

ADHD

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Objectives

At the end of this session participants will be able to:


- 1-List the different classes of medications used to treat ADHD and how to select one**
- 2- Describe the adverse effects of each class of medications used in ADHD treatment and how to manage the adverse effects**
- 3-Describe situations where certain medications should not be used in treatment of ADHD**
- 4- List possible strategies to guard against misuse, abuse and diversion of ADHD medications**

Disclosure

	Research Grants	Speaker	Advisory Board	Stocks
CIHR	✓			
Janssen-Ortho	✓	✓	✓	
Purdue Pharma	✓	✓	✓	
Takeda	✓	✓	✓	
Ironshore			✓	

Disclosure – Book Royalties

Publisher	Title
Springer	Clinician's Guide to ADHD. (2014)
Springer	Clinician's Guide to Adult ADHD Comorbidities. (2016)
	Clinician's Guide to ADHD Comorbidities in Children and Adolescents. (2018)
	Clinician's Guide to Suicide Risk Assessment and Management (2019)
Sage	The SAGE Encyclopedia of Abnormal and Clinical Psychology Stimulant Medications (2016)

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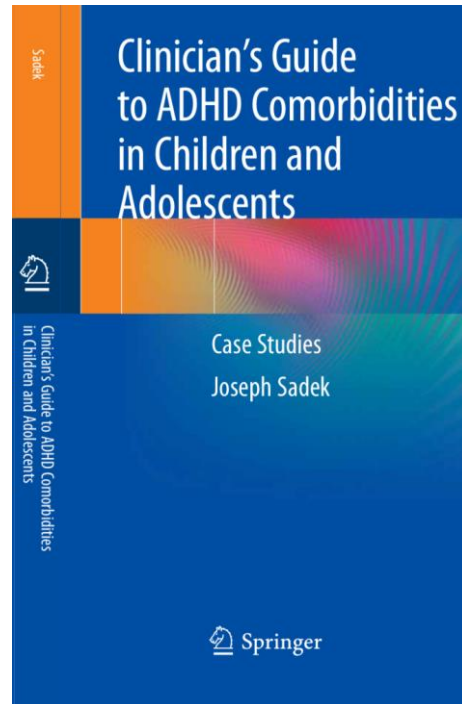
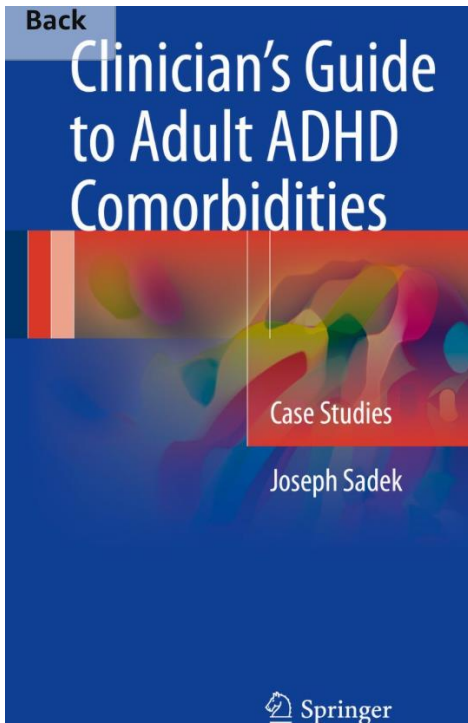
PLEASE SELECT BELOW THE DESIRED OPTION:

Testing New Patient
Information for Patients
Information for Clinicians

HEALTHY

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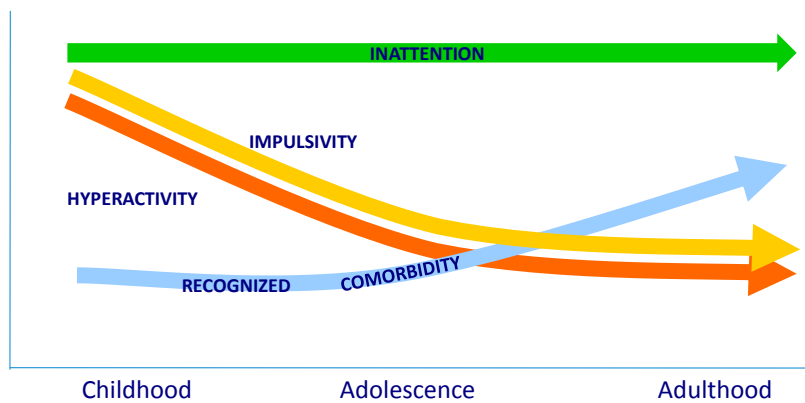
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History

ADHD Developmental Trends by Age



Wasserstein, JCLP 2005. Mick et al. Psychiatr Clin N Am 2004.

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Before Starting Treatment

Clarify Diagnosis and Comorbidities

- Assess Psychiatric and medical comorbid disorders

Setting Patient Goals

- Importance of setting goals
- Examples of questions that can be asked to set goals

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ADHD Management

Multimodal Treatment of Adult ADHD

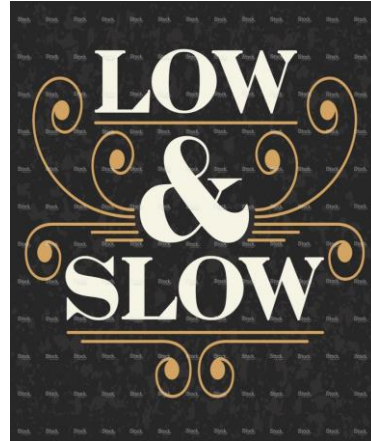
- Sleep, nutrition and exercise
- Psychoeducation
- ADHD medications
 - Stimulants
 - Non-stimulants
- Treatment of comorbid conditions
- Psychosocial Intervention

Psychosocial Interventions

- Psychoeducation
- Behavioural Interventions
- Social Interventions
- Psychotherapy: comorbid conditions, self esteem
- Educational, vocational accommodations
- Psychotherapy
- Appropriate physical and special interest activities

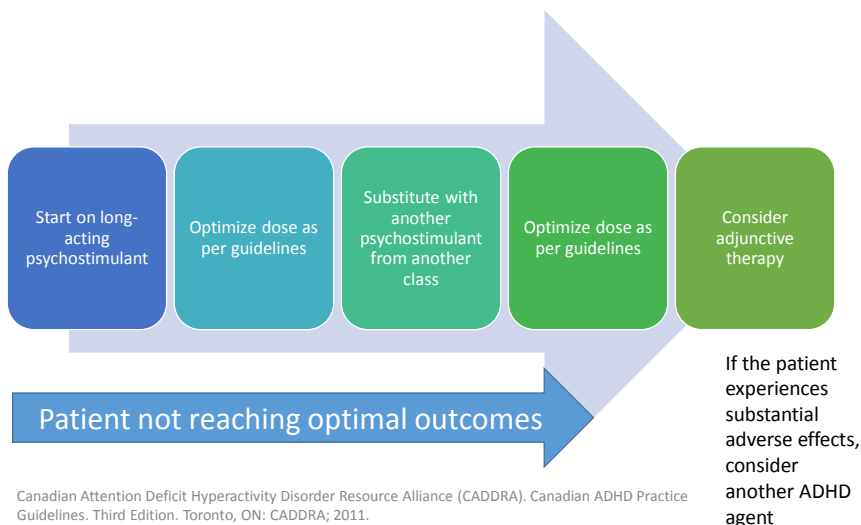
Key Principles when Starting Psychostimulants

- “Start low and go slow”
 - Increasing the dose too quickly may result in increased side effects
- Tailor the choice of medication based on the patient and other factors
- Regular follow-up
- High inter-individual variability of dose response: start low, go slow, keep going



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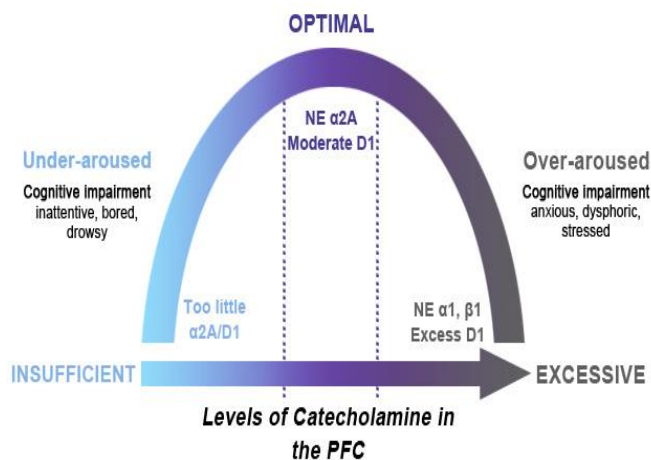
The ADHD Management Continuum



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Pharmacotherapy

The Levels of Catecholamines in the PFC for Optimal Function



Adapted from - Arnsten, A. et al. Pharmacology, Biochemistry, and Behavior 99, no. 2 (August 2011): 211–16.

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Possible Impact of Catecholamines on the PFC

Proposed Mechanism of
Action for Psychostimulants





Proposed Mechanism of Action for Atomoxetine and Guanfacine

Medication Management

- Regular follow up is important
- There is selective response by individuals to different medications
- Use medication chart

Can Symptoms Predict Response?

Comparison of ADHD Medications

AMPHETAMINE-BASED PSYCHOSTIMULANTS						
Dexedrine® tablets 5 mg  Dexedrine® spansules 10, 15 mg	Pill can be crushed ¹ Spansule (not crushable)	~ 4 h ~ 6 - 8 h	Tablets = 2.5 to 5 mg BID Spansules = 10 mg q.d. a.m.	↑ 2.5 - 5 mg at weekly intervals; Max. dose/day: (q.d. or b.i.d.) All ages = 40 mg	↑ 2.5 - 5 mg/day at weekly intervals Max. dose/day: (q.d. or b.i.d.) Children and Adolescents = 20 - 30 mg Adults = 50 mg	
Adderall XR® Capsules 5, 10, 15, 20, 25, 30 mg 	Sprinkable Granules	~ 12 h	5 - 10 mg q.d. a.m.	↑ 5 - 10 mg at weekly intervals Max. dose/day: Children = 30 mg Adolescents and Adults = 20 - 30 mg	Children: ↑ 5 mg at weekly intervals Max. dose/day = 30 mg Adolescents and Adults: ↑ 5 mg at weekly intervals Max. dose/day = 50 mg	
Vyvanse® capsules 10, 20, 30, 40, 50, 60, 70* mg 	Capsule content can be diluted in water, orange juice and yogurt	~ 13 - 14 h	20 - 30 mg q.d. a.m.	↑ by clinical discretion at weekly intervals Max. dose/day: All ages = 60 mg	↑ 10 mg at weekly intervals Max. dose/day: Children = 60 mg Adolescents and Adults = 70 mg	
METHYLPHENIDATE-BASED PSYCHOSTIMULANTS						
Methylphenidate short acting, tablets 5 mg (generic) 10, 20 mg (Ritalin®) 	Pill can be crushed ¹	~ 3 - 4 h	5 mg b.i.d. to t.i.d. Adult = consider q.i.d.	↑ 5 - 10 mg at weekly intervals Max. dose/day: All ages = 60 mg	↑ 5 mg at weekly intervals Max. dose/day: Children and Adolescents = 60 mg Adults = 100 mg	
Biphentlin® Capsules 10, 15, 20, 30, 40, 50, 60, 80 mg 	Sprinkable Granules	~ 10 - 12 h	10 - 20 mg q.d. a.m.	↑ 10 mg at weekly intervals Max. dose/day: Children and Adolescents = 60 mg Adults = 80 mg	↑ 5 - 10 mg at weekly intervals Max. dose/day: Children = 60 mg Adolescents and Adults = 80 mg	
Concerta® Extended Release Tabs 18, 27, 36, 54 mg 	Pill needs to be swallowed whole to keep delivery mechanism intact	~ 12 h	18 mg q.d. a.m.	↑ 18 mg at weekly intervals Max. dose/day: Children = 54 mg Adolescents = 54 mg / Adults = 72 mg	↑ 9 - 18 mg at weekly intervals Max. dose/day: Children = 72 mg Adolescents = 90 mg / Adults = 108 mg	
Fogquest® Capsules 25, 35, 45, 55, 70, 85, 100 mg 	Sprinkable Granules	~ 16 h	25 mg q.d. a.m.	↑ 10-15 mg in intervals of no less than 5 days Max. dose/day: Children and Adolescents = 70 mg Adults = 100 mg	↑ 10-15 mg in intervals of no less than 5 days Max. dose/day: Children and Adolescents = 70 mg Adults = 100 mg	
NON PSYCHOSTIMULANT - SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITOR						
Strattera® (Atomoxetine) Capsules 10, 18, 25, 40, 60, 80, 100 mg 	Capsule needs to be swallowed whole to reduce GI side effects	Up to 24 h	Children and Adolescents : 0.5 mg/kg/day Adults = 40 mg q.d. for 7-14 days	Maintain dose for a minimum of 7 - 14 days before adjusting: Children = 0.8 then 1.2 mg/kg/day 70 kg or Adults = 60 then 80 mg/day Max. dose/day : 1.4 mg/kg/day or 100 mg	Maintain dose for a minimum of 7 - 14 days before adjusting: Children = 0.8 then 1.2 mg/kg/day 70 kg or Adults = 60 then 80 mg/day Max. dose/day: 1.4 mg/kg/day or 100 mg	
NON PSYCHOSTIMULANT - SELECTIVE ALPHA-2A ADRENERGIC RECEPTOR AGONIST						
Intuniv XR® (Guanfacine XR) Extended release tabs 1, 2, 3, 4 mg 	Pills need to be swallowed whole to keep delivery mechanism intact	Up to 24 h	1 mg q.d. (no morning or evening)	Maintain dose for a minimum of 7 days before adjusting by no more than 1 mg increment weekly Max. dose/day: Monotherapy: 6-12 years = 4 mg, 13-17 years = 7 mg	Maintain dose for a minimum of 7 days before adjusting by no more than 1 mg increment weekly Max. dose/day: Monotherapy: 6-12 years = 4 mg, 13-17 years = 7 mg	

Individual Medication Profile

Non Stimulant Medications

- When to consider Non Stimulant medications?

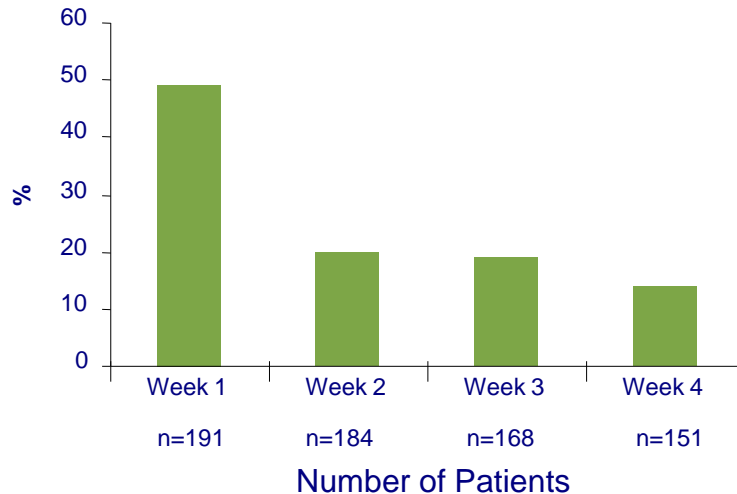
Specific Clinical tips

Augmentation Strategies

Adverse Effects

AEs Reported Over Time

Percentage of Total Treatment-Emergent AEs



Health Canada Warning

Health Canada revised the prescribing and patient information for all drugs used for the management of ADHD:

- May 2006: Contraindicated in patients with uncontrolled high blood pressure, heart disease or abnormalities, hardening of the arteries, or overactive thyroid gland¹
- September 2006: Indicate the potential for psychiatric adverse events, including rare reports of agitation and hallucinations in children²

1. www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2006/2006_35_e.html
 2. www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2006/2006_91_e.html

Warnings and Precaution

- Sudden death, serious heart problems
- Hypertension
- Psychosis, Mania
- Aggression
- Visual disturbance
- Peripheral vasculopathy including Raynaud's phenomena
- Pregnancy and lactation
- Severe renal insufficiency
- Use of sympathomimetic drugs

Adverse Effects

- | | | |
|------------------------|--------------------------|--|
| • Dryness of skin/eyes | • Weight loss | • Heart palpitations |
| • Dryness of the mouth | • Growth suppression | • Increased blood pressure |
| • Thirst / Sore throat | • Frequent urination | • Headache |
| • Dizziness | • Tics | • Sexual dysfunction |
| • Nausea | • Sleep difficulties | • Abuse potential |
| • Stomach aches | • Mood problems | • Feeling worse or different when the medication wears off (rebound) |
| • Vomiting/ Diarrhea | • Irritability | |
| • Sweating | • Agitation/excitability | |
| • Appetite reduction | • Anxiety | |

Management of Adverse Effects

Drug Interactions

Misuse, Abuse and Diversion

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Reasons for Misuse

- To improve attention, concentration and alertness,
- To improve study habits and academic performance
- To 'get high'.

Factors Associated with Stimulants Misuse

(Dussault & Weyandt, 2013; Flory, Payne, & Benson, 2014)

Malingering Detection

New Medications and New Formulations

CASES

Sergio

- 28 year old lawyer who is having several difficulties at work
- Had a recent warning about his performance
- Was diagnosed with ADHD as a child and stopped medications after graduation from Law School
- What are the next steps in diagnosis and management?



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Pogba

- 24 year old university student with problems managing workload and focusing during lectures
- Currently repeating his third year
- Referred by The University Health Center
- No previous mental health history
- What are the next steps in diagnosis and management?



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Janice

- 22 year old female who was diagnosed with ADHD at age 19
- Quit school after grade 11
- Works at a grocery store
- Fired from previous 5 jobs
- Tried high dose of MPH and stopped due to adverse effects
- What are the next steps in diagnosis and management?



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Questions, comments?