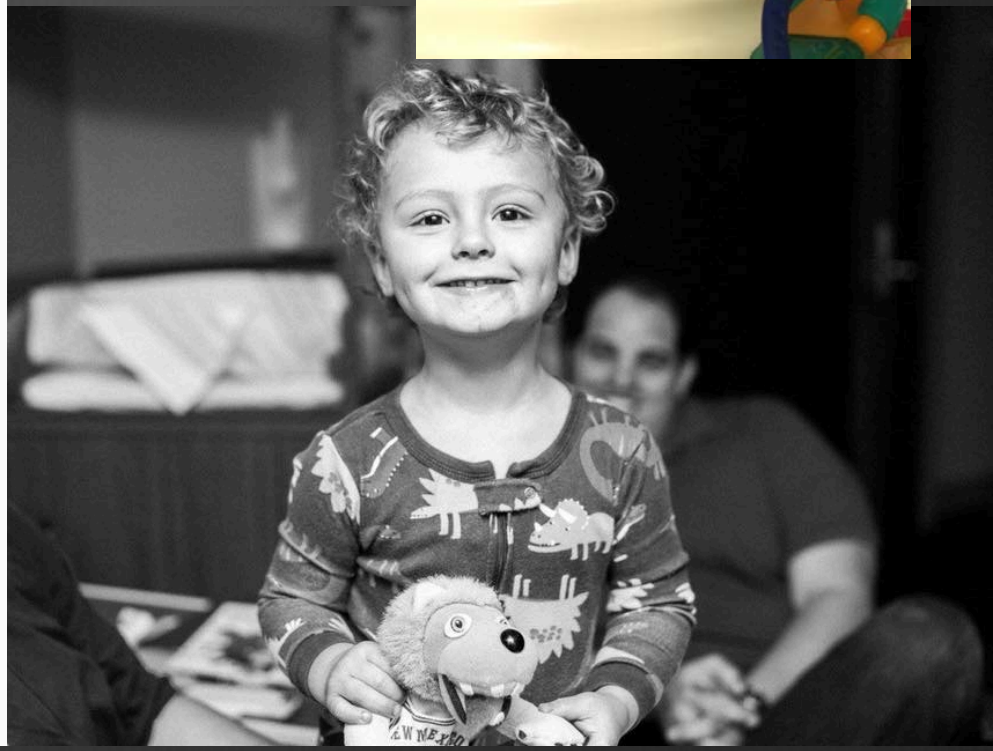
Substance Use and Abuse in Pregnancy

Sarah Turner, MD IBCLC
Family Medicine-Obstetrics, Lactation
St. Joseph Medical Group

Disclosures

- I have nothing to disclose



Objectives

- To review how to screen and identify women with substance use and abuse in pregnancy.
- To review how substance use and abuse affects pregnancy and pregnant women.
- To discuss how to help women who suffer from substance use and abuse in pregnancy
  - Medication Assisted Treatment
  - Community Resources
  - High Risk Prenatal Care
  - Obstacles in Treatment

Substance Use and Abuse in Pregnancy

- Reproductive age women at highest risk
- Pregnant women in the United States in 2012…
  - 5.9% used illicit drugs
  - 8.5% drank alcohol
  - 15.9% smoked cigarettes
- Most common used nicotine → EtOH→ THC → opiates, cocaine
- Poly-substance abuse up to 50%
- Pregnancy often a time of recovery for women
- One prospective study showed abstinence in…
  - 96% of women who drank alcohol → 51%
  - 78% of women who used marijuana → 51%
  - 73% of women who used cocaine → 27%
  - 32% of women who smoked cigarettes →58%

High rates of relapse post-partum

Substance Use and Abuse in Pregnancy

- Associated with:
  - Decreased prenatal care
  - Poor nutrition
  - Increased fetal and neonatal morbidity and mortality – growth restriction, preterm delivery, fetal demise, SIDS/SUID
  - Increased complications of pregnancy – (pre)-eclampsia, placental insufficiency, placental abruption, amnionitis
  - Most perinatal complications are dose dependent
- Other than alcohol, no clear association with birth defects
- Other associations:
  - History of, or current issues with domestic violence, sexual abuse
  - Mental health issues including anxiety, depression, PTSD
  - Food insecurity, housing issues/poverty, lack of transportation
  - Increased rates of HIV, HCV
  - Chronic medical problems

Screening of Patients

- Who do we screen??

  EVERYBODY

  - Takes 30s when negative, 5-10m when positive

- How do we screen??
  - Drug test for everyone?
    - Urine drug screens underestimate use – meconium positive in 88% of women admitting use compared to urine toxicology positive in 52% (Ostrea Pediatrics, 1992)
  - Using your intuition?
    - Selective screening based on "educated guesses" plays on provider's attitudes and biases
  - Ask them if they are using?
    - Self reporting underestimates use – 48% of women with positive drug screens still denied drug use on admission (Gillogley AJOG, 1990)

Screening of Patients

- Screen for alcohol, tobacco, illicit drugs, prescription drugs
  - Questionnaires
  - Rapid drug screens at first prenatal visit
- Don't use the term "alcohol" – use "beer, wine, liquor"
- Need to go beyond "do you use?" questions
- Role of random urine drug screens
- Harm in screening women

Screening of Patients

- Criminalization of expectant mothers
  - South Carolina
    - Preferentially screened African Americans
    - Done without permission
    - Results handed over directly to police
    - Violation of fourth amendment rights
  - Tennessee
    - Bill signed April 2015 – requires drug testing of pregnant women
    - Charged with aggravated assault if positive for illicit drug use in pregnancy (up to 15 years in prison)
    - Opposed by AMA, ACOG, ACLU and all medical associations (with the exception of TN)

Screening of Patients

- There is no national consensus on laws regarding substance use and abuse in pregnancy
  - 18 states consider it child abuse
  - 15 states REQUIRE reporting by health care professionals
  - 4 states require testing if use/abuse is suspected
- Indiana, 2016 – Senate Bill 186
  - Prohibits physicians and certain other individuals involved in prenatal care from informing law enforcement of the results of a drug screening done of a pregnant woman
  - Includes questionnaires, urine, blood
  - Need patient consent or a court order to release results to law enforcement
- Do no harm
  - Prenatal care is important
  - Relationship with patients is important
  - Healthy pregnancy/baby is important

Marijuana in Pregnancy

- Controversial – not a lot of solid data
- Placenta seems to limit fetal exposure – fetal concentrations lower than in maternal serum
- Has been shown to alter brain neurotransmitters and chemistry
- Increased carbon monoxide exposure – may decrease fetal oxygenation
- Many view it as okay because "It's legal in Colorado"

Alcohol is legal…

Tobacco is legal…

Multiple medications that could hurt your baby or your pregnancy are legal…

Marijuana in Pregnancy

- Evidence not consistent
  - Preterm labor
  - Low birthweight and small-for-gestational-age
  - Admission to the NICU
  - Poorer academic achievement
  - More behavioral problems
- Most consistent evidence
  - Reduced attention and executive functioning skills
  - Confounder with other substance use/abuse
  - Confounder with socioeconomic factors
- Rastafarians

Cocaine in Pregnancy

- Can affect brain development (chemical and structural), cognitive development, executive functioning
- Increased rates of
  - Spontaneous abortion
  - Growth restriction, low birth-weight, and small-for-gestational-age
  - Placental abruption
  - Preterm premature rupture of membranes and preterm labor/delivery
  - Uterine rupture
  - Fetal demise/stillbirth
  - SIDS/SUID
- Also associated with
  - Maternal cardiac dysrhythmias
  - Myocardial infarction
- Fetal exposure varies widely with stable maternal dose

Opioid epidemic

- Each Day:
  - 650,000 new opioid prescriptions
  - 3900 people start use of prescription opiates without indication
  - 580 people start heroin
  - 78 people die of an opiate-related overdose
- Treatment programs cannot keep up with the demand
- Increased need for treatment programs for pregnant women

Types of Opioids

Types of Opioids

Opioid Agonists	Codeine Hydrocodone Oxycodone Meperidine Propoxyphene	Fentanyl Hydromorphone Oxymorphone Morphine
Opioid Agonists/NMDA Receptor Antagonists	Levorphanol	
Opioid Agonist/ Norepinephrine Reuptake Inhibitors	Tapentadol	
Mixed Opioid Agonist/Antagonists	Butorphanol Morphine/Naltrexon Pentazocine	
Antagonists	Naloxone	

Long Acting	Short Acting
Fentanyl TD	Codeine
Methadone	Hydrocodone
Morphine CR/SR/ER	Hydromorphone
	Morphine
Oxycodone CR	Oxycodone
Oxymorphone ER	Oxymorphone

Opiates in Pregnancy

- Birth defects are likely rare; possibly due to confounding
- Associated with
  - Fetal growth restriction
  - Placental abruption
  - Preterm labor
  - Fetal demise/stillbirth
  - Neonatal respiratory difficulties
- Dependence leads to withdrawal syndrome for mother and baby; withdrawal usually starts at 4-72 hours and can last weeks with methadone
- ACOG recommends against detoxification
  - "Withdrawal from opioid use during pregnancy is associated with poor neonatal outcomes, including early preterm birth or fetal demise, and with higher relapse rates among women; robust evidence has demonstrated that maintenance therapy during pregnancy can improve outcomes." (ACOG Statement 2016)

Medication-Assisted-Treatment in Pregnancy (MAT)

- Methadone or Buprenorphine (Subutex)
  - Improved prenatal care, nutrition
  - Increased birth weight
  - Reduced infections
  - Reduced crime
  - Similar maternal and delivery outcomes
  - Both have risks of neonatal abstinence syndrome (NAS)
- Detoxification officially not recommended, often pursued
  - Small potential risks of fetal loss, preterm labor
  - Lack of effectiveness with potentially high risk of relapse and NAS
  - Retrospective study reported on 300 women who detoxified during pregnancy
    - NAS in ~17-18% of women incarcerated (cold turkey), with slow weans, and with inpatient detox + intensive outpatient follow-up
    - NAS in ~70% with inpatient detox without intensive outpatient follow-up

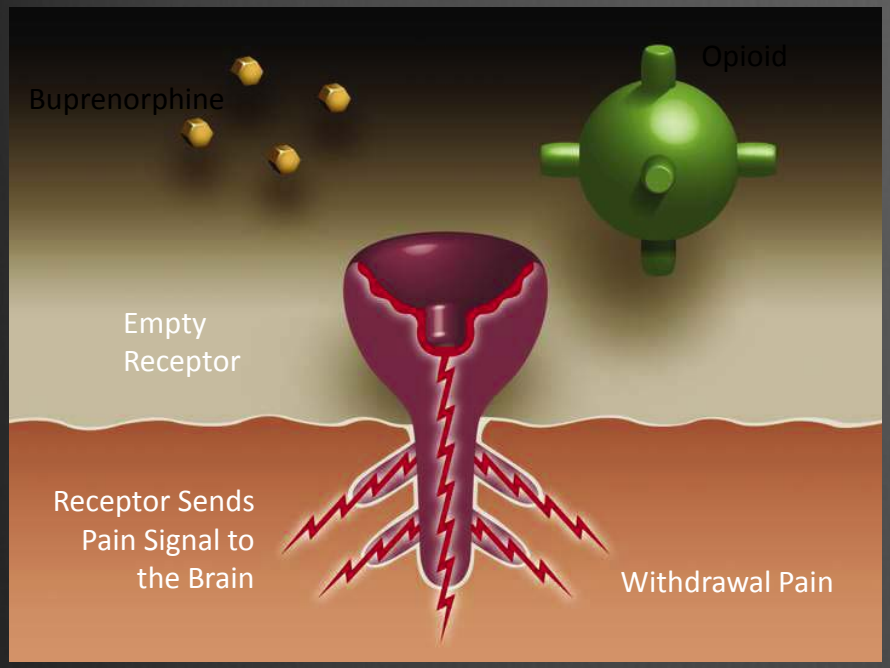
ACOG 2012 CO 524, Bell 2016

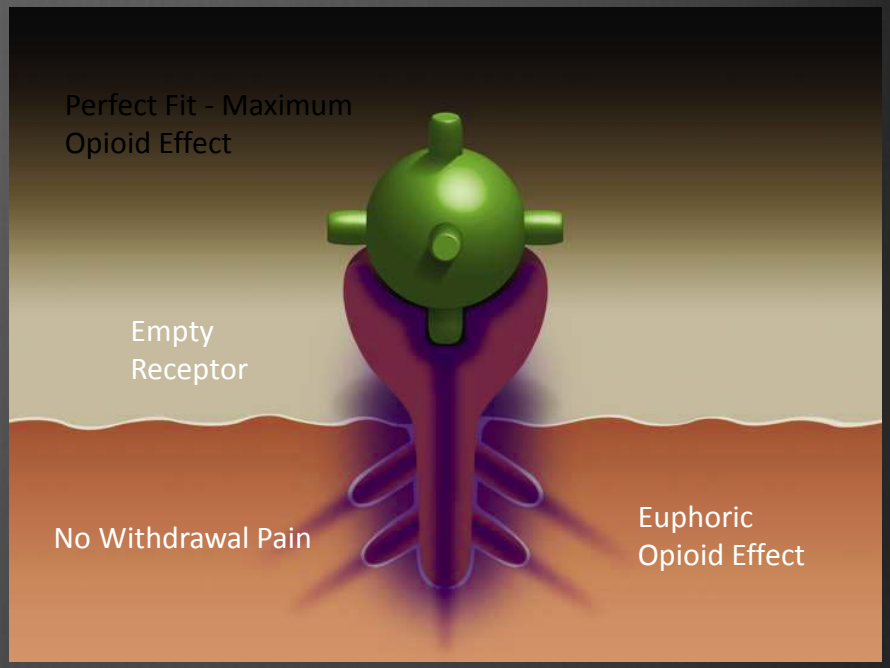
Methadone

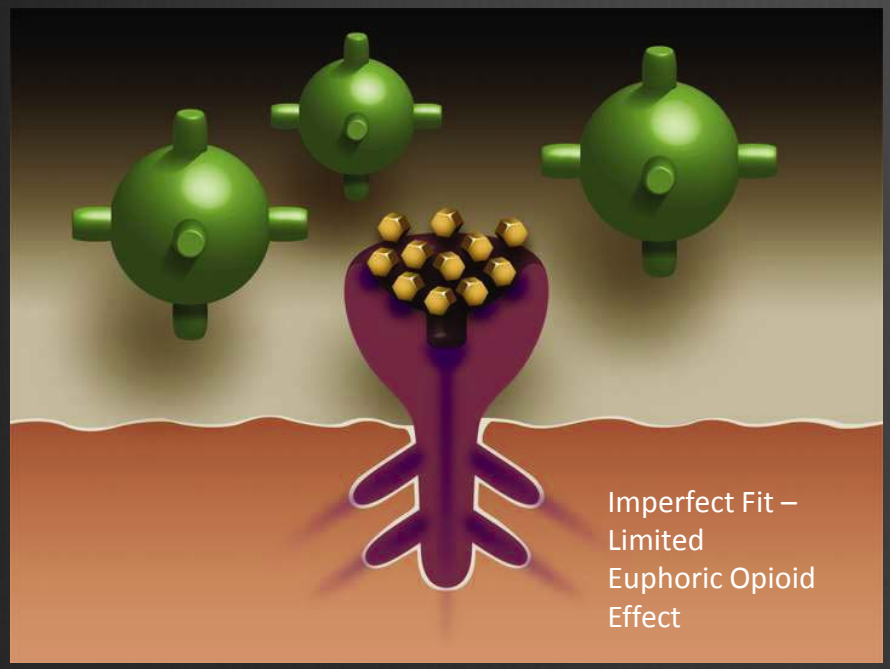
- Long-acting opiate medication
  - Half-life for opiate-tolerant person is ~24 hours
- Must be dispensed by a treatment program
  - Daily dosing
- Doses based on cravings and withdrawal symptoms
  - Expect dose increases in pregnancy (~80-120mg/day)
- Doesn't require withdrawal for induction
- Dose not related to risk of NAS
  - Stability of the dose important!

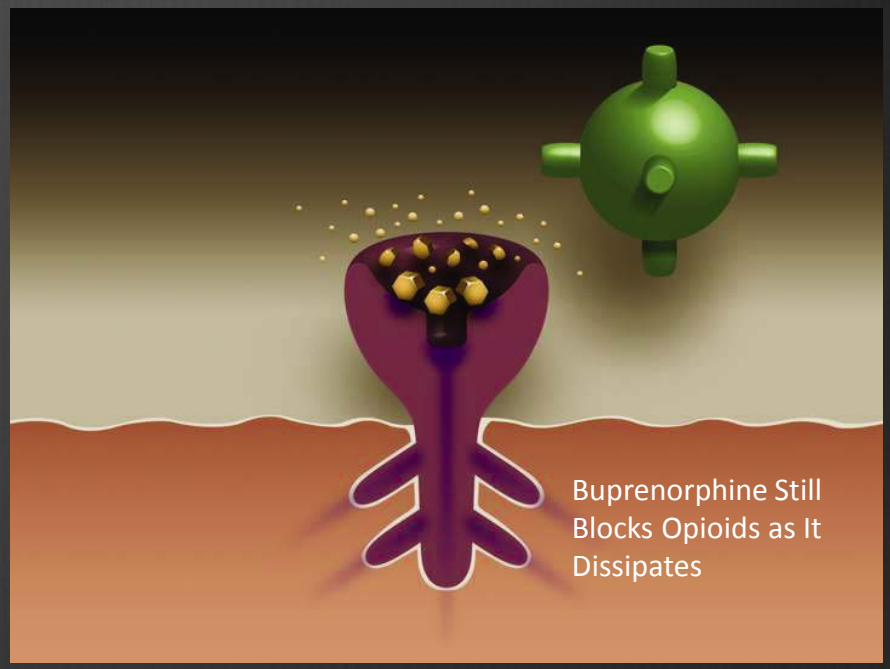
Buprenorphine

- Alternative to Methadone for MAT
- Partial agonist /antagonist
  - Ceiling effect
  - Blocks other opiates
- High affinity for receptor – will displace opioids
- Is abusable, but risk much lower than full agonist opiates









Courtesy of NAABT, Inc. (naabt.org)

Buprenorphine

- Alternative to Methadone for MAT
- Partial agonist /antagonist
  - Ceiling effect
  - Blocks other opiates
- High affinity for receptor – will displace opioids
- Long half-life with once a day dosing as the norm
  - Many use multiple times a day (as with their abuse)
  - Shorter half-life than methadone
- Requires patient to be in withdrawal to initiate use
  - If given prior to withdrawal, can precipitate severe withdrawal symptoms

Buprenorphine vs. Methadone

	Advantages	Disadvantages
Buprenorphine	• Outpatient prescription • Accessible for non-urban women • Perception easier to wean off of • Women who refuse to go to methadone clinic • Less severe NAS	• May not feel the same due to partial agonist • Requires induction • Greater attrition • Can't use if recent methadone use
Methadone	• No induction needed • More supervision for poly-substance abuse	• Requires daily dosing • More severe NAS

Can switch from Buprenorphine to Methadone, but not the other way around!!!

Other Substances - Tobacco

- Placental vasoconstriction
- Carbon monoxide exposure to baby
- Concentration of nicotine higher on fetal side of things (amniotic fluid, placenta, fetal serum) than in maternal serum
- Many of the effects dose dependent in studies
- Most common “second substance” used in poly-substance use

Other Substances - Tobacco

- Perinatal smoking leads to increased risk of…
  - Ectopic pregnancy
  - Miscarriage
  - Oral facial clefting (evidence is weak)
  - Damage to structure of the umbilical cord
  - Growth restriction → low birth weight
  - Placental insufficiency and abruption
  - Preterm labor and delivery
  - Increased infant mortality
  - Early breastfeeding cessation
  - Abnormal cognitive development

Other Substances - Tobacco

- Second hand smoke leads to increased risk of…
  - Respiratory and ear infections
  - Asthma
  - SIDS/SUID
  - Behavioral dysfunction and cognitive impairment
- Counseling
  - Quit smoking
  - Don’t smoke in the same room
  - Change clothes
  - Wash hands

Other Substances - Alcohol

- Effects
  - Pregnancy complications
    - Miscarriage, fetal demise
    - Growth retardation and low birth weight
    - Preterm labor and delivery
  - Problems with development
    - Craniofacial dysmorphism
    - Central nervous system and cardiac abnormalities
  - Withdrawal after delivery
  - Long-term effects
    - Cognitive and behavioral deficiencies
    - Adverse speech and language
    - Executive functioning deficits
    - Psychosocial consequences into adulthood
  - Maternal Withdrawal
    - Associated with hypertension and seizures

Fetal Alcohol Syndrome (FAS)

Alcohol Related Neurodevelopmental Disorder (ARND)

- Evidence for low to moderate use in pregnancy has been inconclusive or has shown no effect – still can't recommend!

Other Substances - Methamphetamine

- Stimulant drug – similar to cocaine
- Causes vasoconstriction
  - Decreases blood flow to/through the placenta
- Prevalence of use in pregnancy up to 4.8% in endemic areas

Other Substances - Methamphetamine

- Use in pregnancy is associated with
  - Shorter gestational ages (premature labor/delivery)
  - Premature rupture of membranes
  - Lower birth-weight
  - Pregnancy-induced hypertension
  - Intrauterine infection
  - Fetal demise/stillbirth
  - Developmental and behavioral issues with children
- Prenatal care (assuming ongoing use):
  - Monitoring for growth
  - Monitoring blood pressure
  - Frequent testing of baby for any signs of stress (After 34 weeks)
  - Delivery at 37 to 38 weeks

Other Substances - Benzodiazepines

- Psychoactive drugs
  - Sedative, hypnotic, anxiolytic, anticonvulsant, muscle relaxant properties
- Central nervous system depressant
  - Additive effect to other CNS depressants (i.e. EtOH, opiates)
  - Potential for toxicity and overdose
- Cross the placenta and can accumulate in the baby

Other Substances - Benzodiazepines

- Evidence is unclear on many things
  - Miscarriage
  - Oral facial clefting
  - Heart defects
  - Pyloric stenosis
  - Alimentary atresia
  - Preterm birth
- Withdrawal after delivery – weeks to months
  - Low Apgars
  - Apnea
  - Hypothermia
  - Hyper-reflexia
  - Hyper/Hypotonia
  - Irritability

  Lethargy
  Restlessness
  Tremor
  Diarrhea
  Poor Feeding
  Vomiting

Treatment of Substance Use/Abuse in Pregnancy

- Medication assisted treatment
  - Opiates
  - Cocaine
- Psychotherapy
  - Addiction counseling
  - Mental health counseling
  - Family counseling
- Social Work/Case Management
  - Housing
  - Transportation
  - Food insecurity
  - Lack of insurance
  - Employment

Treatment of Substance Use/Abuse in Pregnancy

- Parenting Classes
  - Substance abuse affects neurodevelopment in parents
  - Having prior children doesn't exclude parenting skill limitations
- Recovery for partners
  - Risk of relapse without support
  - Clean Slate, Bowen Center

Breastfeeding

- Not recommended with active cocaine, methamphetamine, heroin use/abuse
- Marijuana controversial
  - Past studies old, low power
  - Current research – Dr. Thomas Hale
  - Likely benefit outweighs the risk
- Recommended in women on Subutex, Methadone when stable in recovery
- Benefit outweighs the risk with smoking
- Breast-milk has the same alcohol concentration as maternal serum
  - No pump and dump!!
  - Not recommended if mother is too drunk to feed/hold her baby, but otherwise okay

Monarch Perinatal Clinic

- Maternal Obstetrics and Neonatal care, Addiction Recovery and Comprehensive Health
- For mother and baby, during and after pregnancy
- Place to feel safe, loved
- Judgment free zone
- Social work, case management
- Behavioral health
- Referral for partners
- Continuity of care

References

- www.hhs.gov
- www.cdc.gov
- Abdel-Latif ME, Pinner J, Clews S, Cooke F, Lui K, Oei J. *"Effects of breast milk on the severity and outcome of neonatal abstinence syndrome among infants of drug-dependent mothers."* Pediatrics 2006 Jun; 117(6):e1163-9
- Behnke M, Smith VC, "Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus." Pediatrics 2013, Vol 131, No 3.
- Bell J, Towers CV, Hennessy MD, Heitzman C, Smith B, Chattin K. *"Detoxification from opiate drugs during pregnancy."* Am J Obst Gyne 2016 Sept; 215 (3): 374 e.1 – 374 e.6
- Forray A. *"Substance use during pregnancy."* F1000 Research 2016 May: 887.
- Gillogley KM, Evans AT< Hansen RL, Samuels SJ, Batra KK. "The perinatal impact of cocaine, amphetamine and opiate use detected by universal intrapartum screening." AJOG 1990 Nov; vol 163(5): 1535-42.
- Jones HE, Kaltenbach K, Heil SH, Stine SM, Coyle MG, Arria AM, O'Grady KE, Selby P, Martin PR, Fischer G. *"Neonatal Abstinence Syndrome after Methadone or Buprenorphine Exposure."* N Engl J Med 2010; 363: 2320-2331.
- Meyer MC, Johnston AM, Crocker AM, Heil SH. *"Methadone and buprenorphine for opioid dependence during pregnancy: a retrospective cohort study."* J Addict Med, 2015 Mar-Apr; 9(2): 81-86.
- Mathew P. "*Perinatal Drug Abuse and Adverse Neonatal Outcomes*." Journal of Addiction and Dependence. February 2016, 2 (1): 1-2.
- Newman A, Davies GA, Dow K, Holmes B, Macdonald J, McKnight S, Newton L. *"Rooming-in care for infants of opioid-dependent mothers."* Canadian Family Physician 2015 December; vol 61: e555-561
- Ostrea EM Jr, Brady M, Gause S, Raymundo AL, Stevens M. *"Drug screening of newborns by meconium analysis: a large-scale, prospective, epidemiologic study."* Pediatrics 1992 Jan; 89(1): 107-113
- Wright TE, Schuetter R, Tellei J, Sauvage L. "*Methamphetamines and Pregnancy Outcomes*." J Addict Med. 2015 Mar-Apr; 9(2): 111-117.

Questions?

THANK YOU!!!