

# **Attention-Deficit Hyperactivity Disorder**

Progressive Case Conference Facilitator's Guide

# Contributors

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## **Pre-Assessment Learning**

Before attending this session, please review the ADHD self-study guide.

## Overview

Attention-deficit hyperactivity disorder (ADHD) has been increasingly diagnosed in adults, leading to a greater number of women of reproductive age who are using stimulants to address ADHD. In addition, it is plausible that the increased number of tasks in motherhood as well as cognitive changes in the brain during pregnancy and postpartum can impact the course of ADHD, although little data exists in this area overall. This section will highlight the course of ADHD in pregnancy and focus on both nonpharmacologic and pharmacologic treatment strategies in pregnancy and postpartum.

## Session

Review self-study materials (10 min) Apply knowledge to a new case (40 minutes) Wrap-up (10 minutes)

## **Learning Objectives**

- 1. Appreciate the interface of pregnancy and postpartum on the natural history of ADHD
- 2. Understand changes in the course of ADHD throughout pregnancy and postpartum
- 3. Discuss the safety profile of medication management of ADHD in pregnancy and postpartum
- 4. Understand nonpharmacologic treatment options for ADHD in pregnancy and postpartum

## **Case Presentation**

#### Part 1a: Preconception



Rani is a 34 year old woman who presents to a reproductive psychiatrist for a preconception consultation regarding the management of ADHD in pregnancy. She is married, lives with her husband, and works full-time as a financial consultant. Rani reports that in elementary school, teachers had noted excessive distractibility and fidgeting, interfering with learning. Her family history was notable for ADHD in her father and an undiagnosed anxiety disorder in her mother. After extensive neuropsychological testing was performed, she was diagnosed with attention-deficit hyperactivity disorder, combined type. She was subsequently started on Ritalin and received testing

accommodations throughout the rest of her schooling. Since graduating from college, she has worked for the same

Copyright © The National Curriculum in Reproductive Psychiatry and Marcé of North America employer and continues to perform well with a set routine. She was eventually switched over to Adderall to good effect. She has received excellent reviews at work and is proud of her high performance despite her ADHD diagnosis. She currently takes Adderall XR 20 mg PO qAm and Adderall IR 5 mg PO q2-3pm.

## FACILITATOR PAUSES FOR DISCUSSION

1. What points of discussion should her psychiatrist mention during the visit regarding the natural history of ADHD in women of reproductive age?

*Facilitator elicits the following:* 

- ADHD affects 4% of all adults in the US.
- It is sometimes thought that children always grow out of ADHD, but this is not true; 50% of cases persist into adulthood and adults can be newly diagnosed with ADHD.
- If present, the problems will be noticed in most settings home, work, social life and can have a negative impact on work performance and cause financial strain.
- It is also strongly associated with other mental health disorders, such as mood and anxiety disorders and substance abuse (Freeman 2014, Kolar 2008).
- Specifically, in relation to females a study by Biedermann et al (2012) noted that one third of girls with childhood ADHD will continue to have the diagnosis as adults and 10% of them will have functional impairment - meaning an effect on their home or professional life.

2. What points of discussion should her psychiatrist mention with regard specifically to the course of ADHD in pregnancy and postpartum?

*Facilitator elicits the following:* 

- Currently, there are no comprehensive studies examining the natural history of ADHD in pregnancy and postpartum. Many important questions, such as any effect of pregnancy hormones on cognition, remain unanswered.
- Some women notice that their symptoms get worse in pregnancy, and women without ADHD may notice ADHD-like symptoms (sometimes colloquially known as "baby brain" or "pregnancy brain").
- Some imaging studies suggest that regions of the brain responsible for organization and memory function differently in the postpartum period (Bannbers et al. 2013; Hoekzema et al. 2017).
- Increasing use of stimulants in adults, including women of reproductive age, leads to increasingly frequent medication exposure in pregnancy (Huybrechts 2018)
- Treatment decisions are often impacted by pregnancy, because many women wish to avoid stimulants, thus are under-medicated while still trying to achieve work and family goals. Thus, psychiatrists will have to address issues such as impaired driving and impaired occupational/social functioning during pregnancy and postpartum (Freeman 2014).
- Patients with ADHD may be a vulnerable subgroup impacted by even subtle changes in neurocognition in pregnancy (Freeman 2014).
- Individuals with ADHD may be more vulnerable to unplanned pregnancies, younger age of parenthood, and greater incidence of divorce.

## Part 1b: Preconception

Rani and her psychiatrist then discuss medication use of ADHD medications in pregnancy itself. Rani mentions that she feels worried because she had read on the internet that stimulants are "totally harmful" in pregnancy and should never be used, but on the other hand she worries about how she is going to perform at work and manage at home without being on medications at all.

#### FACILITATOR PAUSES FOR DISCUSSION

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1. What are the medication options for treating ADHD during pregnancy itself, and what should the psychiatrist mention in terms of their safety profile?

Facilitator elicits the following:

- Options:
  - Stimulants: methylphenidate, amphetamines
  - Nonstimulants: bupropion, atomoxetine, guanfacine
- Stimulant safety profile:
  - Ability to draw a safety profile is limited: much of current literature is drawn from drugs of abuse. Additionally, much of the data includes patients with significant comorbidities and more than one medication used (Freeman 2014).
  - Stimulants cause vasoconstriction thus potentially decreasing blood flow to the placenta. Impaired uteroplacental perfusion has been linked to small increases in relative risk of pre-eclampsia, placental abruption, fetal growth restriction, fetal hypoxia and preterm birth (Cohen 2017).
  - Potential small increase in relative risk of perinatal adverse outcomes including increase in NICU admission after birth and CNS disorders such as seizure, but confounding variables couldn't be completely ruled out (Norby 2017)
  - The timing of exposure may determine the impact on fetal growth—in some studies, birth weight was not affected when stimulant was discontinued prior to week 28 (Freeman 2014).
  - The most frequent delivery complication is fetal hypoxia, and the most frequent maternal side effect is decreased maternal appetite (Freeman 2014).
  - There may be a low associated risk of cardiac malformations with methylphenidate exposure but not amphetamines; this was not statistically significant in a single study but pooled analysis suggested a small increase in relative risk--although they couldn't completely rule out confounding variables (Huebrechts 2018, Andrade 2018).
  - Behavioral teratogenicity: there are few human studies, and they are limited to stimulants in context of substance abuse (such as studies of prenatal cocaine exposure). In general, stimulant use is generally not found to have impairment on standard cognitive tests or language/motor development. But the heaviest maternal cocaine use is linked to subtle effects in executive functioning (Freeman 2014).
- Nonstimulant safety profile:

- Bupropion:
  - May be a reasonable option if a woman has been exposed to it before with good effect, with concurrent depression, and/or need for smoking cessation (Freeman 2014)
  - See safety profile in antidepressant section [link to antidepressants section module]
- Atomoxetine :
  - May be an option in pregnancy. Retrospective cohort study showed no congenital malformation in exposed pregnancies (Bröms 2023)
- Guanfacine
  - No systematic studies in human pregnancy for this agent (Freeman 2014)

2. Rani asks if there are any situations in which she can take her stimulant in pregnancy. How should the psychiatrist respond?

Facilitator elicits the following:

- It is imperative that the benefit of a medication be robust enough to justify any potential exposure during pregnancy (Freeman 2014)
- Consider a medication-free trial prior to conception including focusing on psychotherapy targeting ADHD symptoms in order to assess impact on functioning off of stimulants

- If trying to conceive, a woman may discontinue stimulants either prior to pregnancy or once pregnancy is achieved, as early teratogenic effects are unlikely. (Freeman 2014)
- One example of potential use: an unavoidable and unplanned increase in work stress and workload; consider a short-term plan of low doses of methylphenidate for a short period of time (ideally prior to 28 weeks), e.g. two to three weeks, then discontinue when work stress abates
- If stimulants are used, include a plan for minimizing exposure including the lowest effective dose, drug holidays (e.g. only during the work week and not on weekends), and the use of immediate release formulations rather than sustained release

## 3. Rani and her psychiatrist then discuss nonpharmacologic treatment options.

## Facilitator elicits the following:

- Psychoeducation: reviewing the symptoms of the disorder, how ADHD impacts their lives and relationships, how to recognize symptoms, and how to address it (Kolar 2008).
- Psychotherapy:
  - Cognitive-behavioral therapy (CBT) has evidence to support its efficacy in the treatment of ADHD (Kolar 2008, Mongia 2012, Safren 2010).
  - A recent randomized controlled clinical trial also supported the efficacy of mindfulness-based cognitive therapy (vs treatment as usual) in adults with ADHD, although this hasn't been specifically applied yet to pregnant patients with ADHD (Janssen et al)
  - Other strategies that have been tested are group cognitive-behavioral therapy, dialectic behavioral therapy, ADHD coaching (focusing on organizational skills), structured relaxation, and mindfulness (Kolar 2008, Kubik 2010).
- Functioning:
  - Consider impact of driving impairment (Freeman 2014)
  - Change in workplace functioning/scheduling (Freeman 2014)

## Part 2: Sixteen Weeks Pregnant

Rani presents at 16 weeks gestation having tapered off and discontinued all stimulants prior to getting pregnant. She reports that initially she was worried about the worsening of her ADHD symptoms. She describes that she lost her employee badge, missed an important project deadline, was chronically running late to meetings and failed to submit her monthly expenses. She is worried about her job performance and has lost sleep over it.

However, Rani then starts to implement the nonpharmacologic treatment options, and for an important deadline she used low dose stimulants for a brief period of time (2 weeks). To minimize potential exposure, she worked on using the lowest effective dose of the stimulant and decided to take it only during the work week and not on the weekends. She also decided to use the immediate release formulation of the medication instead of the sustained release with the aim of reducing exposure as well. She reports that CBT for ADHD has given her some practical approaches to organizing and prioritizing her tasks. She walks 2 miles a day and is practicing mindfulness techniques. Her workplace made some accommodations for her. She moved to a corner office with more privacy and less distractions. She is able to start her day at 9 AM instead of at 8 AM and work from home on Fridays.

## Part 3: 33 Weeks Pregnant

Rani returns at 33 weeks, she reports that her ADHD feels under control, is well managed and she is able to sleep better. She and her psychiatrist have made a plan to meet with her husband to plan for the postpartum period. Her OBGYN is pleased with her blood pressure control and weight progression. Fetal growth and development is normal. She asks about the postpartum period and lactation. She and her husband have made a plan to get some help with some household chores and give her breaks in the evenings.

## FACILITATOR PAUSES FOR DISCUSSION





1. What is the relationship of stimulant use in breastfeeding?

Facilitator elicits the following:

- Only sparse data is available regarding stimulant use in breastfeeding (Freeman 2014, Bolea-Alamanac 2014)
- It is conceivable that since late pregnancy use of stimulants could impact fetal growth, that stimulant use in pregnancy could impact infant growth as well as having adverse impact on infant appetite and sleep (Freeman 2014)
- Report of a total of three mother-infant pairs: no adverse events were noted in mothers taking methylphenidate (Bolea-Almanac 2014)

## **Resources for Adults with ADHD**

1. Taking Charge of Adult ADHD - 1st Edition, by Russell A. Barkley (Author)

2. Mastering Your Adult ADHD: A Cognitive-Behavioral Treatment Program, Client Workbook (Treatments That Work) Paperback – 15 Jun 2017 by Steven A. Safren (Author), Susan E. Sprich (Contributor), Carol A. Perlman (Contributor)

3. Understand Your Brain, Get More Done: The ADHD Executive Functions Workbook Paperback – April 1, 2012 by Ari Tuckman PsyD MBA (Author)

4. The Mindfulness Prescription for Adult ADHD: An 8-Step Program for Strengthening Attention, Managing Emotions, and Achieving Your Goals Paperback – 28 Mar 2012 by Lidia Zylowska (Author)

5. Women with Attention Deficit Disorder - May 1, 2005 by Sari Solden (Author), MS (Author)

6. You Mean I'm Not Lazy, Stupid or Crazy?!: The Classic Self-Help Book for Adults with Attention Deficit Disorder Paperback – April 25, 2006 by Kate Kelly (Author), Peggy Ramundo (Author), Edward M. Hallowell M.D. (Foreword)

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