Perinatal Substance Use

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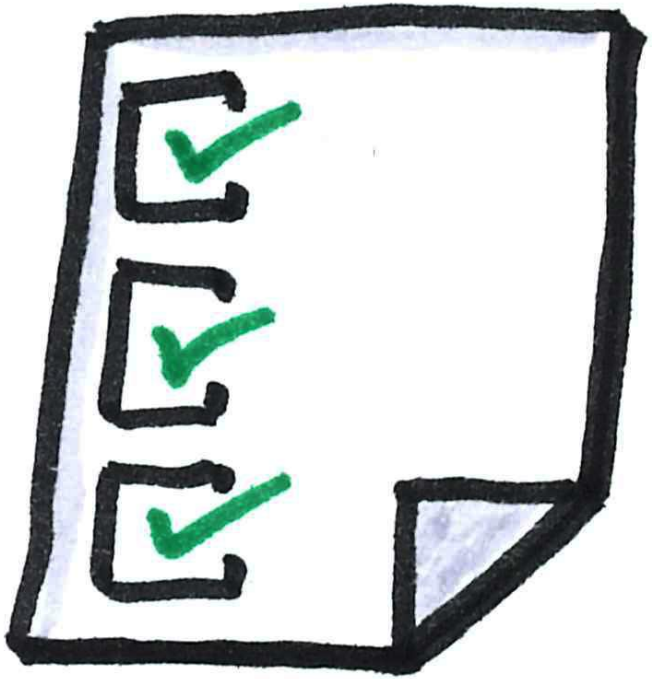
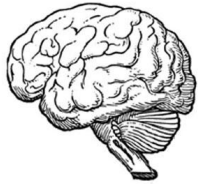
Presentation Outline

- Scope of the Problem
  - Substance Use & Gender
  - Perinatal Substance Use
- Consequences of Drug Use during Perinatal Period
- Cannabis use during pregnancy
- Recommendations and resources
  - Resource Sheets



Definition of Addiction



- A chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences.
- Why a ***BRAIN*** disease?
  - Brain imaging: found drugs change the brain (structure and function)
    - Decision-making, learning, memory, and behavior control.
  - Changes can be long lasting
    - May lead to harmful, self-destructive behaviors.

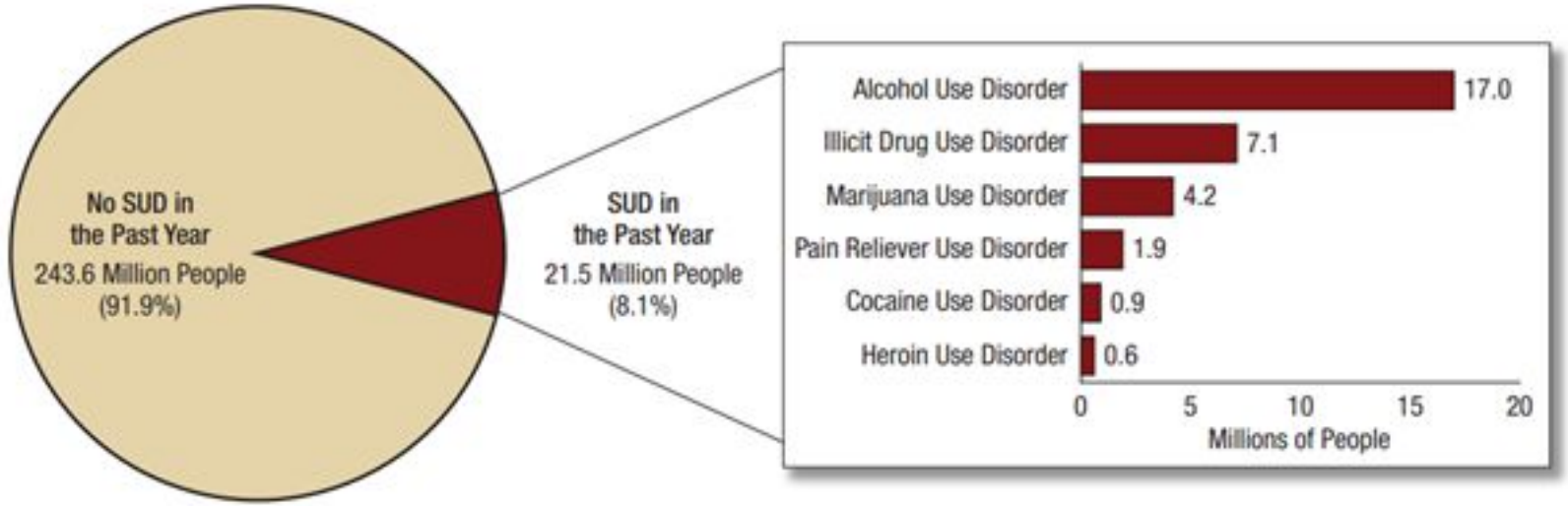
NIDA, 2016

Substance-Related Disorders

- ***Ten Classes of Drugs***:
  - Alcohol
  - Caffeine
  - Cannabis
  - Hallucinogens
  - Inhalants
  - Opioids
  - Sedatives, hypnotics and anxiolytics
  - Stimulants (amphetamine-type, cocaine, others)
  - Tobacco
  - Other (or unknown) substances

Prevalence of Substance Use

Figure 31. Numbers of People Aged 12 or Older with a Past Year Substance Use Disorder: 2014



NSDUH, 2014

SUD = substance use disorder.

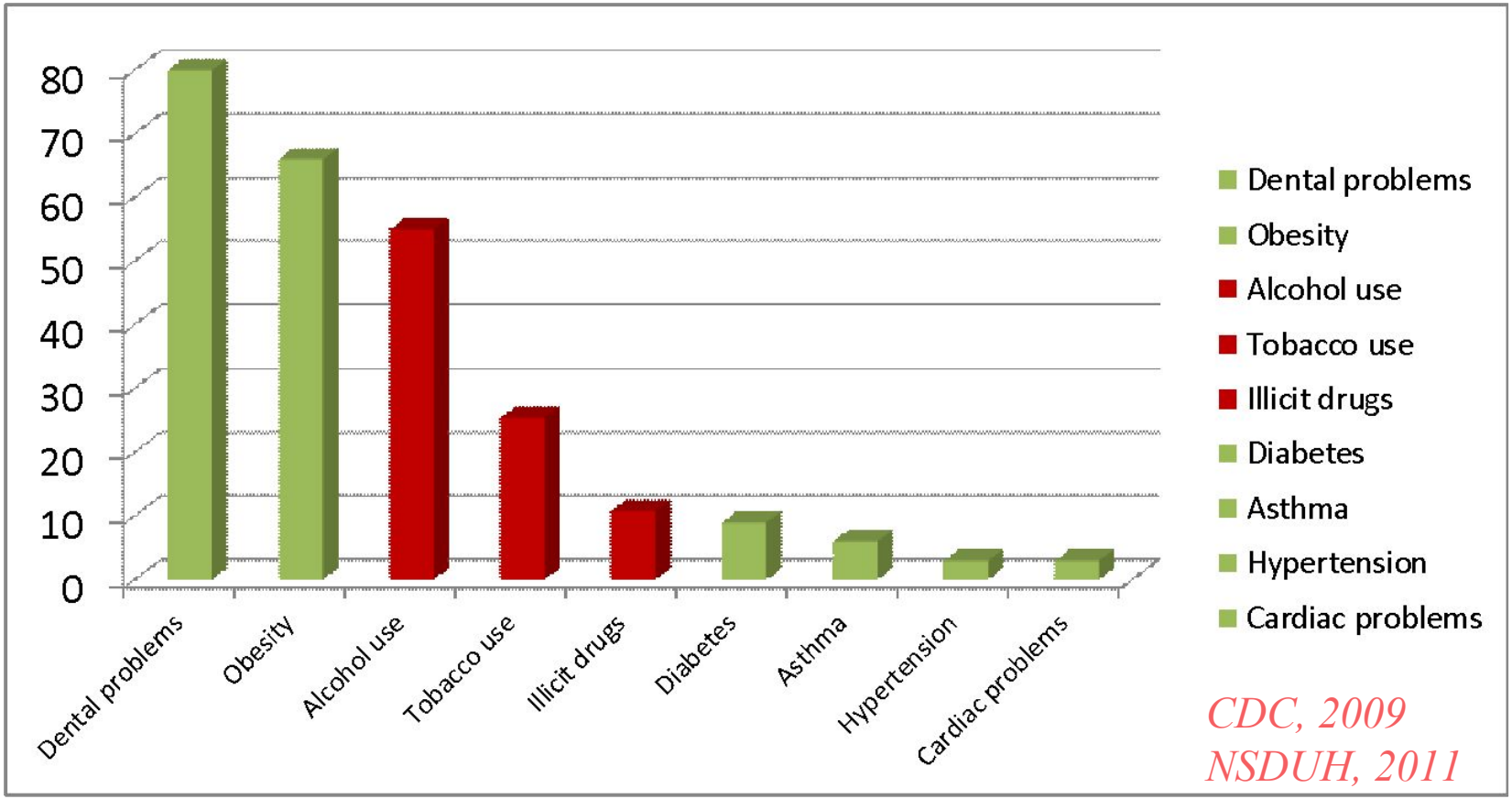
Note: SUD refers to dependence or abuse in the past year related to the use of alcohol or illicit drugs in that same period. Estimated numbers of people having disorders for specific substances do not sum to the 21.5 million people with any SUD because people could have disorders associated with their use of more than one substance.

Gender and Substance Use and Disorders

- Gender differences have been found in the development, course and treatment of SUDs
  - While males are 1.9-2.2 times more likely to **HAVE** a substance use disorder,
    - Females are more likely to experience negative medical and psychosocial consequences of such use

Polak et al., 2015

Morbidity in women of childbearing age (15-44)



CDC, 2009
NSDUH, 2011

Prevalence of Prenatal Substance Use

- Considerations:
  - What constitutes “substance use”?
    - Type of substance
    - Amount of use (once; regularly; high quantity?)
    - Purity and knowledge of what is used and how much
    - Pregnancy awareness
      - Unplanned pregnancies

- Assessment methods
  - Self-report?
  - Urine drug toxicology?
  - Hair analysis
  - Meconium
  - Umbilical cord tissue

Substance Use in Pregnancy

The Literature: Rates vary

Factors contributing to variability include:

Population studied *(urban vs rural; private vs public; younger vs older)*

Trimester of pregnancy tested

Methodology (urine vs self-report)

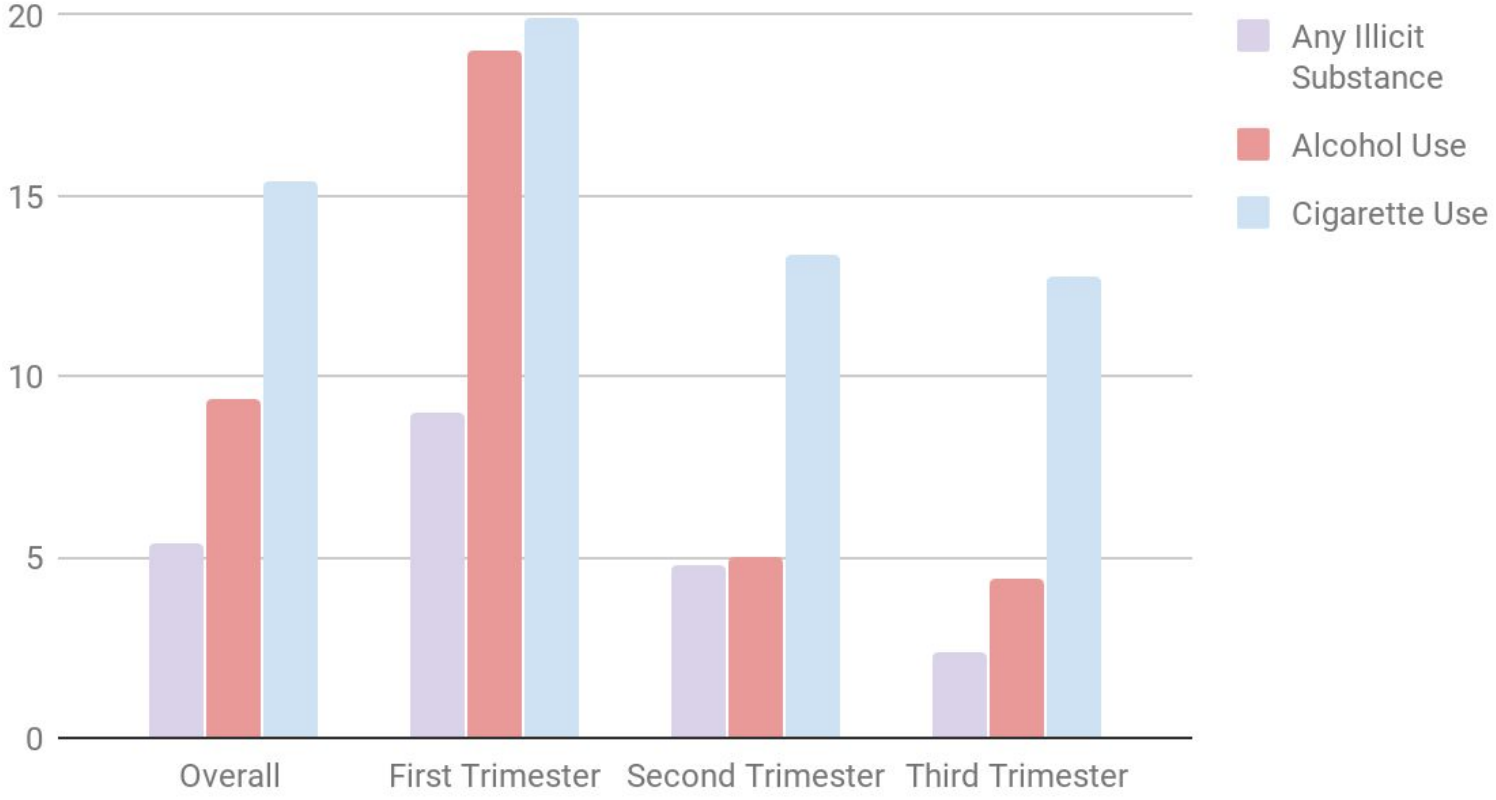
Drugs assessed

Time period for the research

Rates varied in obstetric populations from 2-19%

(Matti et al., 1993; Dold & Quirke, 1998; Stitely et al., 2010; Buchi et al., 2003; Chasnoff et al., 1990)

Drug Use Overall and By Trimester



NSDUH, 2014

Consequences of Use During Pregnancy

Consequences of Prenatal Drug Use

TABLE 2 Summary of Effects of Prenatal Drug Exposure

	Nicotine	Alcohol	Marijuana	Opiates	Cocaine	Methamphetamine
Short-term effects/birth outcome						
Fetal growth	Effect	Strong effect	No effect	Effect	Effect	Effect
Anomalies	No consensus on effect	Strong effect	No effect	No effect	No effect	No effect
Withdrawal	No effect	No effect	No effect	Strong effect	No effect	*
Neurobehavior	Effect	Effect	Effect	Effect	Effect	Effect
Long-term effects						
Growth	No consensus on effect	Strong effect	No effect	No effect	No consensus on effect	*
Behavior	Effect	Strong effect	Effect	Effect	Effect	*
Cognition	Effect	Strong effect	Effect	No consensus on effect	Effect	*
Language	Effect	Effect	No effect	*	Effect	*
Achievement	Effect	Strong effect	Effect	*	No consensus on effect	*

* Limited or no data available.

American Academy of Pediatrics

PEDIATRICS Volume 131, Number 3, March 2013

TABLE. Overview of Risks of Commonly Used Substances in Pregnancy

Substance	Legally Available	Patients' Self-Report of How Substance Makes Them Feel	Evidence of Harm	Risks	Recommendations
Tobacco	Yes	Calms nerves, boosts mood, increases focus, keeps weight down, and makes social interactions easier	Strong evidence	SIDS, IUGR, prematurity, asthma, ear infections, ADHD in boys, and propensity for nicotine addiction in offspring[10]	Taper and discontinue use Do not resume in postpartum Avoid environmental exposure[11,12]
Alcohol	Yes	Calms nerves, numbs emotions and trauma-related flashbacks, and aids sleep	Strong evidence of teratogenicity	Abnormal facial features and neurodevelopmental disability[13,14]	Use reliable birth control measures if drinking heavily Discontinue use when deciding to conceive, throughout pregnancy and while breast-feeding[15-17]
Cannabis	Yes, in some states	Decreases nausea and calms nerves	Mixed evidence; difficult to interpret data, as use with other substances is common	IUGR, low birth weight, stillbirth, poor cognitive functioning, hyperactivity, and decreased attention[18]	Screen all pregnant women Avoid use during pregnancy and breast-feeding Avoid environmental exposure[19,20]

(McLafferty et al., 2016)

Adverse Consequences of Drug Use

- What problems might previous tables present?
  - Polysubstance use (especially alcohol and tobacco)
  - Measurement
  - Methodology – rates of follow-up
  - Comorbid problems
  - Environmental stressors

Using Drugs During Pregnancy

- Many women discontinue substance use on their own when they realize they are pregnant (or after education).
- Those that do not or cannot stop face barriers to care:
  - Stigma
  - Fear of legal consequences
  - Lack of social support
  - Domestic/Intimate Partner Violence
  - Financial problems
  - Lack of transportation and childcare

(Beatty, Svikis, Ondersma, 2012)

Illicit Drug Use in Pregnancy

- Additional Concerns in Epidemiological Studies?
  - Legal consequences
    - Fear of incarceration or CPS case

We will come back to this!

Marijuana Use During Pregnancy

Forms of cannabis

- Dried cannabis
- Concentrates
- Cooked

Dried Cannabis

Also called bud, weed, pot, ganja, mary jane, nug, reefer

Concentrates

Also called: dabs, BHO (butane hash oil), budder, hash, kief, shatter, oil, rosin, wax

Cooked

Tinctures

Edibles

Sprays

Methods of cannabis administration

- Joints
- Blunts
- Bowls/Pipes
- Bongs
- Hot Knives
- Rigs
- Vaporizers

Marijuana Use: Health Effects

New 2018 Study: THC acts on both CB1R & CB2R.

This means it both can simultaneously have anti-inflammatory effect (good for pain) and negative cardiovascular effects (heart attack, stroke).

Effects of short-term use

Impaired short-term memory, making it difficult to learn and to retain information

Impaired motor coordination, interfering with driving skills and increasing the risk of injuries

Altered judgment, increasing the risk of sexual behaviors that facilitate the transmission of sexually transmitted diseases

In high doses, paranoia and psychosis

Effects of long-term or heavy use

Addiction (in about 9% of users overall, 17% of those who begin use in adolescence, and 25 to 50% of those who are daily users)*

Altered brain development*

Poor educational outcome, with increased likelihood of dropping out of school*

Cognitive impairment, with lower IQ among those who were frequent users during adolescence*

Diminished life satisfaction and achievement (determined on the basis of subjective and objective measures as compared with such ratings in the general population)*

Symptoms of chronic bronchitis

Increased risk of chronic psychosis disorders (including schizophrenia) in persons with a predisposition to such disorders

*The effect is strongly associated with initial marijuana use early in adolescence.

New 2017 Review Study:

MJ produces second hand smoke analogous to that of cigarettes.

(Volkow et al., 2014)

Cannabis Use Disorder

- Cannabis use disorder and the other cannabis-related disorders include problems that are associated with substances derived from the cannabis plant and chemically similar synthetic compounds.
- Use causes recurrent problems related to family, school, work, or other important activities.
- Cannabis withdrawal syndrome is included in the DSM 5.
    - Can be prolonged as well, due to how long THC stays in the body.
    - Cannabis withdrawal symptoms may cause significant distress and most likely contribute to relapse among those seeking treatment for their cannabis use.

(American Psychiatric Association, 2013)

Is it safe for pregnant women to use marijuana?

Samantha lives in a state where marijuana is legal for medical use. She recently found out she's pregnant with her second child. During her first pregnancy she had a lot of morning sickness, didn't have an appetite, and lost a lot of weight. She worried about this happening again and has heard smoking marijuana might be a good option for her. After all, it's natural right?

How would you counsel her?

Marijuana Use during Pregnancy

- Use has increased during the time of expanding legalization among reproductive-age women
- 2% to 5% self-report use during pregnancy
- More common among young, urban, socioeconomically disadvantaged → 15% to 28%
- 18.1% of pregnant women using MJ in past year met criteria for abuse, dependence, or both

93% of women stop using illicit drugs during pregnancy or after education

(ACOG, 2017; Metz, 2018; Ko et al., 2015; Mark et al., 2016)

MJ Use:
Public Perception

“If we had to choose between Zofran and weed (during pregnancy), we’d definitely choose weed.”
https://www.nytimes.com/2017/02/20/health/marijuana-pregnancy-mothers.html

Today Show Clip “Marijuana Moms”:
https://www.today.com/video/-marijuana-moms-claim-pot-makes-them-better-parents-1014508099857


The New York Times

SHARED

A Balm When You’re Expecting: Sometimes Pot Does the Trick

Jane, who used pot to quell her nausea during her third pregnancy, with her daughter in New York

MJ Use: Public Perception

400 dispensaries in CO were called by a mystery caller.

Caller stated she was 8 weeks pregnant and experiencing morning sickness.

69% of dispensaries recommended cannabis products as treatment.

(Dickson et al., 2018)

Marijuana Use During Pregnancy

For this presentation, let's conceptualize three "camps" of thought:

1. "The data are inconclusive but we currently advise against it"
2. "Use is harmful and we currently advise against it"
3. "Polysubstance use is a reality, so independent effects are hard to capture"

Marijuana Use During Pregnancy

- The " data are inconclusive but we currently advise against it" camp
  - Fox (2018) in the paper "Do's & Don'ts in Pregnancy"
    - "Marijuana use is not known to be associated with any adverse outcomes in pregnancy"
    - "However data regarding long-term neurodevelopmental outcomes are lacking; therefore, marijuana use is currently not recommended in pregnancy."
  - Conner et al. (2016) in the paper "Maternal Marijuana Use & Adverse Neonatal Outcomes"
    - MJ increased CO2 (5x higher than tobacco) could potentially harm fetus via mom->fetus gas exchange.
    - Through meta-analysis found: MJ not an independent risk for low birth weight, preterm delivery, SGA, placental abruption.
    - However, hard to determine link between higher amount and outcomes due to confounds.
    - Limited data -> Underpowered analysis

Marijuana Use During Pregnancy

- "Use is harmful and we currently advise against it" camp
    - Crume et al. (2018) "Cannabis Use During the Perinatal Period in a State with Legalized Recreational & Medical Marijuana"
        - Prenatal cannabis use was associated with a 50% increased likelihood of low birth weight, independent of maternal age, SES, education, and tobacco use."
    - Grant et al. (2018) "Cannabis Use During Pregnancy: Pharmacokinetics and Effects on Child Development"
        - Not associated with morphological abnormalities at birth
        - Associated with changes in physical growth and early maturation but long-term growth is unaffected
        - Cognition involved in executive functioning can be negatively impacted
        - Associated with higher levels of anxiety and depression in teens
    - Among other studies...

Marijuana Use During Pregnancy

- "Polysubstance use is a reality, so independent effects are hard to capture" camp
  - Leemaqz et al. (2016) "Maternal MJ has independent effects on risk for spontaneous preterm birth but not other common late pregnancy complications"
    - Most people were co-users of tobacco in this study
    - Independent of smoking status, SPTB risk more than doubled regardless smoking status // length of gestation significantly shorter
  - Chabarria et al. (2016) "Marijuana and Its Effects in Pregnancy"
    - Marijuana alone not associated with significant adverse outcomes
    - Cigarette use associated with small for gestational age and <25th percentile head circumference and birth weight
    - Co-use associated with <25th percentile head circumference and elevated rates of pre-E
  - Gunn et al. (2016) "Prenatal exposure to cannabis & maternal & child outcomes"
    - Most of the women in this study co-users of cigarette
      - Anemia in mother, decreased birth weight and NICU more likely for baby.
  - Eiden et al. (2018) two studies
    - Co-use cigarettes and MJ associated with poor toddler emotion regulation and increased behavior problems

Marijuana Use During Pregnancy

- Women do not have good information on use during pregnancy.
  - Doctors usually do not ask about MJ use in a way that elicits an accurate and honest response.
  - There can be dire consequences for women and their families if use is reported.
    - This disproportionately affects communities of color.
- There is a great deal of misinformation on the internet regarding MJ use during pregnancy as well.
  - Messageboards advocating for use.
- What about after pregnancy?
  - MJ use is negatively correlated with initiating breastfeeding in one study(Mark, Desai, Terplan, 2016) but not in others (Crume 2018).
  - Recent study has found THC metabolite in children whose parents use in their presence (second hand smoke) (Wilson et. al, 2017).
    - Also is associated with two fold risk in SIDS (Klonoff-Cohen, & Lam-Kruglick, 2001)
  - See: Public Perception Slide & MJ adverse health effects.

Is it safe for mothers who use marijuana to breastfeed?

Lucy comes to see you 2 weeks postpartum. She is currently smoking marijuana once a day and not using any other substances. She wants to know whether or not she should be breastfeeding her baby.

What would you tell her?

Marijuana Use while Breastfeeding

"Based on physiochemical properties, *should* be readily transferred to breastmilk."

(Mourh & Rowe, 2017)

Marijuana Use while Breastfeeding

Drugs of Abuse for Which Adverse Effects on the Breastfeeding Infant Have Been Reported		
Drug	Reported Effect or Reason for Concern	Reference
Marijuana (cannabis)	Neurodevelopmental effects, delayed motor development at 1 y, lethargy, less frequent and shorter feedings, high milk-plasma ratios in heavy users.	Djulus 2005, Campolongo 2009, Garry 2010

American Academy of Pediatrics Clinical Report, 2013

Marijuana Use while Breastfeeding

- Infant exposure to THC via breastmilk not systematically assessed
- THC may be passed to neonate in breastmilk and inhibit milk production
- One study (n=2) found low levels of THC metabolites in infant feces
- Effect of exposure from breastfeeding alone is unclear due to use in pregnancy and second hand smoke
- UDS may remain positive for days or weeks after stopping use
- Potency of marijuana increasing and often used with other substances (alcohol, cigarettes, etc.)

(Grant et al., 2018; Metz & Stickrath, 2015; Mourh & Rowe, 2017; Perez-Reyes & Wall, 1982)

Is it safe for mothers who use marijuana to breastfeed?

CDC: “Data are insufficient to say yes or no.”

ACOG: “Insufficient data to evaluate the effects of marijuana use on infants during lactation and breastfeeding.”

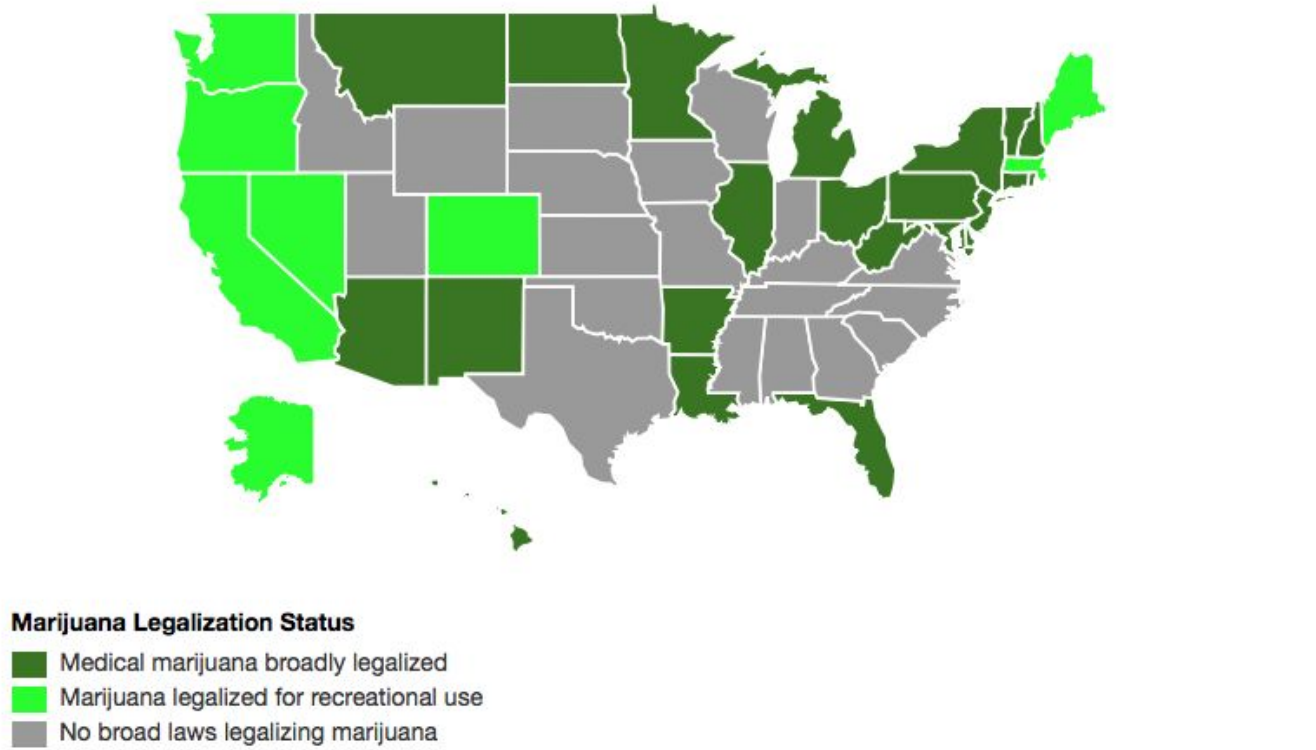
Marijuana use while breastfeeding is discouraged

Academy of Breastfeeding Medicine Recommendations

- Counsel mothers to **avoid** or **reduce** use as much as possible while breastfeeding
- Carefully consider and counsel on the potential risks of exposure and benefits of breastfeeding
- Data are not strong enough to recommend against breastfeeding with marijuana use, BUT we urge **caution**

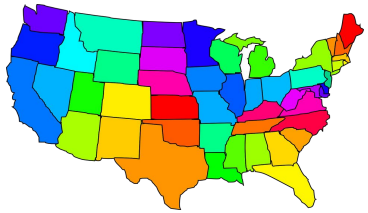
Reece-Stremtan et al., 2015

Marijuana Laws



http://www.governing.com/gov-data/state-marijuana-laws-map-medical-recreational.html

Current Policies



- 23 states +DC consider substance abuse during pregnancy to be child abuse
- 24 states +DC require health care professionals to report suspected use
- 8 states require testing for use if suspected
- 19 states have either created or funded drug treatment programs specifically targeted to pregnant women
- 17 states +DC provided pregnant women with priority access to state-funding drug treatment programs
- 10 states prohibit publicly funded drug treatment programs from discriminating against pregnant women

(Guttmacher Institute, July 2018; https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy)

State Policies on SU during Pregnancy

	Substance Use During Pregnancy Considered:		When substance use diagnosed or suspected, state requires:		Drug Treatment for Pregnant Women		
STATE	Child Abuse	Grounds for Civil Commitment	Reporting	Testing	Targeted Program Created	Pregnant Women Given Priority Access in General Programs	Pregnant Women Protected from Discrimination in Publicly Funded Programs
District of Columbia	**X**		**X**			**X**	
Maryland					**X**		
Virginia	**X**		**X**		**X**		

(Guttmacher Institute, July 2018; https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy)

Legal Implications

Mary lives in a state where marijuana use has not been legalized. She is 20 wks pregnant and comes to see you for anxiety. She discloses that she has been eating marijuana candies twice a day since before she was pregnant. She reports it is the only thing that will help with her anxiety. Marijuana is the only substance she is using.

How would you counsel her?

Legal Implications

Technically recreational use of marijuana is considered illicit substance use and should be reported to DSS.

What would you do?

Is it safe for pregnant women to use marijuana?

Jane lives in a state where marijuana is legal for medical and recreational use. She recently found out she was pregnant. When she comes to see you she is 12 wks pregnant and has been using marijuana recreationally about 5 days a week since before she was pregnant. She potentially meets the criteria for Cannabis Use Disorder.

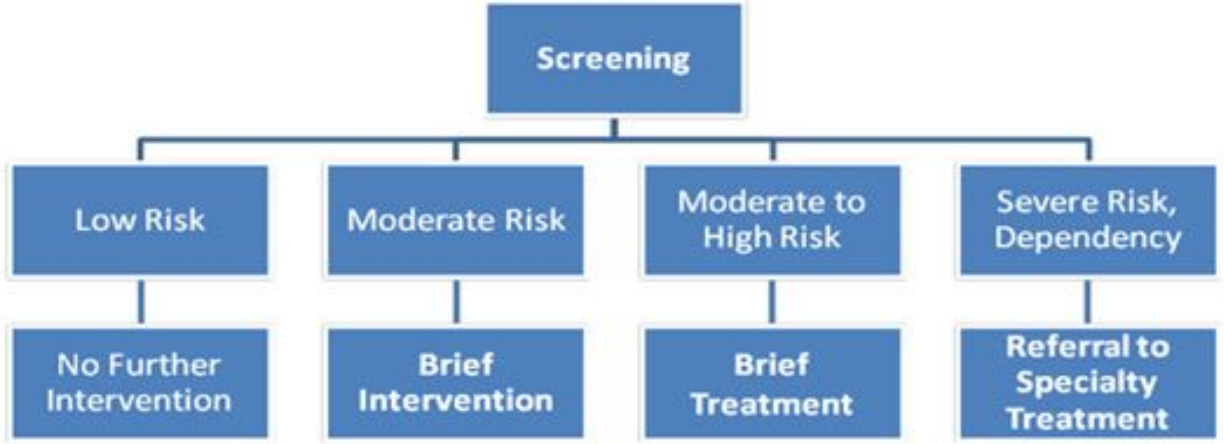
How would you counsel her?

Resources for Providers

Screening Measures

CAGE

T-ACE



CAGE

Have you ever felt you should **C**ut down on your drinking? **Yes/No**

Have people **A**nnoyed you by criticizing your drinking? **Yes/No**

Have you ever felt bad or **G**uilty about your drinking? **Yes/No**

Have you had an **E**ye opener first thing in the morning to steady nerves or get rid of a hangover? **Yes/No**

Scoring: A score of 1 or above places an individual "at risk" and warrant further evaluation.

(Ewing, 1984)

T-ACE

Tolerance:

How many drinks does it take to make you feel high?

Annoyance:

How many people annoyed you by criticizing your drinking?

Cut down:

Have you ever felt you ought to cut down your drinking?

Eye Opener:

Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover?

Scoring: A score of ≥ 2 is considered positive. Affirmative answers to questions A, C, or E = 1 point each. Reporting tolerance to more than two drinks (question T) = 2 points.

(Sokol, 1988)

Motivational Interviewing

- Build motivation and commit to specific plans to engage in treatment and seek recovery
  - Person-centered approach that is empathic, non-judgemental, autonomy supporting and affirming
  - Explore patient's ambivalence regarding pros and cons of change
  - Elicit and elaborate discussions about healthy changes
- Often used early in the process to engage patient in treatment

Cognitive-Behavioral Therapy

- Recognize and challenge negative patterns of thinking and behavior
- Become aware of stressors, situations, and feelings that lead to substance use
- Explore positive and negative consequences of continued substance use
- Self-monitoring to recognize cravings and identify situations that might put one at risk for use
- Relapse prevention: develop strategies for coping with cravings and avoiding those high-risk situations
- Relaxation techniques

Contingency Management

- Designed to provide incentives to reinforce positive behaviors (e.g., remaining abstinent, attending treatment)
- **Voucher-Based Reinforcement (VBR):** patient receives a voucher for every drug-free urine sample provided
  - Voucher has monetary value that can be exchanged for food items, movie passes, etc.
  - Vouchers are at first low but increase as the number of consecutive drug-free urine samples increases; positive sample resets the value
- **Prize Incentives:** Chance to win cash prize instead of vouchers
  - Number of draws starts at one and increases with consecutive negative drug tests and/or sessions attended
  - Resets to one with any drug-positive sample or unexcused absence

Recovery Support Services

- Transportation to and from treatment and recovery-oriented activities
- Employment or educational supports
- Specialized living situations
- Peer-to-peer services, mentoring, coaching
- Spiritual and faith-based support
- Parenting education
- Self-help and support groups
- Outreach and engagement
- Staffing drop in centers, clubhouses, respite/crisis services, or warmlines (peer-run listening lines staffed by people in recovery themselves)
- Education about strategies to promote wellness and recovery

Substance Names

National Institute on Drug Abuse Commonly Abused Drugs Charts:

https://www.drugabuse.gov/drugs-abuse/commonly-abused-drugs-charts#marijuana-cannabis-

National Institute of Health Street and Commercial Names:

https://www.nihlibrary.nih.gov/resources/subject-guides/opioids/street-commercial-names

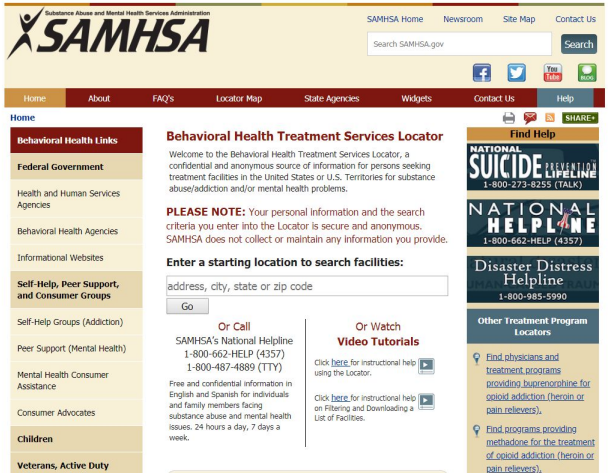
Marijuana (Cannabis)

Marijuana is made from the hemp plant, *Cannabis sativa*. The main psychoactive (mind-altering) chemical in marijuana is delta-9-tetrahydrocannabinol, or THC. For more information, see the Marijuana Research Report.

Street Names	Commercial Names	Common Forms	Common Ways Taken	DEA Schedule
Blunt, Bud, Dope, Ganja, Grass, Green, Herb, Joint, Mary Jane, Pot, Reefer, Sinsemilla, Skunk, Smoke, Trees, Weed; Hashish: Boom, Gangster, Hash, Hemp	Various brand names in states where the sale of marijuana is legal	Greenish-gray mixture of dried, shredded leaves, stems, seeds, and/or flowers; resin (hashish) or sticky, black liquid (hash oil)	Smoked, eaten (mixed in food or brewed as tea)	I**

Tips for locating EBP tx program for patients

- Potential for “phony programs”
- Is this a treatment program that provides EBP?
- Use SAMHA’s locater: https://findtreatment.samhsa.gov/



References

American Academy of Pediatrics. (2012). Breastfeeding and the use of a human milk. *Pediatrics, 129* (3), e827-841.

American College of Obstetricians and Gynecologists. (2017) Marijuana use during pregnancy and lactation. Committee on Obstetric Practice. *American journal of obstetrics and gynecology*, *130*, e205-9.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Behnke, M., Smith, V. C., & Committee on Substance Abuse. (2013). Prenatal substance abuse: short-and long-term effects on the exposed fetus. *Pediatrics*, *131*(3), e1009-24.

Beatty, J. R., Svikis, D. S., & Ondersma, S. J. (2012). Prevalence and perceived financial costs of marijuana versus tobacco use among urban low-income pregnant women. *Journal of addiction research & therapy*, *3*(4).

Buchi, K. F., Zone, S., Langheinrich, K., & Varner, M. W. (2003). Changing prevalence of prenatal substance abuse in Utah. *Obstetrics & Gynecology*, *102*(1), 27-30.

Center for Behavioral Health Statistics and Quality. (2015). 2014 National Survey on Drug Use and Health: Detailed Tables. Substance Abuse and Mental Health Services Administration, Rockville, MD.

Chabarria, K.C., Racusin, D.A., Antony, K.M., Kahr, M., Suter, M.A., Mastrobattista, J.M., & Aagaard, K.M. (2016, October). Marijuana use and its effects in pregnancy. *American Journal of Obstetrics & Gynecology, 215*(4), 506.e1-506.e7.

Chasnoff, I. J., Landress, H. J., & Barrett, M. E. (1990). The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. *New England Journal of Medicine*, *322*(17), 1202-1206.

Conner, S. N., Bedell, V., Lipsey, K., Macones, G. A., Cahill, A. G., & Tuuli, M. G. (2016). Maternal marijuana use and adverse neonatal outcomes. *Obstetrics & Gynecology*, *128*(4), 713-723.

Crume, T.L., Juhl, A.L., Russel, A.B., Hall, K. E., Wymore, E. & Borgelt, L.M. (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. J*ournal of Pediatrics, 197*, 90-6.

Dickson, B., Mansfield, C., Guiahi, M., Allshouse, A. A., Borgelt, L. M., Sheeder, J., ... & Metz, T. D. (2018). Recommendations from cannabis dispensaries about first-trimester cannabis use. *Obstetrics & Gynecology*, *131*(6), 1031-1038.

Dold, L. & Quirke (1998). Substance abuse and treatment needs among pregnant women in Wisconsin. *Wisconsin University of Wisconsin Extension and Survey Research Laboratory, Madison, WI*.

Eiden, R.D., Schuetze, P., Shisler, S., & Huestis, M.A. (2018). Prenatal exposure to tobacco and cannabis: Effects on autonomic and emotion regulation. *Neurotoxicology and Teratology, 68*, 47-56.

Eiden, R.D., Zhao, J., Casey, M., Colder, C.R., Shisler, S., & Schuetze, P. (2018) Pre- and postnatal tobacco and cannabis exposure and child behavior problems: Bidirectional associations, joint effects, and sex differences. *Drug and Alcohol Dependence, 185*, 82-92.

Ewing, J. A. (1984). Detecting alcoholism the CAGE questionnaire. *JAMA, 252*(14), 1905-1907.

Fox, N. S. (2018). Dos and don'ts in pregnancy: Truths and myths. *Obstetrics & Gynecology*, *131*(4), 713-721.

Grant, K. S., Petroff, R., Isoherranen, N., Stella, N., & Burbacher, T. M. (2017). Cannabis use during pregnancy: pharmacokinetics and effects on child development. *Pharmacology & therapeutics, 182*,133-151.

Gunn, J.K.L., Rosales, C.B., Center, K.E., Nuñez, A., Gibson, S.J., Christ, C., & Ehiri, J.E. (2015). Prenatal exposure to cannabis and maternal and child health outcomes: A systematic review and meta-analysis. *BMJ Open*, *6*(4).

Jaques, S. C., et al. (2014). Cannabis, the pregnant woman and her child: weeding out the myths. *J Perinatol, 34*(6), 417-24.

Hayatbakhsh MR, Flenady VJ, Gibbons KS, et al. : Birth outcomes associated with cannabis use before and during pregnancy. Pediatr Res. 2012;71(2):215–9.

Klonoff-Cohen, H., & Lam-Kruglick, P. (2001). Maternal and paternal recreational drug use and sudden infant death syndrome. *Archives of pediatrics & adolescent medicine, 155*(7), 765-770.

Ko, J. Y., Farr, S. L., Tong, V. T., Creanga, A. A., & Callaghan, W. M. (2015). Prevalence and patterns of marijuana use among pregnant and nonpregnant women of reproductive age. *American journal of obstetrics and gynecology*, *213*(2), 201-e1.

Leemaqz, S. Y., Dekker, G. A., McCowan, L. M., Kenny, L. C., Myers, J. E., Simpson, N. A., ... & SCOPE Consortium. (2016). Maternal marijuana use has independent effects on risk for spontaneous preterm birth but not other common late pregnancy complications. *Reproductive Toxicology, 62*, 77-86.

Mark, K., Desai, A., & Terplan, M. (2016). Marijuana use and pregnancy: prevalence, associated characteristics, and birth outcomes. *Archives of women's mental health*, *19*(1), 105-111.

Matti, L. K., & Caspersen, V. M. (1993). Prevalence of drug use among pregnant women in a rural area. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *22*(6), 510-514.

McLafferty, L. P., Becker, M., Dresner, N., Meltzer-Brody, S., Gopalan, P., Glance, J., ... & Worley, L. L. (2016). Guidelines for the management of pregnant women with substance use disorders. *Psychosomatics*, *57*(2), 115-130.

Metz, V. E., Brown, Q. L., Martins, S. S., & Palamar, J. J. (2018). Characteristics of drug use among pregnant women in the United States: Opioid and non-opioid illegal drug use. *Drug and alcohol dependence*, *183*, 261-266.

Metz, T. D. & Stickrath, E. H. (2015). Marijuana use in pregnancy and lactation: A review of the evidence. *American Journal of Obstetrics and Gynecology, 213*(6):761-78.

Miller, M. K., & Thomas, A. (2015). Understanding changes in community sentiment about drug use during pregnancy using a repeated measures design. In *Handbook of community sentiment* (pp. 113-128). Springer, New York, NY.

Mourh, J. & Rowe, H. (2017). Marijuana and breastfeeding: Applicability of the current literature to clinical practice. *Breastfeeding Medicine, 12*(10), 582-596.
NIDA. (2016, October 1). Media Guide. Retrieved from https://www.drugabuse.gov/publications/media-guide on 2018, July 23

Pacher, P., Steffens, S., Haskó, G., Schindler, T. H., & Kunos, G. (2018). Cardiovascular effects of marijuana and synthetic cannabinoids: the good, the bad, and the ugly. *Nature Reviews Cardiology*, *15*(3), 151.

Perez-Reyes, M. & Wall, M., E. (1982). Presence of delta- 9-tetrahydrocannabinol in human milk. *N Engl J Med, 307*, 819-20.

Polak, K., Haug, N. A., Drachenberg, H. E., & Svikis, D. S. (2015). Gender considerations in addiction: implications for treatment. *Current treatment options in psychiatry*, *2*(3), 326-338.

Reece-Stremtan, S. & Marinelli, K., A. (2015). ABM Clinical protocol #21: Guidelines for breastfeeding and substance use or substance use disorder, revised 2015. *Breastfeed Med, 10* (3), 135–141.

Ruisch, I. H., Dietrich, A., Glennon, J. C., Buitelaar, J. K., & Hoekstra, P. J. (2017). Maternal substance use during pregnancy and offspring conduct problems: A meta-analysis. *Neuroscience & Biobehavioral Reviews*, *84*, 325-336.

Stitely, M. L., Calhoun, B., Maxwell, S., Nerhood, R., & Chaffin, D. (2010). Prevalence of drug use in pregnant West Virginia patients. *West Virginia Medical Journal*, *106*(4), 48-53.

Sokol, R. J. (1988). "Finding the Risk Drinker in Your Clinical Practice" in G. Robinson and R. Armstrong (eds), Alcohol and Child/Family Health: Proceedings of a Conference with Particular Reference to the Prevention of Alcohol-Related Birth Defects. Vancouver, BC.

Substance Abuse and Mental Health Services Administration. (2012). Results from the 2011 National Survey on Drug Use and Health: Summary of National Findings. NSDUH Series H-44, HHS Publication No. (SMA) 12-4713. Rockville, MD.

Volkow, N. D., Baler, R. D., Compton, W. M., & Weiss, S. R. (2014). Adverse health effects of marijuana use. *New England Journal of Medicine*, *370*(23), 2219-2227.

Warner, T. D., Roussos-Ross, D., & Behnke, M. (2014). It's not your mother's marijuana: effects on maternal-fetal health and the developing child. *Clinics in perinatology, 41*(4), 877-894

Wilson, K. M., Torok, M. R., Wei, B., Wang, L., Robinson, M., Sosnoff, C. S., & Blount, B. C. (2017). Detecting biomarkers of secondhand marijuana smoke in young children. *Pediatric research*, *81*(4), 589.