



# Substance Use in Pregnancy and Breastfeeding

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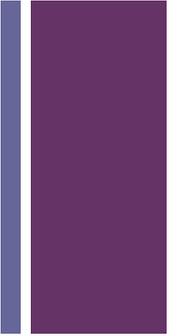
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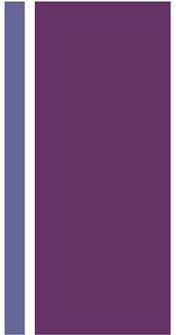


# ++ Disclosures: Dr. Lisa Graves

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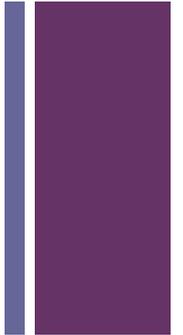


# + Acknowledgments



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- Colleagues from PRIMA (Pregnancy Related Issues in the Management of Addiction)
- Patients and their families

# ++ Objectives

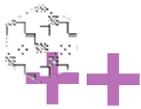


- Identify the evidence related to substance use in pregnancy and breastfeeding focusing on cannabis, cocaine and opiates
- Discuss challenges in addressing substance use in pregnancy and breastfeeding focusing on cannabis, cocaine and opiates
- Apply techniques learned in day to day clinical care of women of reproductive age focusing on cannabis, cocaine and opiates

# ++ Marijuana Use in Women

SAMSA, NSDUH, 2013; Statistics Canada, 2015

- US data: 2013 NSDUH study
  - Non-pregnant (past-month 15-44): 8.9%
  - Pregnant (past-month 15-44): 4.9%
- Canadian data: 2013 Canadian Tobacco, Alcohol and Drugs Survey (CTADS) study
  - All Canadians (Past year use; 15+): 10.6%
  - Youth (Past year use: 15-19): 22.4%
  - Young adults (Past year use: 20-24): 26.2%
  - Approximately 28% of Canadians aged 15 and older who used cannabis in the past three months reported that they **used this drug every day or almost every day**



# The THC & CBD Debate



\*Zuardi, 2012; \*\*Nagarkatti, 2009; Esposito, 2013

- $\Delta$ -9-Tetrahydrocannabinol (**THC**)
  - Binds to CB1 and CB2 receptors
  - $\uparrow$ Dopamine – which reinforces use
  - Stimulant & depressant, some pain relieving
  - Psychotropic – psychosis, paranoia, anxiety
  - **Produces a withdrawal syndrome in 25% of people**
- Cannabidiol (**CBD**) – not psychoactive
  - Protective against psychosis\*
  - Anti inflammatory\*\*
  - As THC content goes up, CBD goes down
  - In 1960s marijuana had 2-3% THC and CBD
  - Now THC can be up to 25%+ & CBD near 0
- NO quality control on THC or CBD at dispensaries or off the street, and only on THC(9%) when federally endorsed source

Adapted from Rieb, 2017

# ++ Label Accuracy in Edible Medical Cannabis Products: Buyer Beware

Vandrey et al., JAMA 2015

- **75 products randomly selected & tested 47 brands in shops in LA, SF, and Seattle**
- **THC accurately labeled in 17%**
  - 60% over-labeled, 23% under-labeled
- 44 products had detectable CBD on testing
  - 13 of these were labeled
- CBD accurately labeled in 0%
  - 4 products over-labeled, 6 under-labeled
- Mean THC:CBD ratio was 30:1

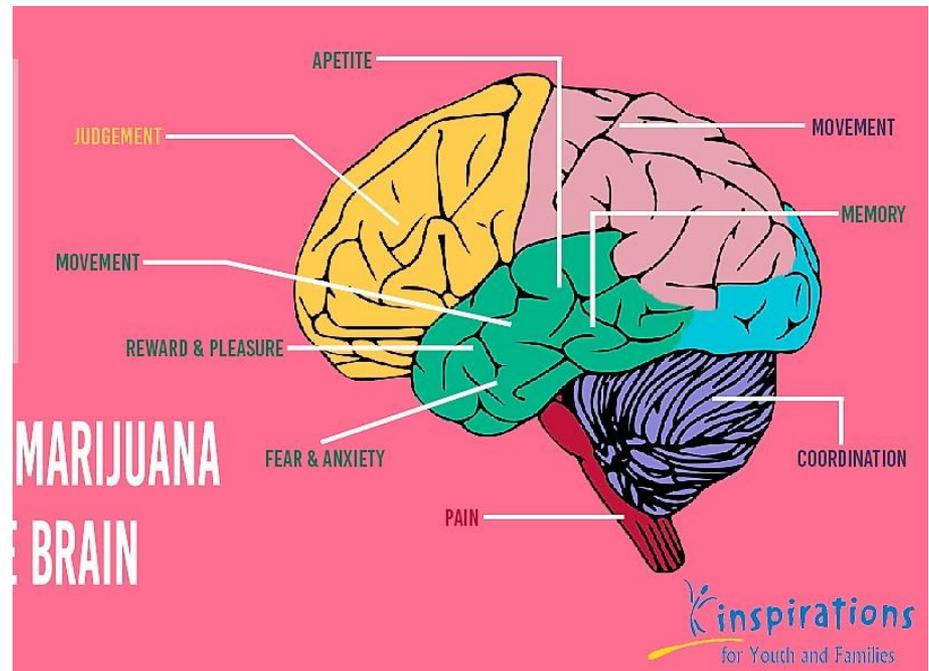
Adapted from Rieb, 2017

# + Cannabis

| Intoxication   | Withdrawal   | Route   | Fetal/<br>Neonatal/<br>Child   | Breastfeeding   | Treatment  |
|--|--|---|--|---|--|
| Tachycardia<br>Tachypnea<br>Hypertension<br>Red eye<br>Dry mouth<br>Increased appetite<br>Slurred speech<br>Ataxia (gait)<br><br>Dysphoria/Panic<br>Paranoia<br><br>Impaired<br>Cognition &<br>Psychomotor | Fatigue<br>Yawning<br>Hypersomnia<br>Psychomotor<br>retardation<br>Anxiety/Depression<br>Anorexia/Weight<br>loss<br>Anger/Irritability<br>Strange dreams | Inhaled<br>-joint<br>-pipe<br>- bong<br><br>Oral<br>-food<br>-tea | <b>Teratogenicity*</b><br><br>Decreased fetal<br>growth<br>Preterm birth<br>Miscarriage<br>Stillbirth<br><br>Neonatal tremors<br>Increased startle<br><br>Memory/Development | Contra-<br>indicated<br><br>(no safety data<br>available)** | Abstinence<br><br>Nabilone<br>(Cesamet®)<br>(harm<br>reduction)<br><br>*?medical<br>marijuana not<br>recommended |
|  |  |   | *five-fold increase in<br>distorted facial<br>features consistent<br>with FASD   |   |  |

# ++ Effects on Neurocognitive Functioning

- Three studies have contributed to our understanding
  - OPPS
  - MHPCD
  - Generation R
- All studies were longitudinal
- Controlled for
  - gender,
  - ethnicity,
  - home environment,
  - maternal SES,
  - prenatal alcohol
  - tobacco exposure
  - current maternal substance use



# + Neonatal Neurocognitive Effects of Cannabis

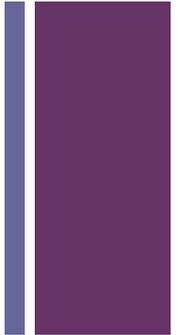
- 5-fold increase in distorted facial features compared to FASD babies
- Deficits in:
  - memory, verbal and perceptual skills (age 3-4+)
  - verbal and visual reasoning (age 3-4+)
- Impaired performance in:
  - reasoning and short-term memory (age 6+)
  - reading, spelling and achievement (age 9+)
- Effects on behaviour:
  - attention deficit, increased hyperactivity and impulsivity.
- Increased likelihood of smoking, substance abuse and delinquency among adolescents
  - Canadian Centre on Substance Abuse, 2015

# ++ Fetal Growth Effects from Cannabis

Canadian Centre on Substance Abuse, 2015

\*\*El Marroun, 2009

- Growth restriction: especially T2/T3
- Lower birth weight
- Dose response effect present
- Both independent of socioeconomic and lifestyle factors\*\*
- Cannabis stays in system up to 30 days
  - Transfer through placenta potentially for 30 days after single use  
2ndary to fat solubility
  - UDS + for 30 days



# ++ “Clearing the Smoke on Cannabis”

## Neurocognitive and Behavioural Effects



**18 months**

Increased aggressive behaviour<sup>c</sup>

Attention deficits (females)<sup>c</sup>

**3–6 years**

Deficits in:

- Verbal and perceptual skills<sup>ab</sup>
- Verbal reasoning<sup>ab</sup>
- Visual reasoning<sup>ab</sup>
- Verbal and quantitative reasoning<sup>b</sup>
- Short-term memory<sup>ab</sup>

Hyperactivity<sup>ab</sup>

Attention deficits<sup>ab</sup>

Impulsivity<sup>ab</sup>

Impaired vigilance<sup>b</sup>

**9–10 years**

Deficits in:

- Abstract and visual reasoning<sup>ab</sup>
- Executive functioning<sup>ab</sup>
- Reading<sup>ab</sup>
- Spelling<sup>ab</sup>

Hyperactivity<sup>ab</sup>

Attention deficits<sup>b</sup>

Impulsivity<sup>b</sup>

Depressive and anxious symptoms<sup>b</sup>

**14–16 years**

Deficits in:

- Visual-cognitive functioning<sup>a</sup>
- Academic achievement<sup>b</sup>
- Information processing speed<sup>b</sup>
- Visual motor coordination<sup>b</sup>

Delinquency<sup>b</sup>

**17-22 years**

Deficits in:

- Executive functioning<sup>a</sup>
- Response inhibition<sup>a</sup>
- Visuospatial working memory<sup>a</sup>

Smoking<sup>ab</sup>

Substance use<sup>ab</sup>

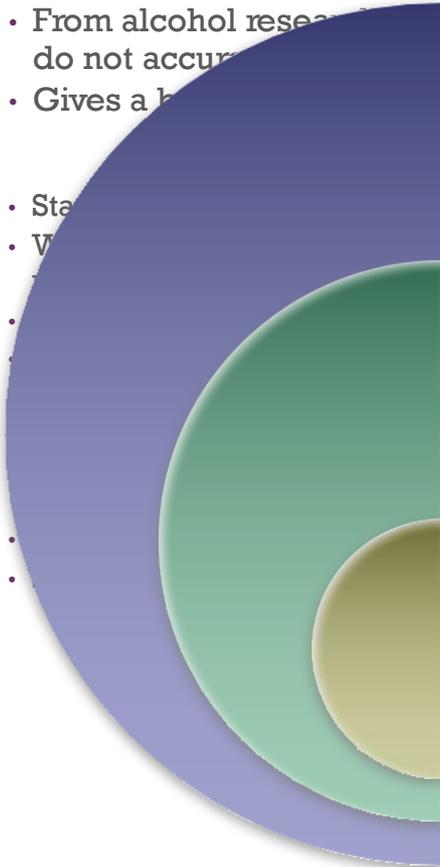
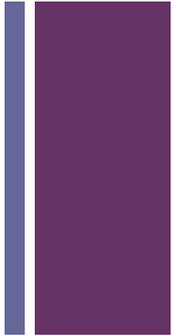
Early initiation of substance use<sup>ab</sup>

<sup>a</sup>OPPS <sup>b</sup>MHPCD <sup>c</sup>Generation R

# ++ More than just cannabis

- Current cannabis often contains contaminants that can include:
  - Cocaine (abruption risk)
  - Fentanyl (overdose risk)
  - Methamphetamine (abruption risk)
  - Benzodiazepines (cleft lip/palate risks)
- Tobacco can be mixed with cannabis
  - Adds impact of tobacco to that of cannabis
  - More challenging to stop when combined together
  - Often needs combined smoking cessation and cannabis cessation techniques

# ++ Reduction / Abstinence



- From alcohol research, it is found that people who do not accurately weigh their cannabis consumption do not accurately weigh their cannabis consumption.
- Gives a better understanding of the amount of cannabis consumed.

- Start with a 10% reduction in daily amount each week.
- Weigh your cannabis.

- Separate out tobacco and cannabis.

- Reduce by 10% of daily amount each week.

**Weigh your cannabis**

**Separate out tobacco and cannabis**

**Reduce by 10% of daily amount each week**

# + SOGC: Marijuana use during pregnancy

- Evidence-based data has shown that cannabis use during pregnancy can adversely affect the growth and development of the baby, and lead to long-term **learning and behavioural consequences**.
- There have been sufficient studies with comparable results, showing that cannabis use during pregnancy raises concerns of **impaired neurodevelopment of the fetus**, in addition to the adverse health consequences related to maternal and fetal exposure to the effects of smoking.
- Pregnancy is a critical time for the brain development of the baby and the adverse effects caused by cannabis exposure can be life-long.
- **The SOGC recommends that women who are pregnant or contemplating pregnancy should abstain from cannabis use during pregnancy**
  - Ordean A, Wong S, Graves L No 349 Substance . J Obstet Gynaecol Can. 2017 Oct; 39 (10): 922-937.e2

# + **ACOG: Marijuana Use During Pregnancy and Lactation (Oct 2017)**

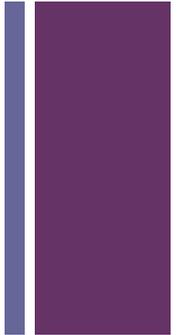
- Women reporting marijuana use should be counseled about concerns regarding potential adverse health consequences of continued use during pregnancy.
- Women who are pregnant or contemplating pregnancy should be encouraged to discontinue marijuana use.
- Pregnant women or women contemplating pregnancy should be encouraged to discontinue use of marijuana for medicinal purposes in favor of an alternative therapy for which there are better pregnancy-specific safety data.
- 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.

# ++ Breastfeeding

- Literature is variable, but the prudent choice is to avoid marijuana use while breastfeeding
- Organizations that do not support breastfeeding with marijuana use are: ACOG, MOTHERISK, ABM, AAP, SOGC
- ACOG statement: “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.”
- Possible increased risk of SIDs that may vary with amount in breastmilk and method of use (smoking vs. edibles)



# American Academy of Breast Feeding Medicine: 2015

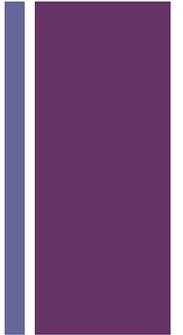


- **Strongly advise mothers found with a positive urine screen for THC to discontinue exposure while breastfeeding and counsel them as to its possible long-term neurobehavioral effects.**
- When advising mothers on the medicinal use of marijuana during lactation, one must take into careful consideration and counsel on the **potential risks of exposure of marijuana and benefits of breastfeeding to the infant.**
- The lack of long-term follow-up data on infants exposed to varying amounts of marijuana via human milk, coupled with concerns over negative neurodevelopmental outcomes in children with in utero exposure, **should prompt extremely careful consideration of the risks versus benefits of breastfeeding in the setting of moderate or chronic marijuana use**

# ++ Intrapartum & Immediate Postpartum

- Adequate pain control needed; pain perceptions may be different with women who are cannabis dependent/using
  - Epidural, if available is the best option
- Nicotine replacement therapy (NRT) for women with concurrent tobacco use
  - # of cigarettes = # mg of nicotine needs (7 mg, 14 mg and 21 mg patch)
- Acute cannabis withdrawal can occur post-partum
  - may look like someone is “high”
  - Nabilone could be considered for acute withdrawal (\*\*off label)
- Monitor baby for withdrawal
  - No need to use Finnegan Scale since opioid-specific
- Provide supportive care for baby
  - keep in hospital for at least 48 hours (no early discharge)
  - ensure feeding well; co-ordinates sucking well, parents able to soothe

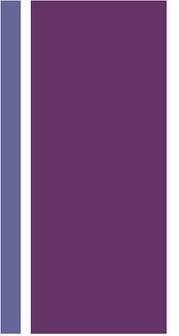
# ++ Postpartum



- CAS issues;
  - Advocate on behalf of woman and child
  - Both should receive additional supports
- Discuss ability to parent while impaired
  - Who is the designated parent?

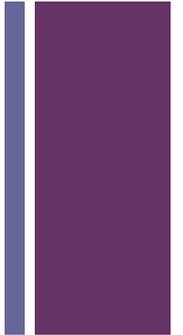
# + Cocaine

- Stimulant - a vasoconstrictor
- Routes: injected, snorted (powder), smoked (crack "rock")
- Blocks presynaptic uptake of dopamine and catecholamines
- Intense euphoria x 20 minutes
- With chronic use, brief euphoria followed by agitation, paranoia





# Cocaine: Withdrawal



- **Symptoms primarily psychological:**
  - Heavy sleep followed by insomnia
  - Anxious, fatigued, irritable, depressed
  - Increased appetite
  - Cravings and drug dreams
  
- Main risks: relapse, suicide
  
- No specific medical therapy

# +Cocaine: Obstetrical Outcomes

Risk of:

- Spontaneous abortion (SA) (miscarriage)
- Intrauterine growth restriction (IUGR)
- Prematurity-premature rupture of membranes and preterm labour
- Stillbirth-placental abruption a risk
- Intrauterine cerebral infarction
- Neurodevelopmental effects\*:
  - Expressive language, Verbal comprehension delay
  - Behaviour problems at school

\*New data suggests less impact than previously shown due to improved neonatal interventions

# + Management of Pregnant Women Dependent on Cocaine

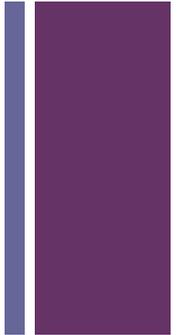
- **Safe to stop cocaine suddenly**
- No specific therapy- occasionally short term benzodiazepines are used to treat anxiety & insomnia but this may lead to dependence so use only if necessary
- Encourage treatment program attendance
- Ongoing counseling to support the woman
- Offer comprehensive prenatal care
- Ensure safe housing safe housing, adequate food

# + Cocaine: Postpartum Issues

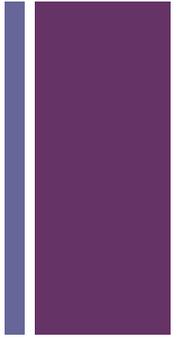
- If woman is intoxicated at time of delivery, neonate may have mild central nervous system effects such as poor feeding and sleepiness
- Baby should be treated like any other neonate: rooming in, cuddling
- Cocaine enters breast milk so it is best to avoid breastfeeding within three days of use (consider pump and discard)

# + Cocaine: Limitations of Neurodevelopmental Studies

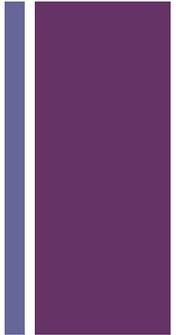
- Several showed a dose-response relationship
- Hard to control for confounders: poverty, poor diet, smoking, other drug use
- Further long-term studies are required



# + Opioids



# + Effects of Dependence

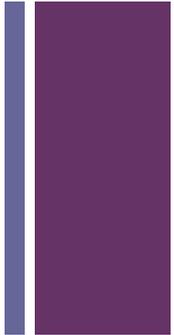


- Tolerance: no longer gets 'high'
- Frightened of withdrawal
- Significant amount of time devoted getting and taking the drug
- Little time or energy for family, friends
- Survival sex (using sex to pay for her drugs)

# + Risks of Opioid Dependence

- Opioid dependence during pregnancy has been associated with numerous adverse fetal outcomes secondary to the drug itself, as well as, secondary to poor nutrition and inadequate prenatal care
- Poor neonatal outcomes such as:
  1. Intrauterine growth restriction
  2. Lower birth weight
  3. Preterm prelabour rupture of membranes

# + Risks of Opioid Dependence

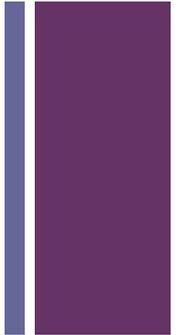


- Opioid withdrawal can trigger uterine contractions leading to an increased risk of **spontaneous abortion (miscarriage)** in the first trimester, **premature labour** in the third trimester
- Maternal complications include **pre-eclampsia** (pregnancy related high blood pressure) and **antenatal bleeding**
- Heroin can lead to intrauterine growth restriction

# +Tolerance to Opioids

- Most women on prescription opioids don't develop dependence – may stay on the same dose for years
- Neurobehavioural adaptation
- Tolerance to analgesic effects develops slowly
- Rapid tolerance to psychoactive effects
- **Highly tolerant women can function on massive amounts of opioids**
- Tolerance disappears within days (resuming usual dose after a period of abstinence can be lethal)

# + Opioid Withdrawal



## Psychological

- Intense anxiety, agitation
- Intense craving for opiates
- Restlessness, insomnia, fatigue

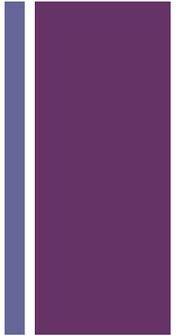
## Physical

In pregnancy: uterine irritability

- Muscle aches, flu-like symptoms “dope sick”
- Nausea, vomiting, cramps, diarrhea
- Sweating, goose bumps
- Dilated pupils
- Runny eyes

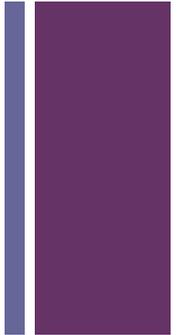


# Opioid tapering during pregnancy



- Some OB providers taper patients off opioids to avoid neonatal abstinence syndrome
- **Slow tapering** may be attempted in non-addicted patients on low to moderate doses
- However, this is rarely successful in **opioid-addicted** patients:
  - They usually relapse because they can't tolerate the severe withdrawal symptoms that accompany tapering
  - Relapse during pregnancy can have catastrophic consequences – child apprehension, family break-up etc
- Therefore best to start opioid-addicted pregnant patients on **buprenorphine/naloxone or methadone**
- Maintain them on their prescription opioid until this can be arranged

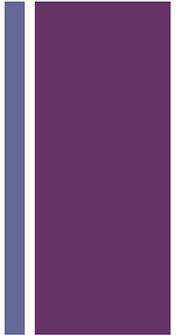
# + Methadone Maintenance Therapy in Pregnancy



- Methadone is a long-acting opioid with a half-life of 24- to-36 hours
- Can be initiated in hospital or in an outpatient setting
- Women on methadone are less likely to experience withdrawal symptoms and drug cravings
- Methadone-maintained pregnancies have reduced obstetrical complications and improved outcomes

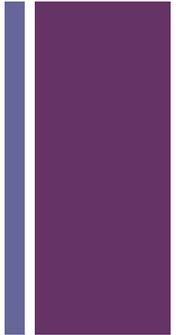


# Buprenorphine and pregnancy



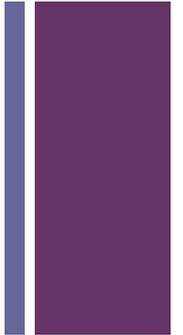
- Buprenorphine/naloxone is safe in pregnancy (Jumah, Edwards, Balfour-Boehm, Loewen, Dooley, Gerber Finn, et al 2016)
  - Patients taking buprenorphine/naloxone during pregnancy had higher birthweight babies and less exposure to marijuana than patients taking other opioids during pregnancy
- MOTHER trial (Jones, Fischer, Heil, Kaltenback, Martin, Coyle, et al 2012): Buprenorphine associated with good maternal outcomes, and shorter and milder neonatal abstinence syndrome than methadone
- SOGC guideline (2017) cautions that literature around safety of Buprenorphine/naloxone is still early
- Pregnant patients who do not get adequate relief of cravings and withdrawal from buprenorphine should be switched to methadone

# + Neonatal Withdrawal



- Not related to methadone/buprenorphine/naloxone dose
- Occurs 2-4 days after birth, can last a couple of weeks
- Poor feeding, irritability, mottled skin, crying, jitteriness, inability to gain weight
- Comfort measures usually sufficient, morphine may be necessary
- Remember to look for other serious problems: sepsis, hypoglycemia, etc. in an unstable infant - do not assume signs due to neonatal withdrawal
- Suggest neonatology/pediatrics consult in hospital with at least Level II capabilities if infant is unstable

# + Breastfeeding

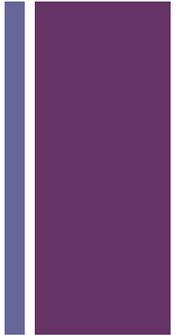


- Safe to breastfeed on methadone/buprenorphine/naloxone regardless of dose
- Ensure close follow-up of mother and baby
- Rooming-in is the best option to encourage attachment and good parenting
- If baby needs to go to the nursery, parents should accompany and be encouraged to hold and cuddle infant 24/7 if possible

# + Postpartum Care

- Assess social support, ensure community supports in place before discharge
- Provide ongoing care for substance use/Continue to provide care to women
- Ensure safety, food, shelter, baby supplies
- Regular ongoing support by stable team of caregivers is best predictor of good outcome
- Link parents to community supports and parenting resources

# + Take-home naloxone



- Important for naloxone to be given at the **point of care**:
  - Patients may not be motivated to follow up at a pharmacy
  - Pharmacy may not be open when patient is ready to get a kit
  - Not all pharmacies are stocked with naloxone
  - It is safe, easy to use, and not a drug of abuse

+ Thank you

