

## anagement of Childhood ADHD : Alexandre Tavares

#### **Declaration of Conflict of Interest:**

I DO NOT have any affiliation with a pharmaceutical, medical device, or communications organization.

I INTEND to make therapeutic recommendations for medications that have not received regulatory approval (e.g. "off-label" use).

# Management of Childhood ADHD Dr. Alexandre Tavares

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# Management of Childhood ADHD Dr. Alexandre Tavares

Mitigating Potential Conflicts of Interest:

Not applicable

I will specifically mention when my therapeutic recommendations have not received regulatory approval.

#### Presenter

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Child and Adolescent Inpatient Program (CAIP) and

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### To learn more:

Visit:

www.drtavares.ca



#### ADHD - Attention Deficit Hyperactivity Disorder.

- Impulsiveness and inattention, with or without a component of hyperactivity
- ADHD is a chronic disorder
- Frequently continues into adulthood

#### ADHD – DSM V American Psychiatric Association's Diagnostic and Statistical Manual

- Diagnostic criteria for Attention-Deficit/Hyperactivity Disorder
- A. Either (1) or (2):
- (1) six (or more) of the following symptoms of **inattention**
- (2) six (or more) of the following symptoms of hyperactivity-impulsivity

Note: older adolescents and adults (over age 17 years) must present with at least five symptom.

#### (1) six (or more) symptoms of inattention

- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- (b) often has difficulty sustaining attention in tasks or play activities
- (c) often does not seem to listen when spoken to directly
- (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)

- (e) often has difficulty organizing tasks and activities
- (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- (g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- (h) is often easily distracted by extraneous stimuli
- (i) is often forgetful in daily activities

### (2) six (or more) symptoms of hyperactivityimpulsivity

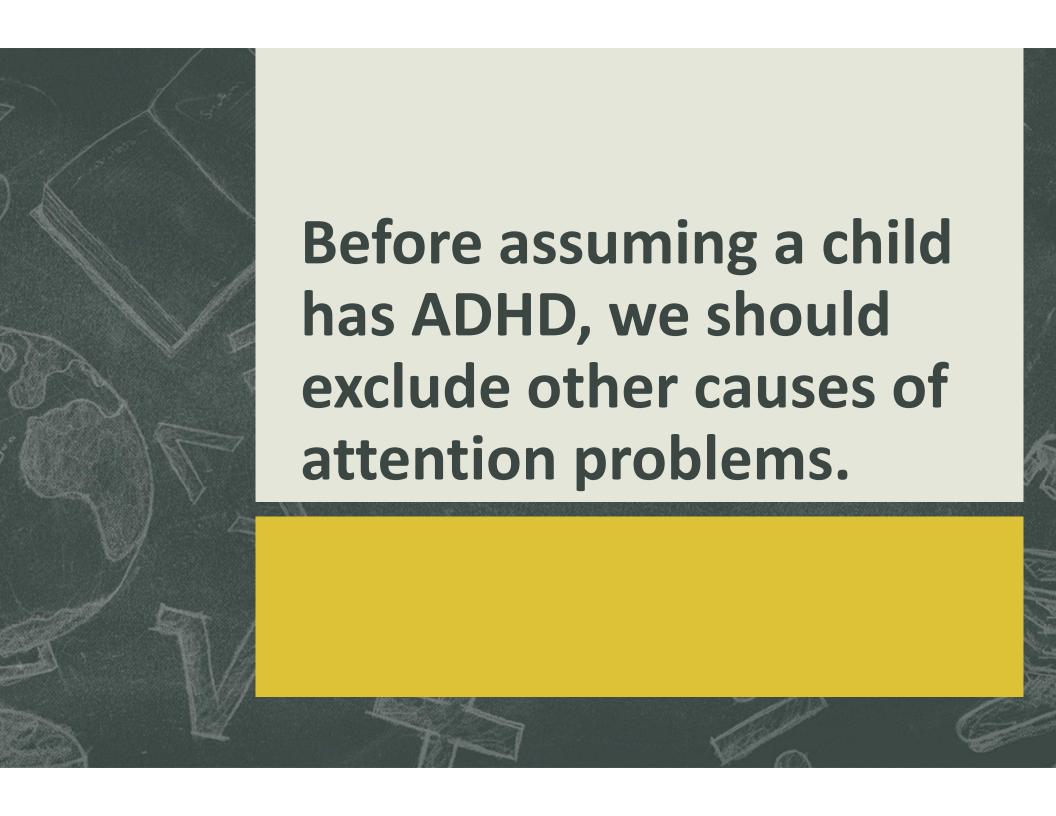
- (a) often fidgets with hands or feet or squirms in seat
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected
- (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- (d) often has difficulty playing or engaging in leisure activities quietly

- (e) is often "on the go" or often acts as if "driven by a motor"
- (f) often talks excessively
- (g) often **blurts out answers** before questions have been completed
- (h) often has difficulty awaiting turn
- (i) often interrupts or intrudes on others (e.g., butts into conversations or games)

- B. Some hyperactive-impulsive or inattentive symptoms that caused **impairment present before age of 12 years**.
- C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).
- D. There must be **clear evidence of clinically significant impairment** in social, academic, or occupational functioning.

But...

E. The symptoms do NOT occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).



#### Medical problems that can cause attention problems.

Examples of medical conditions which can cause ADHD:

- hyperthyroidism,
- seizure disorder,
- hearing deficits,
- sleep apnea

Attention problem secondary to medical problems is NOT considered true ADHD.

#### Poor sleep is a common cause of poor attention:

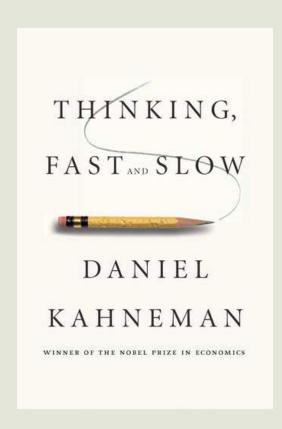
#### Common causes of poor sleep:

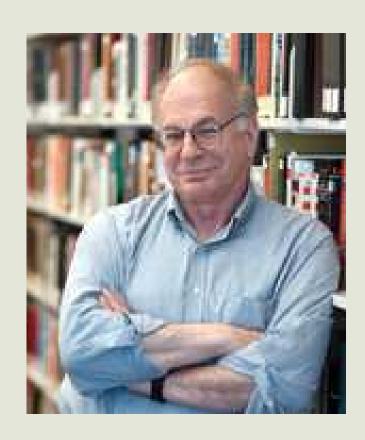
- Sleep apnea?
- Poor sleep habits:
- videogame/TV in the bedroom;
- drinking caffeinated drinks before bed time.

Read more: "Handout: Before Assuming a Child or Adolescent has a Psychiatric Disorder" (<u>www.drtavares.ca</u>)



## Study presented in the book: "Thinking, Fast and Slow Paperback" by Daniel Kahneman (Author)





### Study published in the Proceedings of the National Academy of Sciences

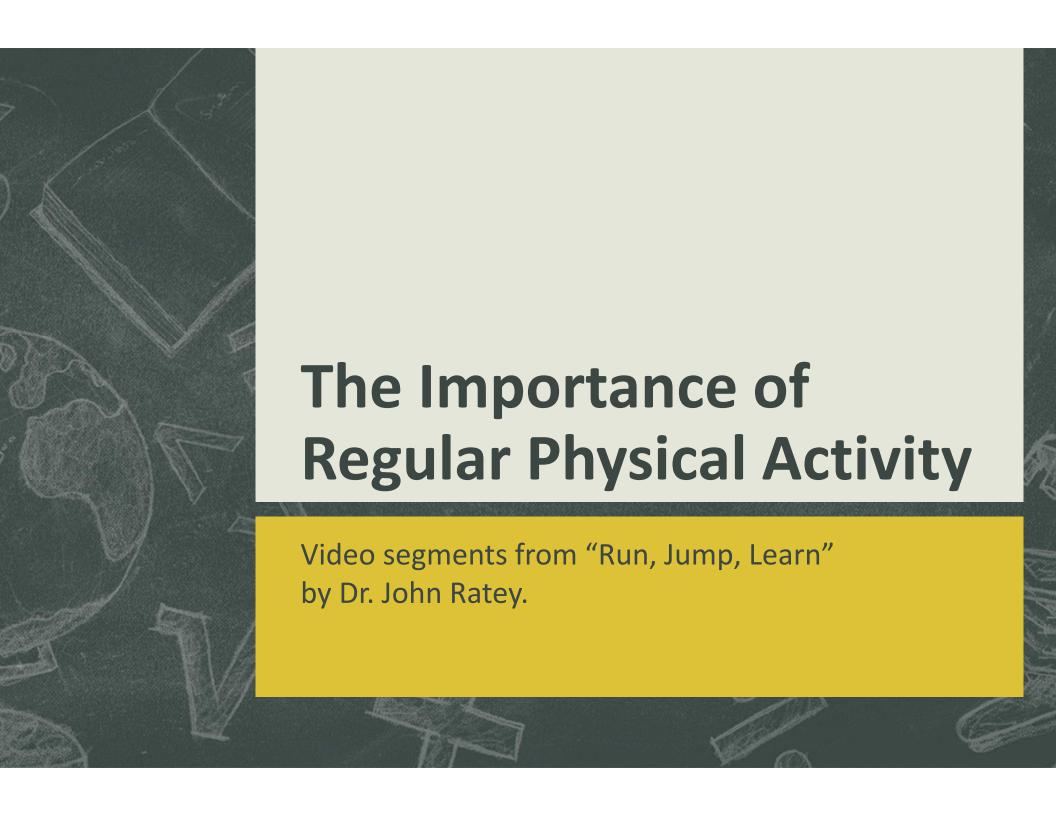
- Eight parole judges in Israel;
- Cases presented in random order;
- Judges spent on average 6 minutes per case;
- Only 35% of cases are approved;
- Time of each decision was recorded;
- Times of the judges three food breaks was recorded as well;
- The proportion of approved requests was plotted since last food break.

Percentage of requests for parole approved.

On the left: right after meal break

On the right: right before next meal break (ZERO approval rate)







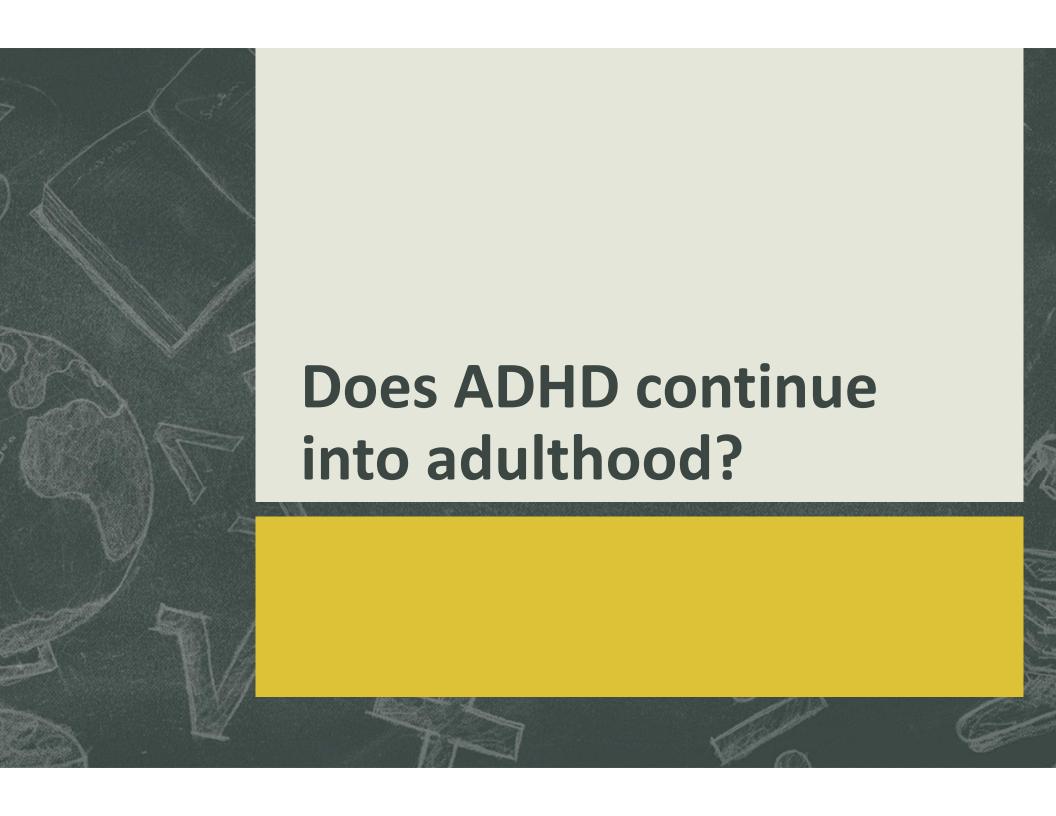
"Run, Jump, Learn" by Dr. John Ratey.

https://www.youtube.com/watch?v=hBSVZdTQmDs&feature=youtu.be&t=5m35s

Learn more:

Handout: "Physical Activity to Enhance Learning and Mental Well-Being"

https://drtavares.wordpress.com/2015/03/26/physical-activity-to-enhance-learning-and-mental-well-being/

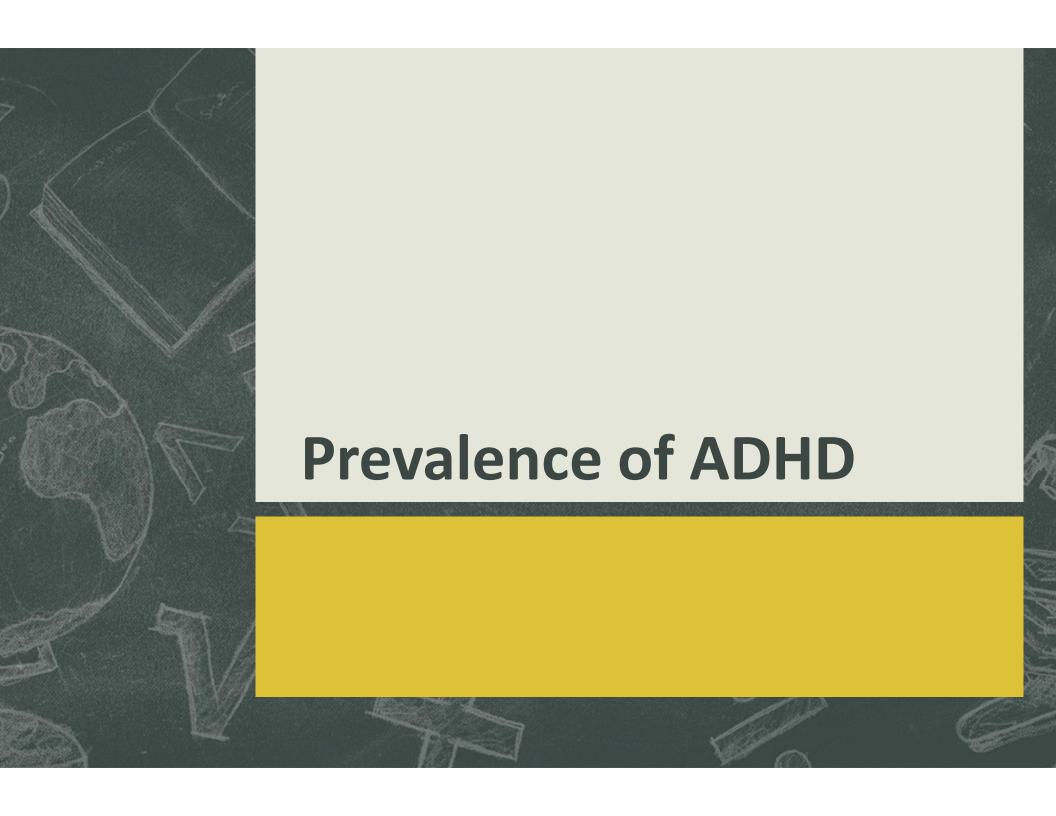


### Answer:

■ ADHD continues into adulthood 25-50% of the time.

#### Quick facts about ADHD in adulthood

- Inattention symptoms predominate.
- Adults are rarely hyperactive.
- Impulsivity may still be a problem.
- Typical presentation in adults:
- Chronic procrastination; poor organization; parents (with ADHD) forget their children' appointment dates etc...



#### How common is ADHD?

Most studies suggest prevalence of:

3 to 5% of children and teenagers

#### ADHD - Diagnosis:

- It is mostly a clinical diagnosis.
- Psychological testing for ADHD is not always precise and typically does not replace a clinical diagnosis.

#### **ADHD** - Inventories:

- Various inventories are available.
- Several are free.
- Inventories can be found at:

www.caddra.ca (Canadian ADHD Resource Alliance)





Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

Gender: \_

#### SNAP-IV 26 - Teacher and Parent Rating Scale

ompleted by:	Type of Class:		Class size:		
For each item, check the column which best describes this child:	Not At All	Just A Little	Quite A Bit	Very Mucl	
<ol> <li>Often fails to give close attention to details or makes careless mistakes in schoolwork or tasks</li> </ol>					
2. Often has difficulty sustaining attention in tasks or play activities					
3. Often does not seem to listen when spoken to directly					
4. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties					
5. Often has difficulty organizing tasks and activities					
<ol><li>Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort</li></ol>					
<ol><li>Often loses things necessary for activities (e.g., toys, school assignments, pencils, or books)</li></ol>					
8. Often is distracted by extraneous stimuli					
9. Often is forgetful in daily activities					
10. Often fidgets with hands or feet or squirms in seat					
11. Often leaves seat in classroom or in other situations in which remaining seated is expected					
12. Often runs about or climbs excessively in situations in which it is inappropriate					
13. Often has difficulty playing or engaging in leisure activities quietly					
14. Often is "on the go" or often acts as if "driven by a motor"					
15. Often talks excessively					
16. Often blurts out answers before questions have been completed					
17. Often has difficulty awaiting turn					
18. Often interrupts or intrudes on others (e.g. butts into conversations/ $\ensuremath{games}\xspace)$					
19. Often loses temper					
20. Often argues with adults					
21. Often actively defies or refuses adult requests or rules					
22. Often deliberately does things that annoy other people					
23. Often blames others for his or her mistakes or misbehavior					
24. Often touchy or easily annoyed by others					
25. Often is angry and resentful					



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	1005 105 100	Vasc is Little	Auto II Die	,,
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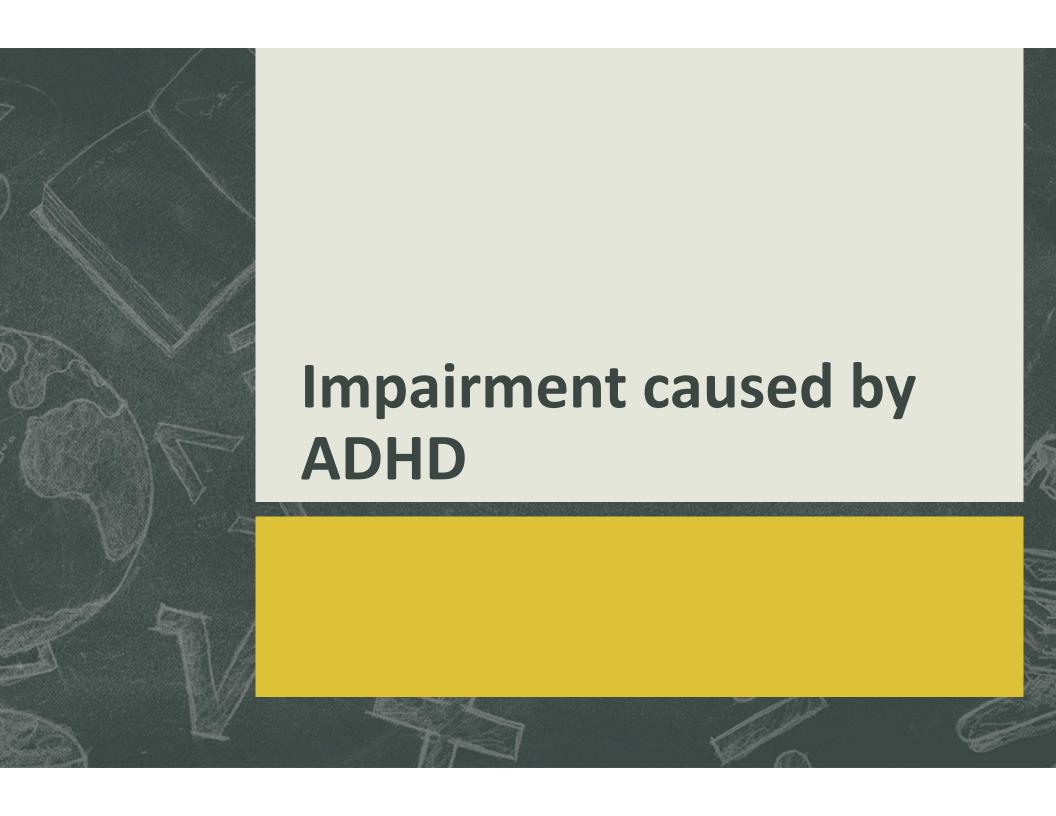
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ften actively defies or refuses adult requests or rules				
ften deliberately does things that annoy other people				
ften blames others for his or her mistakes or misbehavior				
ften touchy or easily annoyed by others				
ften is angry and resentful				
ften is spiteful or vindictive				

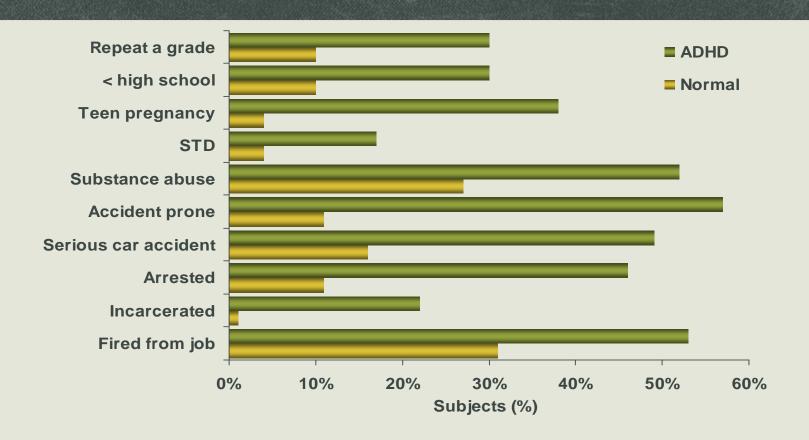
### Adult ADHD Self-Report Scale (ASRS-v1.1)

Available on line.

https://add.org/wp-content/uploads/2015/03/adhd-questionnaire-ASRS111.pdf

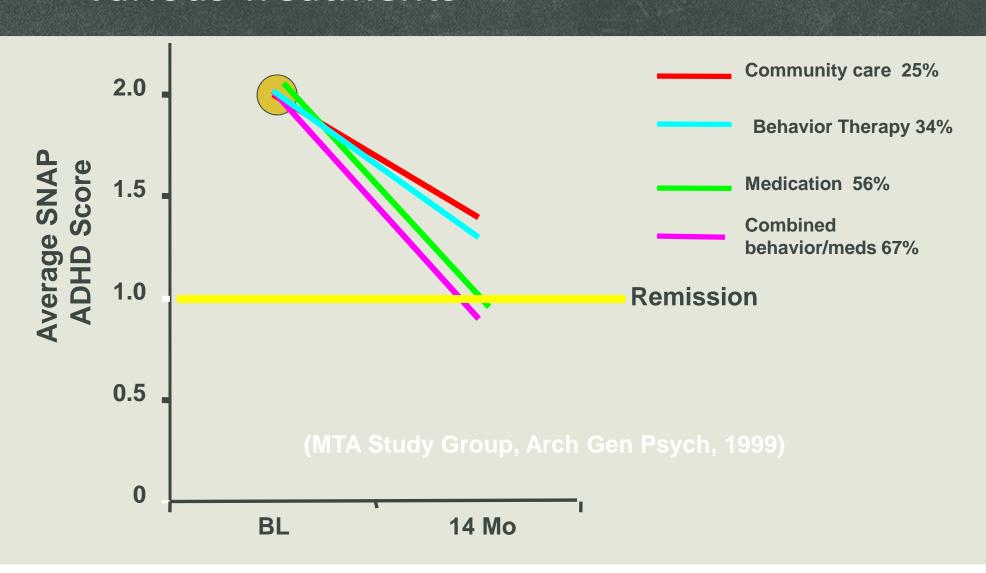


# Functional Impairment in Patients With ADHD vs Controls



<sup>1.</sup> Barkley. Attention-deficit hyperactivity disorder. A handbook for diagnosis and treatment, 1998; 2. Barkley et al. JAACAP 1990; 3. Biederman et al. Arch Gen Psych 1996; 4. Weiss et al. JAACAP 1985; 5. Satterfield, Schell. JAACAP 1997; 6. Biederman et al. Am J Psych 1995.

# MTA RESULTS - % of Children Responding to Various Treatments



### Discussion of chart:

- Unfortunately, in long term follow up, any additional benefits from the medication and from the behavior interventions disappeared and all the groups were equivalent.
- Medication utilized: short acting form of methylphenidate.
   Multiple daily doses required.
- Would the results have been better if long acting forms of medication were available? Only new studies will answer this question.

## Treatment of ADHD – medications:

- Medications can have a central role in the treatment of ADHD, but medications alone are rarely enough.
- Stimulants: methylphenidate; amphetamines.
- Non-stimulant Selective Norepinephrine reuptake inhibitor: atomoxetine;
- Non-stimulant Selective Alpha Adrenergic Receptor Agonist: Guanfacine.
- Bupropion (an antidepressant).

## Medications – for additional information:

CADDRA - Canadian ADHD medication chart (free):

http://www.caddra.ca/pdfs/Medication Chart English CANADA.pdf

Medication app (free version available) – Epocrates:

www.epocrates.com

### CADDRA Guide to ADHD Pharmacological Treatments in Canada - 2016

Medications available and illustrations	Characteristics	Duration of action <sup>1</sup>	Starting dose <sup>2</sup>	Dose titration as per product monograph	Dose titration as per CADDRA www.caddra.ca			
AMPHETAMINE-BASED PSYCHOSTIMULANTS								
Dexedrine®	Pill can be	~ 4 h	Tablets = 2.5 to 5 mg BID	↑ 2.5 - 5 mg at weekly intervals;	↑ 2.5 - 5 mg/day at weekly intervals			
Dexedrine® spansules 10, 15 mg	crushed <sup>3</sup> Spansule (not crushable)	~6-8h	Spansules = 10 mg q.d. a.m.	Max. dose/day: (q.d. or b.i.d.) All ages = 40 mg	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 20 25 30	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 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 = 60mg Adolescents and Adults = 70 mg			
METHYLPHENIDATE-BASED PSYCHOSTIMULANTS								
Methylphenidate short acting, tablets 5 mg (generic) 10, 20 mg (Ritalin*) 10 70 70 10 70 70 70 70 70 70 70 70 70 70 70 70 70	Pill can be crushed <sup>3</sup>	~3-4h	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			
Biphentin®	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 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			
NON PSYCHOSTIMULANT - SELECTIVE NOREPINEPHR	INE REUPTAKE INHIB	ITOR						
Strattera <sup>ND</sup> (Alomoxetine) Capsules 10, 18, 25, 40, 60, 80, 100 mg	Capsule needs to 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 ADR	ENERGIC 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. (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 As adjunctive therapy to psychostimulants 6-17 years = 4 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 As adjunctive therapy to psychostimulants 6-17 years = 4 mg			

Note: Illustrations do not reflect real size of pills/capsules, For specific details on how to start, adjust and switch ADHD medications, clinicians are invited to refer to the Canadian ADHD Practice Guidelines (www.caddra.ca)

Document developed by Annick Vincent MD (www.attentiondeficit-into.com) and Direction des communications et de la philanthropie, Laval University, with the special collaboration of CADDRA.



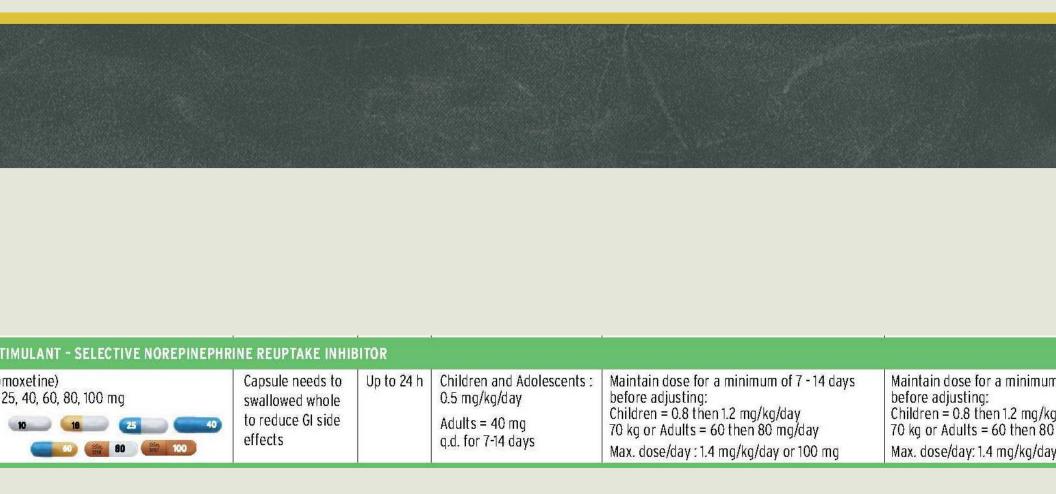


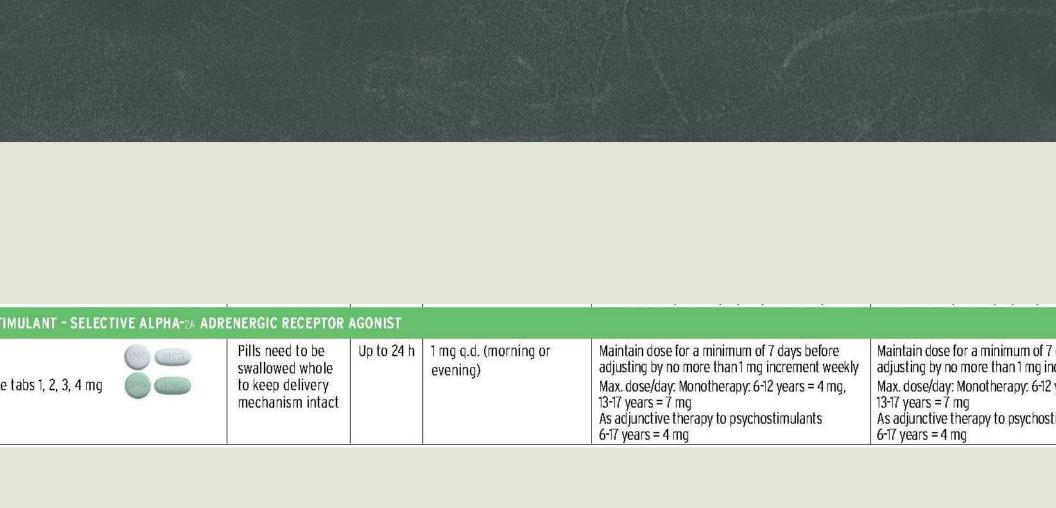
<sup>1</sup> Pharmacodynamic response vary from individual to inclinidual. The clinician must use clinical judgement as to the duration of efficacy and not solely rely on reported values for PK and duration of effect.

2 Starting doses are from product monographs. CADDRA recommends generally starting with the lowest dose available. 3 Higher abuse potential.

vailable and illustrations	Characteristics	Duration of action	Starting dose <sup>2</sup>	Dose titration as per product monograph	Dose titration as per C
E-BASED PSYCHOSTIMULANTS		and Committee			
5 mg	Pill can be crushed <sup>3</sup> Spansule (not crushable)	~4h ~6-8h	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 we Max. dose/day: (q.d. or Children and Adolescer Adults = 50 mg
20 25 30	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 wed Max. dose/day = 30 mg Adolescents and Adults weekly intervals max. dose/day = 50 mg
\$400 -\$50mg \$480 50mg \$480 60mg	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 inte Max. dose/day: Children = 60mg Adolescents and Adults

	/ - 9	I		1					
DATE-BASED PSYCHOSTIMULANTS									
te short acting, tablets lin®)	Pill can be crushed <sup>3</sup>	~3-4h	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 = Adults = 100 mg				
第10 第 第15 第 第20 第	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 inter Max. dose/day: Children = 60 mg Adolescents and Adults = 8				
ase 54 mg (alza 8) (alza 27) (aza 28)	Pill needs to 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 inter Max. dose/day: Children = 72 mg Adolescents = 90 mg / Adu				





## Information about Wellbutrin (bupropion) – from epocrates.com

### Wellbutrin SR

bupropion hydrochloride

**Dosage Forms** 

100,150,200 ER

**Pediatric Dosing** 

#### \*ADHD

#### 12 yo and older

Dose: 3-6 mg/kg/day PO divided bid; Start: 2 mg/kg up to 100 mg PO qam, incr. by up to 1 mg/kg/day q2-3wk to 3-6 mg/kg/day PO divided bid; Max: 400 mg/day; Info: do not cut/crush/chew tab

### Wellbutrin XL

bupropion hydrochloride

Dosage Forms

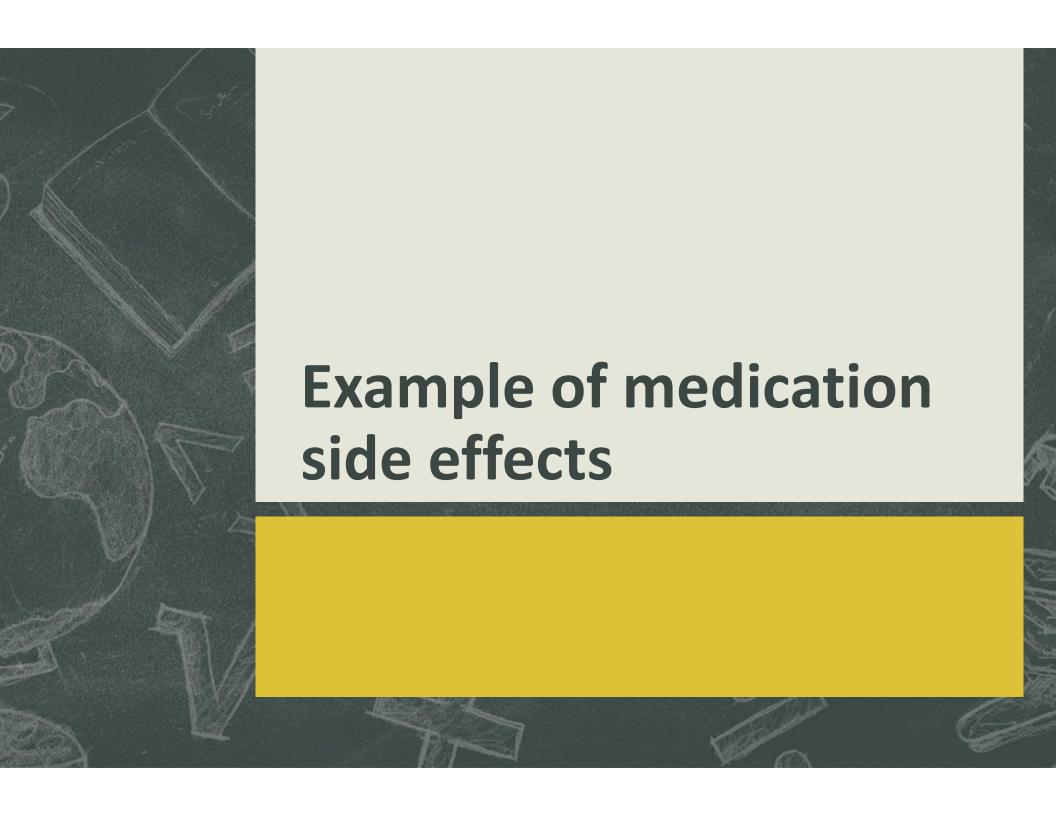
150,300 ER

**Pediatric Dosing** 

#### \*ADHD

#### 12 yo and older

Dose: 3-6 mg/kg/day PO qam: Start: 150 mg PO qam, may incr. dose after 2wk; Max: 450 mg/day; Info: do not cut/crush/chew tab



# RITALIN (*methylphenidate*) – possible side effects:

#### **Common Reactions**

- nervousness; insomnia; anorexia
- abdominal pain; weight loss (long-term use)
- tachycardia; nausea; motor tics; headache;
- palpitations; dizziness; fever; rash; urticaria
- depression, transient; drowsiness
- dyskinesia; angina; BP changes
- visual disturbances; elevated liver transaminases

# RITALIN (*methylphenidate*) – possible side effects:

#### **Serious Reactions**

- dependency, abuse; psychosis; mania
- aggressive behavior; Tourette's syndrome
- Arrhythmia; MI; stroke; sudden death
- Seizures; growth suppression (long-term use)
- hypersensitivity rxn; exfoliative dermatitis
- erythema multiforme; thrombocytopenic purpura
- leukopenia; neuroleptic malignant syndrome
- cerebral arteritis; hepatic coma

## Other stimulant medications:

Side effects SIMILAR to RITALIN (methylphenidate).

## Wellbutrin (bupropion)

- It is an antidepressant.
- Can be used to treat ADHD.

### May help children that:

- Do not tolerate stimulant ADHD medications
- Have a history of abuse of stimulant ADHD medication.

## Wellbutrin (bupropion)

- Is Wellbutrin safer or better that the stimulant ADHD medications?
- Not necessarily.
- Usually do NOT work as well.
- May work extremely well for some children and teenagers.

## Omega 3 fish oil

- A few studies indicate it may be beneficial in the treatment of ADHD.
- Most patients have either no clinical response or small improvements.
- Small subgroup of patients may have clinically significant improvements.

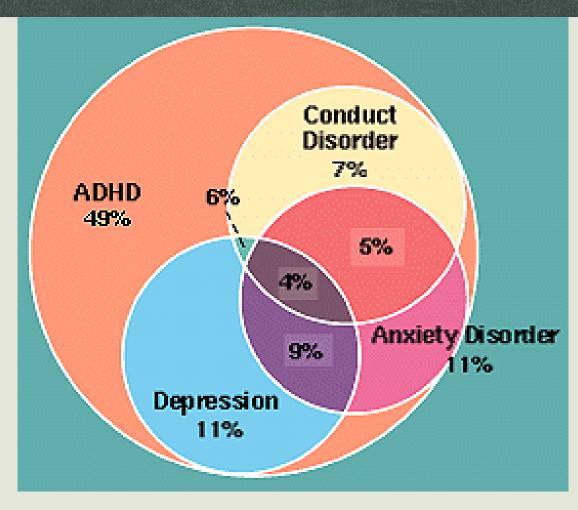
Learn more reading the handout 'Healthy Body, Healthy Mind" (www.drtavares.ca)



## Conditions commonly associated with ADHD:

- Anxiety Disorders
- Depression
- Oppositional Defiant Disorder
- Conduct disorder
- Learning Disabilities
- Drug / alcohol abuse or dependence
- Fetal Alcohol Syndrome
- Tourette's syndrome

Illustration from Joseph Biederman and Stephen Faraone, Harvard Mahoney Neuroscience Institute Letter, Winter 1996 Volume 5 Number 1



## Differential diagnosis

How to differentiate among these conditions?

- "clinical picture"
- Timing
- Age of onset
- Family history

# Learning disabilities and ADHD

- Can a child have both?
- Answer: YES
- Consequences of having both.
- Common misconceptions.

## Gifted child or adolescent with ADHD

- Can an intelligent child or teenager have ADHD?
- Answer: YES!

- My child is doing well at school. So she/he can't have ADHD, is this correct?
- Answer: NO!

# Behavioral interventions:

- Oppositional behaviors: managed mostly with parent management training and behavioral treatment.
- Parent Management Training (PMT) is also very important in the treatment of ADHD.

## Common Benefits of Parent Management Training (PMT)

- A) Use of smaller doses of ADHD medication.
- B) Leads to lower need for sleep aid medications.
- C) Improved parent mental health.
- D) Lower anxiety level among the children.

# How to get the training (Parent Management Training) From lowest cost or more convenient, to higher cost – slide 1/2

A) Parenting books and videos based on Evidence Based Resources - examples:

Book: "The Kazdin Method for Parenting the Defiant Child" by Alan E. Kazdin.

Video: Angry Kids & Stressed Out Parents

http://www.cbc.ca/doczone/episodes/angry-kids-stressed-out-parents

Videos: Ten Secrets to Positive Parenting

http://www.cbc.ca/doczone/features/ten-secrets-to-positive-parenting

B) Web based training:

http://www.triplep-parenting.net/ont-en/find-help/triple-p-online/

# How to get the training (Parent Management Training) From lowest cost or more convenient, to higher cost – slide 2/2

C) Sign up to attend a evidence based parenting program:

Triple P: Positive Parenting Program:

www.triplep.net

The Incredible Years

www.incredibleyears.com

Parent Child Interaction Therapy

www.pcit.org

