Cannabis Use in Pregnancy, Postpartum and Infant Feeding

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Disclosures: None

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Objectives

Examine the evidence on cannabis exposure in pregnancy

Review the data on neonatal outcomes with cannabis exposure

Discuss the data on cannabis exposure and lactation

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Outline

- A review of cannabis basics
- Cannabis epidemiology in the United States
- Challenges with data on perinatal cannabis use
- Data on cannabis and breastfeeding
- Recommendations and resources

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Cannabis or Marijuana?

Marijuana

Used to boost support for drug prohibition by utilizing xenophobia and anti-immigrant sentiment

Cannabis

Genus name

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Cannabis

- Cannabinoids mediate medical and psychoactive properties
- Delta-9-tetrahydrocannabinol (THC)
- Increased dopamine release, altered mood and cognition

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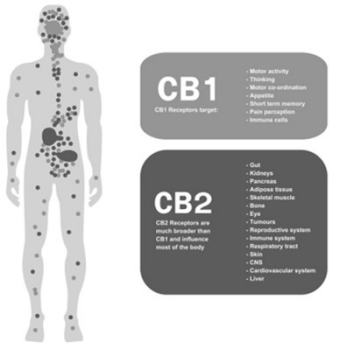

Cannabis Education: All about Endocannabinoids — Consume Cannabis Blog
 — CONSUME

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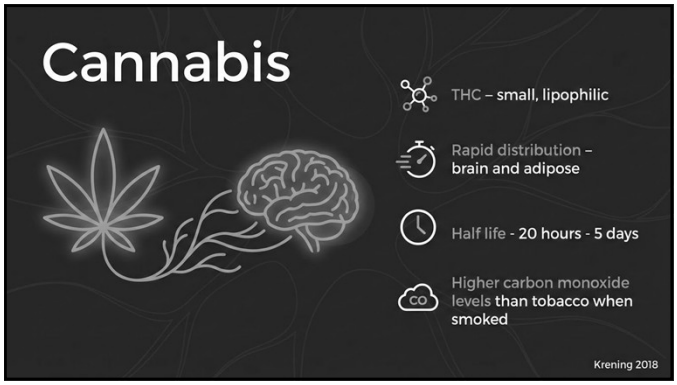

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Route of Administration	Inhalation	Oral
% Dose Consumed	~ 50% (loss due to pyrolysis)	100%
Trajectory to Circulation	Lungs – Bronchi-Bronchiole - Alveoli	Stomach – Small Intestines – Portal Vein - Liver
Other Factors Affecting Uptake	Intake upon inhalation (puff duration, intake volume, holding time)	Absorption (stomach contents, metabolic rate, genetic variants in CYP 450 enzyme activity, enzyme regulation by other drugs)
First-Pass Hepatic Metabolism	Bypassed	First-Pass Hepatic Metabolism by CYP450 enzymes
Bioavailability	2 – 56%	<20%
Onset	Immediate	30 – 90 minutes
Time of Peak Plasma	5 – 10 minutes	1 – 6 hours
Duration	2 - 4 hours	4 – 8 hours

Nahtigal et al, 2017

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What about Medical Cannabis? Sera 2024

Table 2. The Evidence Base for Cannabinoid Therapy[13,41,138,139]

Level of evidence	Symptom/condition	Formulation(s) associated with therapeutic benefit			
		THC	CBD	THC:CBD (1:1)	Inhaled flower
Conclusive or substantial evidence of effectiveness • Strong evidence from RCTs (conclusive) • Strong evidence from many (conclusive) or several (substantial) good-quality studies • Very few or no credible opposing findings	Chronic pain			x	x
	Chemotherapy-induced nausea and vomiting	x			
	Multiple sclerosis–associated spasticity (patient-reported symptoms)	x		x	
	Seizures associated with Lennox-Gastaut and Dravet syndromes		x		
Moderate evidence of effectiveness • Several findings from good- to fair-quality studies • Very few or no credible opposing findings • Some uncertainty due to chance or bias	Insomnia	x			
Limited evidence of effectiveness • Supportive findings from fair-quality studies • Mixed findings, with most favoring effectiveness • Substantial uncertainty due to chance or bias	HIV/AIDS–associated anorexia/cachexia	x			x
	Multiple sclerosis–associated spasticity (clinician-measured symptoms)	x		x	
	Symptoms associated with: • Tourette syndrome • Social anxiety disorder • Posttraumatic stress disorder	x x	x		
No evidence or insufficient evidence • Mixed findings or a single poor-quality study or health outcomes have not been studied • No conclusion can be made due to chance or bias	Cancer Cancer-associated anorexia/cachexia, Anorexia nervosa Spasticity associated with spinal cord injury Substance use disorders Dystonia Schizophrenia Symptoms associated with: • Huntington disease • Amyotrophic lateral sclerosis • Parkinson disease				

CBD, cannabidiol; THC, delta-9-tetrahydrocannabinol.

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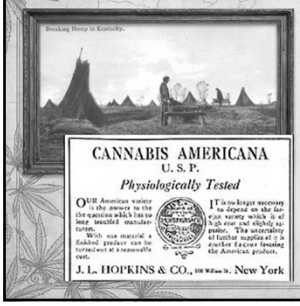
Cannabis History, United States, 1611-1911



- Hemp to US, Jamestown settlers
- Grown by President Washington and President Jefferson
- Included in US Pharmacopeia (1850)
- First outlawed in Massachusetts (1911)

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Cannabis History, United States, 1937

- Push to tax cannabis to limit use
- American Medical Association opposed taxing, encouraged research

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Cannabis History, 1970s

- Recommended removal from new substance scheduling system
- Recommended decriminalization
- Rejected by President Nixon

1970 1970 1970 1972

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Cannabis Classification

SCHEDULE CLASSIFICATIONS

SCHEDULE	DEFINITIONS	EXAMPLES
SCHEDULE I	No accepted medical use, high abuse potential	Heroin, ecstasy, LSD, cannabis
SCHEDULE II	High abuse potential with severe psychological or physical dependence, acceptable medical use	Morphine, codeine, oxycodone, fentanyl, methadone.
SCHEDULE III	Abuse potential less but may lead to moderate or low dependence	Products with < 90 mg of codeine per dose
SCHEDULE IV	Abuse potential less than Schedule III but more than Schedule V	Propoxyphene, benzodiazepines
SCHEDULE V	Medications with the least potential for abuse among the controlled substances	Robitussin AC, Phenergan with codeine, pregabalin

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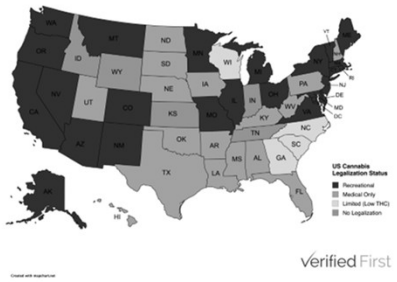
Cannabis Status By State



https://verifiedfirst.com/blog/pre-employment-thc-drug-testing-laws/#:~:text=United%20States%20Cannabis%20Legalization%20Status%20Map%201The,longer%20a%20simple%20legal%20vs.%20illegal%20binary.

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Perinatal Cannabis : Epidemiology

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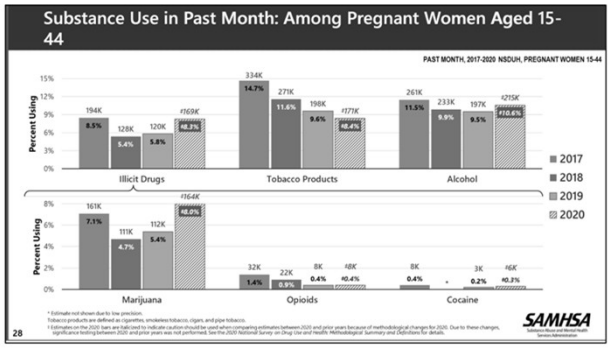

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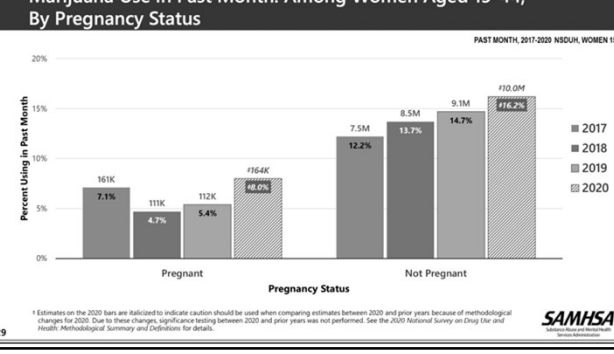

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Data Challenges with Cannabis Outcomes

- Data remain limited due to funding
- Confounders
  - Polysubstance exposure
- Often self report
- Difficult to quantify amount of exposure
- Rising THC concentrations

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Data Challenges with Perinatal Cannabis

- **Confounders**
- Prenatal use
- Second-hand smoke
- Parenting with active exposure
- **No long term information on isolated human milk exposure**

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Perinatal Cannabis - the data

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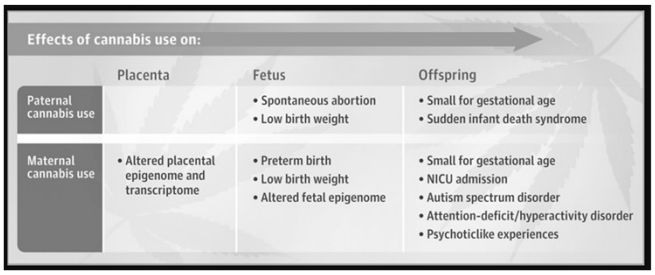
Cannabis and Pregnancy



Lo, Hodges and Metz 2023

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TABLE 1 Cannabis impact on infant outcomes: Evidence from human studies

Timeline	Pregnancy	Breastfeeding
Short term (≤12 months)	Low birth weight[19-22] Preterm birth[19-22]	Decreased motor development[102] Reduced height[103]
Long term (>12 months)	**18 months old** Increases in: Aggressive behaviour[24] Attention deficits[24] **3-6 years old** Deficits in: Verbal and perceptual skills[9,27] Verbal, visual and quantitative reasoning[9,27] Short-term memory[9,27] Increases in: Hyperactivity, attention deficits and impulsivity[9,27] Impaired vigilance[9] **9-10 years old** Deficits in: Abstract reasoning[9,27] Executive function[9,27] Reading[9,27] Spelling[9,27] Increases in: Depressive and anxious symptoms[9] **14-16 years old** Deficits in: Academic achievement[9] Information processing speed[9] Visual motor coordination[9] **17-22 years old** Deficits in: Executive functioning[27] Response inhibition[27] Visuospatial working memory[27] Increases in: Smoking and substance use[9,27]	*Not studied*

[a]With use greater than once per week.
[b]Conflicting literature.

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Cannabis and Lactation

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Key Questions

- When are cannabis metabolites present in human milk?
- Does isolated cannabis exposure through human milk have associated adverse infant/child outcomes?

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Pharmacokinetics of Cannabis and Its Derivatives in Animals and Humans During Pregnancy and Breastfeeding

Anaëlle Montort[1,2], Ema Ferreira[1,2], Grégoire Leclair[1,2] and Gregory Anton Lodygensky[3,4]

THC still present **4 hours** after cannabis use

Case report of THC present in milk **6 days** after use

THC and CBD concentrations **2x higher** in breast milk than in maternal plasma

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Human Milk Cannabinoid Concentrations and Associations with Maternal Factors: The Lactation and Cannabis (LAC) Study

Prospective study design

20 participants included:

- Frequent cannabis use (> 1 / week)
- < 6 months postpartum
- Feeding infants 5+ times daily
- No illicit substance exposure

Data collection: 5 milk samples collected after a single cannabis exposure event (following a 12-hour abstinence period).

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Human Milk Cannabinoid Concentrations and Associations with Maternal Factors:
The Lactation and Cannabis (LAC) Study

- THC peaked 120 minutes after a single use of cannabis
- The more often cannabis was used, the higher the THC concentrations at baseline and in post-use samples
- Bioaccumulation

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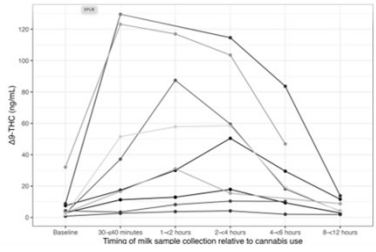
Human Milk Cannabinoid Concentrations and Associations with Maternal Factors:
The Lactation and Cannabis (LAC) Study



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Cannabinoid Hyperemesis Syndrome

- Chronic cannabis exposure
- Little relief with conventional anti-emetics
- Cyclical vomiting, nausea and abdominal pain with abstinence
- Improved with extended hydrothermotherapy

Kirby 2023

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Cannabinoid Hyperemesis Syndrome

Treatment
- Haloperidol
- Droperidol
- Benzodiazepines
- Topical capsaicin

Supportive care - fluids, electrolytes

Ongoing abstinence

Kirby 2023

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Cannabinoid Hyperemesis Syndrome

Rome IV diagnostic criteria

Must include all of the following:
- Episodes of vomiting and nausea of less than 1-week duration
- ≥3 episodes within the last 12 months and ≥2 episodes within the last 6 months occurring at least 1 week apart
- Absence of vomiting between episodes
- ≥3 months with symptomatic onset occurring at least 6 months prior to diagnosis
- Chronic use of cannabis

Clinical characteristic	Frequency
Severe nausea and vomiting	100%
Cyclical pattern of vomiting occurring over multiple months	100%
Resolution of symptoms with cessation of cannabis consumption	96.8%
Compulsive hydrothermotherapy with symptom relief	92.3%
Abdominal pain	85.1%
History of regular cannabis use for ≥1 year	74.8%

Kirby 2023

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What about CBD products?

- CBD detected in milk samples
- Small amounts
- Higher in smoking vs. edible formulations
- No information on infant/child outcomes after exposure

Yeung 2023

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The Patient Perspective

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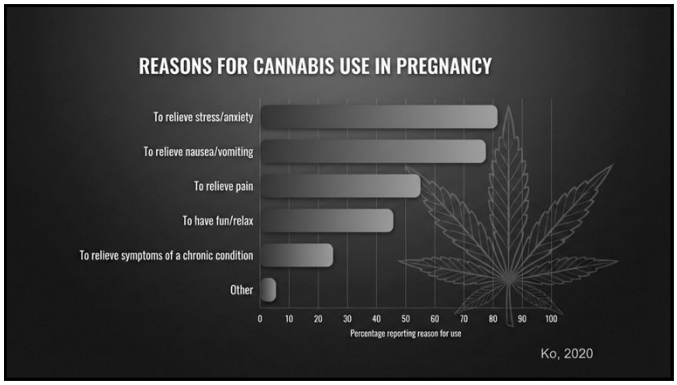

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Perceptions of Cannabis Use and Its Benefits and Risks Among Breastfeeding Mothers

Zane Boerner,[1,*] Cristina Natha,[2] Teresa Baker,[3,4] and Christine D. Garner[3,4]

98%

believed that cannabis was a safer alternative to medication for health concerns

Nausea Anxiety Depression Pain Low Appetite

- Perceived to have fewer side effects than medication

Sense of improved quality of life with use, including with parenting.

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Healthcare professionals and counseling

Fatunbi 2024, Kitsanas 2024

→ Counseling was not standardized across all patients
- Increased counseling if younger, unmarried, and not identifying as white race

→ Limited counseling/resources on cannabis and breastfeeding

→ Limited awareness of impact of cannabis with human milk feeding

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Is legal = safer?

In the context of legalization of cannabis use at the state level, does this confer a broader perception of safety during pregnancy and human milk feeding?

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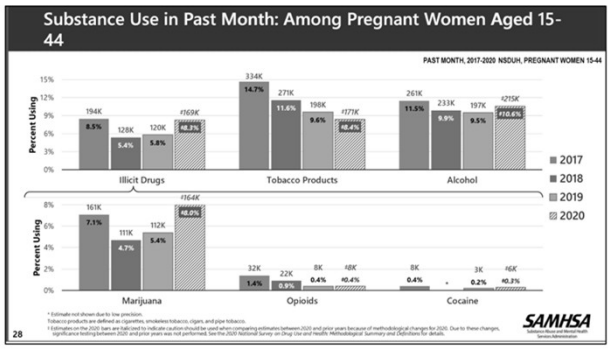

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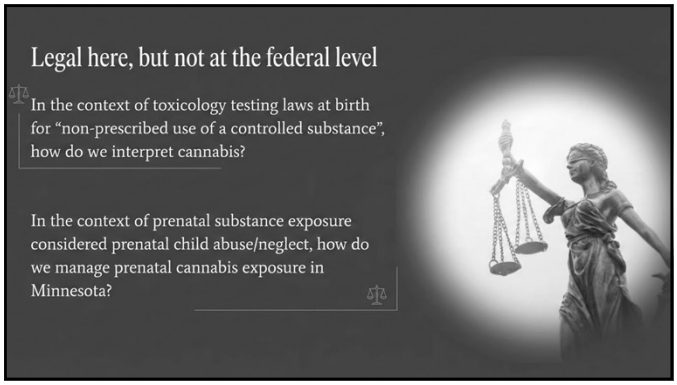

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Recommendations

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Organizational Recommendations *ACOG, AAP*

Recommendation Against Use

- Recommend against cannabis use while pregnant and during lactation, due to insufficient data.

Shared-Decision Making Approach

- Shared–decision making with medical cannabis therapy.

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Breastfeeding Medicine
Volume 18, Number 10, 2023

https://doi-org.ezp2.lib.umn.edu/10.1089/bfm.2023.29256.abm

ACADEMY OF Breastfeeding Medicine

ABM Protocol

Academy of Breastfeeding Medicine Clinical Protocol #21: Breastfeeding in the Setting of Substance Use and Substance Use Disorder (Revised 2023)

Miriam Harris[1,2], Davida M. Schiff[3,4], Kelley Saia[2,5], Serra Muftu[3,4], Katherine R. Standish[6], and Elisha M. Wachman[2,7]

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ACADEMY OF Breastfeeding Medicine

" In general, breastfeeding is recommended among mothers who stop non-prescribed substance use by the time of delivery"

(Does this include chronic cannabis exposure?)

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ACADEMY OF Breastfeeding Medicine

- Cannabis: Shared-decision making, attempt cessation/reduction

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So, what do I say?

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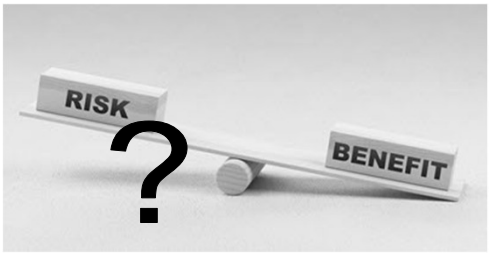

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Talking about cannabis use

- Consider validated screening
- Provided compassionate feedback
- Ask what they know
- Ask for permission to share information and resources
- Prioritize the health of the dyad – don't forget the birthing person
- Consider alternatives

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Tools for engagement

Respectful engagement: Antenatal counselling toolkit

Explore obstacles and emotions
- Consensually explore patient perceptions, feelings and fears
- Acknowledge existing barriers to accessing supports and assess readiness for change

Reflection
- Reflect on previous parenting experiences
- Identify positive and negative experiences antenatally, during parenthood and with healthcare providers

Shame and stigma
- Address stigmatization, feelings of shame and hopelessness
- Provide a non-judgmental and safe space for open communication

Partnership and empowerment
- Explore patient-orientated goals and aspirations both antenatally and for parenthood
- Establish ongoing supports to assist with attaining goals in early pregnancy
- Acknowledge the inherent doctor-patient power imbalance and provide opportunities for patient-directed discussion about concerns and shared decision-making

Ongoing support
- Offer culturally appropriate support and, if consensual, link in with hospital social worker
- Foster familiarity and continuity of care with a supportive multidisciplinary team

Online Toolkit: https://esqm.csyw.qld.gov.au/practice-kits/alcohol-and-other-drugs/working-with-expecting-and-new-parents/responding/respectful-engagement#Explore_her_fears_and_acknowledge_the_obstacles

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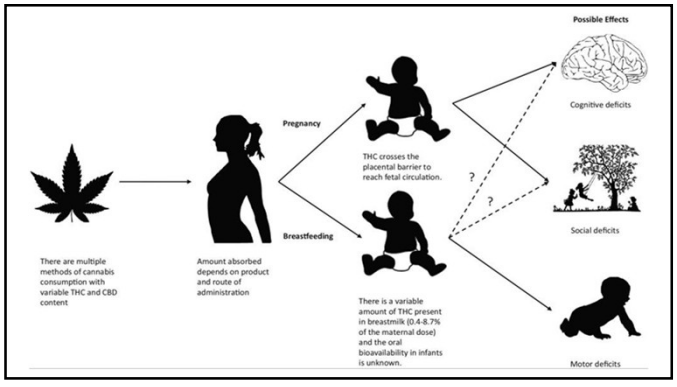

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DSM-V Criteria – Cannabis Use Disorder

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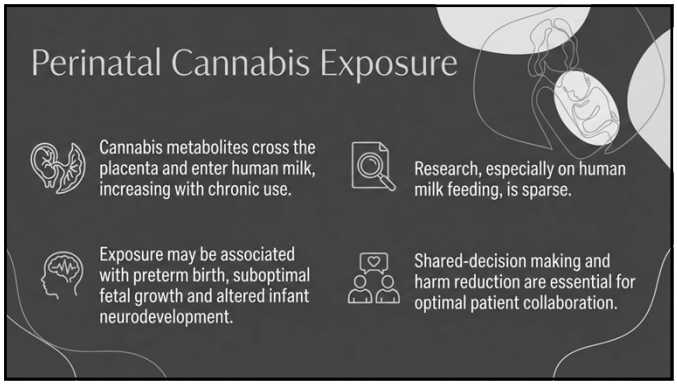

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Resources

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https://patientgateway.massgeneralbrigham.org/mychart-prd/PPGDocs/BWH/Marijuana%20Info%20Sheet.pdf

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https://cdphe.colorado.gov/prevention-and-wellness/marijuana/marijuana-fact-sheets-in-multiple-languages

Available in English, Spanish, Vietnamese, Korean, Chinese, Somali, and Arabic

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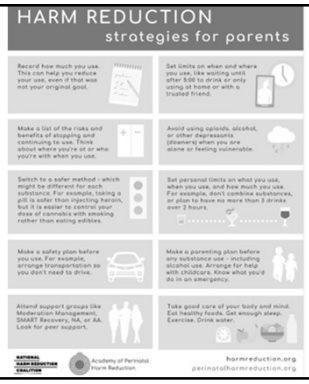
perinatalharmreduction.org



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Thank You!

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