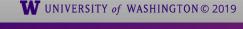
# Treating ADHD in Pregnancy & Postpartum

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#### **General Disclosures**

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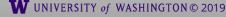
#### **Speaker Disclosures**

PAL for Moms phone consultation line for providers

State of Washington Health Care Authority

206-685-2924 OR 1-877-PAL4MOM, M-F 9-5







#### **Learning Objectives**

- Apply a basic algorithm for how to approach ADHD in pregnancy and postpartum
- 2. Name some risks of untreated ADHD during pregnancy
- 3. Recognize risks and benefits of pharmacologic options for ADHD in pregnancy and postpartum
- 4. Describe non-pharmacologic strategies for ADHD

### **Epidemiology**

- 3-4% prevalence of ADHD in adult women
- Comorbidities
  - Any mood disorder 38%
  - Any anxiety disorder 47%
  - Any substance use disorder 15%

Louik et al 2015







### **Prescribing Trends**

- Adult diagnoses of ADHD have increased
- Use of ADHD meds in pregnancy has increased from 0.2% in 1997 to 1.3% in 2013
- Among women prescribed ADHD meds in pregnancy:
  - Amphetamine-dextroamphetamine (Adderall) = 57.5%
  - Methylphenidate (Ritalin, Concerta) = 29.9%
  - Lisdexamphetamine (Vyvanse) = 5.7%
  - Atomoxetine (Straterra) = 3.4%





#### Case

Sarah is a 28 year old woman with ADHD, depression, and anxiety who would like to get pregnant in the next year.

- Current meds: Adderall 30mg ER
- ADHD symptoms are well-controlled
- Depression and anxiety are in remission



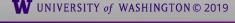
### **Confirm the Diagnosis**

- Inattentive and/or hyperactive symptoms
  - Adult ADHD Symptom Report Scale (ASRS)
- Symptoms cause impairment in two or more domains
- Age of onset, school history
- Rule out other potential causes (sleep apnea, anxiety, depression, substance use disorder)



### What are the risks of stopping meds?

- Functional impairment
  - Poor work performance, loss of employment
  - Decreased ability to care for older children
- Comorbidities
  - Increased anxiety or depression
  - Increased risk of substance use disorders & tobacco dependence
- Safety
  - Impulsivity
  - Driving risk, accidents
- Possible pregnancy outcomes associated with untreated ADHD
  - Miscarriage, preterm birth, NICU admissions





# What are non-medication options?

- Psychoeducation
- CBT for ADHD
  - Skills for task management and organization
  - Addressing common cognitive distortions
- Coaching
- ADHD support groups
- Reduce workload if possible
- Use public transport instead of driving

#### Sarah

- You've confirmed the diagnosis is correct
- Her symptoms are severe
- When her ADHD was previously untreated, her boss noticed decreased work performance, her depression and anxiety were much worse, and she smoked cigarettes
- She is the sole breadwinner in her family
- She has already completed CBT for ADHD and attends a support group regularly
- She says "There is no way I can make it through this pregnancy without a medication for my ADHD. I'll lose my job or start smoking again."

#### If you are thinking about meds ...

- Has she had a trial period off of medication in the past? What happened?
  - o If not, conduct a trial and track symptoms
- Has she failed other medications in the past?
- Is there time to trial a safer medication for pregnancy?
  - Meds can be started/stopped quickly with fast effects



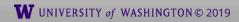
# What are the medication options?

- Stimulants increase synaptic dopamine
  - Methylphenidate (Ritalin, Metadate, Concerta), dexmethylphenidate (Focalin)
  - Amphetamine-dextroamphetamine (Adderall), dextroamphetamine (Dexedrine), lisdexamphetamine (Vyvanse)
- Non-stimulants
  - Bupropion (Wellbutrin) norepinephrine-dopamine reuptake inhibitor
  - Atomoxetine (Straterra) norepnephrine reuptake inhibitor
  - Guanfacine, clonidine alpha 2 adrenergic agonists



### **ADHD Medications in Pregnancy**

	Early Pregnancy	Late pregnancy	Breastfeeding?
	No consistent association with overall	Small increased risk of preterm birth.	
	defects (~5000 exposures); possible	Possible increased risk of	
	small increased risk of cardiac septal	preeclampsia, SGA, placental	Low levels in breastmilk,
	defects (NNH estimates range from	abruption, low Apgar score, NICU	undetectable in infant serum.
	92-333); possible increased risk	admission, CNS disorders, induced	Limited data without adverse
Methylphenidate	spontaneous abortions.	terminations	effects
		Small increased risk of preterm birth	
		and preeclampsia. Possible increased	Infant dose 5-15% maternal
Prescribed	No consistent association with	risk of SGA, placental abruption, NICU	dose. Very limited data without
amphetamines	malformations (~5500 exposures).	admission, CNS disorders.	adverse effects.
			Nursing infant exposed to 2%
	No consistent association with		maternal dose; 2 case reports
Bupropion	malformations (~2300)	No adverse effects (small studies)	of seizures at 6 months
	No consistent association with		
Atomoxetine	malformations (~450 exposures)	Mixed evidence (~700 exposures)	Unknown
Guanfacine	Too few exposures to say (~30)	Low birth weight (very small studies)	Unknown
			Excreted in breast milk. Adverse
	No based on data from women with		events reported (hypotonia,
Clonidine	HTN	Reduced fetal growth	drowsiness, apnea, seizure)

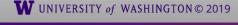






## What are the risks of stimulants in pregnancy?

- 2005 Expert Panel of the Center for the Evaluation of Risks to Human Reproduction concluded insufficient information to comment
- More studies since 2005
  - ~9000 exposures to prescribed amphetamines
  - ~7000 exposures to prescribed methylphenidate
- Issues with these studies
  - Treatment groups have psychiatric comorbidities, take more medical and psychotropic medications, and use alcohol, tobacco, and other substances.
  - Women with more severe ADHD are more likely to remain on stimulants during pregnancy







#### **Methylphenidate in Pregnancy**

No consistent association with overall Small increased risk of preterm birth. defects (~5000 exposures); possible Possible increased risk of small increased risk of cardiac septal preeclampsia, SGA, placental Low levels in breastmilk, defects (NNH estimates range from abruption, low Apgar score, NICU undetectable in infant serum. Limited data without adverse 92-333); possible increased risk admission, CNS disorders, induced Methylphenidate spontaneous abortions. terminations effects

This translates to an increase in the rate of cardiac malformations from 10 per 1000 births to 13-21 per 1000 births.

High doses may interfere with milk supply.





# Amphetamine Abuse in Pregnancy

- No consistent association with malformations
- Increased risk of miscarriage, gestational hypertension, preeclampsia, placental abruption, preterm birth, IUGR, lower Apgar scores, fetal/neonatal/infant death
  - Proposed mechanism of action: Vasoconstriction --> Decreased uteroplacental perfusion
- Withdrawal symptoms at birth (poor feeding, sleeping disruption, abnormal muscle tone, jitteriness, breathing difficulties)
- Children have increased risk of learning difficulties, behavioral problems, externalizing disorders, anxiety, depression, structural brain changes on MRI



# Prescribed Amphetamines in Pregnancy

Prescribed
Amphetamines
No consistent association with amphetamines
No consistent association with amphetamines
No consistent association with admission, CNS disorders.

Small increased risk of preterm birth and preeclampsia. Possible increased risk of preterm birth and preeclampsia. Possible increased risk of preterm birth and preeclampsia. Possible increased dose. Very limited data without adverse effects.

Preterm birth OR ~1.3 Preeclampsia OR ~1.3

High doses may interfere with milk supply.



### Tips for Prescribing Stimulants in Pregnancy

- Use the lowest dose possible
- Skip days if possible (e.g. weekends)
- Augment with non-pharmacologic strategies (CBT for ADHD, coaching)
- Monitor BP, maternal weight gain, and fetal growth



### Non-Stimulants in Pregnancy

	No consistent association with		Nursing infant exposed to 2% maternal dose;
Bupropion	malformations (~2300)	No adverse effects (small studies)	2 case reports of seizures at 6 months

Possible increased risk of miscarriage

	No consistent association with		
Atomoxetine	malformations (~450 exposures)	Mixed evidence (~700 exposures)	Unknown
Guanfacine	Too few exposures to say (~30)	Low birth weight (very small studies)	Unknown
			Excreted in breast milk. Adverse
	No based on data from women with		events reported (hypotonia,
Clonidine	HTN	Reduced fetal growth	drowsiness, apnea, seizure)

### **Treatment algorithm**

Mild ADHD without comorbidities	<ul> <li>Discontinue medication</li> <li>Optimize non-pharm strategies</li> </ul>
Moderate ADHD with functional impairment +/- associated comorbidities	<ul> <li>Assess for comorbidities</li> <li>Optimize non-pharm strategies</li> <li>Consider bupropion vs. prn stimulant</li> </ul>
Severe ADHD with functional impairment + comorbidities	<ul> <li>Continue stimulant at lowest effect dose (consider weekend drug holidays)</li> <li>Monitor maternal BP &amp; weight gain, monitor fetal growth</li> <li>Optimize non-pharm augmentation strategies</li> </ul>



#### Sarah

- Severe symptoms, sole breadwinner, failed bupropion, already did CBT for ADHD, has experienced depression/anxiety off meds as well as smoking
- Doing well on Adderall, wants to take a med, understands the risks

 Alternatively, what if Sarah's ADHD had been moderate, she was a non-smoker, she had never tried any other medications, and she worked part-time with a supportive partner and parent to help with childcare?

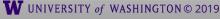


# What if Sarah were already pregnant?

Minimize exposures to the fetus

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