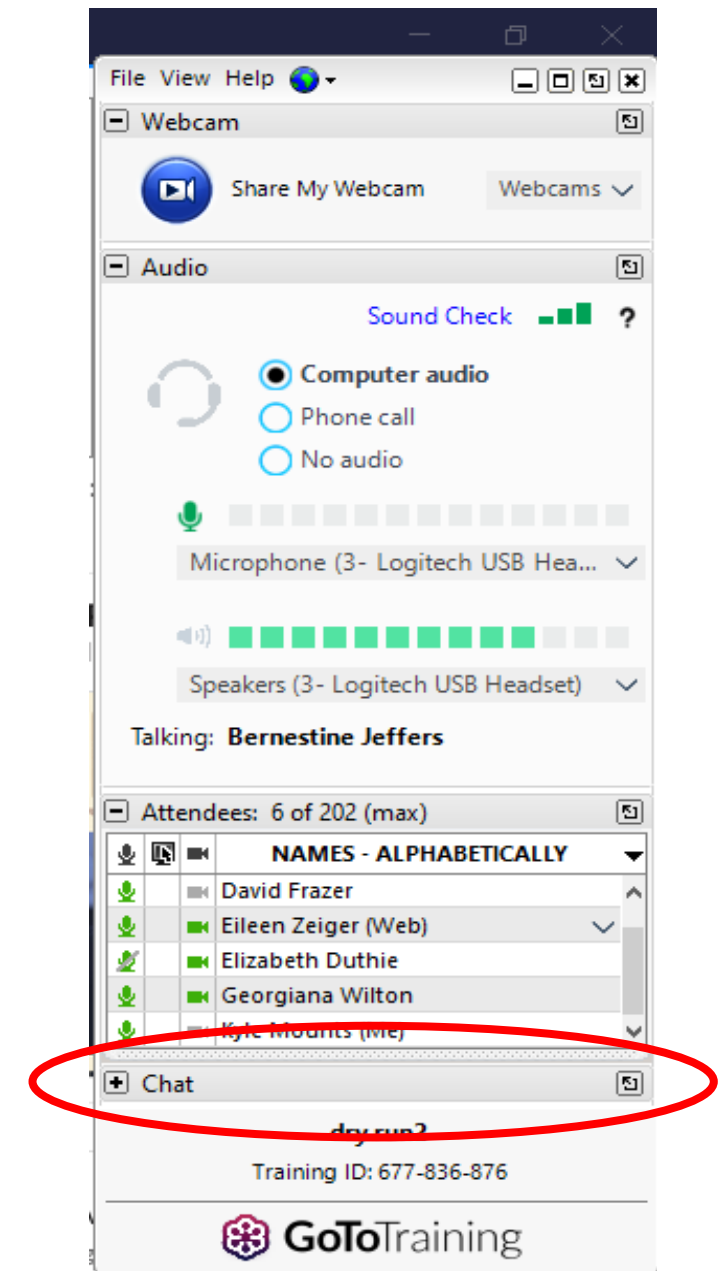


Introductions

- Thank you for joining us today.
- To introduce yourself, please enter your name and agency/organization in the chat box and send to all.



ECHO Etiquette

- Stay muted when we are not speaking to reduce extraneous noise
- Use the “raise hand” function to ask a question or make a comment, or put it in the Chat Room
- Be respectful of everybody, even if their ideas don’t resonate with you
- Never disclose protected health information or any identifying information regarding the case study
- Help us keep the learning environment productive, positive, helpful, and safe

Reminders

- If you ever have questions or comments about any of our programs, please use the “Contact” function on the Wisconsin CONNECT website
- The didactic will be recorded and posted on the website along with responses to your questions.
- This is your last chance to **“introduce yourself”** to your colleagues in the **chat room**. Once the didactic begins, we’ll reserve that space for questions.
- If the PowerPoint slides aren’t large enough on your screen, drag the “gray bar” above the slide up or down to change the size—and you can remove the webcam coverage to just see the slides.

Accreditation for CME and CNE

- CME

- The Wisconsin Association for Perinatal Care (WAPC) is accredited by the Wisconsin Medical Society to provide continuing medical education for physicians.
- The Wisconsin Association for Perinatal Care (WAPC) designates this internet live course for a maximum of 1 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

- CNE

- The Wisconsin Association for Perinatal Care (WAPC) is approved as a provider of nursing continuing professional development by the Wisconsin Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.
- This internet live activity meets the criteria for a maximum of 1 contact hour.

THC and TLC

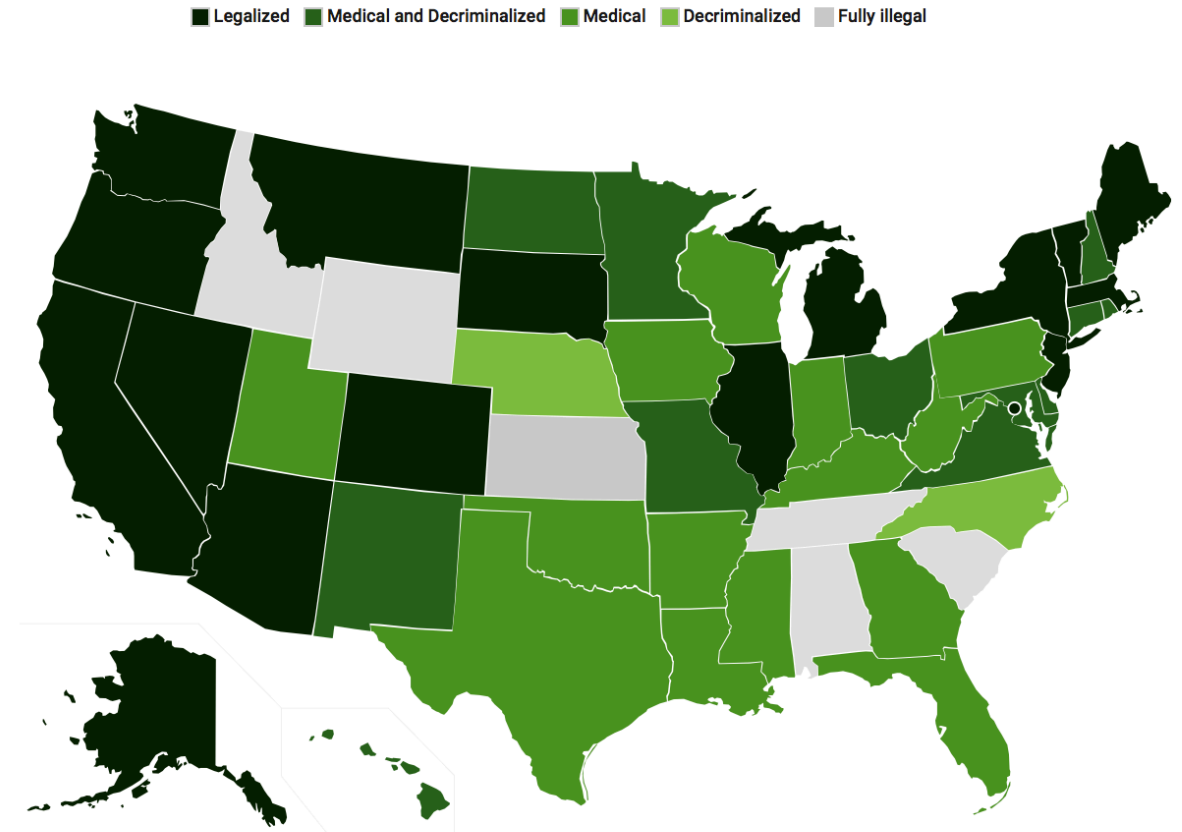
Marijuana Use During Pregnancy and Breastfeeding

Objectives

- Current prevalence of cannabis use in pregnancy
- What we know (and don't know) about cannabis use in pregnancy and effects on the developing fetus
- What are recommendations for cannabis use while breastfeeding?

State of Legalization

- Wisconsin
 - CBD Oil legal
 - Full legalization discussed but currently no significant legislation
 - Marquette poll found 59% of WI residents support legalization
- Iowa
 - CBD Oil legal
- Minnesota
 - Medicinal Marijuana legal
- Illinois
 - Fully legal



Changing Landscape THC and CBD

Increasing **STRENGTH** of Products

- Potency of MJ in samples from 1983 3.2% THC
- Potency of MJ in samples from 2008 13.3% THC, isolated samples as high as 27.3-37.2%

- National Criminal Justice Reference Service. Quarterly Report: Potency Monitoring Project. Report 104. www.ncjrs.gov

Increasing **VARIETY** of Products

Increasing **COMMERCIALIZATION** of Products

Increasing **AVAILABILITY** of Products

Changing Perception of Safety

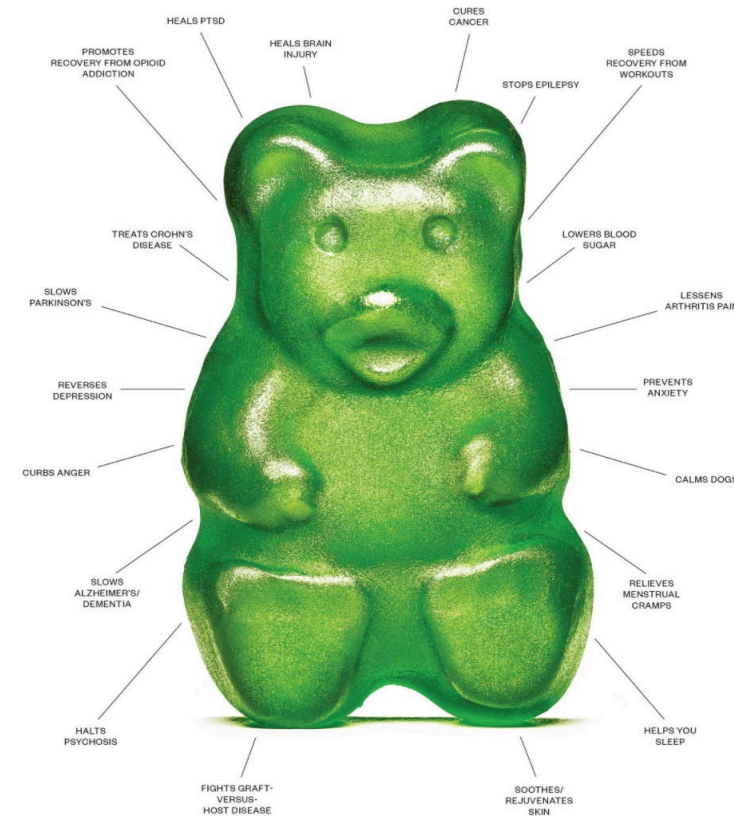


Jarlenski M et al. Trends in perception of risk of regular marijuana use among UW pregnant and non-pregnant reproductive-aged women. Am J OBGYN 2017;217(6) 705-707

A note on CBD

- There is no comprehensive research studying the effects of CBD on the developing fetus, pregnant mother, or breastfed baby
- Contamination of unregulated products with THC, pesticides, heavy metals, bacteria and fungus
- Known risk of liver toxicity and extreme sleepiness

FDA Website



Patterns of Prenatal Cannabis Use

- Cannabis use among pregnant women is **INCREASING**

- Volkow N. Self-reported Medical and Nonmedical Cannabis Use Among Pregnant Women in the United States. JAMA 2019;322(2)

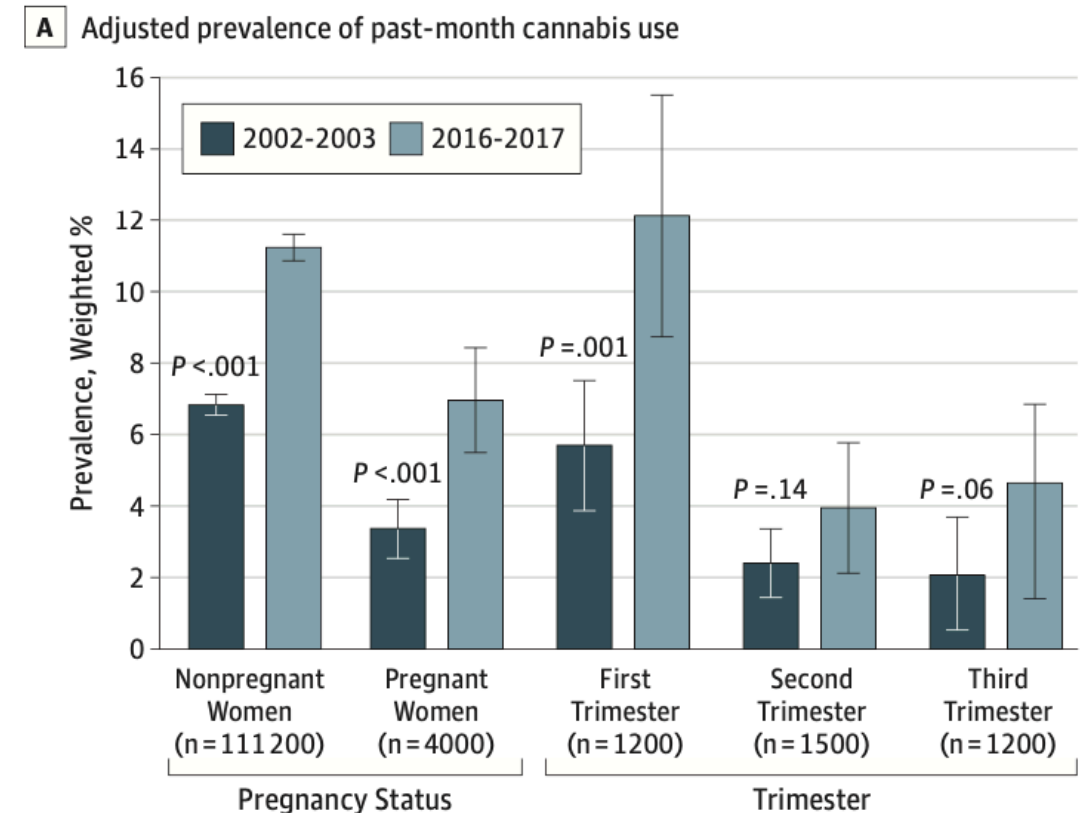
- Pregnant women reporting MJ use in last month have significantly **HIGHER** co-morbidities

- samsha.gov

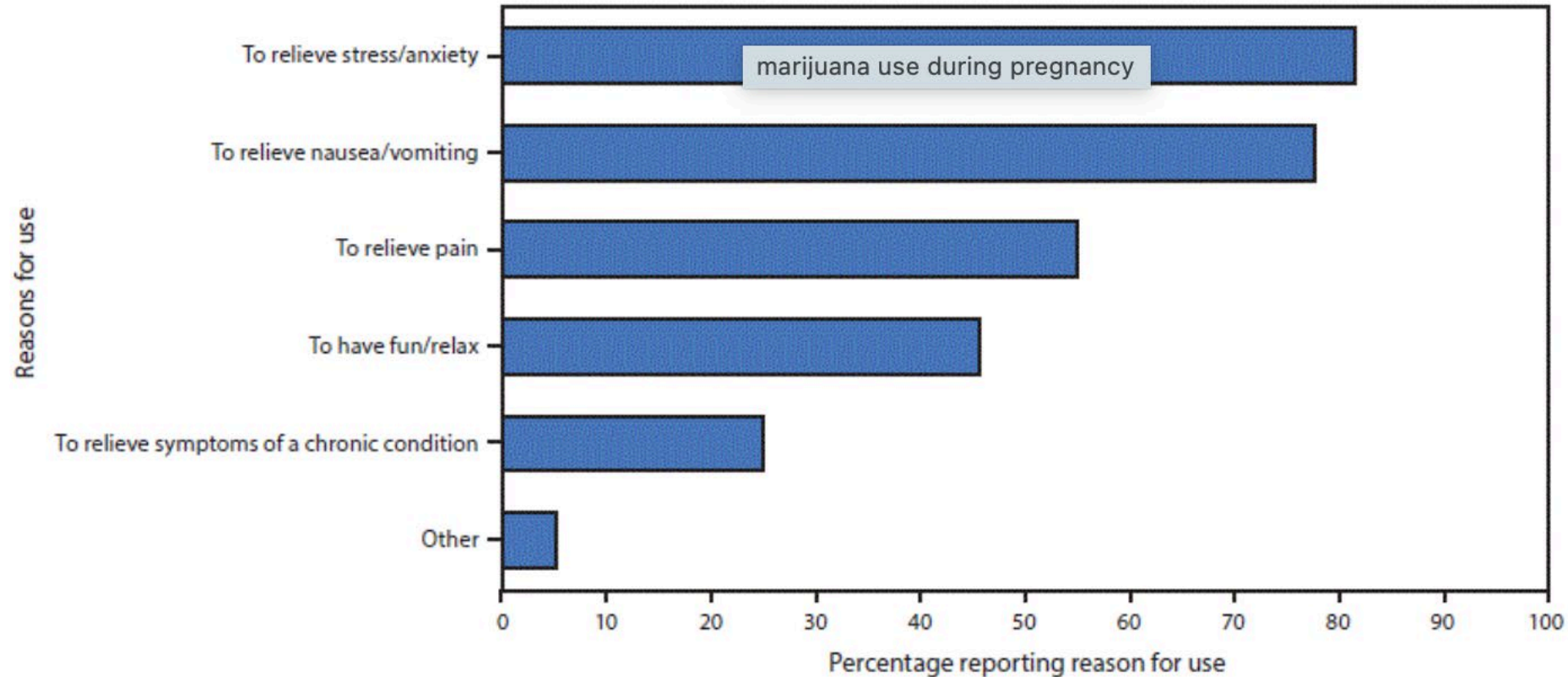
- Co-morbidities more likely in younger women

- Luke S. Cannabis Use in Pregnancy in British Columbia. J Obstet Gynecol Can. 2019;41(9)

Figure. Adjusted Prevalence of Cannabis Use in Women Aged 12 to 44 Years Based on National Survey on Drug Use and Health (NSDUH) Data



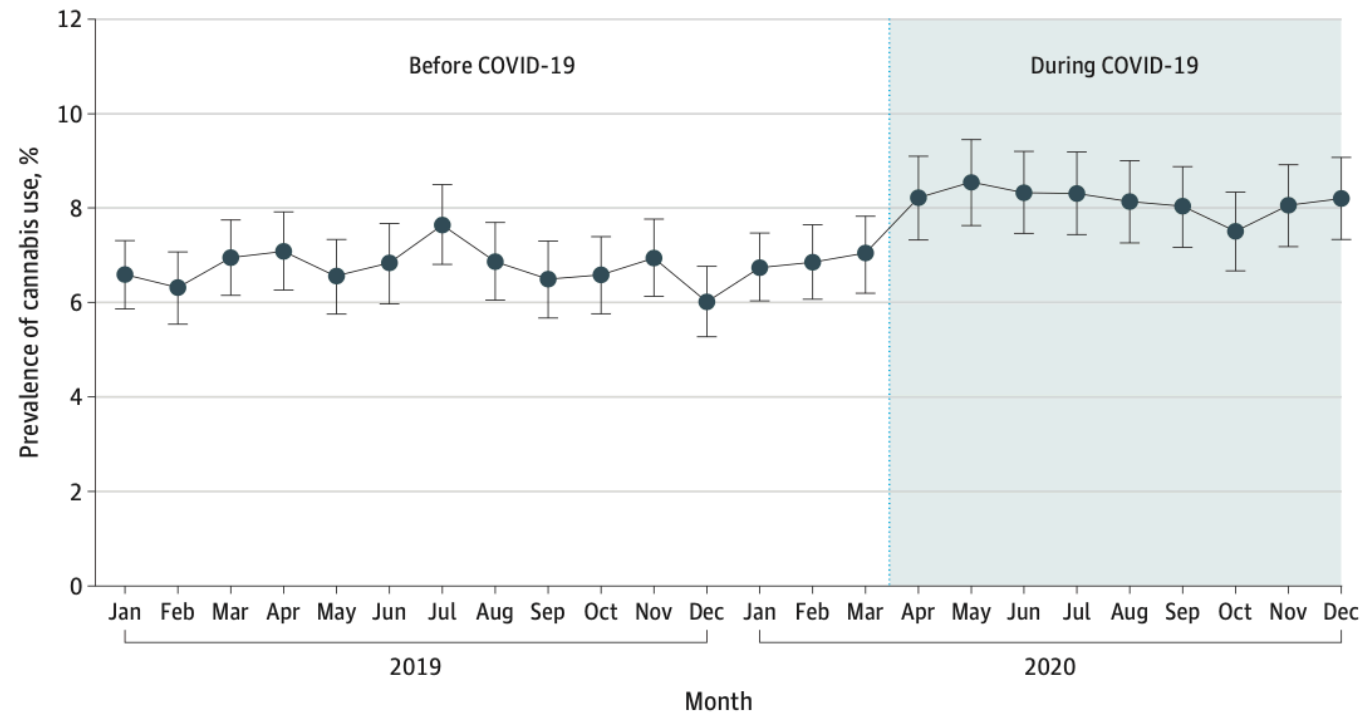
Indications for MJ Use in Pregnancy?



Ko et al. Characteristics of Marijuana Use During Pregnancy — Eight States, Pregnancy Risk Assessment Monitoring System, 2017. MMWR Morb Mortal Wkly Rep 2020;69:1058–1063.

Impact of COVID on Patterns of Use

Figure. Monthly Trends in Cannabis Use During Pregnancy Before and During the COVID-19 Pandemic (N = 100 005)



Young-Wolff KC, Ray GT, Alexeeff SE, et al. Rates of Prenatal Cannabis Use Among Pregnant Women Before and During the COVID-19 Pandemic. *JAMA*. 2021;326(17):1745–1747.

Professional Guidance?

- Women who are pregnant or contemplating pregnancy should be encouraged to discontinue marijuana use
- Health care providers should be discouraged from prescribing or suggesting the use of marijuana for medicinal purposes during preconception, pregnancy and lactation
- Women who are pregnant or considering pregnancy should be encouraged to discontinue use of marijuana for medicinal purposes

- ACOG Committee Opinion 722. October 2017

Cannabis: Pharmacology

- Cannabis plants produce more than 400 chemical entities, more than 60 cannabinoids
- Main psychoactive component is delta-9-THC, acts as agonist to CB1 and CB2 receptors in CNS
- Half life 20-36 hours up to 4-5 days
- Cord blood levels 10% of maternal levels

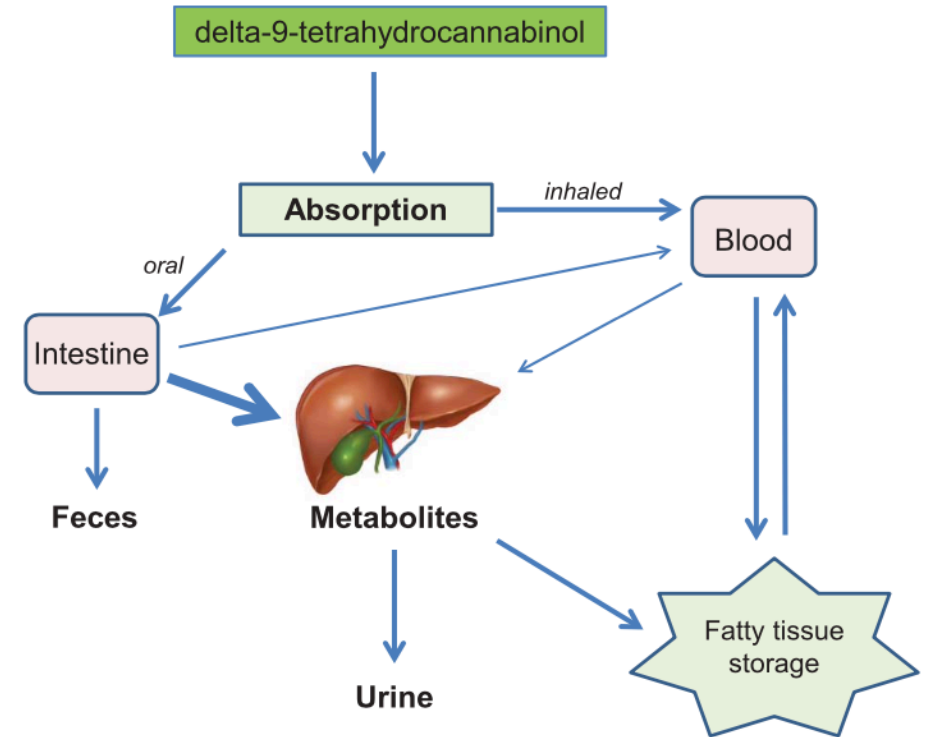


Fig. 1. After consumption, the primary psychoactive component of marijuana, delta-9-tetrahydrocannabinol, undergoes various absorption, metabolism, and excretion pathways based on method of administration. Illustration of the human liver anatomy © Erhan Akin, Dreamstime.com. Used with permission.

Metz and Borgelt. Marijuana Use in Pregnancy. Obstet Gynecol 2018.

Role of the Endocannabinoid System (ECS) in Newborn Brain Development and Function

- ECS detectable as early as 5 weeks gestation
 - CB1 receptors in CNS
 - CB2 receptors in immune system
- Plays an essential role in early stages of neuronal development including cell proliferation, migration and differentiation
- Concentrated in areas of the brain responsible for emotional regulation, cognition and memory
- CB1 plays an essential role in development of feeding response in mice

No clear withdrawal syndrome

- Altered arousal patterns, regulation and excitability measured by NICU network Neurobehavioral Scale
 - De Moraes Barros MC. Exposure to marijuana during pregnancy alters neurobehavior in the early neonatal period. *J. Pediatr* 2006;149(6): 781-787
- Increased tremors and prolonged and exaggerated startle reflex in first week and persisted at 9 and 30 days of age
 - Fried PX. Neonatal neurological status in a low-risk population after prenatal exposure to cigarettes, marijuana and alcohol. *J Dev Behav Pediatr*. 1987;8(6):318-326
- Poor habituation and response to visual but not auditory stimuli
 - Fried PA Neonatal behavioral correlates of prenatal exposure to marijuana, cigarettes and alcohol in a low risk population. *Neurotoxicol Teratol* 1987;9(1):1-7
- High pitched cry
 - Lester BM. Effects of marijuana use during pregnancy on newborn cry. *Child Dev* 1989;60(4)765-771
- Abnormal sleep patterns with decreased quiet sleep and increased sleep motility
 - Scher MS The effects of prenatal alcohol and marijuana exposure: disturbances in neonatal sleep cycling and arousal. *Pediatr Res* 1988;24(1):101-105

Early Effects on Newborn

- Meta-analysis of 24 studies looked at effect of marijuana use on maternal anemia, neonatal growth parameters NICU admission and gestational age at birth.
 - Found infants exposed prenatally to marijuana had a **decrease in birth weight (ave 110g less)** and **higher likelihood of needing admission to the NICU**
 - Limitation of this study was that most women included had history of polysubstance abuse
 - Gunn JK Prenatal exposure to cannabis and maternal and child health outcomes; a systemic review and meta-analysis. BMJ Open 2016;6(4)
- Systemic review of 31 studies evaluating maternal marijuana use on neonatal outcomes adjusting for tobacco use and other substance exposures
 - When controlling for tobacco use, women were **not at risk for preterm birth**
 - **No independent relationship between marijuana use and SGA, placental abruption, need for NICU admission or spontaneous abortion**
 - Conner SN. Maternal marijuana use and adverse neonatal outcomes: a systemic review and meta-analysis. Obstet Gynecol 2016;128(4):713-723

Late Effects: Behavior and Development

Study Setting	Population	Major Findings
Ottawa Prenatal Prospective Study N=698	Middle Income	<ul style="list-style-type: none">• Higher rates of reported “problem behaviors” at age 6-9 and depressive symptoms at age 16-21• Deficits in executive function tasks including impulse control, visual problem solving and analytic skills requiring sustained attention
Maternal Health Practices and Child Development Study N=564	Low SES	<ul style="list-style-type: none">• Higher rates of depressive symptoms by parent and teacher report at 10 years of age• Deficits in executive function tasks, problem solving and global achievement
Generation R Study N=9778	High SES	<ul style="list-style-type: none">• No difference in behavior at age 3

Breastmilk Exposure: What do we know?

- Isolated impact of infant cannabis exposure via breastmilk is unknown
- Bioavailability of THC and metabolites ingested in breastmilk is unknown
- What do we know?
 - THC 99% protein bound
 - THC very lipophilic
 - Low molecular weight 314



Patterns of Post-Natal Use

- 84% of users during pregnancy continue to use while breastfeeding
 - Perez-Reyes, M & Wall, M. (1982). Presence of Δ^9 - Tetrahydrocannabinol in Human Milk. *The New England journal of medicine*. 307. 819-20. 10.1056/NEJM198209233071311.
- Marijuana is the most commonly used recreational drug in breastfeeding women
 - Ryan SA, Ammerman SD, O'Connor ME, AAP COM- MITTEE ON SUBSTANCE USE AND PREVENTION, AAP SECTION ON BREASTFEEDING. Marijuana Use During Pregnancy and Breastfeeding: Implications for Neonatal and Childhood Outcomes. *Pediatrics*. 2018;142(3):e20181889
- Increase in use after the immediate post-natal period
 - Moss M. Cannabis use and measurement of cannabinoids in plasma and breastmilk of breastfeeding mothers. *Pediatric Research* 2021

Professional Guidance?

- ACOG/AAP: 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.

- Marijuana use during pregnancy and lactation. Committee Opinion No. 722. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2017;130:e205–9.

- ABM: : BF mothers “should be counseled to reduce or eliminate their use of cannabis to avoid exposing their infants and advised of the possible long-term neurobehavioral effects from continued use

- Reese-Stretman R. ABM Clinical Protocol #21: Guidelines for Breastfeeding and Substance Use or Substance Use Disorder, Revised 2015. *Breastfeed Med.* 2015;10(3):135-141

- AAP: Street drugs such as PCP (phencyclidine), cocaine, and cannabis can be detected in human milk, and their use by breastfeeding mothers is of concern, particularly with regard to the infant’s long-term neurobehavioral development and thus are contraindicated

- Section on Breastfeeding. Breastfeeding and the Use of Human Milk. *Pediatrics* 2012, 129(3) e827-e841

Thank You!

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University of Wisconsin School of
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UWHealthKids



School of Medicine
and Public Health
UNIVERSITY OF WISCONSIN-MADISON



Closing

- Thank you for participating today.
- Plan to attend the next ECHO
 - Thursday, December 9, 11am Central Time
 - Topic: *A Man Alone: Increasing the Wellbeing of Fathers, Father Figures, and Family Members in Women's Substance Use Disorder Treatment*
 - Speaker: Eileen Sperl and Perry Henry from Meta House in Milwaukee
 - Case presentation: If you have a case to present, let us know!
- We will put a link to this session's evaluation in the chat box now. Please take the time to fill it out and help us make this ECHO as useful to you as possible. If you want CE credits, an evaluation is required.