Psychotropics and Pregnancy

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Agenda

- Introduction
- Psychotropics and Pregnancy
- Managing Pregnancy and SUDS
- MAT and Pregnancy


Risk of Illness
Risk of Medication

Introduction

Stages of Pregnancy

1. Pre-Pregnancy
2. First Trimester
3. Second Trimester
4. Third Trimester
5. Prenatal, Perinatal, and Post Partum

1. Pre-Pregnancy

Considerations

Pre-pregnancy advice

- 50% pregnancies are unplanned

Starting medication in pregnancy

- Previously used
- First time

If already on medication

- Should you continue?
- Should you stop it?
- Should you change it?

What about multiple medications?

What about safety in breastfeeding?

Depression Onset in Young Adult Women

Depression in females is 2 times higher than the rate found in males

Change in rates occurs during puberty and the onset of menses

Young Women and Depression

Women, aged 22, with major depressive disorder had first onset of illness in adolescence

44% had their first episode of major depression during pregnancy

Valid Tool for Screening for depression during pregnancy

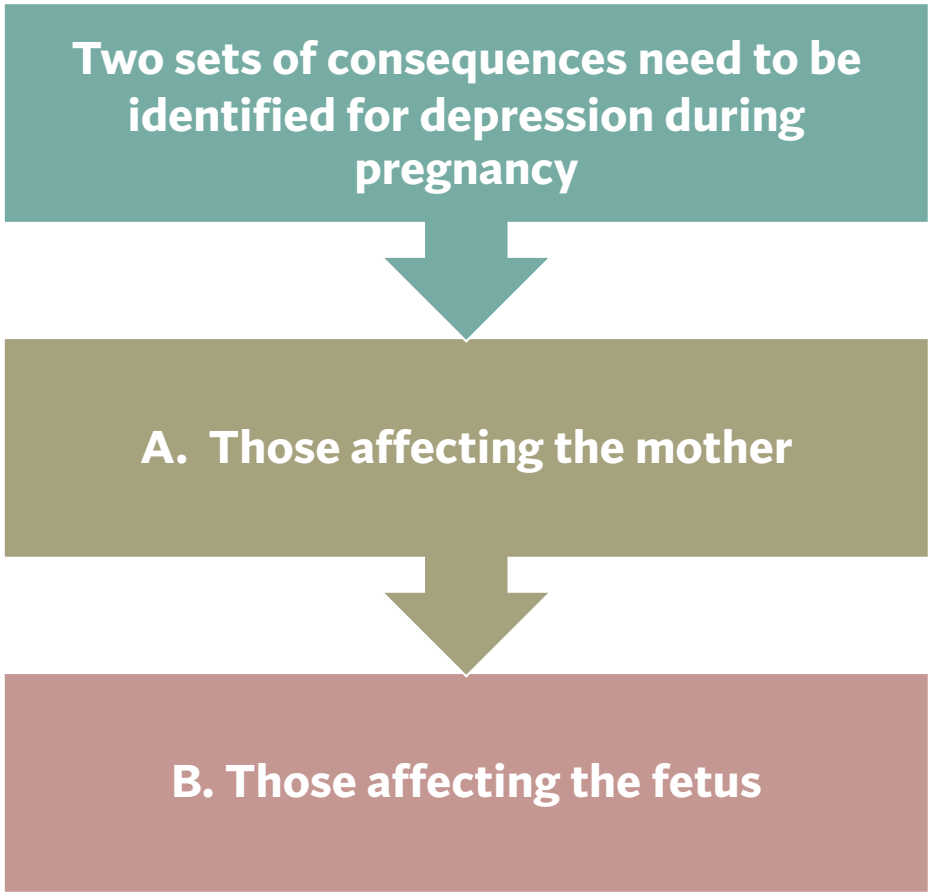
A Tool for screening must access only affective and cognitive symptoms

Edinburgh Postnatal Depression Scale

Risk Factors for Depression During Pregnancy

- Race and Ethnicity: increased rates among African-American and Hispanic populations
- Adolescents
- Single status
- Low Socio-economic status (world-wide risk factor)
- Uninsured status
- Personal History of Depression
- Family History of Depression

Consequences of Depression During Pregnancy



RISKS OF UNTREATED DEPRESSION DURING PREGNANCY

- Neonatal risks (low birth weight and small for gestational age infants
- Obstetrical risks (higher rates of miscarriage, preterm labor, placental abruption, preeclampsia
- Irritable babies (with high cortisol levels)
- Lack of adequate prenatal care
- Higher use of alcohol and drugs
- SUBSEQUENT POSTPARTUM DEPRESSION
- SUBSEQUENT RECURRENT EPISODES OF DEPRESSION
- SUICIDE

Depression and the Mother

Women with Prenatal Depression have:

- Poor prenatal care and health behaviors
- Poor weight gain and nutrition
- Fatigue and loss of functioning
- Disturbed sleep
- Use of drugs including cigarettes and illicit drugs

Prenatal Depressive Symptoms and Fetal Development

- Increase in Preterm Delivery
- Mean gestational age: 29.5 weeks
- Reduction in birth weight of 9.1 grams for every one point increase in a self-report measure of depression in low-SES group
- 4-fold increase in low birth weight babies in an African-American population

Exposure of Psychotropic Medication to Fetal Brain

Morphological teratogenesis

Behavioral teratogenesis

Morphological Teratogenesis

Embryonic Period: weeks 2-8

Fetal Period (months 4-9)

Behavioral Teratogenesis

Little is known about effects of medication treatment for prenatal depression

Depressive symptoms do adversely effect behavioral outcomes in offspring

Table 1

Pregnancy risks and outcomes associated with untreated maternal disorder.

Creeley, C. E., & Denton, L. K. (2019). Use of Prescribed Psychotropics during Pregnancy: A Systematic Review of Pregnancy, Neonatal, and Childhood Outcomes. *Brain sciences*, *9*(9), 235. https://doi.org/10.3390/brainsci9090235

MATERNAL DISORDER	PREGNANCY RISKS AND OUTCOMES
•**DEPRESSION DISORDERS** Major Depression •Persistent Depression Disorder •Minor Depression	•inadequate maternal weight gain [16] •substance abuse [17] •pre-eclampsia; preterm birth; low birth weight [18,19,20,21,22] •fetal distress [23] •increased risk of cesarean birth; increased risk of neonatal intensive care unit(NICU) admission [24]
•**BIPOLAR DISORDERS** Bipolar I and II •Bipolar NOS •Cyclothymia	•low birthweight, size at birth, preterm birth [25] •increased risk of cesarean birth, small head circumference, hypoglycemia [26] •increased risk for long-term neurocognitive, behavioral and social deficits [27,28,29] •high postpartum risk for first-onset and recurrent bipolar episodes [30,31,32,33,34] and hospitalization [30,31,35,36] •substance use, poor prenatal care, maternal suicide [37,38,39]
•**ANXIETY DISORDERS** Generalized Anxiety Disorder (GAD) •Panic Disorders •Social Anxiety Disorder •Specific Phobias	•increased risk for preterm birth, small for gestational age [39,40,41] •spontaneous abortion [42] •pre-eclampsia, deceased head circumference [43], low birth weight [44] •excessive infant crying [45] •long-term childhood behavioral disorders, anxiety [46] •altered maternal/fetal cortisol levels [47]
OBSESSIVE COMPULSIVE DISORDER	•low birth weight, preterm birth [48]
•**SLEEP DISORDERS** Insomnia	•comorbid with mood/anxiety disorders •postpartum depression

FDA Pregnancy Risk Categories

In 1977 the FDA set up these categories:

Category A : Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).

Category B: Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.

Category C: Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category D: There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category X: Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

Then in 2015 the FDA replaced the risk categories with the **Pregnancy and Lactation Labeling Final Rule (PLLR)** went into effect on June 30, 2015; however, the timelines for implementing this new information on drug labels (also known as the package insert) is variable.

New FDA Pregnancy and Lactation Labeling

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The **Pregnancy** subsection will provide information about dosing and potential risks to the developing fetus and registry information that collects and maintains data on how pregnant women are affected when they use the drug or biological product.

New FDA Pregnancy and Lactation Labeling

The **Lactation** subsection will replace the “Nursing Mothers” subsection of the old label. Information will include drugs that should not be used during breastfeeding, known human or animal data regarding active metabolites in milk, as well as clinical effects on the infant.

The subsection entitled **Females and Males of Reproductive Potential**, relevant information on pregnancy testing or birth control before, during or after drug therapy, and a medication’s effect on fertility or pregnancy loss will be provided when available.

ACOG Prepregnancy Counseling

Any patient encounter with nonpregnant women or men with reproductive potential (eg, not posthysterectomy or poststerilization) is an opportunity to counsel about wellness and healthy habits, which may improve reproductive and obstetric outcomes should they choose to reproduce.

Counseling can begin with the following question: " *Would you like to become pregnant in the next year* ?"

The goal of prepregnancy care is to reduce the risk of adverse health effects for the woman, fetus, and neonate by working with the woman to optimize health, address modifiable risk factors, and provide education about healthy pregnancy.

Women should be counseled to seek medical care before attempting to become pregnant or as soon as they believe they are pregnant to aid in correct dating and to be monitored for any medical conditions in which treatment should be modified during pregnancy.

Prepregnancy counseling. ACOG Committee Opinion No. 762. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e78–89

ACOG Prepregnancy Counseling

- **Many chronic medical conditions such as diabetes, hypertension, psychiatric illness, and thyroid disease have implications for pregnancy outcomes and should be optimally managed before pregnancy.**
- **All prescription and nonprescription medications should be reviewed during prepregnancy counseling. This review also should include nutritional supplements and herbal products that patients may not consider to be medication use but could affect reproduction and pregnancy.**
- **Women who present for prepregnancy counseling should be offered screening for the same genetic conditions as recommended for pregnant women.**
- **Women of reproductive age should have their immunization status assessed annually for tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap); measles–mumps–rubella; hepatitis B; and varicella.**
- **All patients should receive an annual influenza vaccination; those women who are or will be pregnant during influenza season will have additional benefits.**

Prepregnancy counseling. ACOG Committee Opinion No. 762. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e78–89

ACOG Prepregnancy Counseling

- **Assessment of the need for sexually transmitted infection (STI) screening should be performed at the time of prepregnancy counseling.**
- **Patients with potential exposure to certain infectious diseases, such as the Zika virus, should be counseled regarding travel restrictions and appropriate waiting time before attempting pregnancy.**
- **All patients should be routinely asked about their use of alcohol, nicotine products, and drugs, including prescription opioids and other medications used for nonmedical reasons.**
- **Screening for intimate partner violence should occur during prepregnancy counseling.**

Prepregnancy counseling. ACOG Committee Opinion No. 762. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e78–89

ACOG Prepregnancy Counseling

Female prepregnancy folic acid supplementation should be encouraged to reduce the risk of neural tube defects (NTDs).

Patients should be screened regarding their diet and vitamin supplements to confirm they are meeting recommended daily allowances for calcium, iron, vitamin A, vitamin B_{12}, vitamin B, vitamin D, and other nutrients.

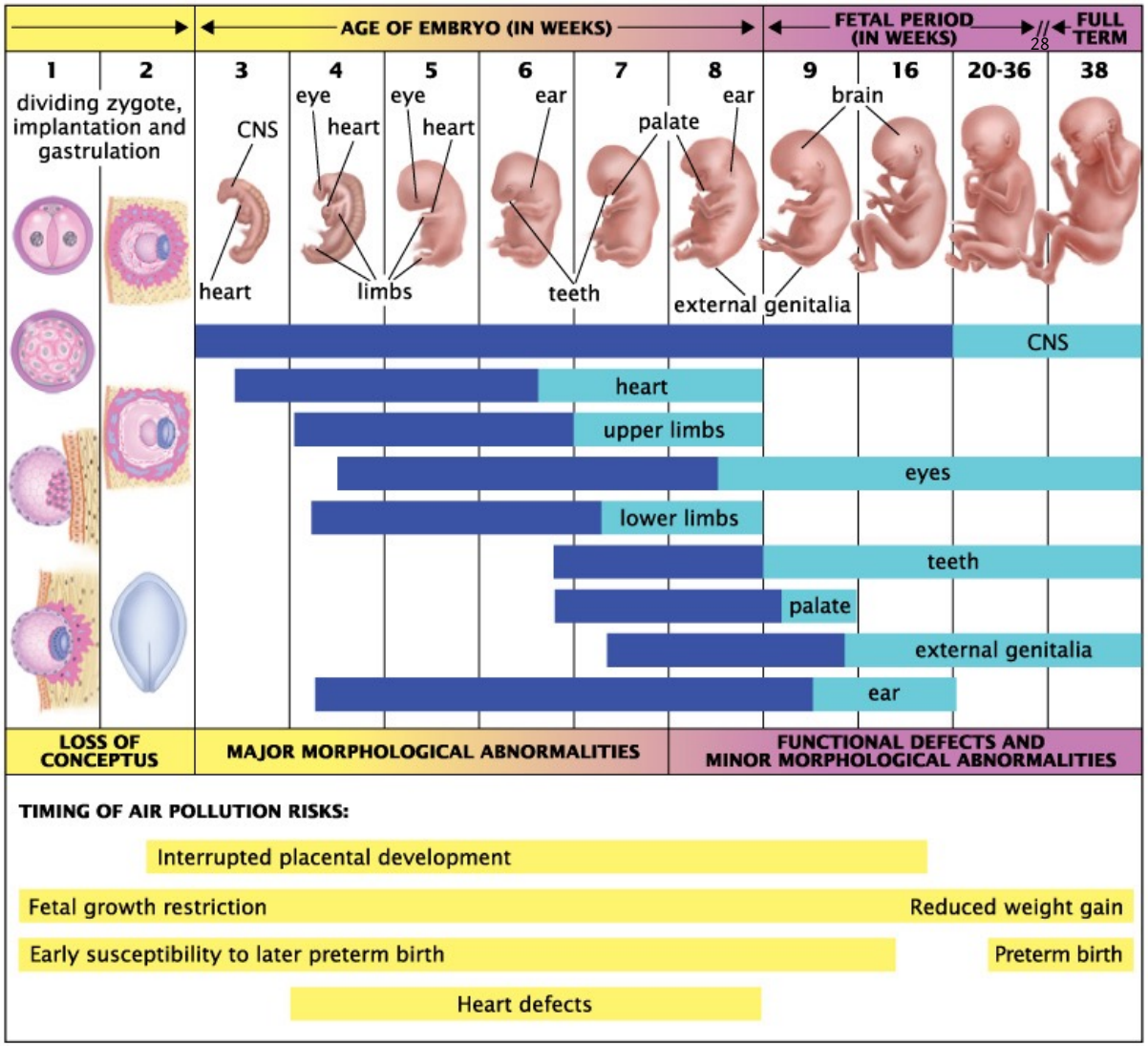
Patients should be encouraged to try to attain a body mass index (BMI) in the normal range before attempting pregnancy, because abnormal high or low BMI is associated with infertility and maternal and fetal pregnancy complications.

Prepregnancy counseling. ACOG Committee Opinion No. 762. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e78–89

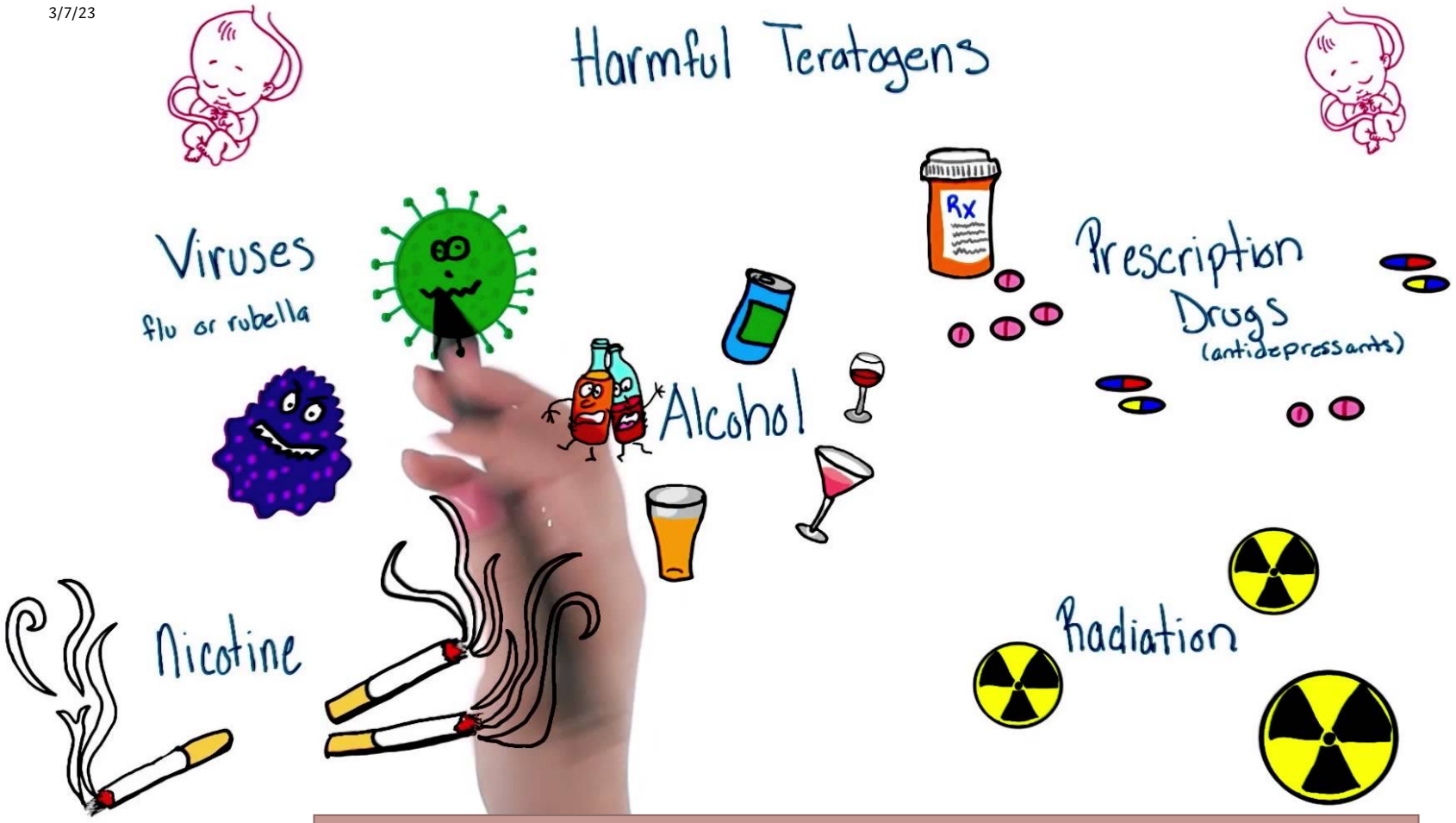
2. First Trimester

- **First Trimester**
  - Period of organogenesis which is most critical for fetal growth and development
- **Second Trimester**
  - Continuous growth and development

    (focus is length of fetus)
- **Third trimester**
  - Period of most rapid growth and development(focus is weight of fetus)



Note: Blue bars indicate time periods when major morphological abnormalities can occur, while light blue bars correspond to periods at risk for minor abnormalities and functional defects.



Teratogen: Any agent that can disturb the development of an embryo or foetus

Risks associated with timing of medication	
Early pregnancy	risk of teratogenesis
Late pregnancy	neonatal toxicity poor neonatal adaptation long term impact on the infant's neurodevelopment
Breast feeding	short term toxicity longer term neurodevelopment

Background Risks

Irrespective of any drug or chemical exposure.	
Miscarriage	10-20%
Congenital abnormality	2-3%
Congenital heart defects(CHD)	0.6%
Stillbirths	0.5%
Neural tube defects	0.1%
Ebstein’s anomoly	0.002%

General Advice

Individualized assessment of benefit versus risk

Do not abruptly discontinue medication in pregnancy without considering risk of illness and relapse

- If no clear evidence base that one drug is safer than another, the safest option is not to switch
- Seek expert advice if necessary (Pharmacy or your local Psychiatrist)

If medication IS required,

- choose treatments with the lowest known risk
- aim for monotherapy
- lowest effective dose for the shortest period necessary
- preferable to avoid/minimise prescribing in the first trimester, if possible, due to organogenesis
- For medications initiated in pregnancy, think ahead and consider its safety in breastfeeding

GUIDELINES FOR TREATMENT OF DEPRESSION DURING PREGNANCY

Assess	Try	Have	Consider
Assess the overall risks through evaluation of the patient's history, current risk factors and current presentation	For mild to moderate depression try non-pharmacologic intervention	Have an open discussion of the risks and benefits of treatment with medication	Consider the risks of inadequately treated depression

Guidelines

For women who are stable on antidepressants who wish to discontinue antidepressants, inform them of the risks and monitor closely. Intervene early at signs of recurrence

When the decision is made to use medication, select medications with the best established safety profile.

Medication decisions should be guided by the patient's history of prior medication treatment

Guidelines

If a woman is already on an SSRI antidepressant that is working well, continue her on that one; pregnancy is not a time to change antidepressant s and risk relapse and exposure to two drugs.

TCA's are safe, with nortriptyline being preferred

Use an adequate dosage, this often increases during the pregnancy because of the increase in blood volume

Consider ECT for severely depressed or psychotic women –it is safe and very effective

Regardless of circumstances, a woman with suicidal or psychotic symptoms should immediately see a mental health specialist for treatment.

General Advice

Effects of the pregnancy on drug metabolism

- eg. need for dose adjustments in later pregnancy

Neonate/Infant

If known risk, appropriate fetal screening

Monitor neonate for adverse effects

Premature or ill babies more at risk of harm

Monitor the infant for specific drug side effects, feeding patterns, growth and development

Caution women against sleeping in bed with the infant, particularly if taking sedative drugs.

What Would You Do ?

- Jane has been on Sertraline for last 2 years
- Commenced after losing her job
  - Became depressed and anxious
- Continues to get brief episodes of low mood (often lasts 7-10 days)
- Has 2 children. No previous mental health issues specific to pregnancy/childbearing
- She has just found out she is pregnant and has come to see you.

What advice would you give re. medication ?

What Would You Do ?

Sarah has Bipolar disorder

2 previous psychiatric admissions, including detention under MHA

Compliant with an antipsychotic. Well for 1 year. Known to CPN and OPC

1st pregnancy, unplanned. 1st trimester

What advice would you give re. medication ?

Specific Medications Requiring Caution

Antenatal - Avoid **Paroxetine** due to risk of congenital cardiac malformations

Antenatal - Avoid **Valproate** in pregnancy and women of childbearing potential due to risk of foetal abnormality and adverse neurodevelopmental outcomes

Antenatal - **Antipsychotics** during pregnancy

- Olanzapine, Clozapine - Monitor for blood glucose abnormalities
- Close monitoring of foetal growth.

FDA Category A

Controlled studies show no risk

No Antidepressants are Category A

FDA Category B

Inadequate number of human studies, animal findings are negative

Animal studies show risk but human studies do not show risk

Bupropion is category B

FDA Category C

Risk cannot be ruled out. Human studies are lacking.

Animal studies show risk or there are few animal studies completed.

Following list are category C

All Serotonin-reuptake Inhibitors (SSRI medications)

Venlafaxine, nefazodone, trazadone, mirtazapine

Amitriptyline and Clomipramine

FDA Category D

Negative risk to the fetus

No Antidepressants in this category

FDA Category X

Contraindication for Pregnancy

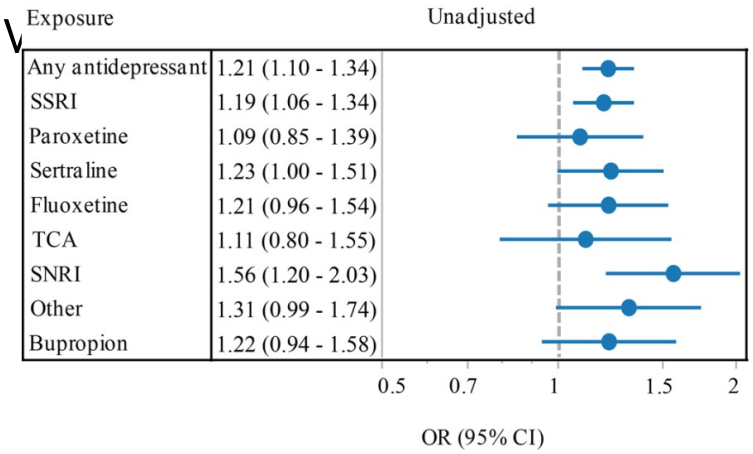
Fetal Risk outweighs benefits

3. Second Trimester

Effect of antidepressants on the risk of cardiac defects

In 2005, the FDA warned against a potential increase in the risk of congenital cardiac malformations associated with paroxetine

Adjustment (for smoking, BMI, SES, etc) did not change OR in case-control studies



Huybrechts K, Palmsten K, Avorn J, Cohen LJ, Holmes LB, Franklin JM, Mogun H, Levin R, Kowal M, Setoguchi S, Hernández-Díaz S. Antidepressant Use in Pregnancy and the Risk of Cardiac Defects. New England Journal of Medicine. 2014;370:2397-407).

The FDA Safety Information and Adverse Event Reporting Program

Topamax (topiramate): Label Change - Risk For Development of Cleft Lip and/or Cleft Palate in Newborns

Available as generic topiramate

AUDIENCE: Neurology, OB/GYN
ISSUE: FDA notified healthcare professionals and patients of an increased risk of development of cleft lip and/or cleft palate (oral clefts) in infants born to women treated with Topamax (topiramate) during pregnancy. Because of new human data that show an increased risk for oral clefts, topiramate is being placed in Pregnancy Category D. Pregnancy Category D means there is positive evidence of human fetal risk based on human data but the potential benefits from use of the drug in pregnant women may be acceptable in certain situations despite its risks. The patient medication guide and prescribing information for Topamax and generic topiramate will be updated with the new information.
BACKGROUND: Topiramate is an anticonvulsant medication approved for use alone or with other medications to treat patients with epilepsy who have certain types of seizures. Topiramate is also approved for use to prevent migraine headaches. **The new data was from the North American Antiepileptic Drug (NAAED) Pregnancy Registry.**

RECOMMENDATION: Before starting topiramate, pregnant women and women of childbearing potential should discuss other treatment options with their health care professional. Women taking topiramate should tell their health care professional immediately if they are planning to or become pregnant. Patients taking topiramate should not stop taking it unless told to do so by their health care professional. Women who become pregnant while taking topiramate should talk to their health care professional about registering with the North American Antiepileptic Drug Pregnancy Registry, a group that collects information about outcomes in infants born to women treated with antiepileptic drugs during pregnancy.

Antidepressants in pregnancy

Evidence of harm is conflicting

SSRI

- **Paroxetine**: cardiac malformation
  - Background rate 0.6% Increased rate 1%
- Persistent pulmonary hypertension of the newborn PPHN
  - early and late SSRI exposure
  - Background rate 0.19%
  - Relative Risk x2-3 Absolute risk 0.2 to 0.3%
- Neonatal adaptation syndrome
  - Clinically evident in 10% of babies

Neonatal Adaptation Syndrome

aka poor neonatal adaptation, neonatal withdrawal or neonatal abstinence syndrome

A cluster of symptoms in the neonate due to psychotropic use in pregnancy

- **Irritability**
- **sleep disturbance**
- **persistent crying**
- **tachypnoea**
- **hypoglycaemia**
- **poor thermal regulation**
- **seizures**

Liaise with maternity services to ensure appropriate monitoring and management

Symptoms are often self-limiting

Persistent Pulmonary Hypertension of the Newborn (PPHN)

Relatively rare outcome with an estimated baseline prevalence of 1.9 per 1000 live births

Normally - Blood vessels in the lungs of the infant relax following delivery

- PPHN - the resistance in the pulmonary vasculature following birth continues, leading to poor oxygenation. Evident soon after birth.

Symptoms - range in severity from **mild** respiratory distress to the most severe form, with hypoxia necessitating intensive medical care

PPHN defined as “a final common pathway of a variety of risk factors and insults that can cause pulmonary underdevelopment, maldevelopment, or poor postnatal adaptation.”

Risk factors - certain congenital malformations, premature birth, meconium aspiration, maternal obesity, and caesarean section mode of delivery

Antidepressant Drug Effects Associations

Spontaneous abortion - no increased risk associated with AD

Reduced birthweight - no significant association compared to depressed mothers without AD exposure

Stillbirths & neonatal deaths - no association with antenatal SSRIs after adjusting for confounders.

Autism spectrum disorders - no significant association in large cohort study despite two nested case-control studies reporting an association with AD exposure in pregnancy

Mirtazapine

- Data limited. Consider use if alternatives are not clinically appropriate
- No significant increased risk of congenital malformation, but evidence too limited to exclude any increased risk
- Conflicting advice about spontaneous abortion and pre-term delivery
- Risk of neonatal hypoglycaemia may be increased

Venlafaxine

No increased overall risk of congenital malformation.

- large case-control study: association with specific congenital malformations including hypospadias, gastroschisis, cleft palate, limb, and heart defects.
- Currently the data are too limited to confirm or exclude an increased risk of malformations after in utero exposure to venlafaxine.

Spontaneous abortion and preterm delivery: Some association reported but data not conclusive

Theoretical risks of NAS and PPHN

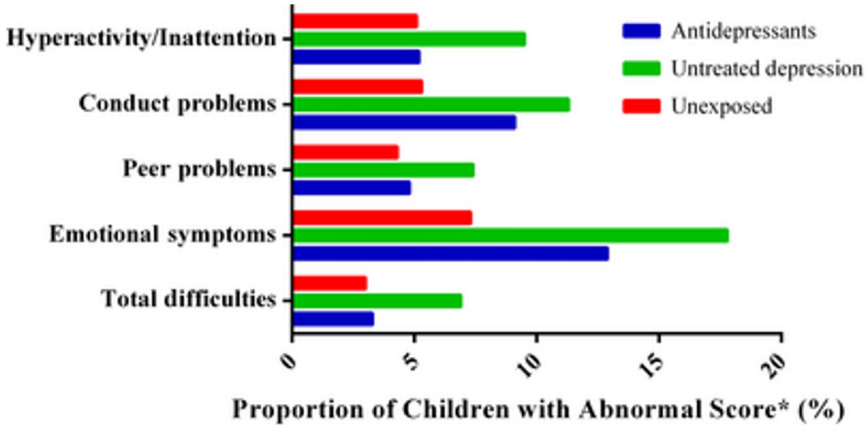
Neurodevelopment: Not known

Where maternal treatment with venlafaxine is clinically indicated it should be offered, provided the women is carefully counselled regarding the available human pregnancy safety data or the prescriber considers risk of not treating the maternal condition too great to withhold treatment on the basis of the undetermined fetal risk.

4. Third Trimester

Prenatal antidepressant exposure and child behavioural outcomes at 7 years of age: a study within the Danish National Birth Cohort

BJOG: An International Journal of Obstetrics & Gynaecology
15 SEP 2015 DOI: 10.1111/1471-0528.13611
http://onlinelibrary.wiley.com/doi/10.1111/1471-0528.13611/full#bjo13611-fig-0001



*Behavioural problems defined as scores above the 90th percentile on the parent-report version of the Strengths and Difficulties Questionnaire (SDQ)

Tapering AD before delivery?

Advantages vs Disadvantages

Antipsychotics

Congenital malformation

- no increased rate of any major malformation for any drug.

Neurological effects on neonate

- self-limiting extra-pyramidal symptoms
- association between low birth weight and typical antipsychotics in pregnancy
- large for gestational age in women taking atypical antipsychotics, especially olanzapine and clozapine.

Advice

- Women taking antipsychotics during pregnancy should be monitored for alterations in fetal growth.
- Monitor for blood glucose abnormalities where olanzapine or clozapine are prescribed.

NICE 2014: Antipsychotics

Take into account risk factors for gestational diabetes and excessive weight gain.

If a pregnant woman is stable on an antipsychotic and likely to relapse without medication, advise her to continue the antipsychotic

Monitor for gestational diabetes in pregnant women taking antipsychotic medication and offer an oral glucose tolerance test.

Do not offer depot antipsychotics to a woman who is planning a pregnancy, pregnant or considering breastfeeding, unless she is responding well to a depot and has a previous history of non-adherence with oral medication

Antiepileptics

Congenital malformation

- Use in early pregnancy increases the risk of congenital malformations
- Greatest risk with valproate.
- Overall major malformation rate was 2.9% for carbamazepine, 8.7% for sodium valproate and 2.7% for lamotrigine.

Neurological effects on neonate

- Sodium valproate exposure :Poorer outcome on development eg. IQ, verbal ability and attention.
- No effects on development were found for carbamazepine or lamotrigine.
- Polytherapy was associated with highest risks.

Advice

- Avoid valproate in pregnancy and women of childbearing potential

NICE 2014: Anticonvulsants

Valproate

Do not offer valproate for acute or long-term treatment of a mental health problem in women who are planning a pregnancy, pregnant or considering breastfeeding.

If a woman is already taking valproate and becomes pregnant, stop the drug because of the risk of fetal malformations and adverse neurodevelopmental outcomes.

Carbamazepine

Do not offer carbamazepine to treat a mental health problem in women who are planning a pregnancy, pregnant or considering breastfeeding.

If a woman is already taking it, discuss with the woman the possibility of stopping the drug (because of the risk of adverse drug interactions and fetal malformations)

Lamotrigine

In pregnancy, check lamotrigine levels frequently during pregnancy and into the postnatal period because they vary substantially at these times.

Lithium - Risk

Historical evidence

Retrospective data from the lithium baby registry: 225 exposed babies

- 25 malformations (11%).
- 18 (8%) cardiovascular defects, six of which were Ebstein's anomaly.

Prospective data: 296 exposed babies

- 8 malformations (3%), same rate as controls. 2 had Ebstein's anomaly
- cw ZERO Ebstein's in 1354 controls (3% malformations)

Recent evidence: Systematic review and meta-analysis of lithium toxicity (62 studies)

evidence that exposure to lithium is teratogenic is weak

risk has been overestimated

CIs were wide and the upper confidence limit was consistent with a clinically significant increase in risk of congenital malformations.

Lithium - Guidance

Explain the uncertainty around risk to women and to consider the balance between harm to the baby and risk of worsening maternal mood instability.

When lithium is used in pregnancy, lithium levels need to be checked more frequently because of the changes in blood volume, and particularly closely in women who develop pre-eclampsia.

Some uncertainty surrounds when to stop lithium around the time of labour. However, once labour has begun, lithium should not be taken until after delivery when plasma levels and electrolyte balance can be checked and lithium reinitiated.

Benzodiazepines

Data conflicting; Multiple confounders

Teratogenicity

- Older studies suggested possible increased risks of congenital malformation including orofacial clefts and cardiac malformations.
- More recent, better designed studies have failed to identify such associations.

Prolonged use near term, especially in high doses

- associated with neonatal withdrawal syndrome and/or “floppy infant syndrome”
- Use of diazepam around term should therefore be avoided unless use can be clinically justified.

Neurodevelopment

- Effects unknown

Benzodiazepines

Spontaneous abortion

- increased risk following exposure to benzodiazepines as a group has been reported but data too limited and confounded to be certain that a clinically relevant increased risk exists.

Avoid abrupt withdrawal of Diazepam

Beta Blockers

Associated with

Intrauterine growth retardation (IUGR) and low birth weight in 1st + 2nd trimester use

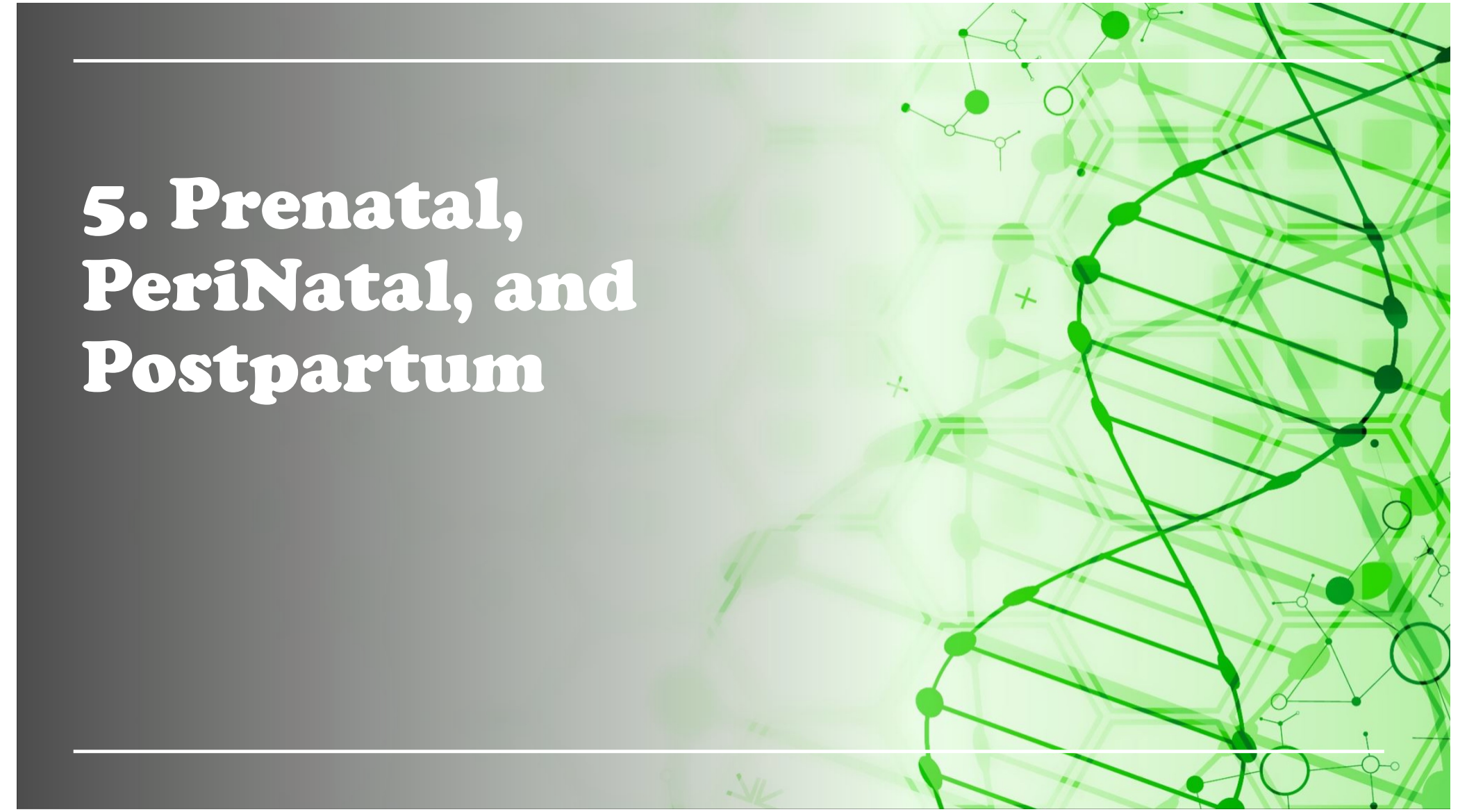
Neonatal bradycardia, hypotension and hypoglycaemia if used near term

Respiratory distress and apnoea: has been reported following in utero exposure

Not associated with an increased risk of structural foetal malformations.

- Recent studies suggest possible increased risk of congenital heart defects associated with antihypertensive therapy in general including beta blockers.
- Unclear whether these result from the underlying maternal condition or the use of medication.

5. Prenatal, PeriNatal, and Postpartum



Breastfeeding

NICE 2014

Encourage women with a mental health problem to breastfeed, unless they are taking carbamazepine, clozapine or lithium (valproate is not recommended to treat a mental health problem in women of childbearing potential). However, support each woman in the choice of feeding method that best suits her and her family.

LOW relative infant doses(<10%)	HIGHER relative infant doses(>10%)
sertraline, paroxetine, duloxetine, mirtazapine, fluvoxamine, reboxetine, bupropion, and nortriptyline.	citalopram, escitalopram, fluoxetine, and venlafaxine

Breastfeeding: Antidepressants

Advice: SIGN 127

- ☐ Avoid doxepin
- ☐ If starting SSRI try to avoid fluoxetine, citalopram and escitalopram

Breastfeeding

- **Lithium**
  - Due to risk of infant toxicity, mothers should be encouraged to avoid breast feeding.
  - If decide to breastfeed, close monitoring of the infant (serum lithium levels, thyroid and renal monitoring)
- **Clozapine**
  - should not breast feed.

Antiepileptics

Sodium valproate

- excreted in low levels. Infant serum levels 1-2% of maternal serum level.
- no short term adverse clinical effects have been noted

Carbamazepine

- excreted in significant quantities. Infant serum levels 6-65% of maternal serum levels.

Lamotrigine

- Infant plasma concentrations four hours after breast feeding were 18.3% of the maternal dose.

Advice:

Antiepileptic mood stabiliser prescription is not, of itself, a contraindication to breastfeeding, but decisions should be made individually with the woman, after full discussion of the risks and benefits.

Benzodiazepines

Excreted in breast milk with a low milk/plasma ratio.

Sedation, poor feeding, weight loss and apnoea

If a benzodiazepine is required during breast feeding short-acting agents should be prescribed in divided doses.

Mothers should be advised not to stop medication suddenly and to contact their doctor if the infant is observed to have sleepiness, low energy or poor suckling.

What are the medication choices available during pregnancy and when breastfeeding my baby?

Medications		
Medicine	**Can I take if I'm pregnant?**	**Can I take if I'm breast feeding?**
Antidepressants selective serotonin reuptake inhibitors (SSRI), and tricyclic antidepressants (TCA))	Yes Paroxetine should not be the first treatment choice during pregnancy. If you have already been taking this, your doctor will consider the risk and benefits to you and your baby before advising you to continue taking this or switching to another medication. It is not possible to say whether or not antidepressants increase the risk of miscarriage. It is possible that there may be a low risk or no risk at all that SSRIs cause heart defects in babies. Babies exposed to antidepressants during pregnancy may show signs such as agitation, irritability and, in rare cases, seizures. This is unusual, is not normally harmful and does not last for long.	Yes Sertraline or paroxetine are usually the first choice of antidepressants, but others may be chosen in certain situations, for example, if you need to continue the medicine you took in pregnancy or if you have depression which is difficult to treat. You should avoid doxepin.
Lithium **Lithium should not be stopped suddenly**	Yes There may be a risk of birth defects so you may have extra ultrasound scans to monitor your baby's growth and development. Babies exposed to lithium around the time of birth have increased risk of poor temperature control, floppiness, breathing problems and thyroid problems. They may need to stay in hospital longer.	Not recommended Lithium can affect your baby's thyroid and kidney function. If you choose to breast feed, your baby will need to be closely monitored.

Medications		
Medicine	**Can I take if I'm pregnant?**	**Can I take if I'm breast feeding?**
Anti-epileptic mood-stabilising drug (for example valproate)	No This medicine increases the risk of your baby having fetal abnormalitiesm for example, spina bifida You may have extra ultrasound scans to monitor your baby's growth and development.	Yes If you need to take anti-epileptic medicines, it may still be possible to breastfeed. The risks and benefits of taking these should be discussed with you.
Benzodiazepines (drugs like valium) **Benzodiazepines should not be stopped suddenly.**	Yes If you already take these and your doctor thinks it would be useful to continue taking them during pregnancy, you should only take them for a short time and in the lowest dose possible.	Should usually be avoided. They may make your baby sleepy and feed poorly. If they are needed a short-acting drug should be prescribed in a low dose for a short time.
Antipsychotics (medication used to treat types of mental disorder such as schizophrenia and bipolar disorder)	Yes It is not possible to say whether or not antipsychotics increase the risk of complications during your pregnancy. You may have extra ultrasound scans to monitor your baby's growth and development.	Yes It is not possible to say whether or not antipsychotics pose a risk to your baby. You should avoid clozapine.
Alternative medicines (for example St John's Wort)	No These may be harmful to your baby. There is no information that they are safe in the short or longer term.	

Don’t forget….

- Contraception
- Non-pharmacological interventions
- ECT
- Driving advice

Managing Pregnant Patients with Substance Use Disorder

DSM-5 Diagnostic Criteria: OUD & SUD

A minimum of 2-3 criteria is required for a mild substance use disorder diagnosis, while 4-5 is moderate, and 6 or more is severe

- Taking the opioid in larger amounts and for longer than intended
- Wanting to cut down or quit but not being able to do it
- Spending a lot of time obtaining the opioid
- Craving or a strong desire to use opioids
- Repeatedly unable to carry out major obligations at work, school, or home due to opioid use
- Continued use despite persistent or recurring social or interpersonal problems caused or made worse by opioid use
- Stopping or reducing important social, occupational, or recreational activities due to opioid use
- Recurrent use of opioids in physically hazardous situations
- Consistent use of opioids despite acknowledgment of persistent or recurrent physical or psychological difficulties from using opioids

- *Tolerance as defined by either a need for markedly increased amounts to achieve intoxication or desired effect or markedly diminished effect with continued use of the same amount. (Does not apply for diminished effect when used appropriately under medical supervision)
- *Withdrawal manifesting as either characteristic syndrome or the substance is used to avoid withdrawal (Does not apply when used appropriately under medical supervision)
- *This criterion is not considered to be met for those individuals taking opioids solely under appropriate medical supervision.

Source: APA 2013

Substance Use Disorders

- Alcohol Use Disorder (AUD)
- Tobacco Use Disorder
- Cannabis Use Disorder
- Stimulant Use Disorder
- Hallucinogen Use Disorder (HUD)
- Opioid Use Disorder (OUD)

Substance use disorders occur when the recurrent use of alcohol and/or drugs causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home.

Source: SAMHSA; https://www.samhsa.gov/disorders/substance-use

Alcohol Use Disorder and Pregnancy

Alcohol

Alcohol Use

Fast Facts

- **79,000 deaths annually attributed to excessive alcohol use**
- **3rd leading lifestyle-related cause of death in America**
- **Cost**

  Est. $276 Billion/year (due to crime, healthcare, lost productivity, etc.)

What Is Alcohol?

1 Street Drug

A low potency drug

The alcohol we drink is ethanol (ethyl alcohol)

Standard US drink: 14g of ethanol

- Beer: 12oz of 5% alcohol
- Wine: 5oz of 12% alcohol
- Liquor: 1.5oz of 40% alcohol

Other alcohols are toxic (e.g. isopropyl)

BAC (blood alcohol content): % alcohol in someone's blood

Pharmacokinetics

Ingestion: Oral

Distribution: total body water

- Affected by body composition (e.g. women have lower proportion of total body water)

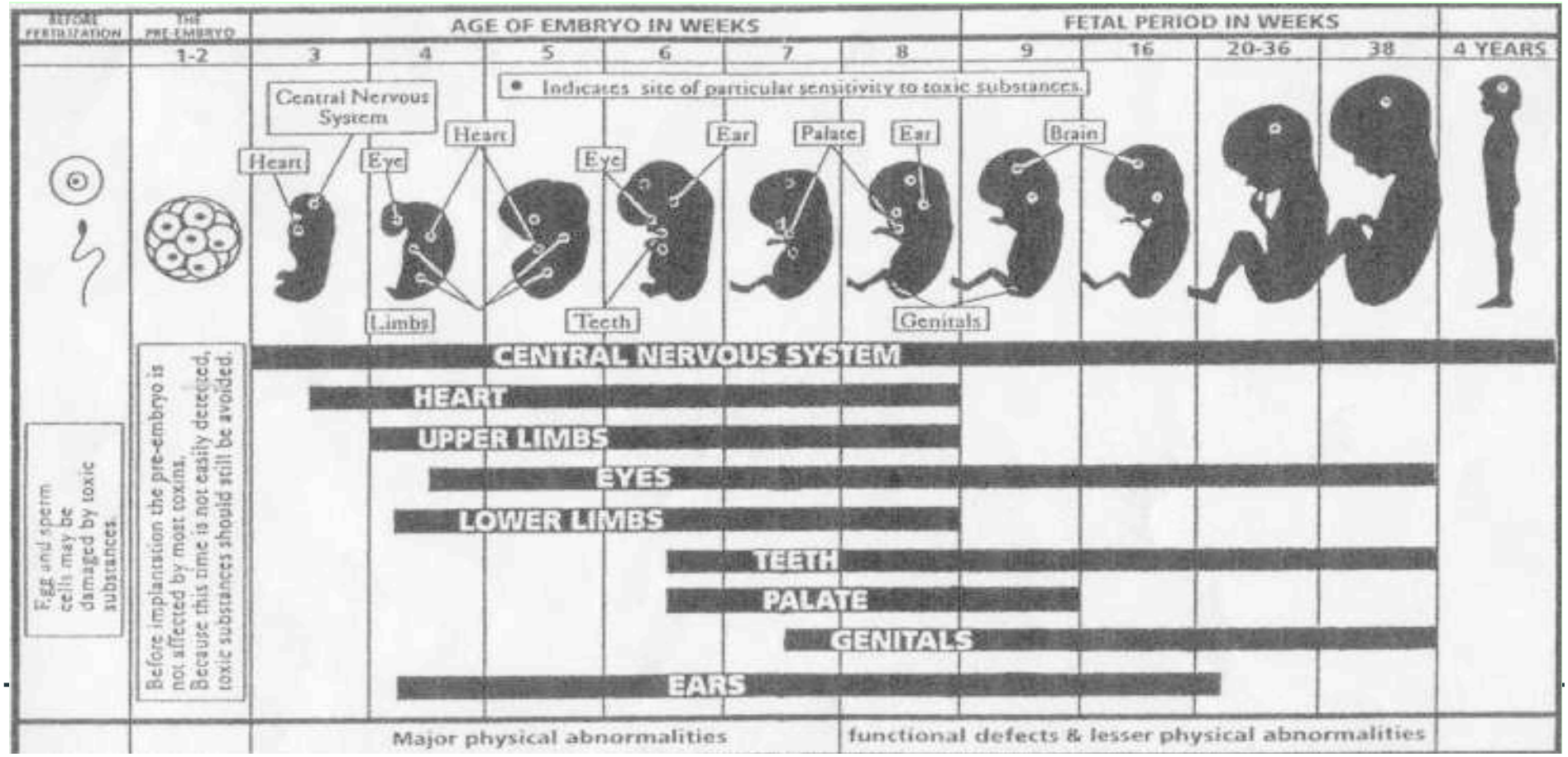
Absorption:

- Absorbed primarily through duodenum in small intestines
- Rate varies depending on:
  - Food intake
  - Alcohol amount and concentration
  - Rate of drinking
  - First Pass Metabolism (e.g. Aspirin increases absorption by affecting first pass metabolism)

Metabolism: 10-14g ethanol/hour

Alcohol's Effects on Pregnancy

Embryonic/Fetal Development



Alcohol Use in Pregnancy

Prevalence in ♀ who know pregnant

- **2%: ≥ 5 drinks/occasion 5+ days past mo**
- **28% ≥ 5 drinks typical drinking days**
- **21% ≥ 45 drinks per month**

~50% pregnancies unplanned

- **50% don't know pregnant early**
- **45% drink before know pregnant**
- **~5% ♀ drink ≥ 6 drinks/ week**

Alcohol use during pregnancy can lead to lifelong effects.

Up to 1 in 20 US school children may have FASDs.

People with FASDs can experience a mix of the following problems:

Physical issues

- low birth weight and growth
- problems with heart, kidneys, and other organs
- damage to parts of the brain

Which leads to...

Behavioral and intellectual disabilities

- learning disabilities and low IQ
- hyperactivity
- difficulty with attention
- poor ability to communicate in social situations
- poor reasoning and judgment skills

These can lead to...

Lifelong issues with

- school and social skills
- living independently
- mental health
- substance use
- keeping a job
- trouble with the law

Drinking while pregnant costs the US $5.5 billion (2010).

Prenatal Case

A 21 year-old pregnant woman, Lisa, comes to clinic for her first prenatal visit. She found out she was pregnant one week ago by using an at-home pregnancy test. The first day of her last menstrual cycle was 5 weeks ago.

She is concerned because she was at a party 3 weeks ago and consumed 6 mixed drinks, predominantly rum mixed with coca-cola.

Questions:

1. Do the timing and level of drinking in this case meet the threshold for dangerous prenatal alcohol exposure?
2. How would you counsel the patient regarding the risk to the embryo in this scenario?
3. If the event was repeated in the first trimester, how would the risk change?
4. If the event was repeated in the second trimester, how would the risk change?

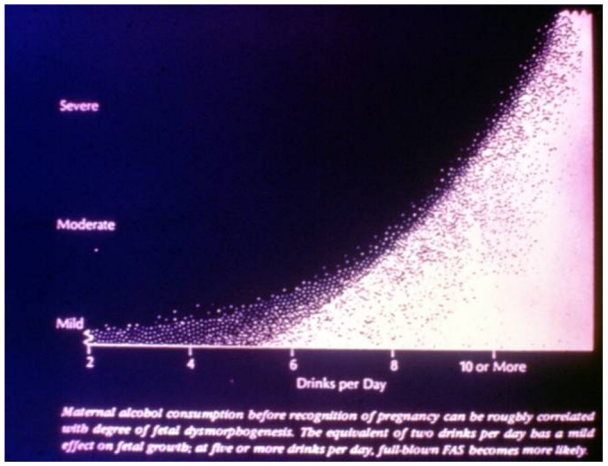
Variables Affecting Teratogenic Impact

Timing of exposure

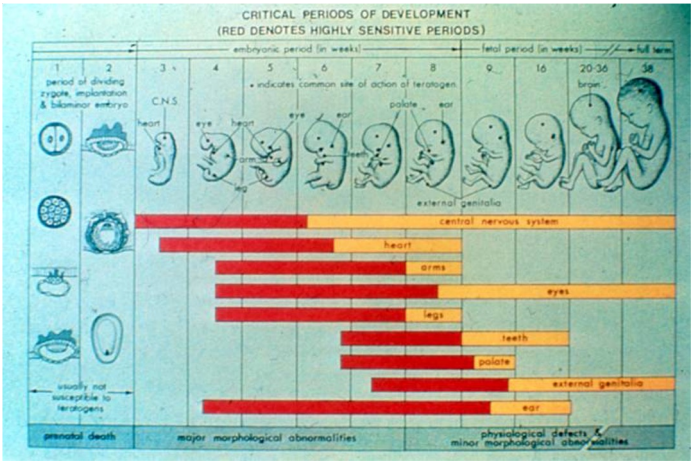
- **1st trimester—miscarriage, malformations (high sensitivity days 18-60)**
- **2nd and 3rd trimester—pregnancy viability, CNS growth and maturation, fetal growth**
- **Perinatal—problems with newborn adaptation**

Dose

- **Some drugs have a threshold of teratogenicity**
- **As a general rule, the higher the dose, the higher the risk to the fetus**



Maternal alcohol consumption before recognition of pregnancy can be roughly correlated with degree of fetal dysmorphogenesis. The equivalent of two drinks per day has a mild effect on fetal growth; at five or more drinks per day, full-blown FAS becomes more likely.



Epidemiology: Rates of Alcohol Use among Women of Childbearing Age

CDC 2015 Morbidity and Mortality Report

Non-pregnant women

- Any Alcohol Use = 54%
- Binge Drinking (4 or more) = 18%

Pregnant women

- Any Alcohol Use = 10% (1 in 10 consuming alcohol)
- Binge drinking = 3% (1 in 33 binge drinking)

Among Binge drinkers: Pregnant women have *higher frequency* of binge drinking than non-pregnant women

Prevalence of alcohol use in pregnant women is higher for women with college degrees compared to less education

FASD Epidemiology

It is not known what percentage of babies will be born with FASD if the mother drinks alcohol during pregnancy.

FASD is likely underdiagnosed

- **Dysmorphic features can be less noticeable in newborns**
- **CNS deficits may not be recognized until preschool age**
- **Less consideration for prenatal alcohol use to be underlying factor in behavioral and learning disorders**

The CDC: up to 1.5 infants per 1000 births with FAS

The CDC: 0.3 out of 1000 children from 7 to 9 years of age with FAS

May et al. (2009): 10.9 to 25.2 cases of FAS/pFAS per 1000.

May et al. (2014): 24 to 48 of FASD per 1000.

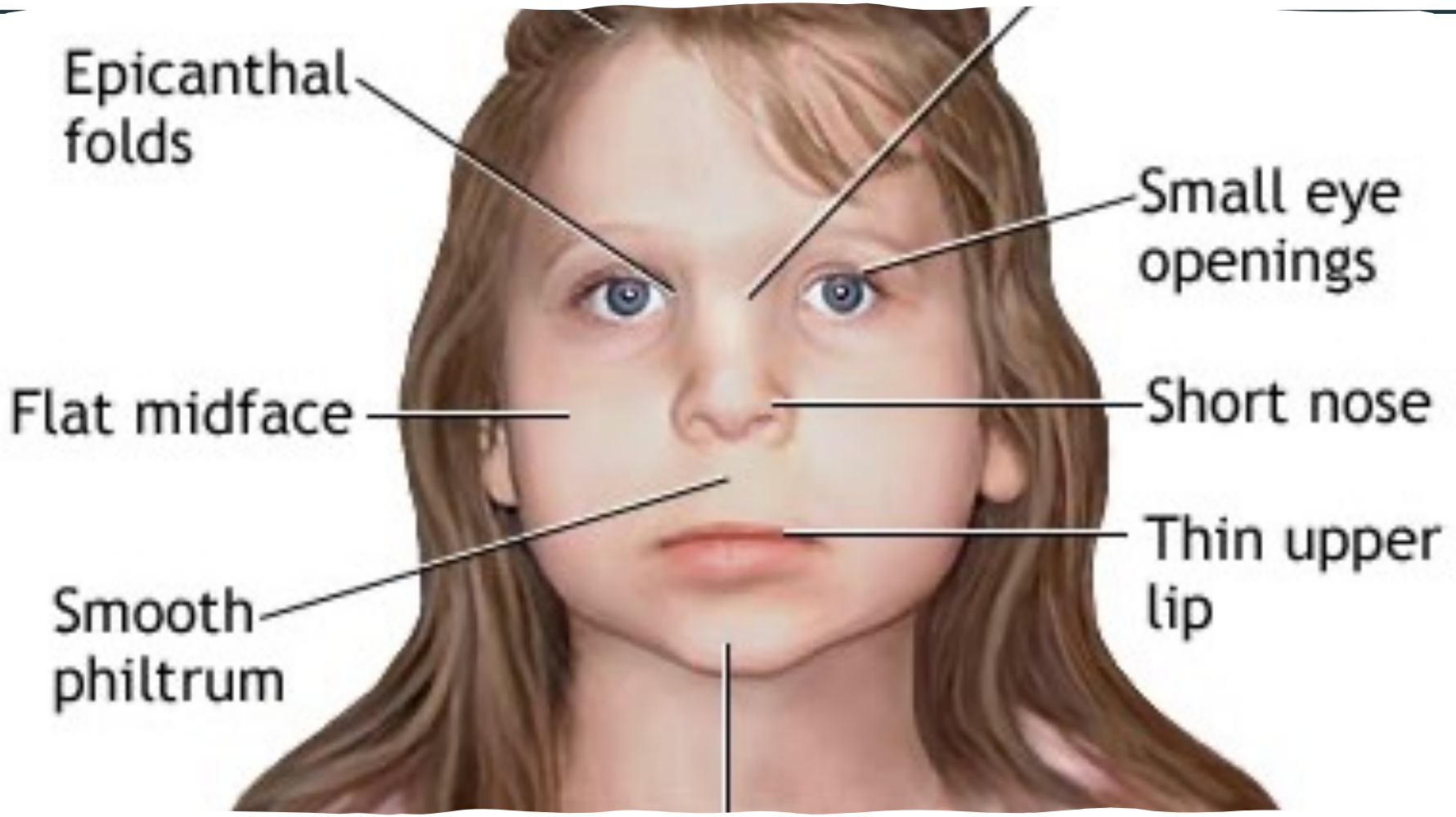
FAS Facts

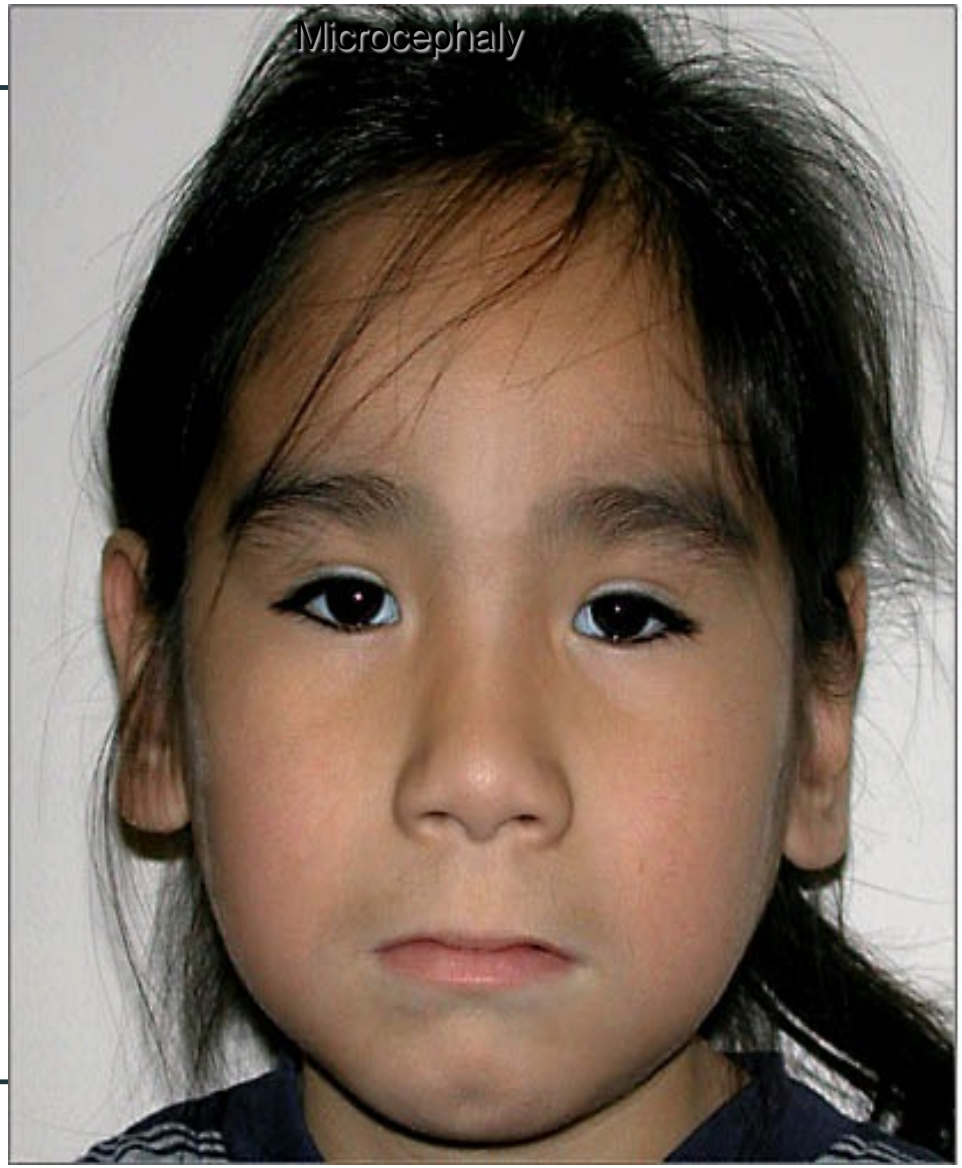
Alcohol diffuses through placenta

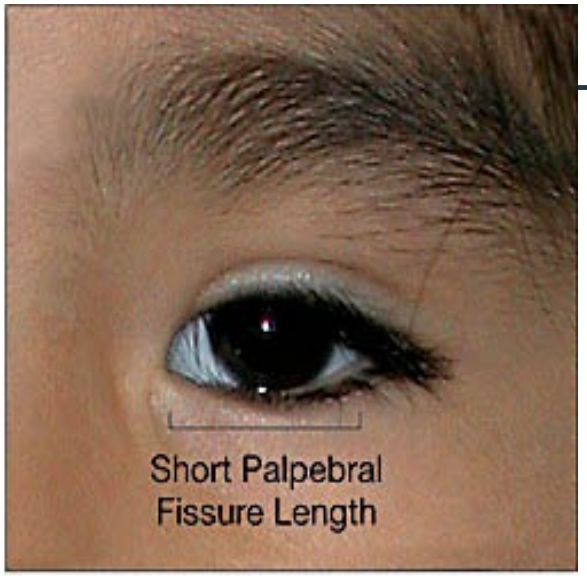
Concentration in fetal blood is the same as in the mother's blood within a few minutes

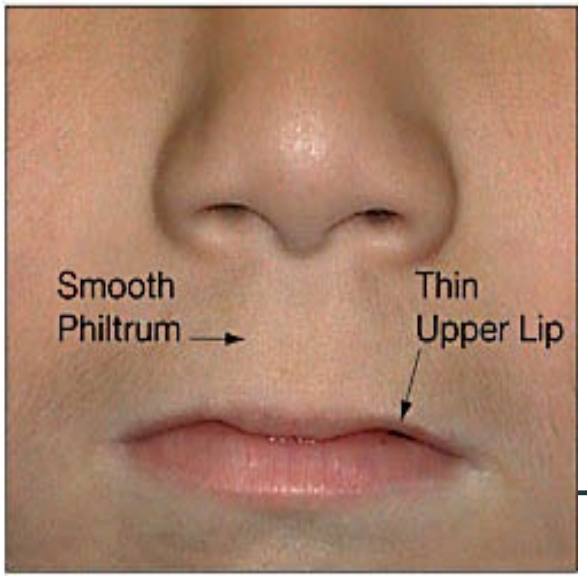
The fetus is able to metabolize alcohol 10% as fast as the mother

Fetal Alcohol Spectrum Disorders (FASD)

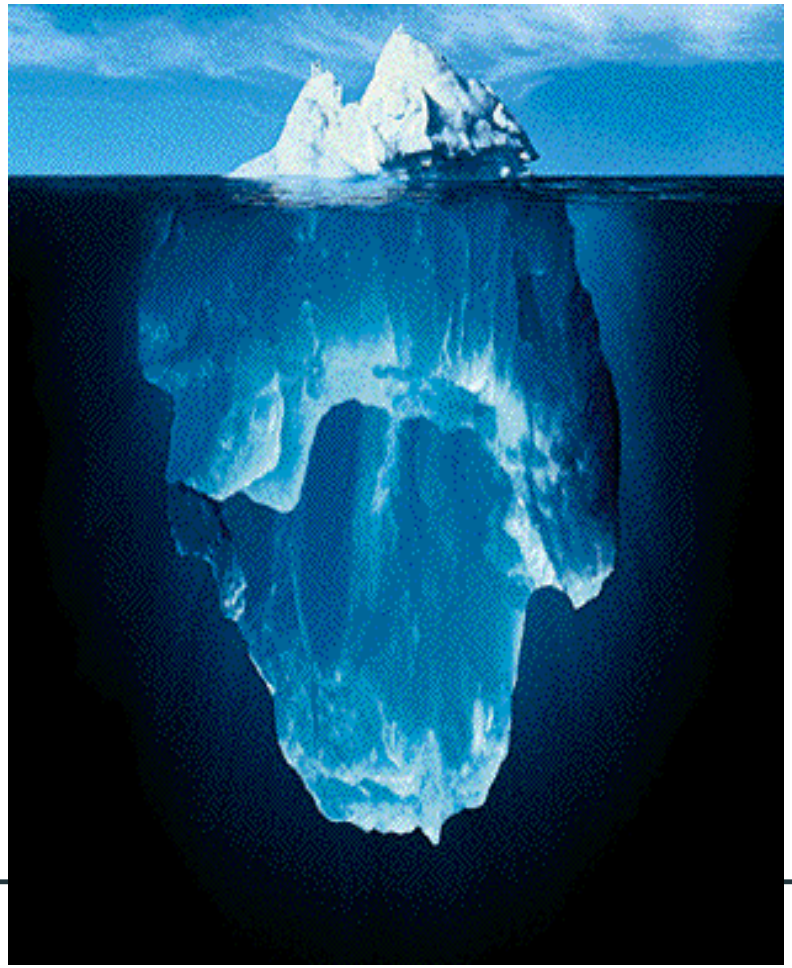

Epicanthal folds
Small eye openings
Flat midface
Short nose
Thin upper lip
Smooth philtrum


Microcephaly


Short Palpebral
Fissure Length


Smooth
Philtrum
Thin
Upper Lip

FAS – Only the Tip of the Iceberg

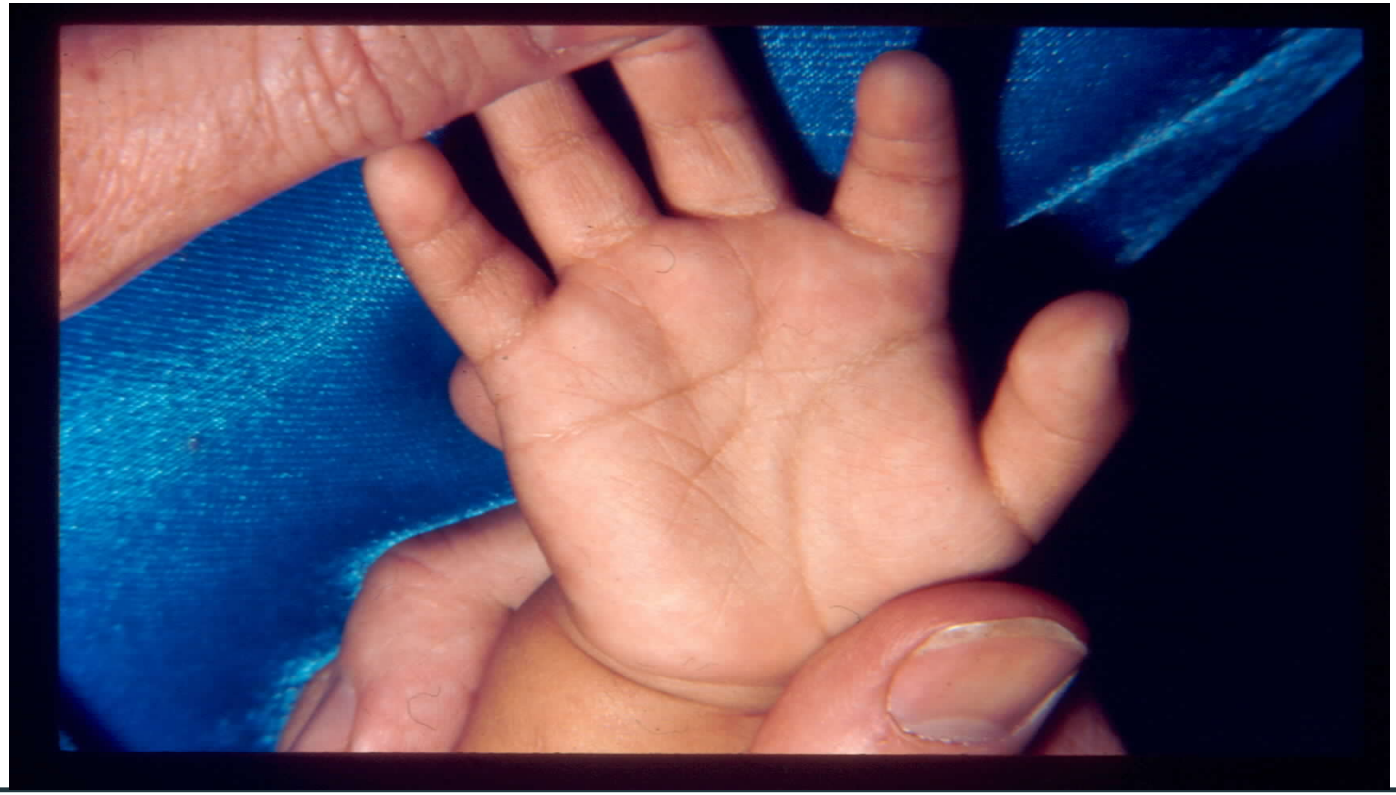


- PFAS –Partial Fetal Alcohol Syndrome (PFAS)
- Alcohol-Related Birth Defects (ARBD)
- Alcohol-Related Neurodevelopmental Disorders (ARND)

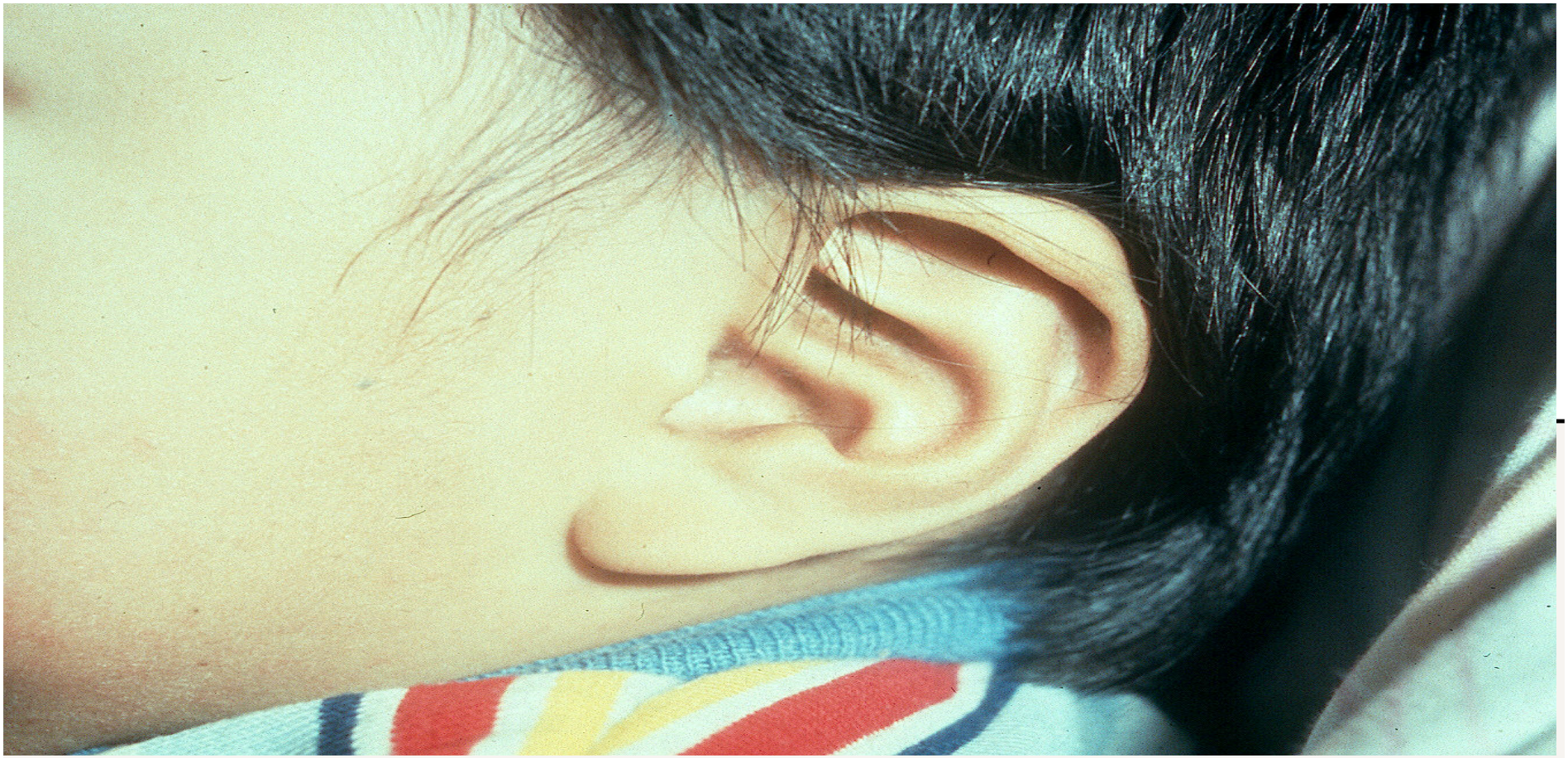
Associated congenital anomalies, malformations, & dysplasias:

Cardiac	ASD	Aberrant great vessels
	VSD	Conotruncal heart defects
Skeletal	Hypoplastic nails	Clinodactyly of 5th fingers
	Short 5th digits	Pectus carinatum/excavatum
	Radioulnar synostosis	Vertebral segmentation defects
	Lg joint contractures	Scoliosis
	Camptodactyly	"Hockey stick" palmar creases
Renal	Aplastic/hypoplastic/ Dysplastic kidneys	"Horseshoe" kidneys/ Ureteral duplications
Eyes	Strabismus	Refractive errors
	Retinal vascular anomalies	Optic nerve hypoplasia
Ears	"Railroad track" ears	Conductive/ neurosensory hearing loss

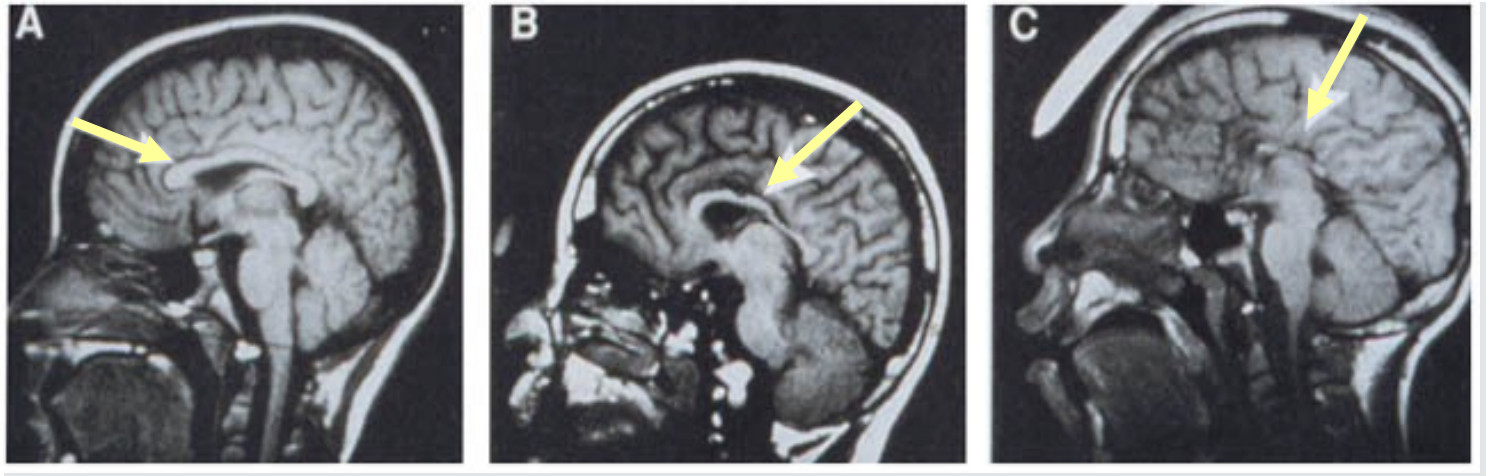
Hockey Stick Palmar Crease



Railroad Track Ears



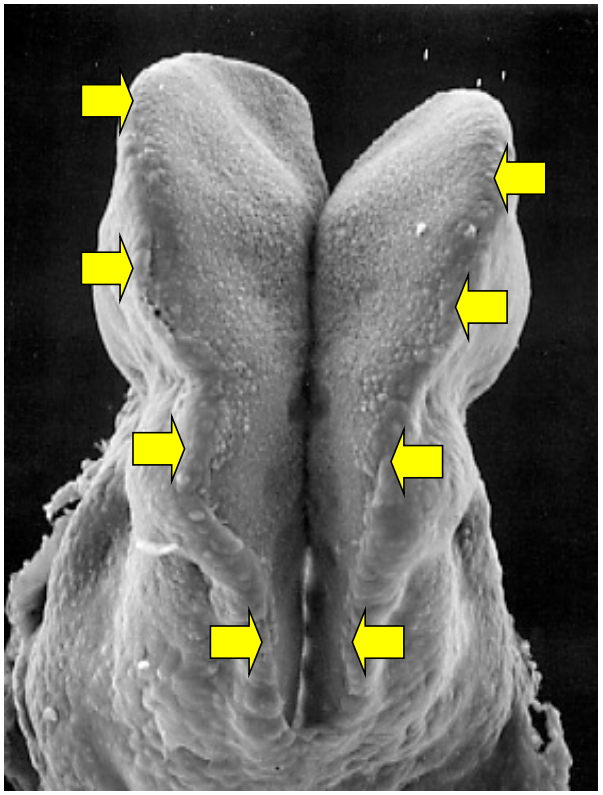
Visualization of the brain of a normal individual (A) and two with FAS (B,C) shows permanent loss of the tissue indicated by the arrows (portions of the corpus callosum).



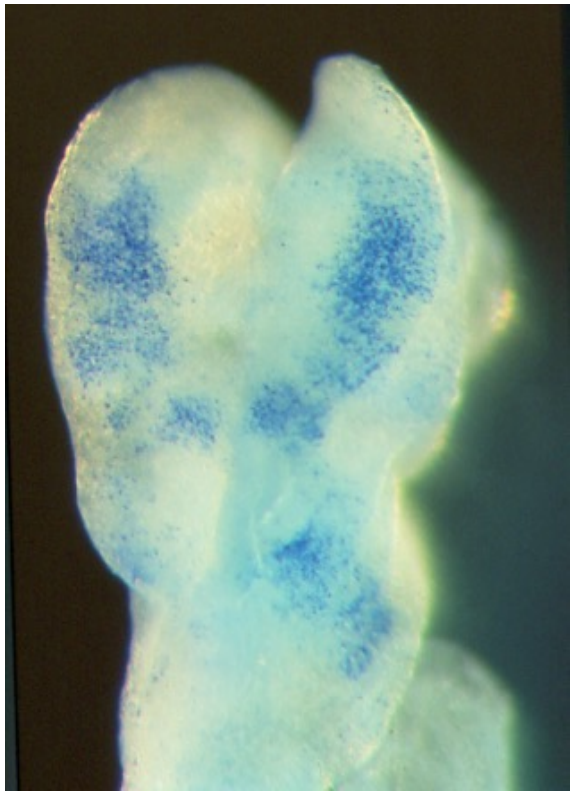
Normal FAS FAS

Images courtesy of Dr. S. Mattson

ALCOHOL KILLS SPECIFIC CELLS IN THE DEVELOPING BRAIN

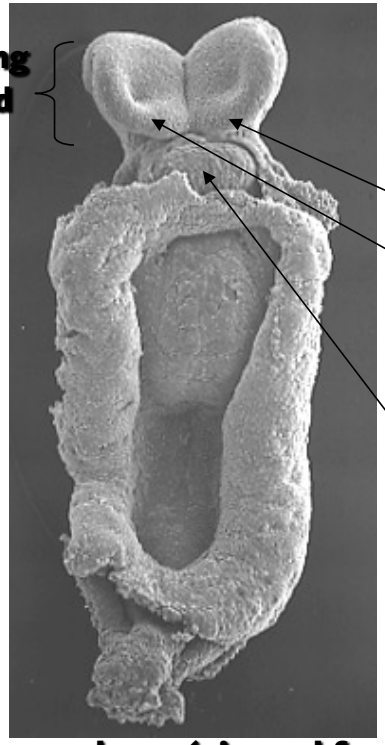


Arrows surround a portion of the brain of a mouse embryo (viewed from the back) that is at a developmental stage corresponding to a 22-23 day human.

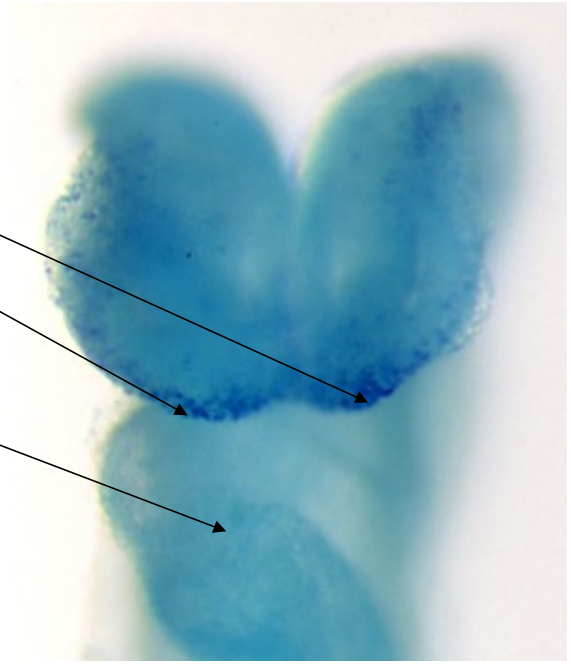


Cells killed by alcohol in the brain of a mouse embryo (at a comparable stage of development to that on the left) have taken up a dark blue stain.

CELLS THAT SHOULD FORM MIDLINE STRUCTURES OF THE BRAIN AND FACE ARE KILLED BY ALCOHOL

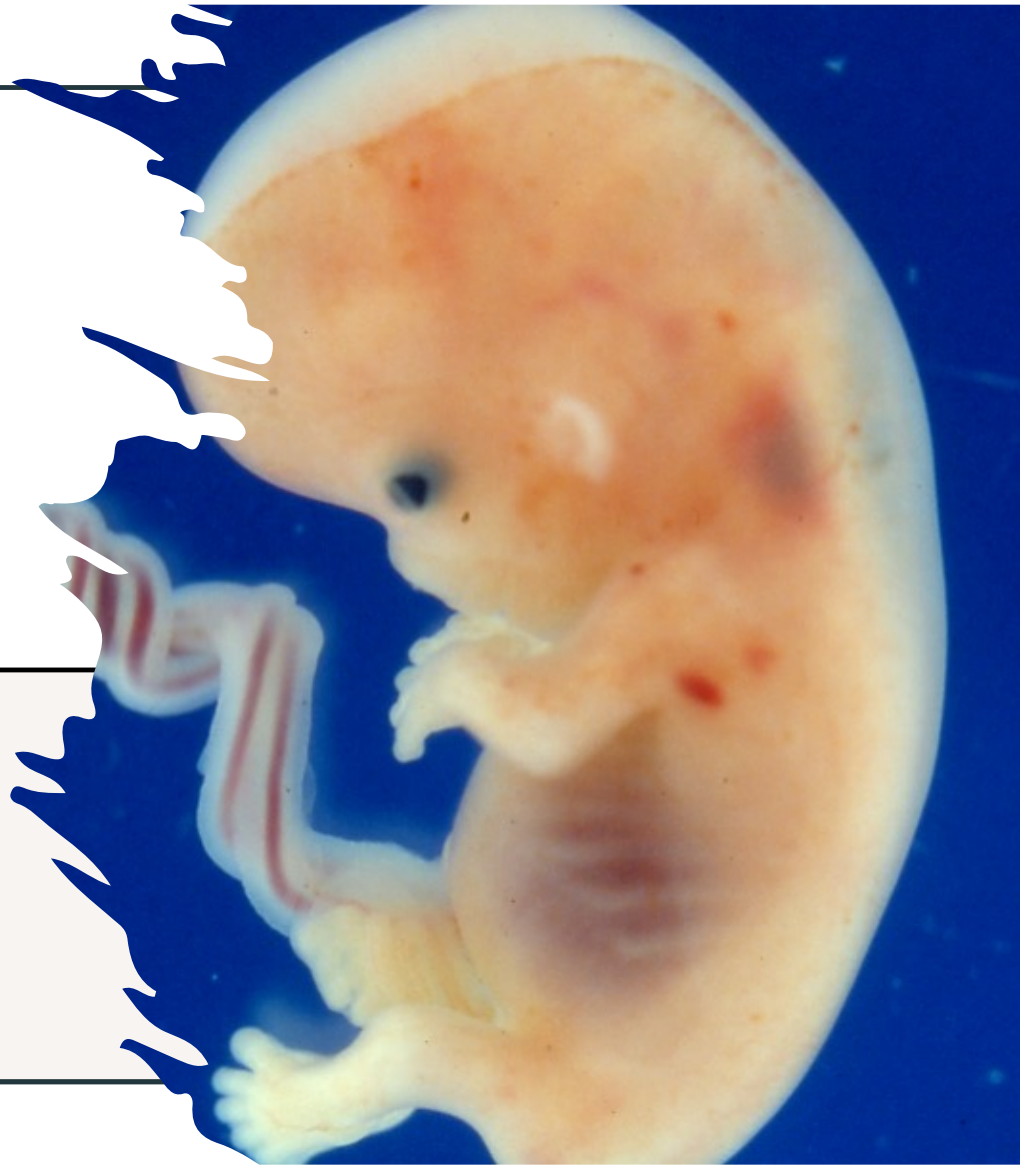


Mouse embryo (viewed from the front) at a stage corresponding to a 22-23 day old human.



A close-up view of an alcohol-exposed mouse embryo shows cells killed by alcohol that have taken up a dark blue stain.

By the ninth week of development the human fetus is about 24mm. long. Damage caused by alcohol to the brain at this time and until birth can result in abnormal brain function.



Excessive alcohol exposure can cause damage during all stages of prenatal development.

- **Pre-implantation: first 2 weeks**
- **Embryonic: 3-8 weeks after conception**
- **Fetal: from week 9 until birth**

Alcohol and Breastfeeding

When you drink alcohol, it passes into your breast milk at concentrations similar to those found in your bloodstream.

Although a breastfed baby is exposed to just a fraction of the alcohol his or her mother drinks, a newborn eliminates alcohol from his or her body at only half the rate of an adult.

The amount of alcohol taken in by a nursing infant through breast milk is estimated to be **5% to 6% of the weight-adjusted maternal dose**.

Alcohol can typically be detected in breast milk for about 2 to 3 hours after a single drink is consumed.

Alcohol and Breastfeeding

Ideally it is best to avoid breastfeeding for about **2 hours** after drinking one alcoholic beverage.

Women may want to express breast milk to relieve any engorgement for their own comfort.

They are minor and unlikely to have any long-term impact on your baby.

The only way they would potentially cause problems is if you were to drink heavily throughout the day.

The amount of alcohol that passes into breast milk is miniscule, less than a tenth of a percent of what you drink

Alcohol and Breastfeeding

“**There's nothing you can do to remove the alcohol from your milk once pumped;**

Since alcohol is not “trapped” in breastmilk (it returns to the bloodstream as mother's blood alcohol level declines), **pumping and dumping will not remove it**.

Drinking a lot of water, resting, or drinking coffee will not speed up the rate of the elimination of alcohol from your body either.

"If a mom is going to drink alcohol, she should wait **at least three to four hours** until breastfeeding the baby," said Dr. Herway. (The CDC says to wait a minimum of two hours.)

"The amount of alcohol in breast milk is very similar to the amount in the woman's blood and alcohol is a fast-acting drug,"

Alcohol and Breastfeeding

Waiting **two hours after each alcoholic drink to breastfeed** should allow the alcohol to leave your breast milk whether or not you pump and dump.

The half-life of alcohol is four to five hours. A half-life is how long it takes for your body to get rid of half of it.

It takes about five half-lives to get rid of alcohol completely.

So, it takes about **25 hours** for your body to clear all the alcohol


Opioid Use
Disorder and
Pregnancy

Women and Opioid Use Prenatal Care

Public Health Problem

Prescribed medications disproportionately

Complications are caused by the use and misuse of the prescriptions

Reasons for lacking Pre-Natal Care

- **Amenorrhea**
- **Homeless / lack of self-care**
- **High Risk Behaviors**
- **Medical Coverage**

ACOG Screening Guidance

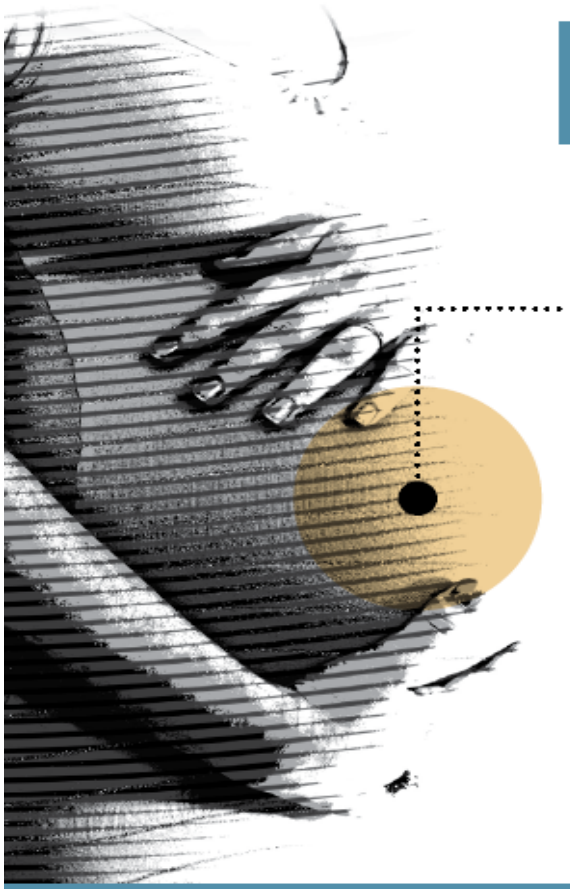
Screening for substance use should be part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with pregnant woman. Screening based only on factors, such as poor adherence to prenatal care or prior adverse pregnancy outcome, can lead to missed cases, and may add to stereotyping and stigma.

Early **universal screening, brief intervention** (such as engaging the patient in a short conversation, providing feedback and advice), and **referral for treatment (SBIRT)** of pregnant women with opioid use disorder improve maternal and infant outcomes.

Who can perform SBIRT? Physicians, nurse practitioners, physician assistants, nurses, health or substance use counselors, prevention specialists, and other health or behavioral health staff.

Source: ACOG. Opioid Use and Opioid Use Disorder in Pregnancy. Opinion No. 711. ACOG Committee Opinion on Obstetric Practice & the American Society of Addiction Medicine. Replace Opinion No. 524, May 2012. Published August 2017.

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018



ARE OPIOID PAIN MEDICATIONS SAFE FOR WOMEN WHO ARE PREGNANT OR PLANNING TO BECOME PREGNANT?

Possible risks to your pregnancy include[1,2]:

- **Neonatal Opioid Withdrawal Syndrome (NOWS):** withdrawal symptoms (irritability, seizures, vomiting, diarrhea, fever, and poor feeding) in newborns[3]
- **Neural tube defects:** serious problems in the development (or formation) of the fetus' brain or spine
- **Congenital heart defects:** problems affecting how the fetus' heart develops or how it works
- **Gastroschisis:** birth defect of developing baby's abdomen (belly) or where the intestines stick outside of the body through a hole beside the belly button
- **Stillbirth:** the loss of a pregnancy after 20 or more weeks
- **Preterm delivery:** a birth before 37 weeks

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

LEARN MORE | www.cdc.gov/drugoverdose/prescribing/guideline.html

Why use Medication Assisted Treatments?

Used to avoid withdrawal – why?

Maintain abstinence from heroin or other opioids that have compromised various life areas and are unknown in quantity and dose

- Unbridled use of street heroin can have many serious health impacts on the unborn baby leading to life long issues including but not limited to heart defects, language and developmental issues, glaucoma, spina bifida, premature birth, low birth weights, etc.
- Mothers can be impacted by toxemia, communal infections, Hepatitis C, HIV, hypertension, miscarriage and even death

Used during pregnancy to provide overall safety for the pregnant woman and the fetus

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

Medication Assisted Treatment (MAT) Options

Methadone

- Gold standard since 1960s for maintenance as well as to avoid withdrawl during detox. Category C by FDA
- Babies may be born with opioid acute withdrawl otherwise known as Neonatal Abstinence Syndrome (NAS)

Buprenorphine (Subutex)

- Babies born average weight and between 38-40 weeks
- Less traces of opioid in system therefore NAS usually less severe

Suboxone (Naloxone and Buprenorphine)

How does your birthing hospital handle patients with SUD - what is their philosophy? You need to know!

Next Steps

Neonatal Abstinence Syndrome (NAS)

Provide education regarding neonatal abstinence syndrome (NAS) and newborn care

- Infants born to women who used opioids during pregnancy should be monitored by a pediatric care provider for neonatal abstinence syndrome (NAS), a drug withdrawal syndrome that opioid-exposed neonates may experience shortly after birth.
  - Engage patients early on in care and inform them to seek a pediatrician around their third trimester
  - Ensure awareness of the signs and symptoms of NAS
- Include interventions to decrease NAS severity (eg, maternal-infant bonding and breastfeeding, smoking cessation)
- Educate patient that baby may cry inconsolably, have seizures and experience GI issues as well
- Symptoms can appear 3 hours to 12 days after birth
- Babies stay minimum of 5 days at CHS hospitals

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

NAS: Signs to Watch For

- Increased muscle tone “tightness”
- Poor eating or vomiting. Often, babies look like they want to eat, but they are not able to suck and swallow at the same time. Instead, they may take in a lot of air and become frantic, not able to eat. This can cause them to lose weight and have trouble putting weight back on

Source: Catholic Health Women Care NAS Pamphlet

**Use a modified NAS scoring system (eg, Finnegan’s, NWIS)*

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

NAS: Signs to Watch For

- High pitched or long periods of crying or fussiness. Often, a lot of loud high pitched crying occurs and it may be difficult to quiet your baby. Long periods of being unsettled can cause your baby to use up a lot of calories and lose weight
- Trouble sleeping. Without enough sleep, they tire out and are not able to eat properly

Source: Catholic Health Women Care NAS Pamphlet

**Use a modified NAS scoring system (eg, Finnegan's, NWIS)*

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

NAS: Signs to Watch For

- Tremors or shaking. Your baby may not be able to control his/her movements or self-console
- Diarrhea. This will cause your baby to lose weight and also puts skin in jeopardy of breakdown due to frequent stools
- Fever or sweating. Babies cannot control their temperature well, and sweating uses up a lot of calories

Source: Catholic Health Women Care NAS Pamphlet

**Use a modified NAS scoring system (eg, Finnegan's, NWIS)*

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

NAS: Signs to Watch For

- Frequent yawning or sneezing
- Difficulty breathing because of a stuffy nose, fast breathing, or forgetting to breathe
- Breakdown of skin on face or knees because of rubbing on the linen. This can also happen if baby is unable to self-console
- Possible seizures

Source: Catholic Health Women Care NAS Pamphlet

**Use a modified NAS scoring system (eg, Finnegan's, NWIS)*

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

Treatment Options for NAS

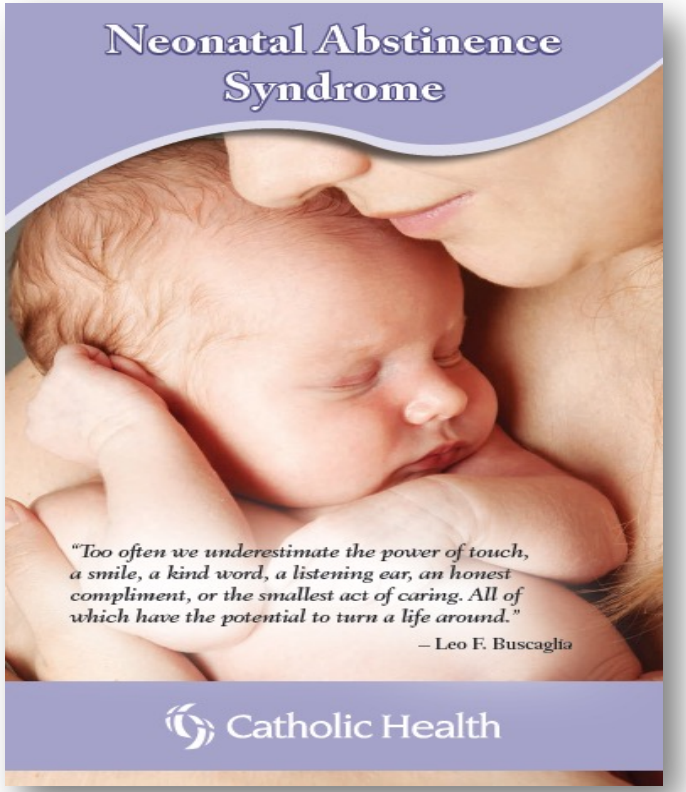
- Swaddling
- Cuddling
- Movement but with minimal sound and light
- Pharmacological interventions including morphine
- Bonding time with mom and/or dad

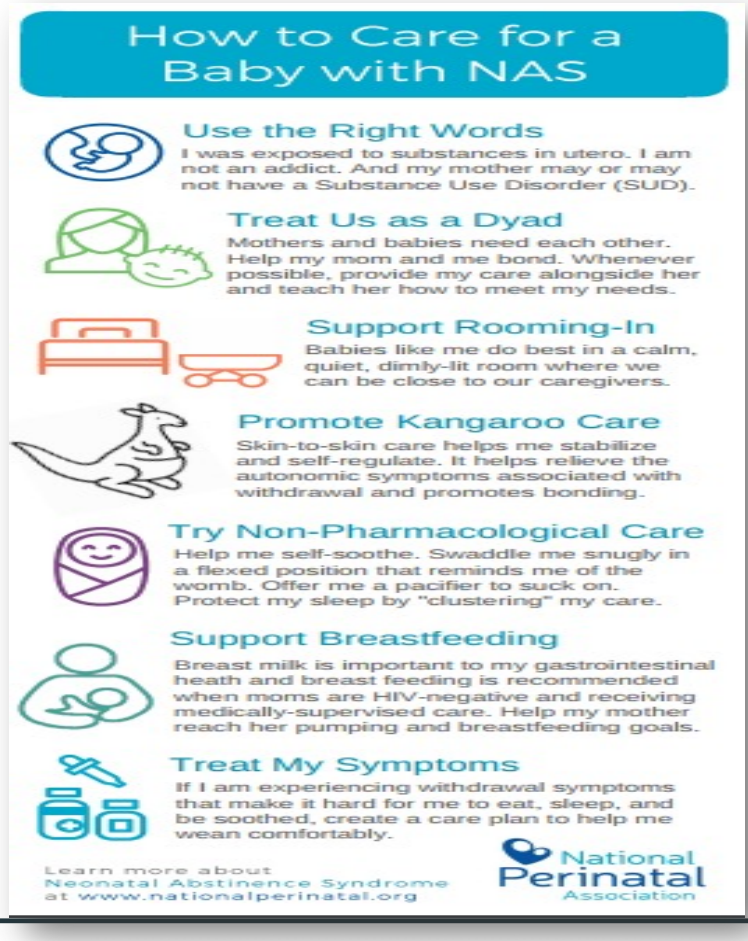
Source: Catholic Health Women Care NAS Pamphlet

**Use a modified NAS scoring system (eg, Finnegan's, NWIS)*

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

Resources

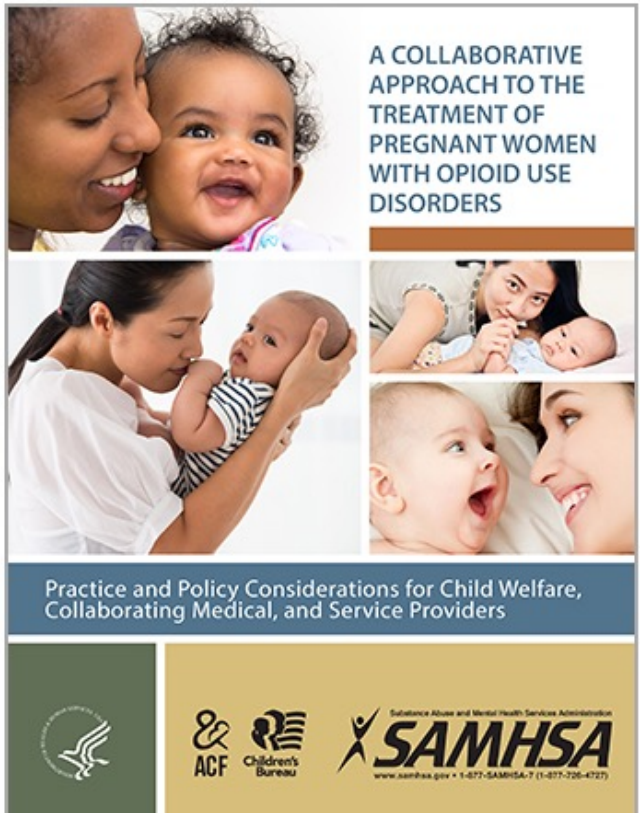




Sources: Catholic Health
National Perinatal Association

Some Information Adapted from ACOG District II Presentation Opioid Use Disorder Bundle, 2018

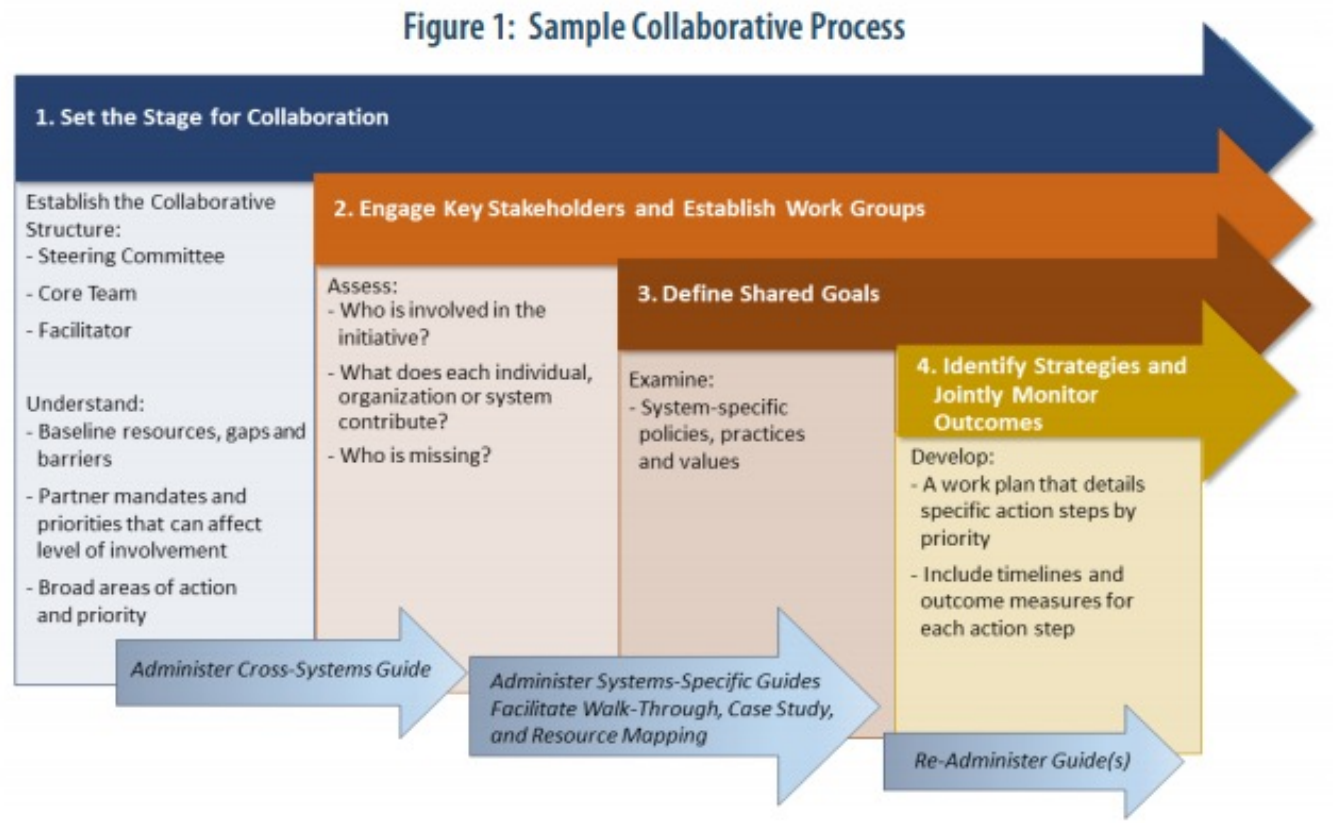
Resources



Compared to efforts by individual agencies and systems, collaboration across multiple agencies and systems, coupled with strong leadership and consistent communication, offers a more effective approach, a more efficient way of doing business, and ultimately leads to better outcomes.

Source: https://store.samhsa.gov/product/A-Collaborative-Approach-to-the-Treatment-of-Pregnant-Women-with-Opioid-Use-Disorders/SMA16-4978

Resources



Source: https://store.samhsa.gov/product/A-Collaborative-Approach-to-the-Treatment-of-Pregnant-Women-with-Opioid-Use-Disorders/SMA16-497801

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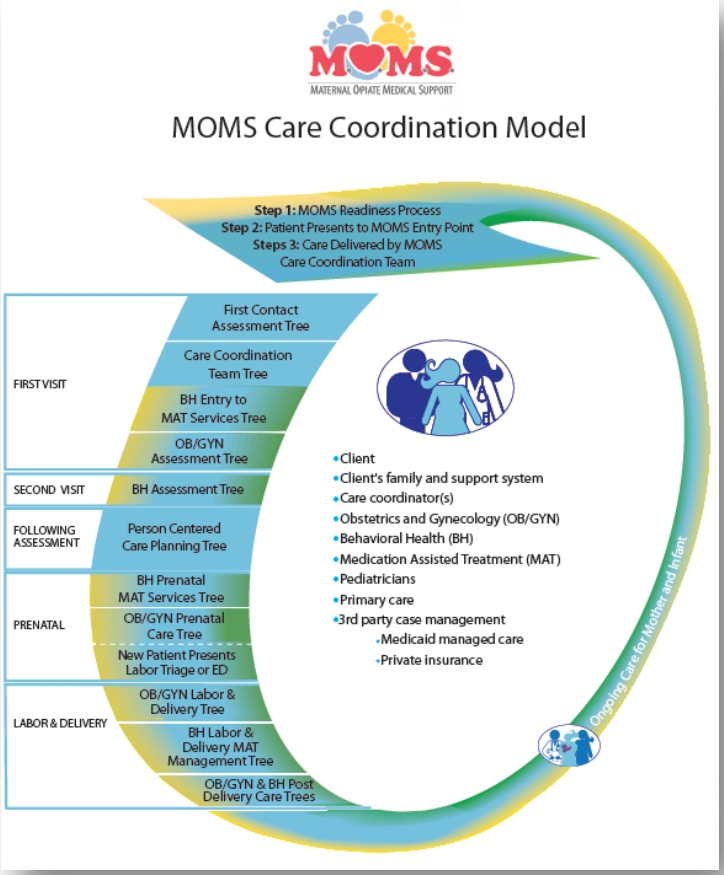

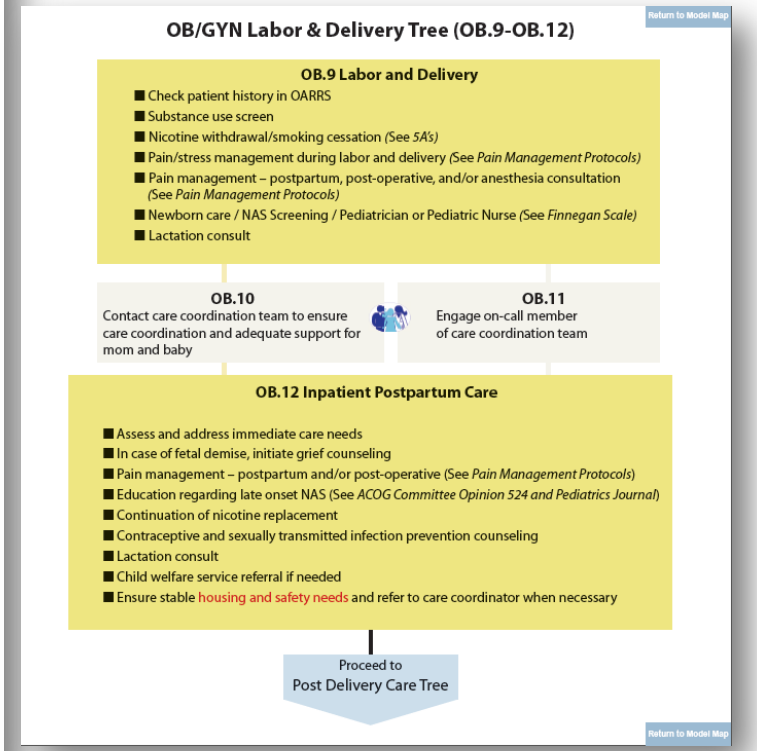

Source: http://momsohio.org/healthcare-providers/decision-trees/decisiontree-attributes/MOMS-Decision-Tree_F3_12-8-15.pdf

Created by ACOG District II in 2018

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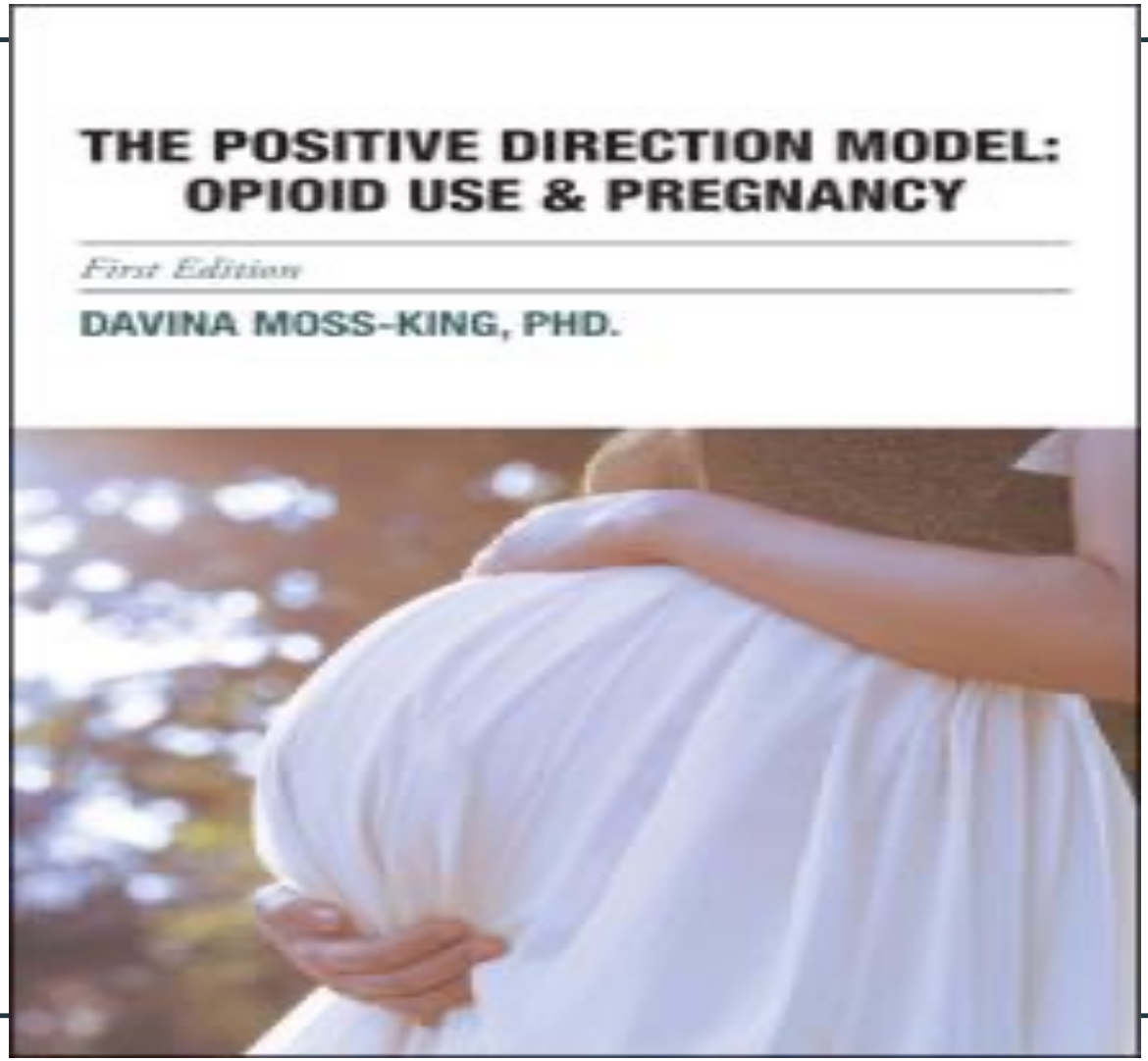
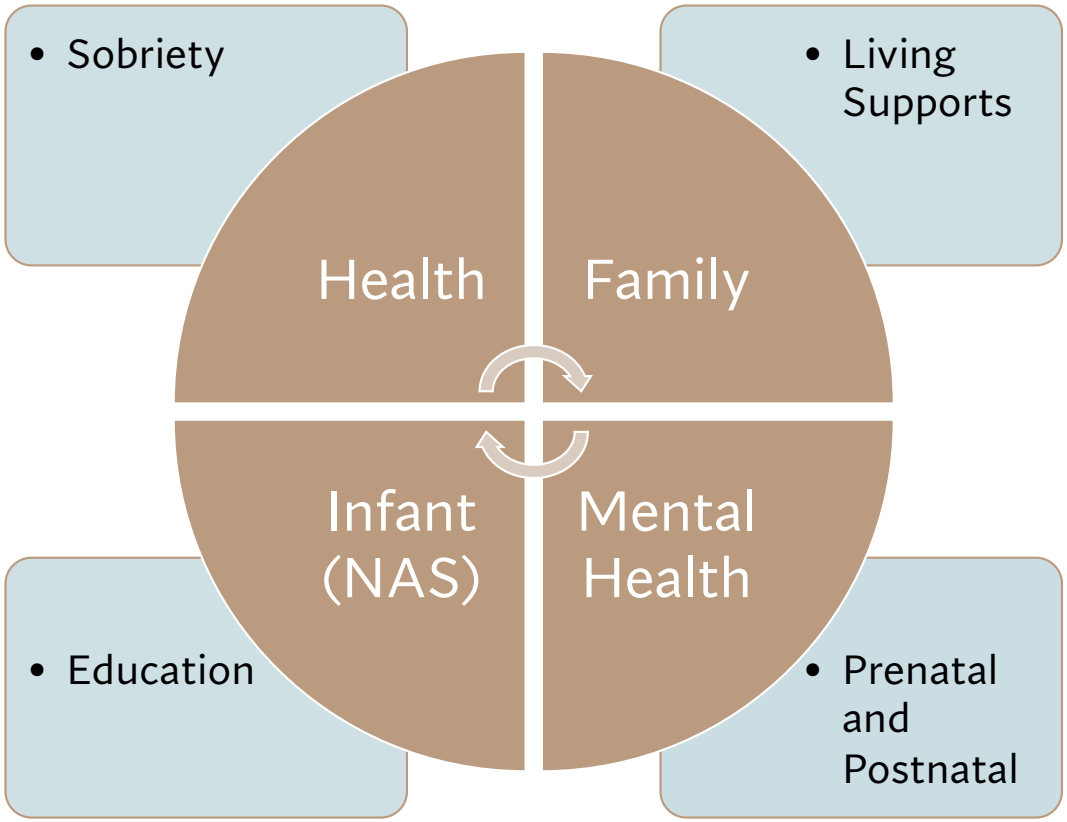

THE POSITIVE DIRECTION MODEL:
OPIOID USE & PREGNANCY
First Edition
DAVINA MOSS-KING, PHD.

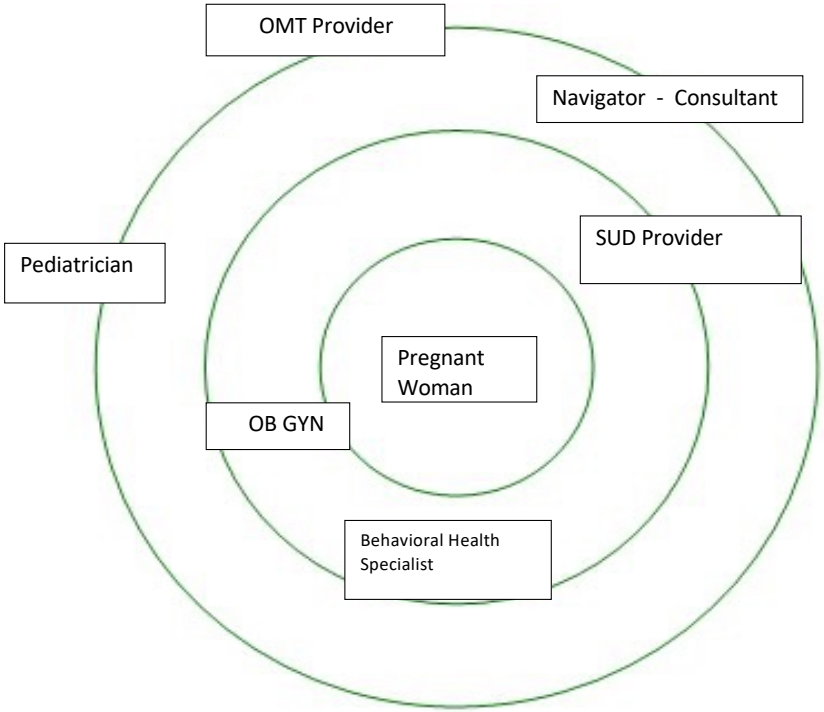
Positive Direction Model ™ Opioid Use & Pregnancy (2017)

- Collaborates with the OBGYN
- Communicates concerns regarding the recovery
- Develops treatment plans and shares with the physicians involved with the patient
- Provide intense education regarding effects of opioid use / other substances
- Provide education on Neonatal Abstinence Syndrome

The Counselor's Concerns



Positive Direction Model



Positive Direction Model for Opioid Maintenance Treatment during Pregnancy

PDM - Workbook

- Demographics
- Treatment Plan
- Continuity of providers
- Medication Assistant Therapy Letter
- Info for my baby
- Birthing Plan
- Discharge Plans
- Ready to Come Home Plan
- Breastfeeding chart

Methamphetamine

Animal studies regarding malformations and behavioral alterations are inconsistent.

In humans, most studies do not show a significant risk for malformations

3rd trimester use associated with low birth weight, prematurity, and withdrawal symptoms (jitteriness, drowsiness, and respiratory distress)

Possible long term impact on cognition and behavior; area of study.

Marijuana

Today's marijuana may be up to 20x more potent than in the past. Very little data on high potency exposures!

Conflicting reports with regard to teratogenicity--minimal risk for birth defects, but some evidence of subtle behavioral changes

Chronic use in 3rd trimester may cause problems with newborn adaptation

In some cases is "cut" with more dangerous agents

THC excreted in breast milk

Thank You For Your Time

Any Questions?