ADULT ADHD- Are we missing the diagnosis in our female patients?

Grand Rounds March 5th, 2026

Dr. Tina Kappos

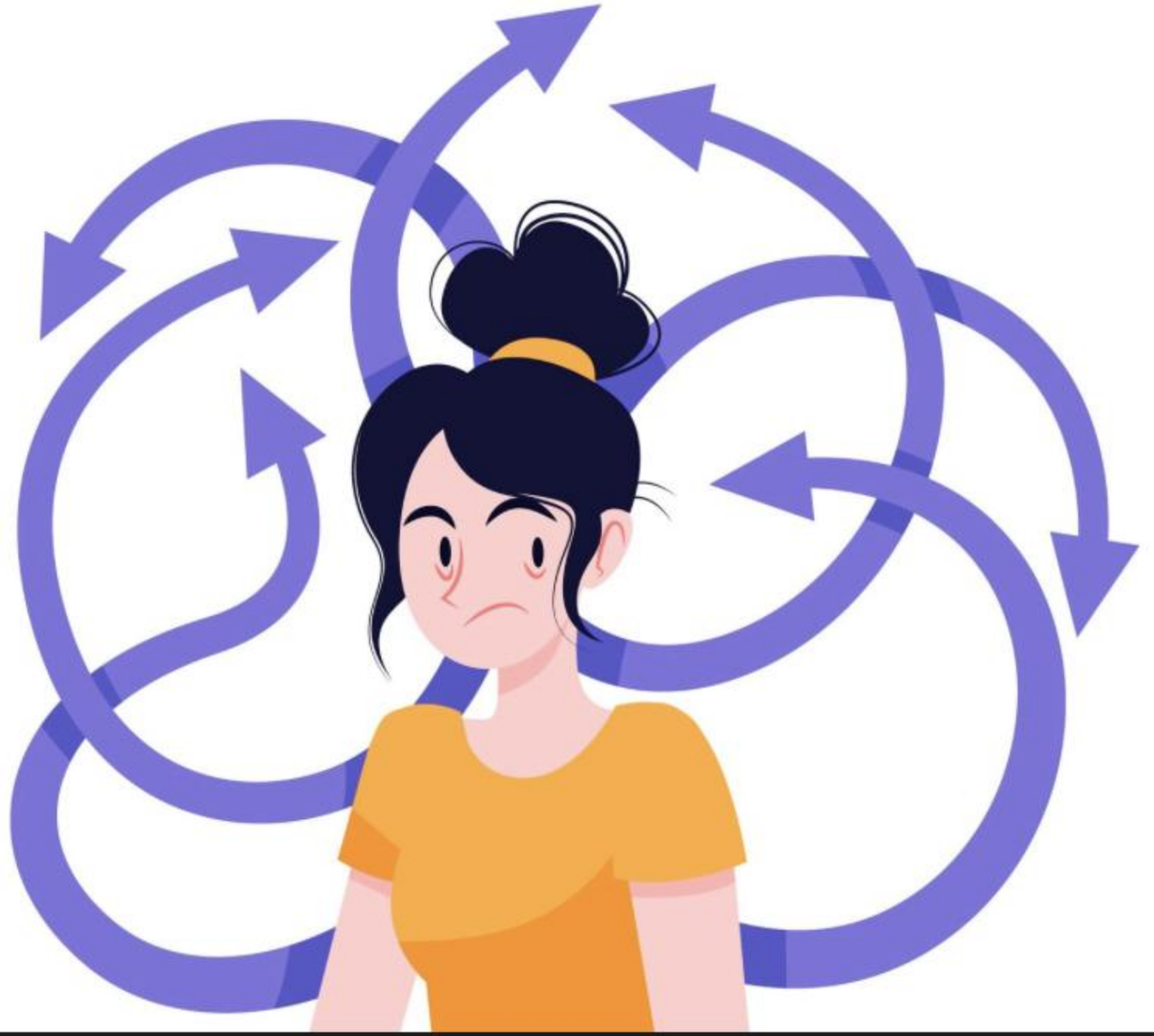
OBJECTIVES

By the end of today's session, attendees should be able to:

- 1. Describe how ADHD presents in females and how ADHD intersects with other common mental health comorbidities
- 2. Describe non-pharmacological treatment options and resources available for counselling and coaching
- 3. List treatment strategies for ADHD during pregnancy and postpartum
- 4. List contraindications to the use of 1st line stimulant and 2nd line non-stimulant ADHD medications and list their common side effects

ADHD

ATTENTION-DEFICIT/HYPERACTIVITY DISORDER



Females, Hormones and ADHD - Webinar

Share The Love

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Dr. Sara Binder is a consulting psychiatrist at the Foothills Medical Centre in Calgary. She treats adult outpatients who struggle with mood, anxiety, ADHD and substance use disorders. As part of her practice she teaches and supervises psychiatry residents and multidisciplinary students training in mental health. She treats many health care professionals within her practice.

Dr. Binder created an Adult ADHD stream within her clinic which has become one of the only publicly funded adult ADHD clinics based in a hospital setting in Canada.

Dr. Binder works with a team of skilled therapists within a collaborative model of mental health care. She developed and runs an ADHD medication group and an 8 week CBT based ADHD Skills group.

Dr Binder is the Vice Chair of CADDRA and the co-chair of the Education Committee. She is passionate about ADHD – both the clinical aspects but also in educating other healthcare professionals in managing ADHD in adults.

CEP Attention Deficit Hyperactivity Disorder (ADHD) in Adults March 19, 2025

Consider screening for ADHD those adults presenting with executive function difficulties

- Treatment-resistant anxiety and/or depression
- Family hx of ADHD
- Difficulty with transitions in life- eg. University/college, living independently, work/promotion,parenthood, menopause
- Occupational instability, perceived underachievement
- High-risk behaviour (e.g. substance misuse, driving offences, legal difficulties)

Consider screening for ADHD those adults who present with executive function difficulties

- Suicidal behaviour, ideation
- Emotional dysregulation
- Family dysfunction
- Eating issues/fluctuating weight (e.g. binge eating)
- High caffeine tolerance
- Atypical response to stimulants (I.e. calming effect on initial use- eg. Cocaine)

DSM-5 Diagnostic Criteria for ADHD

- Symptoms and/or behaviours have persisted >6 months in > 2 settings (e.g. school, home, work)
- Symptoms have negatively impacted academic, social, and/or occupational functioning
- Symptoms present prior to age 12 yrs
- In those over 17 yo, > 5 symptoms are necessary for diagnosis
- CORE DOMAINS include:
- INATTENTION. HYPERACTIVITY. IMPUSLIVITY

DSM-5 Diagnostic Criteria for ADHD

Inattentive Type Diagnosis Criteria

- Displays poor listening skills
- Sidetracked by external or unimportant stimuli
- Loses and/or misplaces items needed to complete activities or tasks
- Lacks ability to complete schoolwork and other assignments or to follow instructions
- Avoids or is disinclined to begin homework/activities requiring concentration
- Fails to focus on details, makes thoughtless mistakes in work, assignments

DSM-5 Diagnostic Criteria for ADHD

Hyperactive Type Diagnosis Criteria

- Squirms when seated or fidgets with feet/hands
- Marked restlessness that is difficult to control
- Appears to be driven by a “motor” or is often “on the go”
- Overly talkative

DSM-5 Diagnostic criteria for ADHD

Impulsive type diagnosis criteria

- Difficulty waiting their turn
- Interrupts or intrudes into conversations and activities of others
- Impulsively blurts out answers before questions completed

DSM-5 Diagnostic Criteria for ADHD

CLASSIFICATION

- Combined Type- patient meets both INATTENTIVE and HYPERACTIVE/IMPULSIVE criteria for > 6 months
- Predominantly INATTENTIVE type
- Predominantly HYPERACTIVE/IMPULSIVE type

Adult ADHD Self-Report Scale (ASRS-v1.1)

Part A

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name		Today's Date	

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					

Part A

Adult ADHD self-report scale (ASRS-V1.1)

Symptom checklist to screen patients for ADHD

- The six questions in Part A of the Symptom Checklist were found to be the most predictive of symptoms consistent with ADHD
- If four or more marks appear in the darkly shaded boxes within Part A then the patient has symptoms highly consistent with ADHD in adults and further investigation is warranted

GENDER DIFFERENCES IN ADHD

GENDER DIFFERENCES in ADHD

Quinn P, Madhoo M. Prim Care Companion CNS Discord. 2014;16(3)

- MALES:
- more likely to present earlier in development and more likely to have learning disorder or oppositional defiance disorde
- more likely to present with externalizing behaviours, hyperactivity and impulsivity
- more likely to be referred for assessment of ADHD

GENDER DIFFERENCES in ADHD

Quinn P, Madhoo M. Prim Care Companion CNS Discord. 2014;16(3)

- FEMALES
- More likely to have INATTENTIVE type of ADHD, which often goes undiagnosed until adulthood
- Less likely to be referred for assessment for ADHD
- More likely to present with internalizing symptoms and comorbid MDD/anxiety
- More likely to develop emotional disorders in adolescence- MDD, anxiety disorder, eating disorder

ADHD in Adolescent Girls

Rucklidge JJ. Psychiatr Clin North Am. 2010 Jun;33(2):357-373

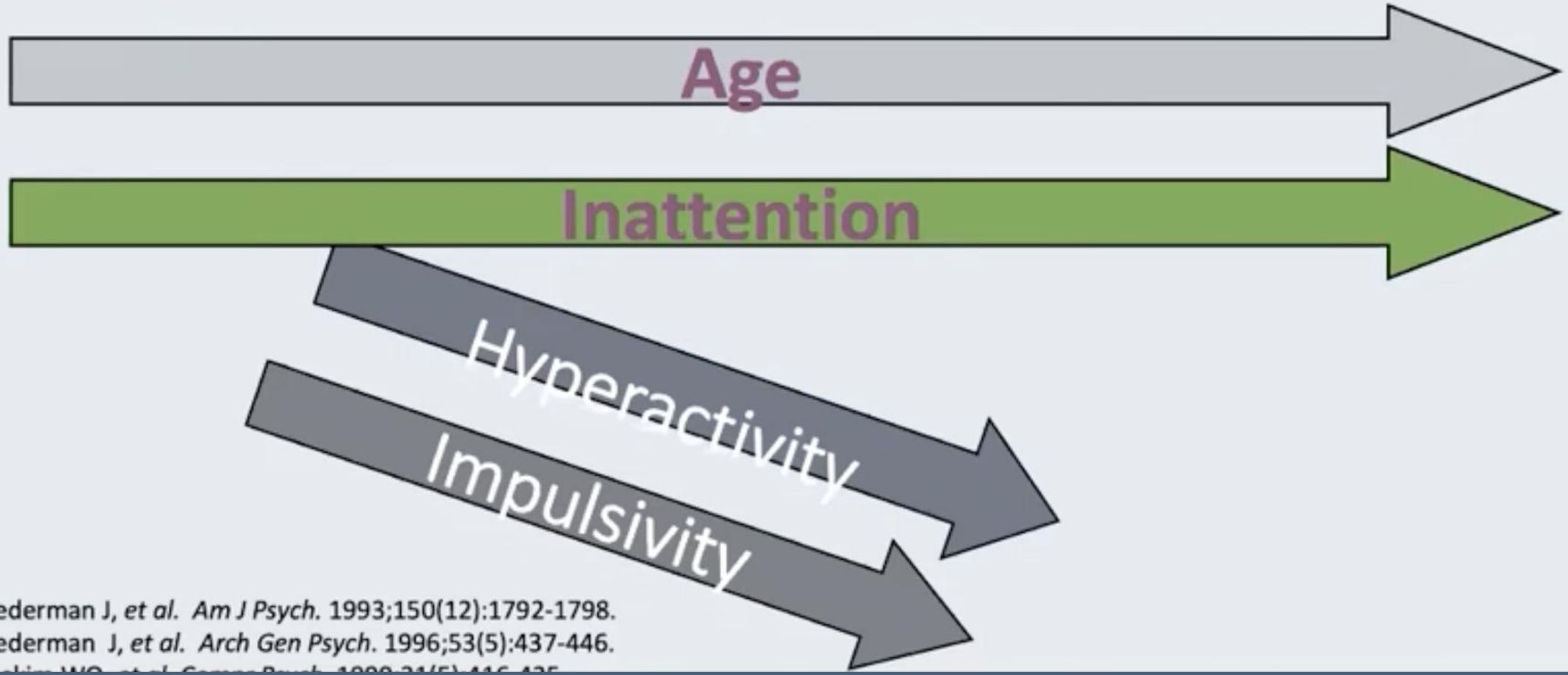
- Lower self-efficacy, poorer coping strategies
- Higher rates of MDD, anxiety
- Impulsivity associated with untreated ADHD- may lead to unplanned pregnancies & STIs

Women with ADHD

Babinski D et al. J Atten Disord. 2011;15:204-214
Fedele D et al. J Atten Disord. 2012;16:109-117

- On average, women with ADHD have:
- Lower socioeconomic status than their non-ADHD female peers
- Problems in dating and marital relationships, social activities, completing daily responsibilities

Course of ADHD



Biederman J, *et al. Am J Psych.* 1993;150(12):1792-1798.
Biederman J, *et al. Arch Gen Psych.* 1996;53(5):437-446.

Comorbid Problems can Complicate ADHD Evaluation

- 50-90% of children with ADHD have at least one comorbid condition
- 85% of adults with ADHD meet criteria for a comorbid condition
- Treatments for the co-morbid illness may worsen ADHD

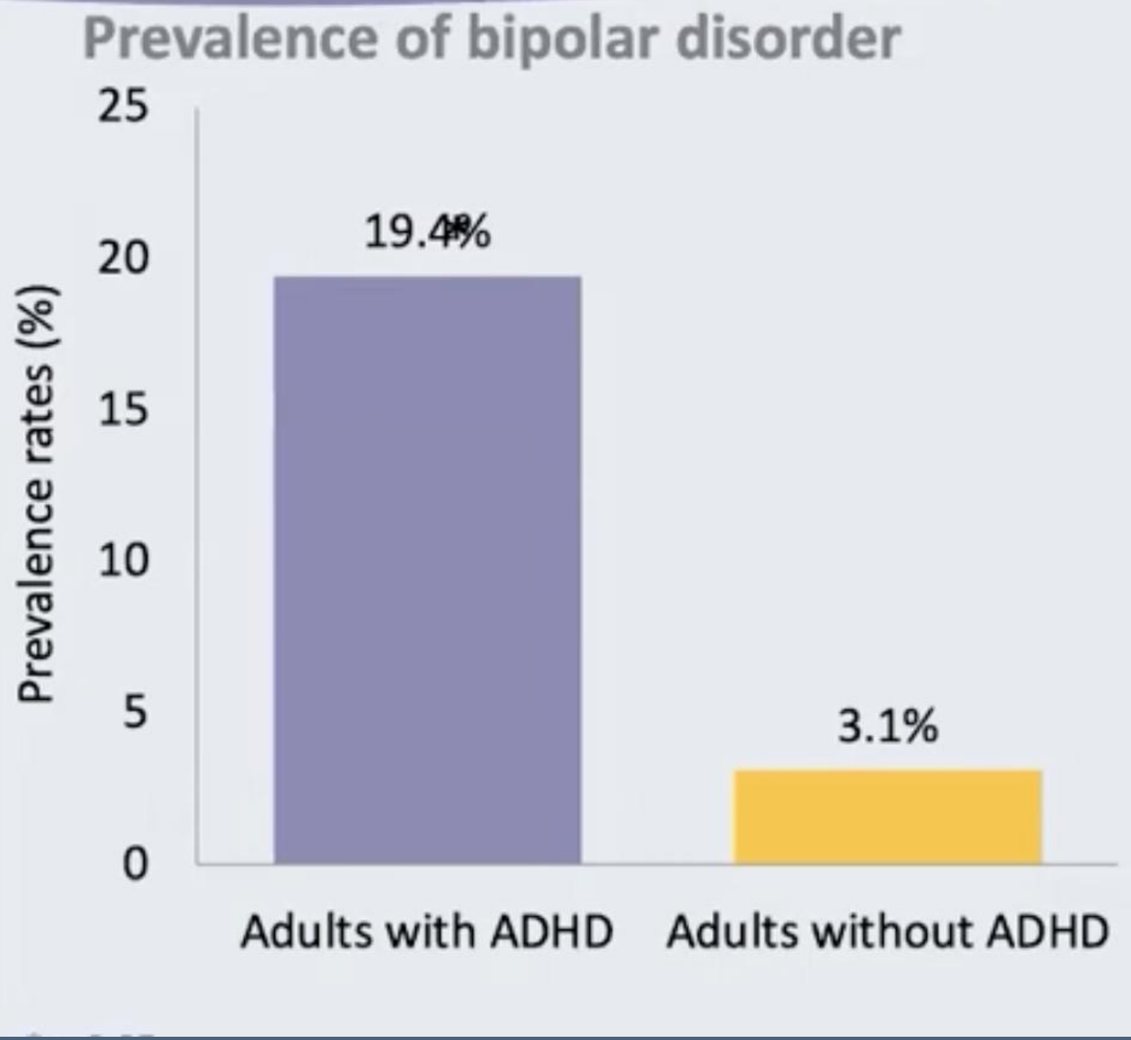
Kessler RC, et al. *Am J Psychiatry*. 2006;163:716-723.
Cumyn L et al. *Can J Psychiatry*. 2009;54(10):673-683.

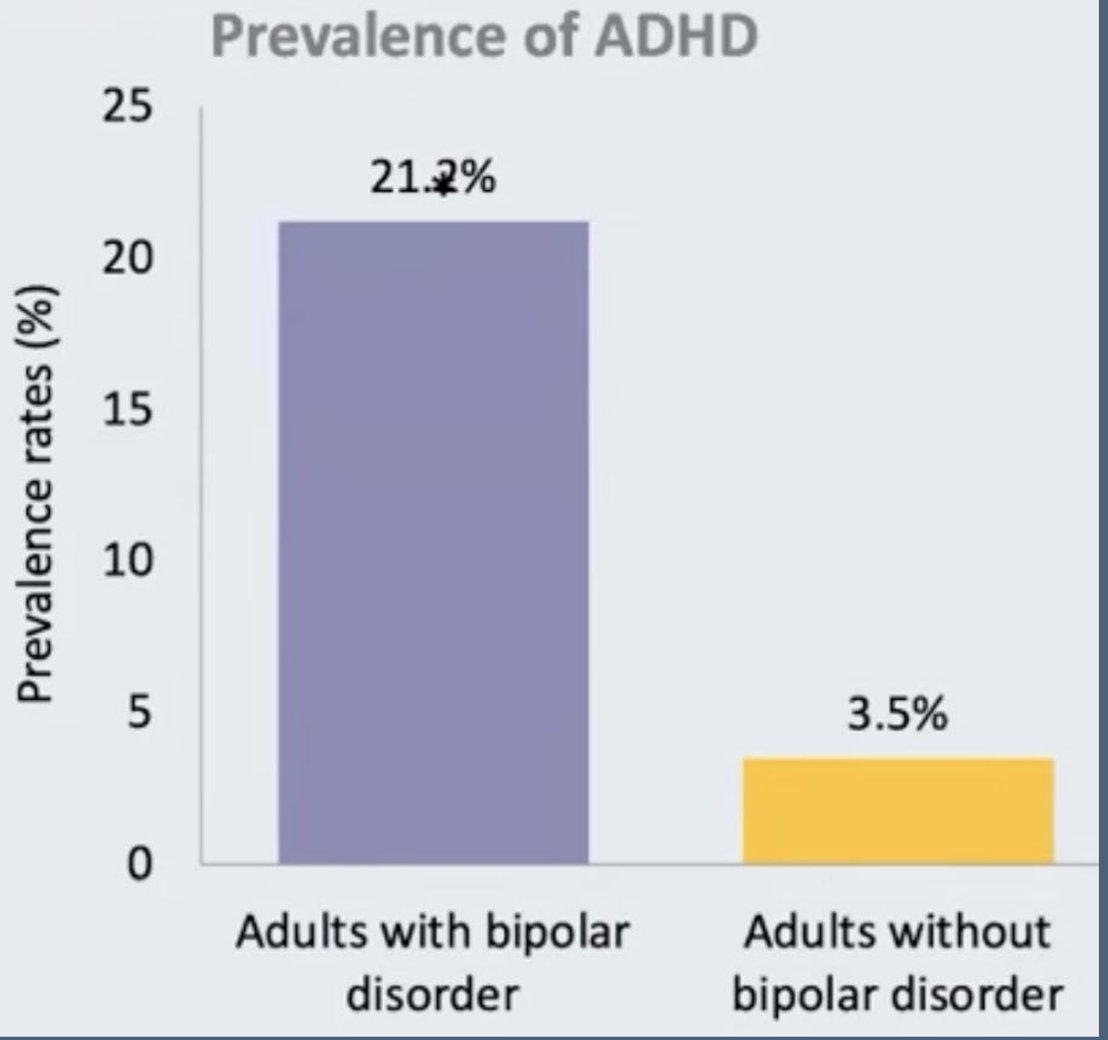
Differential Diagnosis: Symptom Overlap Between ADHD & other Disorders
Kooij et al. J Atten Disord 2012; 16:3S-19S

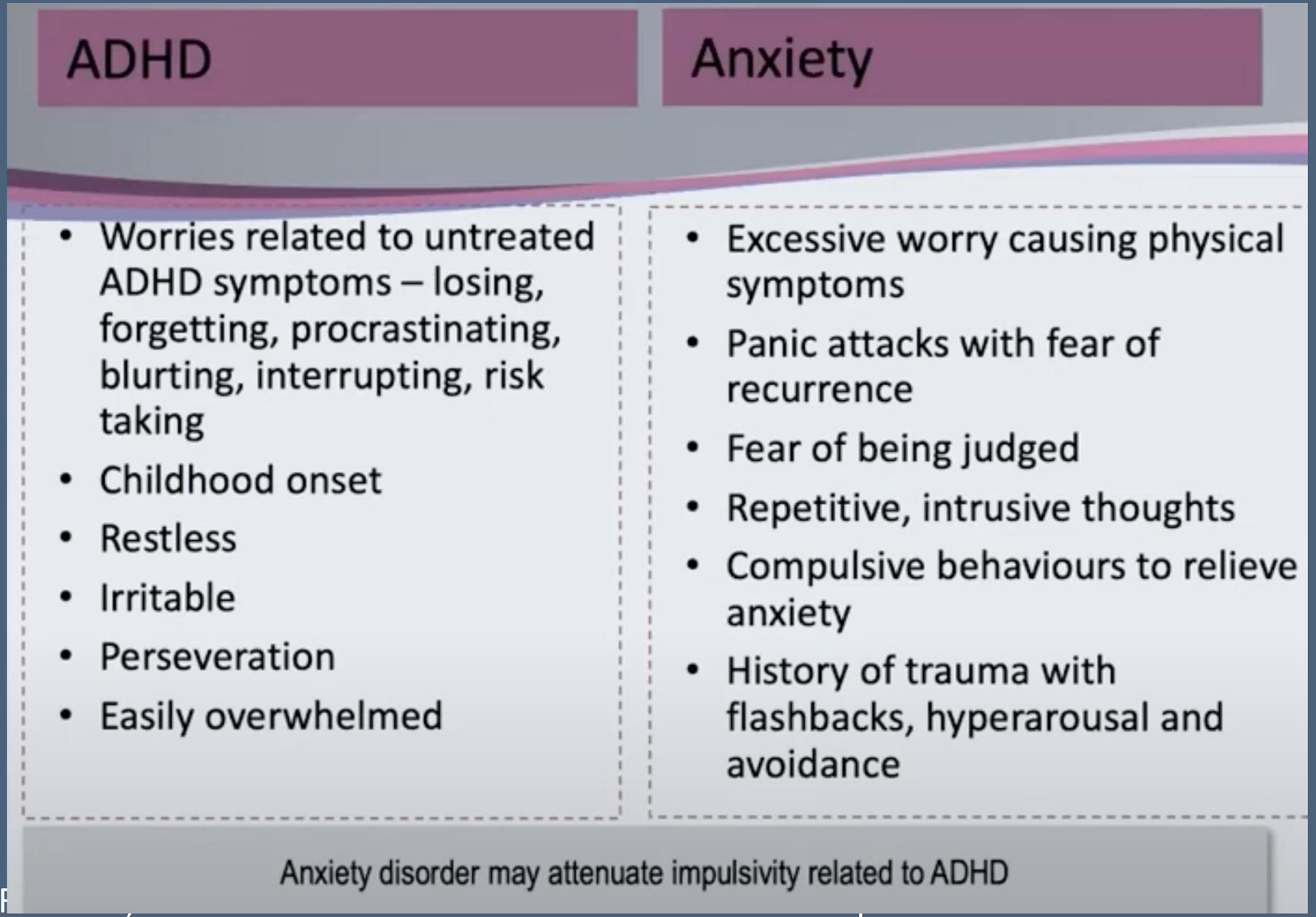
MDD. Bipolar Disorder. Anxiety. SUD

		MDD	BD [hypo] manic	BD depressed	Anxiety disorders	SUDs
ADHD symptoms - Hyperactivity	Excessive talkativeness		X			X
	Restlessness/ psychomotor agitation	X	X	X	X	X
- Impulsivity	Racing thoughts		X			
	Impulsive behaviours		X			X
- Inattention	Difficulty concentrating	X	X	X	X	X
	Decreased attention, distractibility	X	X	X	X	
ADHD-related	Mood swings/ anger outbursts		X		X	
Non-ADHD symptoms		Depressed mood, weight loss, diminished interest, suicidal thoughts	Episodic symptoms, fluctuating between major depressive and (hypo) manic symptoms		Fatigue, muscle tension, sleep disturbance	Excessive use of a substance, dependence

ADHD and Bipolar Disorder are Highly Comorbid

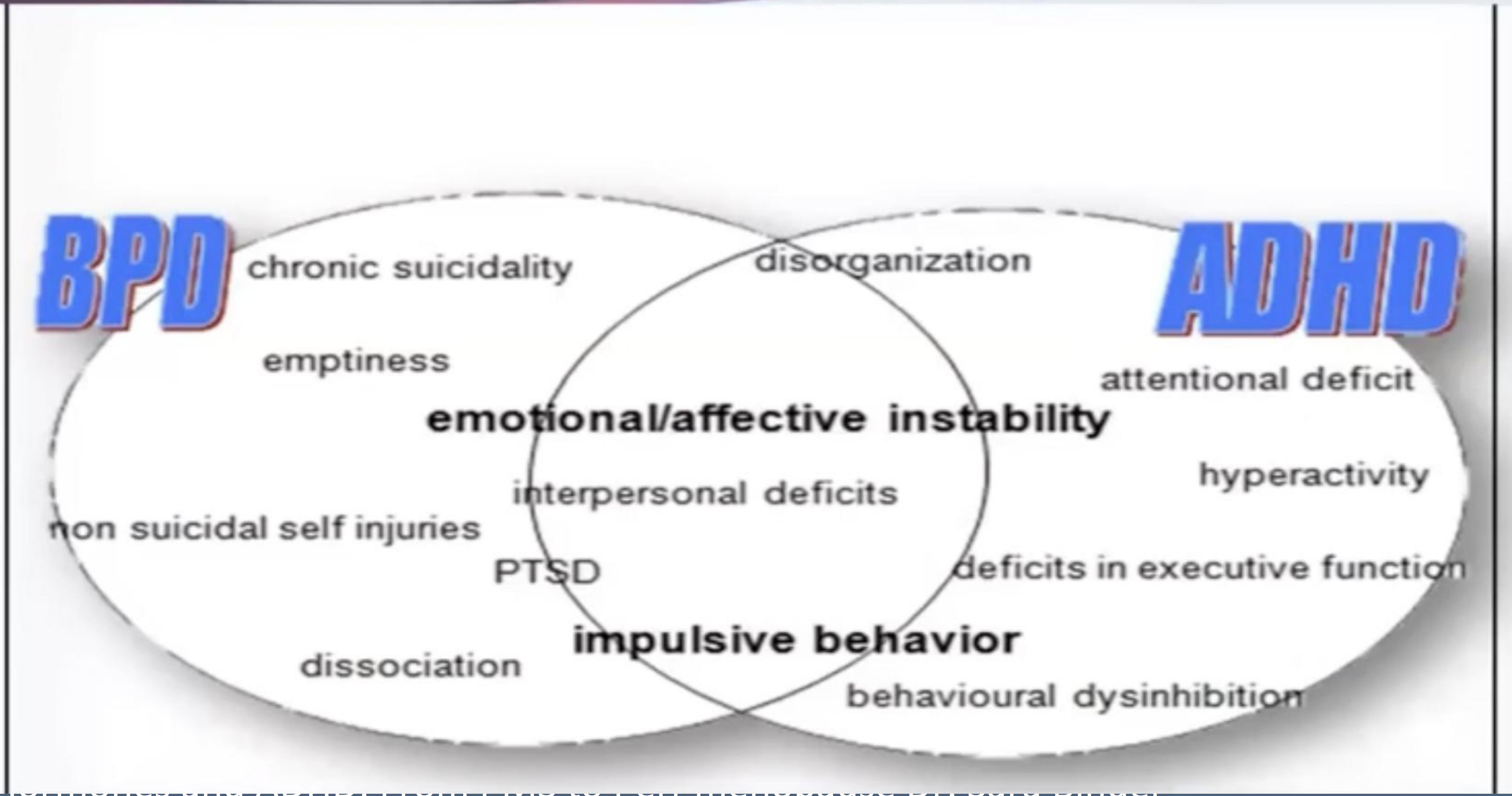





ADHD
Anxiety
• Worries related to untreated ADHD symptoms – losing, forgetting, procrastinating, blurting, interrupting, risk taking
• Childhood onset
• Restless
• Irritable
• Perseveration
• Easily overwhelmed
• Excessive worry causing physical symptoms
• Panic attacks with fear of recurrence
• Fear of being judged
• Repetitive, intrusive thoughts
• Compulsive behaviours to relieve anxiety
• History of trauma with flashbacks, hyperarousal and avoidance
Anxiety disorder may attenuate impulsivity related to ADHD

- F

ADHD and Borderline PD: 11% ADHD in BPD teens



Estrogen & Brain Functioning

- Estrogen affects mood, emotional regulation, memory, executive function, circadian rhythms
- Fluctuations impact mood, cognition, physical symptoms
- Periods of decreased estrogen: increase risk of depression, anxiety, cognitive decline, increased ADHD Sx

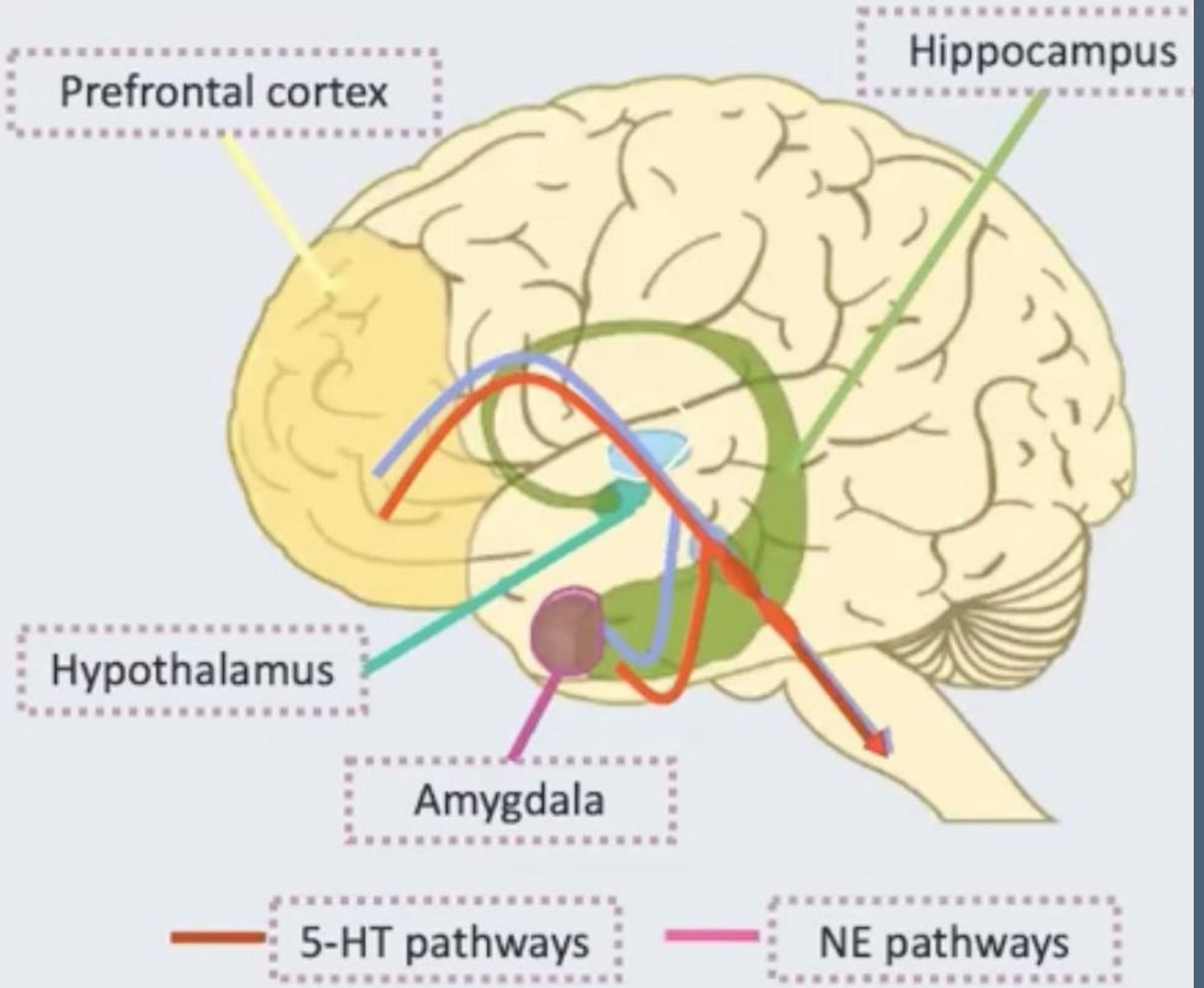
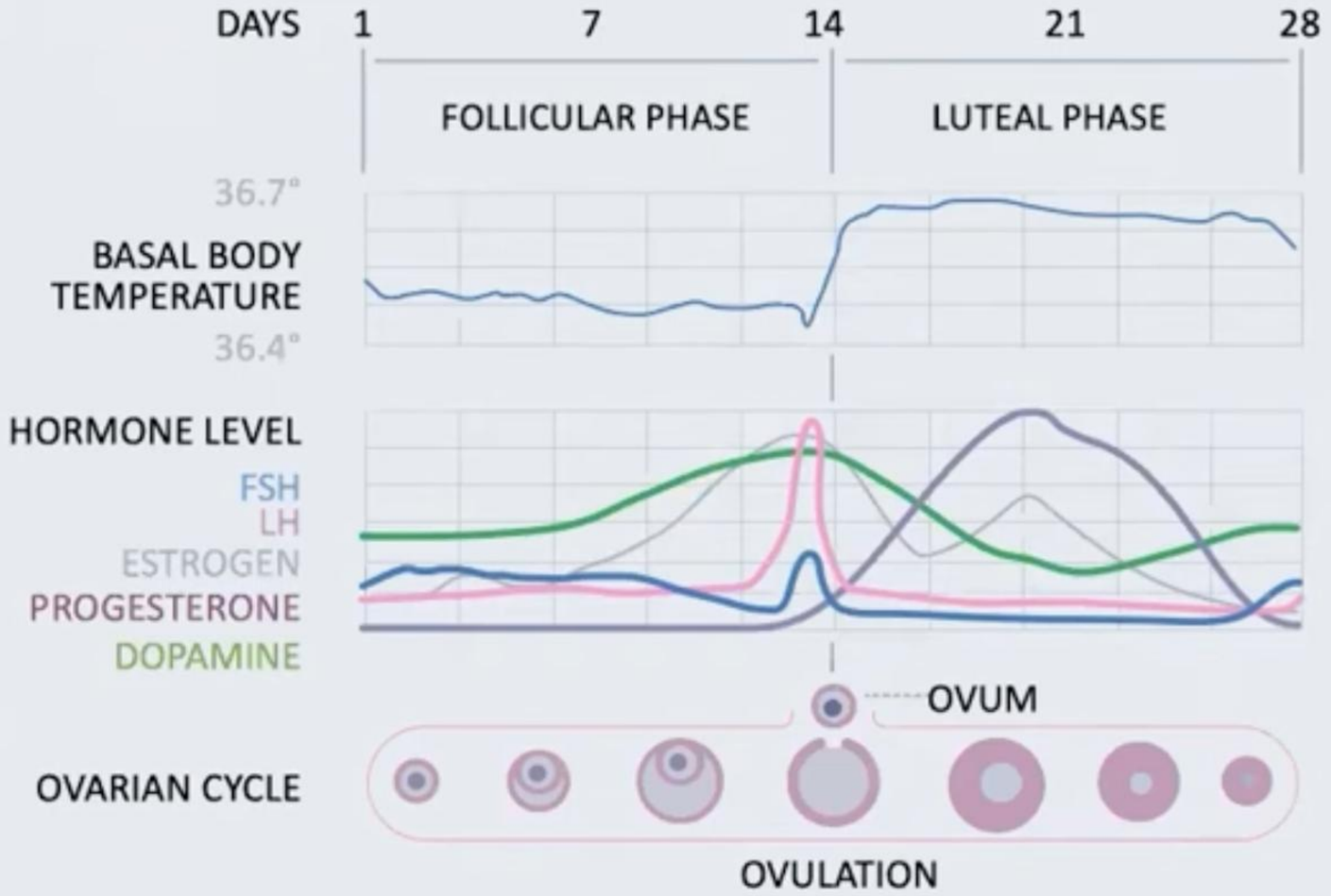


Figure modified from Charney DS. *Am J Psychiatry*. 2004;161:195-216; Lokuge L et al. *Behav Pharmacol*. In press.

ADHD & Hormones

- ADHD Sx may vary across the menstrual cycle in response to hormone changes[1]
- Ovulation= peak Estrogen
- Post-ovulatory, increase in ADHD Sx
  - Coincides with lower Estrogen and Dopamine



Pregnancy & Cognition

- Many women experience increased distractibility during pregnancy and post partum
- Neurocognitive changes have been subjectively observed during pregnancy
- “Pregnancy brain”— complaints of memory impairment, poor concentration
- Changes in sex hormones hypothesized to cause impaired cognition

5; Mann D. WebMD.2010

Pregnancy & ADHD

- In the perinatal period, ADHD Sx may incr. due to:
  - Elevated Prolactin during breastfeeding
  - Hormonal effects on DA & NE
  - Sleep deprivation
  - Change in routines
  - Challenges associated with parenting a newborn

215;
Mann D. WebMD 2010

Pregnancy & Cognition

- 2018 Meta-analysis showed significantly worse cognitive functioning, memory and executive functioning in pregnant than controls, particularly in 3rd trimester
- Women assessed in 3rd trimester & post-partum vs non-pregnant had lower verbal memory & processing speed scores

Henry JF, Sherwin BB. Hormones and cognitive functioning during late pregnancy and postpartum: a longitudinal study. Behav Neurosci 2012; 126: 73-85.
Davies, SJ et al. Cognitive impairment during pregnancy: a meta-analysis. Med J Aust. 2018 Jan 15; 208
Freeman M. *Am J Psychiatry*. 2014;171(7):723-728; Sharp K et al. *Br J Obstet Gynaecol*. 1993;100:209-215; Mann D. *WebMD*. 2010.

Pregnancy & Cognition

- 2012 study found a relationship between Prolactin levels and cognitive functioning in young healthy pregnant women
- Higher levels of Prolactin may be detrimental to executive function
- The negative linear associations between Prolactin and verbal memory suggests that high and low levels of Prolactin are detrimental to verbal memory whereas moderate levels are optimal

Henry JF, Sherwin BB. Hormones and cognitive functioning during late pregnancy and postpartum: a longitudinal study. Behav Neurosci 2012; 126: 73-85.
Davies, SJ et al. Cognitive impairment during pregnancy: a meta-analysis. Med J Aust. 2018 Jan 15; 208
Freeman M. *Am J Psychiatry*. 2014;171(7):723-728; Sharp K et al. *Br J Obstet Gynaecol*. 1993;100:209-215; Mann D. *WebMD*. 2010.

Stimulants During Pregnancy

- More women are entering reproductive years being Tx'd for ADHD
- No guidelines to inform Tx of ADHD during pregnancy & postpartum
- Stimulants classified as "Category C"
- In utero exposure to stimulants raises concerns regarding fetal growth
- Stimulants do not appear to be associated with major congenital malformations
- Weighing risks/benefits of Tx is crucial in determining use of psychotropic medications in pregnancy

Freeman M. *Am J Psychiatry*. 2014;171(7):723-728; McAllister-Williams RH et al. *J Psychopharmacol*. 2017;31(5):519-552; Motherisk Helpline, www.motherisk.org.

Treatment Considerations

- Many women may stop ADHD medications during pregnancy and lactation with minimal negative impact
- Others experience significant impairment and severe consequences:
  - Driving and MVAs
  - Occupational functioning
  - Finances
  - Self-care – neonatal appointments, diet
  - Relationships
  - Substance use - Pregnant women with ADHD are more likely to smoke up to the third trimester

Reproductive Safety of Stimulants (*cont'd*)

- Cohort Study 2000-2013:
  - US (1.8M) & Nordic Health Registries (2.5M)
    (Denmark, Iceland, Finland, Norway, Sweden)
  - Found small increased risk of cardiac malformations with methylphenidate exposure but not amphetamines
- More recent Swedish Study 2006-2014 (Norby et al, 2017):
  - 964 734 infants, 0.2% exposed to ADHD meds
  - 50% more likely to be admitted to NICU
  - Increased risk of seizures, OR 1.9
  - Increased risk of preterm birth, OR 1.3
  - No overall increased risk of congenital malformations

Centers for Disease Control and Prevention. *MMWR Morb Mortal Wkly Rep*. 2008;57:1-5; Bolea-Almanac BM et al. *Br J Clin Pharmacol*. 2014;77(1):96-101;
Humphreys C et al. *Can Fam Physician*. 2007;53:1153-1155; Dideriksen D et al. *Basic Clin Pharmacol Toxicol*. 2013;112:73-76; Debooy VD et al. *Am J Dis Child*. 1993;147:1062-1065; Huybrechts KF et al. *JAMA Psychiatry*. 2018;75(2):167-175. Norby U et al. *Pediatrics*. 2017; 140(6):e20170747.

Key Points from 2019 Meta-analysis

Jiang HY et al. 2019

- Controversial whether an increased risk of adverse maternal and neonatal outcomes associated with ADHD medications
- ADHD medication use during pregnancy is associated with an increased risk of NICU
- Exposure to methylphenidate is marginally associated with an increased risk for cardiac malformation
- No evidence of an increased risk for other adverse maternal or neonatal outcomes was found

- Jiang HY, et al. Pharmacoepidemial Drug Saf. 2019;28:288-95

Breastfeeding & Stimulants

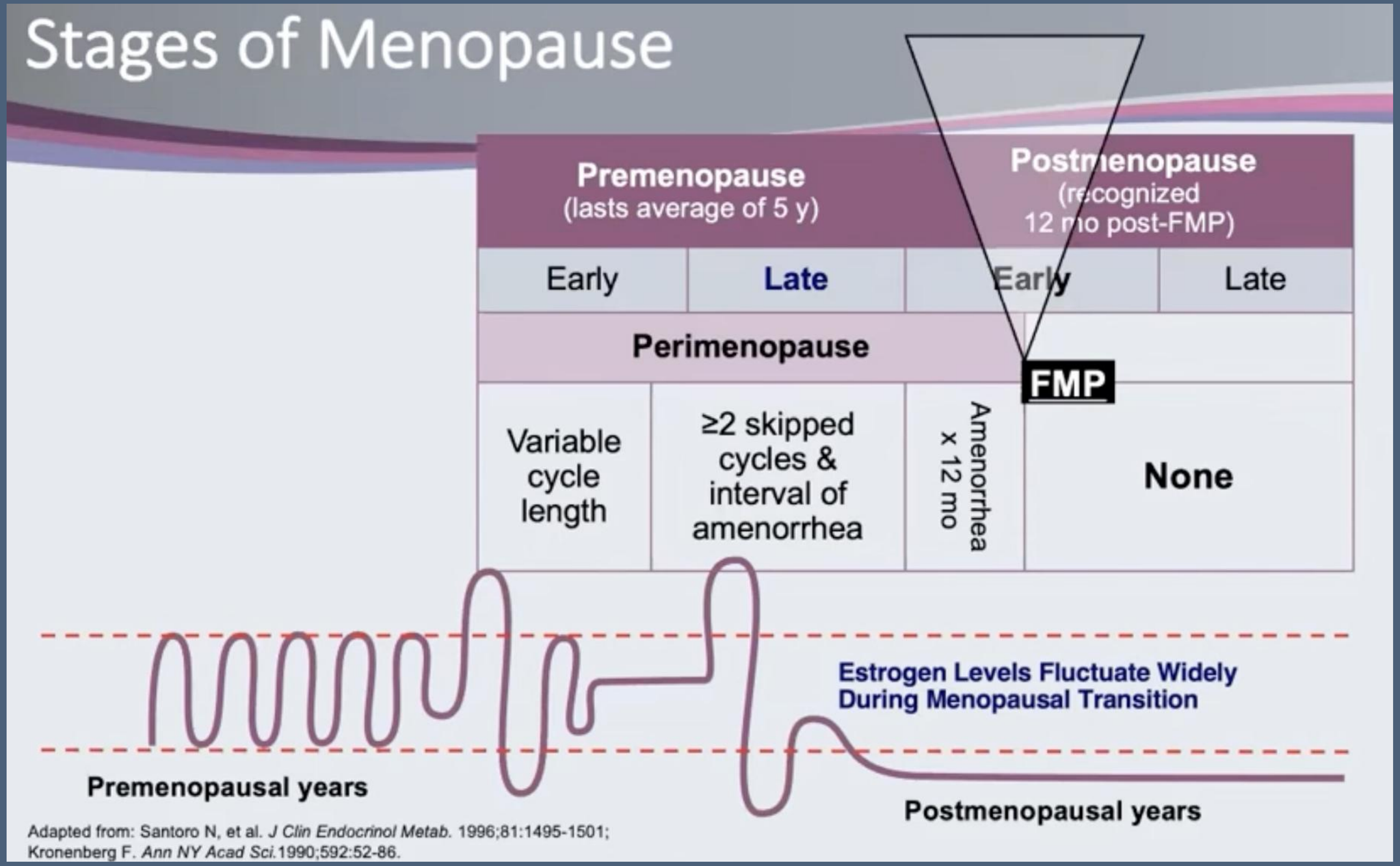
- Limited data
- Exposure in breast milk could affect infant growth, sleep
- In a report of 3 mothers taking dextroamphetamine, no adverse events
- Infant plasma level was low or undetectable
- Infant dose was 5.7% of maternal dose (below 10% cutoff cited in literature)

Bupropion as an Alternative to Stimulants During Pregnancy & Lactation

- When stimulants are not tolerated
- Stable on buproprion pre-pregnancy
- Comorbid MDD & smoking cessation
- Reports on safety are reassuring:
  - Birth defect rates similar to general population rate
  - Absolute risk 2/1000 pregnancies
  - Est. dose in exposed breastfed infants = 5.7%

7;16:474-484.

ADHD and Menopause



Menopausal Symptoms & ADHD

- Significant Sx in menopause include low energy, physical pain, sleep disturbance, memory problems
- Overlapping Sx with ADHD, esp. if unrecognized previously
- Memory/cognition worsening with reduction in estrogen

- Females,Hormones and ADHD: From PMS to Peri-menopause. Dr. Sara Binder

ADHD & Menopause

- Early changes in working memory circuitry are evident decades before the age range typically targeted in cognitive aging studies
- Reproductive age & hormonal status likely more important than chronological age in understanding aging of memory circuitry in women
- Decline in DA starts in the 30s
- Continues at 10% loss per decade

- Bannon MJ, Whitty CJ. Neurology. 1997;48(4); Jacobs EG et al. Cereb Cortex. 2017;27(5):2857-2870 Females,Hormones and ADHD: From PMS to Peri-Menopause. Dr Sara Binder

ADHD & Menopause

- Midlife decline in cognition & executive function is a common complaint for peri-menopausal women
- Peri-menopause involves fluctuating hormones & eventual depletion of estrogen in post-menopause
- PFC is responsible for Executive function which is impaired by decreased Estrogen
- Reduced cognition with respect to attention & memory may correlate with decline in estrogen

Treatment for Menopausal Decline in Executive Function

- Meds that increase DA may improve executive dysfunction induced by loss of estrogen input to PFC
- LDX 40-60 mg found to improve subjective measures of executive function in menopausal women with new-onset difficulties
- LDX improved executive function but not working memory task performance
- Education level has been correlated with performance on executive tasks
- Study included 79% with college degree; 35% with graduate degree

- Shanmugan S et. Neuropsychopharmacology. 2017 Jan; 42(2):437-445;Epperson CN et. Psychopharmacology. 2015 Aug:232(16): 3091-3100

Management of ADHD

Non-pharmacological treatment options

- Part of a multimodal treatment approach
- Consider supportive psychological intervention focused on ADHD, such as CBT
- Consider referring patients for more information on ADHD and coping skills development, e.g. coaching, counselling available for free through Centre for ADHD awareness Canada (CADDAC)
- Focus on the basics- sleep, hygiene, routines, exercise, healthy diet, use of planner

Centre for ADHD awareness Canada (CADDAC)

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- ADHD Conferences
- ADHD Resource Navigator

CADDAC
CENTRE FOR ADHD AWARENESS, CANADA
CSTC - Centre de sensibilisation au TDAH Canada

ADHD RESOURCE NAVIGATOR

Layla Teixeira
info@caddac.ca

CADDAC's ADHD Resource Navigator works with families and individuals affected by ADHD to identify ADHD and mental health resources in their communities.

This role focuses on two areas: providing emotional support to the community, listening to concerns, helping them build upon their strengths and supporting the development of advocacy skills; and assisting the community to navigate through the mental health system by locating appropriate ADHD and mental health resources such as therapy, specialists, tutors and support groups etc.

CADDAC Adult programs

Programs & Events

Parenting Programs

Adult Programs

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Webinars

ADHD Conferences

ADHD Resource Navigator

Adult ADHD Programs

Click on one of the upcoming Adult ADHD Programs to learn more and to register.

Adult ADHD Group Coaching Programs

Adult ADHD Group Coaching Programs Are you an adult who struggles with ADHD? Do you feel overwhelmed by everything on your to-do list? Are you ready t

Adult ADHD Support Groups

Join one of CADDAC's ongoing monthly Adult ADHD Support Groups!

Monday Adult ADHD Peer-led Support Group (FREE!)

Feeling overwhelmed with life's twists and turns? CADDAC's ADHD Support Groups are led by trained facilitators who are all adults with ADHD. Each meet

Websites

- Canadian ADHD Resource Alliance (CADDRA): www.caddra.ca
- Centre for ADHD Awareness, Canada (CADDAC): www.caddac.ca
- Attention Deficit Disorder Association (ADDA): www.add.org
- Quebec-based Dr. Annick Vincent's ADHD website: www.attentiondeficit-info.com
- Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD): www.chadd.org
- MyADHD, Connecting doctors, parents & teachers: www.myadhd.com
- Totally ADD: www.totallyadd.com
- BeMindful.co.uk: https://bemindful.co.uk/
- Motherisk Helpline: http://www.motherisk.org

Pharmacotherapy for ADHD

Appropriate where symptoms persist despite other interventions

- Document the patient's blood pressure, heart rate, BMI/wt and ASRS-v1.1 score at BASELINE and all subsequent visits to measure the effect of treatment for monitoring purposes
- Once stable, reassess the Rx plan q 3-12 months
- When prescribing stimulants for ADHD, use LONG-ACTING stimulants as there is an increased potential risk of diversion and misuse associated with immediate-release formulations
- Complete a risk assessment for substance misuse and drug diversion
- Consider incorporating a treatment agreement into the treatment plan, particularly if at high risk or has a Substance Use Disorder (SUD)

Informed consent/treatment agreement for stimulant therapy

Stimulants do not work for everyone. They also require careful monitoring as they can cause side effects. As well, stimulants are controlled substances and there are numerous laws and regulations regarding how they are prescribed. One reason these regulations exist is that stimulants have a high street value and can be desired by people who misuse substances. This Informed Consent and Treatment Agreement is to help **keep you safe** and help your healthcare provider comply with **standard best practices**.

The patient/guardian agrees:

1. To fill prescriptions only at **one pharmacy** located at _____.*

   **your healthcare provider will send a copy of this agreement to the above pharmacy*

   Staying with one pharmacy makes monitoring your progress easier for all involved.
2. To receive stimulant prescriptions from only **one healthcare provider** (except in emergency situations, where I will inform my healthcare provider as soon as possible).
3. To report any **side effects** arising from the medication (see Table 1). These side effects can often be managed by adjusting the dose, adjusting the time of day the medication is taken, or changing to a different formulation.
4. To reliably attend **appointments** with the practitioner.
5. To take stimulants only as prescribed (i.e. not to change the dose without the consent of your healthcare provider). This means that **early refills** will not be authorized.
6. To safely store the medication. The best approach is to use a lock box and to not keep stimulants where others might see or have access to them. **If stimulants are lost, stolen, or spilled**, they will not be replaced. (With apologies, but we must be like the bank and money in this regard).
7. To not **share, lend, or sell** this stimulant medication to any other person.
8. To periodic **urine drug tests** at the discretion of the healthcare provider (including coming in for random screens).
9. To periodic **pill counts** at the discretion of the pharmacist (including coming in for random counts).
10. To explore **non-stimulant related treatments** for ADHD as recommended by your healthcare provider.

Table 1. Some common side effects of stimulant medications.
• Decreased appetite (which can lead to weight loss) • Trouble sleeping • Headaches • Stomach upset

Breaking this agreement may mean that your healthcare provider will stop prescribing this stimulant.

The practitioner agrees:

1. To be able to see you within a reasonable time for follow up.
2. To maintain open communication between any other healthcare providers regarding your ADHD management (such as physicians, pharmacists, or emergency departments).

Stimulant Therapy

Potential Contraindications

- Pregnancy/lactation
- CARDIOVASCULAR - Family Hx of sudden, early death. Structural heart defect, arrhythmia, advanced atherosclerosis.
- Untreated Hypertension
- Unstable Substance Use Disorder
- Unstable/untreated psychosis or mania
- Glaucoma
- Seizure or tic disorder

Stimulant Side Effects- most common ones

- ANTICHOLINERGIC- Dry mouth, blurred vision, diplopia, mydriasis
- Appetite reduction, weight loss
- GASTROINTESTINAL- nausea, vomiting, diarrhea
- CARDIOVASCULAR- hypertension, palpitations, tachycardia
- CNS- Headache, nervousness, irritability, anxiety, insomnia, dizziness, tics

Stimulant therapy- Drug Interactions

Methylphenidate and Amphetamine-based medications

- MAOIs- HYPERTENSIVE CRISIS could occur; contraindicated to take if < 14d after MAOI d/c'd
- Serotonergic drugs- risk of SEROTONIN SYNDROME
- Antihypertensives- may DEcrease efficacy of BP meds
- Drugs affecting DA/NE pathways- INcreased risk of EXTRAPYRAMIDAL symptoms
- PPIs- DEcreased absorption time of amphetamine, except Vyvanse
- Cannabis- REDUCED efficacy of stimulants
- Alcohol- Enhanced adverse effects
- Impact on action of ANTICOAGULANTS, ANTICONVULSANTS, ANTIDEPRESSANTS

Stimulant therapy- WARNINGS

Methylphenidate and Amphetamine-based medications

- Potential for abuse, misuse, and dependence
- CV risks include sudden death, stroke, MI, hypertension
- Psychiatric risks- psychosis, aggression, anxiety, and mania
- Risk of lowering the seizure threshold
- Risk of priapism, Raynaud’s phenomenon
- Potential for gastrointestinal obstruction in pts with pre-existing GI narrowing (Concerta)

1st line treatment for Adult ADHD

- AMPHETAMINE-BASED MEDICATIONS
- Facilitate release of dopamine (DA) and norepinephrine (NE) into the synaptic cleft
- Leads to enhanced neurotransmission and improves cognitive control
- METHYLPHENIDATE-BASED MEDICATIONS
- Blocks the reuptake of DA and NE into the presynaptic neuron, leading to increases in extracellular concentration of DA and NE in the prefrontal cortex
- Enhance attention and reduce impulsivity; minimal direct effects on serotonin

AMPHETAMINE-BASED MEDICATIONS

Brand Name. Starting Dose Weekly Titration. Max Dose. Duration

- Adderall XR. 10 mg q am 5-10 mg 20-30 mg 10-12h
  - VYVANSE Lisdexamfetamine 10 mg 70 mg. 13-14 h. 20-30 mg
  - With or without food- maintain consistency
  - Covered under ODB except Vyvanse 70 mg capsule
  - Renal dosing needed if eGFR< 30ml/min; hepatic impairment may alter elimination

Methylphenidate-based Medications

Brand Name. Starting Dose. Wkly titration. Max.Dose. Duration

- MPH controlled-release. 10-20 mg. 10 mg. 80 mg. 10-12h.
  BIPHENTIN. IR/ER%. 40/60. Granules can be sprinkled onto applesauce,yogurt
- CONCERTA. 18 mg. 9-18 mg 72 mg 10-12h. IR/ER
  %. 22/78 tablets should be swallowed whole, with or without food
- FOQUEST 25mg 10-15mg 100 mg. 16h.
  IR/ER%. 20/80. Granules can be sprinkled onto applesauce, yogurt
- No renal dose adjustment needed for all in this family; no studies conducted on hepatic impairment impact

1st Line Stimulant Medications

Titration

- START LOW, GO SLOW- consider titrating patient dose every 2-4 weeks based on goals assessment and symptom improvement
- ASRS-V1.1 can be used as a scale to follow changes in the patient's executive function
- May take several months for choice of med and dosage to be in the range that provides optimum benefit
- Dose titration must be slower and monitored more carefully in patients with co-morbid MH conditions, neurodevelopment disorders, medical conditions
- Patients should avoid self-treating eg. Caffeine, nicotine, alcohol, cannabis, while titrating med

1st Line Stimulant Therapy

Trouble shooting issues

- For significant side effects or intolerance- try a stimulant from the other stimulant family
- For concerns with duration of action- try switching within the same stimulant family
- If effects wear off too early in the day, consider LA stimulant with a longer duration of action OR a higher proportion of extended release OR adding small dose of the same LA stimulant at mid-day
- If greater effects are needed in the morning, consider switching to a LA-stimulant with a higher proportion of immediate-release

2nd Line Treatment-non-stimulant meds

When 1st line ineffective, poorly tolerated or stimulant CxD'd

- Selective NE Reuptake Inhibitors (SNRI)- Atomoxetine (STRATTERA), Bupropion (Wellbutrin)
- Increase NE levels in the synaptic cleft, particularly in the prefrontal cortex- enhances attention, reduces impulsivity and hyperactivity
- Minimal direct action on DA or serotonin
- Most common side effects- insomnia, decreased appetite, dry mouth, nausea, dizziness, constipation, erectile dysfunction, urinary hesitation/retention
- Drug interactions- potential interactions with drugs that prolong QTc, disturb electrolytes
- Interaction with CYP2D6 inhibitors (e.g. Fluoxetine, Paroxetine) leading to increased Strattera plasma levels

2nd line Non-stimulant Medications

Contraindications and Warnings

- Contraindications:
- Narrow angle glaucoma, severe cardiovascular disorders, moderate to severe hypertension. Concurrent use of MAOIs or < 14d from discontinuation of MAOIs

- Warnings:
- Potential for severe liver injury (rare); risk of CV effects-tachycardia, orthostatic hypotension, syncope, QTc interval prolongation
- Risk of priapism; psychiatric risks- agitation, mood swings, aggression, suicidality
- Potential withdrawal hypertension if abruptly stopped

2nd Line non-stimulant medications

Atomoxetine (STRATTERA)

- Offer if symptoms have NOT responded to separate 6 week trials of amphetamines and methylphenidate
- Requires daily administration and may be discontinued without tapering; with or without food Do not open capsules as can cause nausea, vomiting
- Onsets in 1-2 WEEKS, full efficacy could take 4-6 WEEKS
- Duration of action up to 24h
- Initial adult dose 25-40 mg OD for 7-14 days; Titrate up by 20mg/d q 1-2 weeks
- Hepatic impairment requires dose reduction; no renal dosing needed

2nd Line Non-stimulant Medications

Selective Alpha-2a adrenergic receptor agonist Guanfacine (INTUNIV)

- Strengthens PFC network activity- improves attention, working memory and impulse control by reducing hyperactivity of the sympathetic nervous system
- Indicated for 6-17 yr olds; onset: 1-2 weeks; full efficacy could take 4 weeks
- Duration of Action: up to 24 hours
- Swallow whole to keep delivery mechanism intact; with or without food, not with high fat meal or grapefruit
- Use with caution in renal/hepatic impairment

2nd Line Treatment

Guanfacine (INTUNIV)

- Initial dose- 1 mg in the morning or evening with a small amount of liquid
- Titration- increase by 1mg/d q weekly
- Most common side effects - fatigue, headache, somnolence/sedation, dizziness, decreased appetite, abdominal pain
- Warnings- risk of somnolence, sedation, particularly at initiation or dose increases
- CV risks- hypotension, bradycardia, syncope; rebound hypertension on discontinuation. QTc prolongation
- Aggression,hostility, suicidality

Treatment considerations for patients with comorbid mental health conditions

Depression

- If depression is the most distressing symptom, treat this first
- If depression is well managed, or treatment resistant, then revisit ADHD assessment
- Note: medications such as SSRIs and antipsychotics may worsen ADHD symptoms due to relative reduction in NE and DA
- BIPOLAR DISORDER
- Patients with co-occurring BAD and ADHD should be stabilized on a mood-stabilizing medication BEFORE treating ADHD with a stimulant
- In BD type 1, think about how effective the mood stabilizer is at protecting against manic episode

Comorbid mental health conditions

ANXIETY DISORDERS

- Untreated ADHD may present as anxiety
- For pts with ADHD, racing thoughts often revolve around reviewing all tasks and distractions
- Anxious thoughts are more secondary in ADHD
- In contrast, GAD is characterized by persistent worries and fears
- If anxiety is the most distressing symptom, treat it first
- If anxiety is well managed, or treatment resistant, then revisit ADHD question

Comorbid mental health conditions

Acute psychotic or manic episodes

- Stop stimulant medication as should NOT be prescribed for untreated acute psychosis or mania
- Resume or start a new ADHD medication after the episode has been treated

Comorbid Mental Health Condition

SUBSTANCE USE DISORDER (SUD)

- SUD (eg. Alcohol, cannabis, cocaine, nicotine) ideally stabilized BEFORE starting ADHD med
- Not addressing their ADHD will make it more difficult to address their SUD
- Treatment with atomoxetine (Strattera) may be recommended as has limited abuse potential
- Lisdexamfetamine (Vyvanse) is a prodrug which makes it difficult to abuse and divert
- In smokers, methylphenidate may be recommended
- When complications of SUD present, more frequent review and shorter time between medications may be beneficial

Conclusions

- Girls with ADHD tend to be overlooked or misdiagnosed with only MDD/anxiety
- Significant functional impairment in women with undiagnosed/untreated ADHD
- Hormonal fluctuations affect ADHD Sx & response to stimulants
- Repeated assessment/management of comorbid conditions essential
- Dosing titration may be useful throughout menstrual cycle

Conclusions

- Stimulant Tx during pregnancy must be determined evaluating risks/benefits
- Risk to fetus of long-acting stimulants is minimal
- Consider impact of menopause in women with ADHD
- Psychosocial interventions are necessary in combination with pharmacotherapy for best functional outcomes
- Ensure management through entire life cycle

THANK YOU!