

TREATMENT OF ADHD



1. "Kids on Monkey Bars" by Fat Camera.; Google Stock Images.



2. "Teddybear" by Pixabay; Pexels.

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Kelty Mental Health Resource Centre

We help families across the province by:

- ▶ Helping with understanding and navigating the mental health system
- ▶ Listening and offering peer support, and
- ▶ Connecting families to resources and tools.



Webinar Series & Recordings



ADHD
Webinar Series
FOR PARENTS & CAREGIVERS

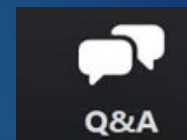
*brought to you in collaboration with the BC Children's Hospital
Provincial ADHD Program*

Practical Self-Regulation Tools
ADHD Basics
→ ADHD Treatment in Children & Youth ←
Parenting a Child with ADHD
ADHD Goes to School

For recordings, slides, and other resources visit:
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Housekeeping

- ▶ Attendees are automatically muted & cameras are turned off.
- ▶ Please submit questions for the speakers through the “Q&A” icon.
 - ▶ you can ‘upvote’ questions that you want answered.
 - ▶ You can also submit questions anonymously.
- ▶ Please submit technical questions/comments through the “Chat” icon.
- ▶ At the end of the webinar, a survey will pop up for you to complete. The survey will also be sent to you in an email tomorrow.



NOTE: This information applies to the context in British Columbia. If you are in another jurisdiction please consult your local health authority for further information.

Speaker



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LAND ACKNOWLEDGEMENT

- ▶ I respectfully acknowledge that the the land I work on is the traditional territory of the Coast Salish peoples, including the Musqueam, Squamish, and the Tsleil-Waututh Nations.



LEARNING OBJECTIVES

- ▶ 1. To look at all options for ADHD Tx. Best outcomes occur using both non pharmaceutical and pharmaceutical treatments.
- ▶ 2. To look at differences between short acting, intermediate acting and long acting stimulants.
- ▶ 3. To look at non stimulant medications.
- ▶ 4. To understand how treatment of other comorbidities can help improve ADHD treatments.
- ▶ 5. To discuss the neuroprotective effect on brain function of medications for complex ADHD.



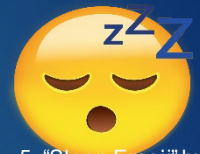
SOME ADHD TREATMENT CONSIDERATIONS...

- 1 ADHD Kid ≠ Another ADHD kid.
- Parents know best....There is no right or wrong decision with regards to treating your child's ADHD with meds.
- Recovery from ADHD is not a race; it's a marathon...so pace yourself.
- Parental educational programs can help a child's ADHD dysfunction almost as much as ADHD medications. But this may not help at school...

NON PHARMACOLOGIC TREATMENT OF ADHD

▶ PROVEN/EVIDENCE BASED

- ▶ 1. Parental education/intervention program
- ▶ 2. Sleep hygiene ± melatonin 2 hr before bed
- ▶ 3. Diet i.e. complex carb + protein, freq snacks, high fat dairy, Pediasure
- ▶ 4. Omega 3 fatty acids, 750-1000 mg daily
- ▶ 5. 30 min cardio exercise 4-5 X a week
- ▶ 6. Tutoring i.e. Orton Gillingham
- ▶ 7. School based/ “Real life” - Social skills training
- ▶ 8. School accomodations with IEP



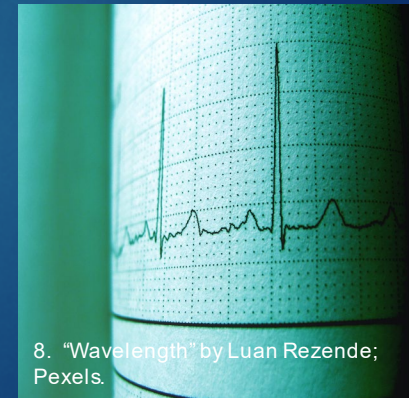
5. “Sleep Emoji” by J.Lover; Clipart ket.com; Google Stock Images.



6. ID194454525 © David Tadevosian; Dreamstime.com; Google Stock Images.

WHEN TO TRY MEDICATION

- ▶ Evidence of impairment, at home and at school
- ▶ Thorough evaluation for co-existing conditions
- ▶ No positive cardiac history/family history SCD/arrythmias
- ▶ Baseline assessment of side effects
- ▶ Everyone is well educated and prepared for the trial of medication



Quick Guide to ADHD Medication in CANADA - February 2018



Medications available and illustrations of Tabs	Liberation mode (% immediate / delayed)	Particularities	Duration of action ¹	Starting Dose ²	Dose titration as per product monograph
Amphetamine-based psychostimulants					
Dexedrine® Tablets 5 mg Dexedrine® spansules 10, 15 mg	 (100/0) (50/50)	Pill can be crushed ³ Spansule	~ 4 h ~ 6 - 8 h	Tablets = 2.5 to 5 mg BID Spansules = q.d. 10 mg am	↑ 2.5 - 5 mg at weekly intervals; max. dose/day: (q.d. or b.i.d.) All ages = 40 mg
Adderall XR® Capsules 5, 10, 15, 20, 25, 30 mg	 (50/50)	Sprinkable Granules	~ 12 h	5 - 10 mg q.d. a.m.	↑ 5 mg at weekly intervals max. dose/day: Children = 30 mg Adolescents and Adults = 20 - 30 mg
Vyvanse® Capsules 10, 20, 30, 40 50, 60, 70* mg	 Prodrug	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
Methylphenidate-based Psychostimulants					
Methylphenidate short acting Tablets 5 mg (generic) 10, 20 mg (Ritalin®)	 (100/0)	Pill can be crushed ³	~ 3 - 4 h	5 mg b.i.d. to t.i.d. Adult: consider q.i.d.	↑ 5 mg at weekly intervals max. dose/day: All ages = 60 mg
Biphentin® Capsules 10, 15, 20, 30, 40, 50, 60, 80 mg	 (40/60)	Sprinkable Granules	~ 10 - 12 h	10 - 20 mg q.d. a.m.	↑ 5 - 10 mg at weekly intervals max. dose/day: Children and Adolescents = 60 mg Adults = 80 mg
Concerta® Extended Release Tabs 18, 27, 36, 54 mg	 (22/78)	Pill needs to be swallowed whole to keep delivery mechanism intact	~ 12 h	18 mg q.d. a.m.	↑ 9 - 18 mg at weekly intervals max. dose/day: Children = 54 mg Adolescents = 54 mg / Adults = 72 mg
Foquest® Capsules 25, 35, 45, 55, 70, 85, 100 mg	 (20/80)	Sprinkable Granules	~ 16 h	25 mg q.d. a.m.	↑ 10-15 mg in intervals of no less than 5 days Max. dose/day: Adults = 100 mg
Non psychostimulant - Selective Norepinephrine Reuptake Inhibitor					
Strattera® (Atomoxetine) Capsules 10, 18, 25, 40, 60, 80, 100 mg	 Not applicable	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
Non psychostimulant - Selective Alpha-2A Adrenergic Receptor Agonist					
Intuniv XR® (Guanfacine XR) Extended Release Tabs 1, 2, 3, 4 mg	 Not applicable	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

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). ¹ Pharmacokinetics and pharmacodynamic response vary from individual to individual. 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. * Vyvanse 70 mg is an off-label dosage for ADHD treatment in Canada. Document developed by Annick Vincent MD (www.attentiondeficit-info.com) and Direction des communications et de la philanthropie, Laval University.

ADHD MEDICATIONS

- ▶ Stimulants and non stimulants (guanfacine XR, atomoxetine) most effective treatments for core ADHD symptoms
- ▶ Stimulants most well-studied medications in psychiatry (350+ studies)
- ▶ High safety ratings – safer than baby aspirin
- ▶ Over 90% of children will improve (50% will be in normal range)
- ▶ Can be used safely for years (compliance a problem in teens; 50% stop using after 3 years)

CADDRA TREATMENT GUIDELINES 2017

▶ 1ST LINE

- ▶ All long acting stimulants (LAS) i.e. Concerta, Biphentin, Foquest, Adderral XR and Vyvanse

▶ 2ND LINE

- ▶ Short and intermediate acting stimulants
- ▶ atomoxetine
- ▶ guanfacine XR



9. "Google Android Robot with Pills" by Slon.pics; Google StockImages.

▶ 3RD LINE

- ▶ clonidine
- ▶ atypical antipsychotics

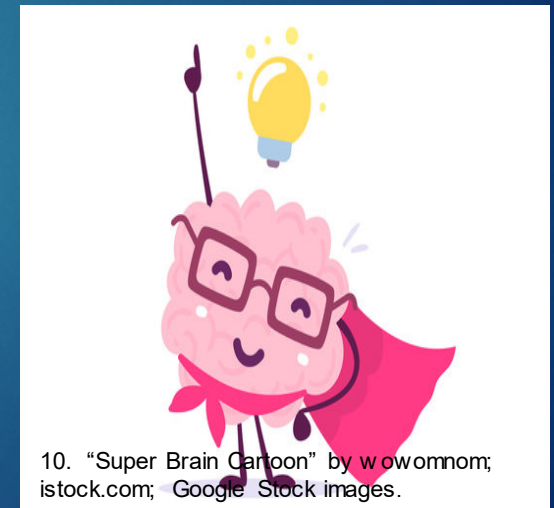
STIMULANT POSITIVE EFFECTS

Improves core symptoms:

- ↑ concentration & attention
- ↓ impulsivity & hyperactivity/restlessness
- ↑ working memory and internalized language

Secondary effects:

- ↑ work productivity (accuracy)
- ↓ aggression & defiance (studies in children)
- ↑ handwriting & motor coordination
- ↑ self-esteem
- ↑ peer acceptance & interactions
- Better awareness of game in sports
- ↑ driving performance
- ↓ recreational substance abuse



Stimulants: Common Myths

Addictive When Used as Prescribed

No, must be inhaled or injected

Greater Risk of Later Substance Abuse

No, 14 studies find no such result; a few also found decreased risk if continued through teens

Over-prescribed

No, 4.3 % on medication vs. 5-6% prevalence

Creates Aggressive, Assaultive Behavior

No, decreases aggression & antisocial actions

Increased Risk of Seizures

Only at very, very high doses

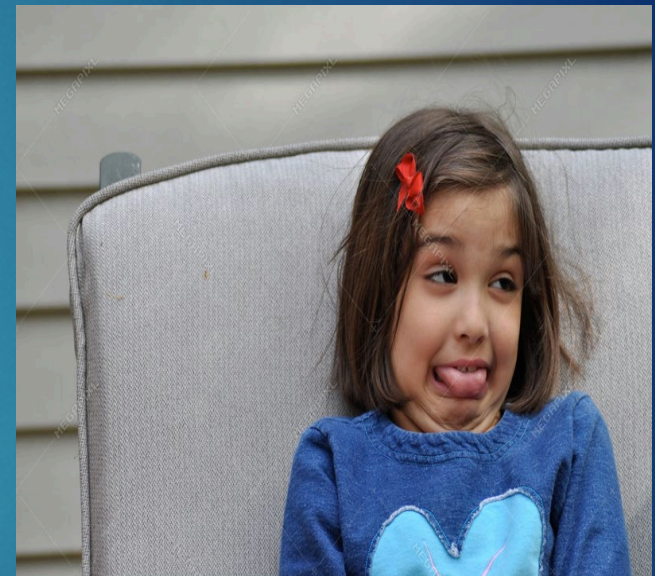
Causes Tourette's Syndrome

Can increase pre-existing tics in 30% of cases; decreases in 35%

STIMULANT SIDE EFFECTS

Dose responsive; most common:

- ▶ Insomnia (50% +)
- ▶ Loss of Appetite (50%+)
- ▶ Headaches (20-40%)
- ▶ Stomachaches (20-40%)
- ▶ Irritable, Prone to Crying (<10%)
- ▶ Nervous Habits & Mannerisms (<10%)
- ▶ Tics (<3%) & Tourette's (Rare)
- ▶ Mild Weight Loss (mean = 1-4 lbs.; transient)
- ▶ Small Effect on Height 1st year (about 1 cm)



11. "Yuck!" ID14343462, © Canettistock;
megapixel.com; Google Stock Images.

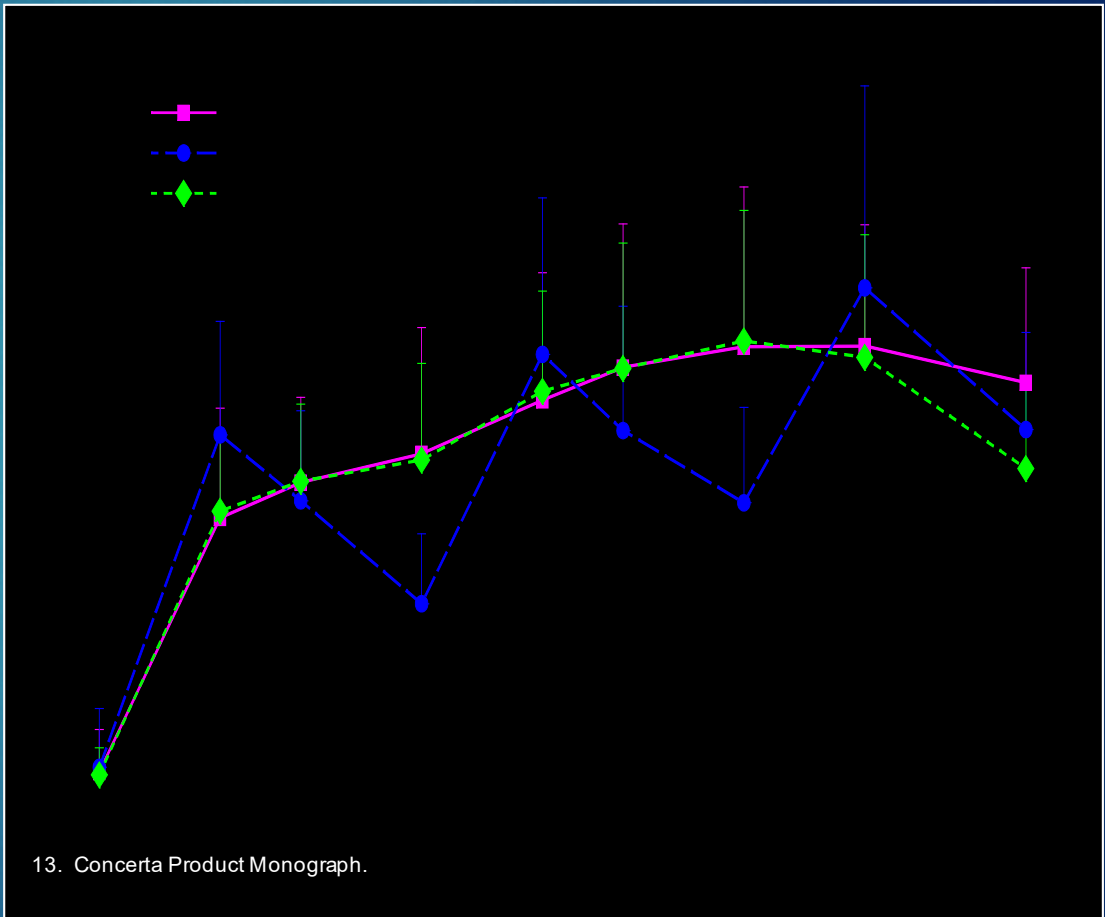
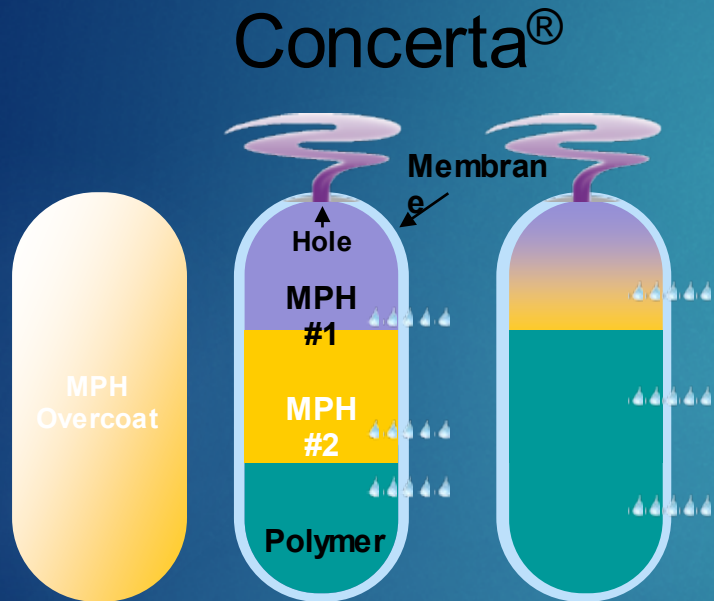
ADVERSE SIDE EFFECTS

▪ <5% discontinue due to adverse events ie. Cardiac side effects, suicidal thinking (SI)... BUT don't be alarmed just yet. Usually SI is decreased with meds.



Proof of product study:

PK profiles for OROS-MPH (Concerta®) and IR-MPH (Ritalin®)



Biphentin®

(CR Methylphenidate MLR™)



14. Biphentin Product Monograph.

MANAGING SIDE EFFECTS

- ▶ Ensure compliance!!
- ▶ Adjust dose
- ▶ Check for rebound
- ▶ Assess for comorbidities and treat these
- ▶ Assess for substances, med diversion/abuse
- ▶ Psychosocial changes
- ▶ Improve sleep hygiene/Melatonin 2 hrs before bedtime
- ▶ Improve eating ie. Higher fat dairy, more protein, Pediasure,

MEDICATIONS 2

- ▶ Non stimulants
 - ▶ Atomoxetine
 - ▶ Guanfacine XR
 - ▶ Clonidine IR
 - ▶ Risperidone



15. "Pillsin Dosette" by Polina Tankilevitch; Pexels.

ATOMOXETINE SIDE EFFECTS

➤ Common side effects

Decreased appetite

Stomach upset, mild nausea

Headaches, drowsiness, dizziness

Potential for irritability

Energized feelings, nervousness

Increased heart rate

➤ Rare side effects

Liver dysfunction

Rash

Agitation and suicidal thinking



16. Atomoxetine Product Monograph.

GUANFACINE XR

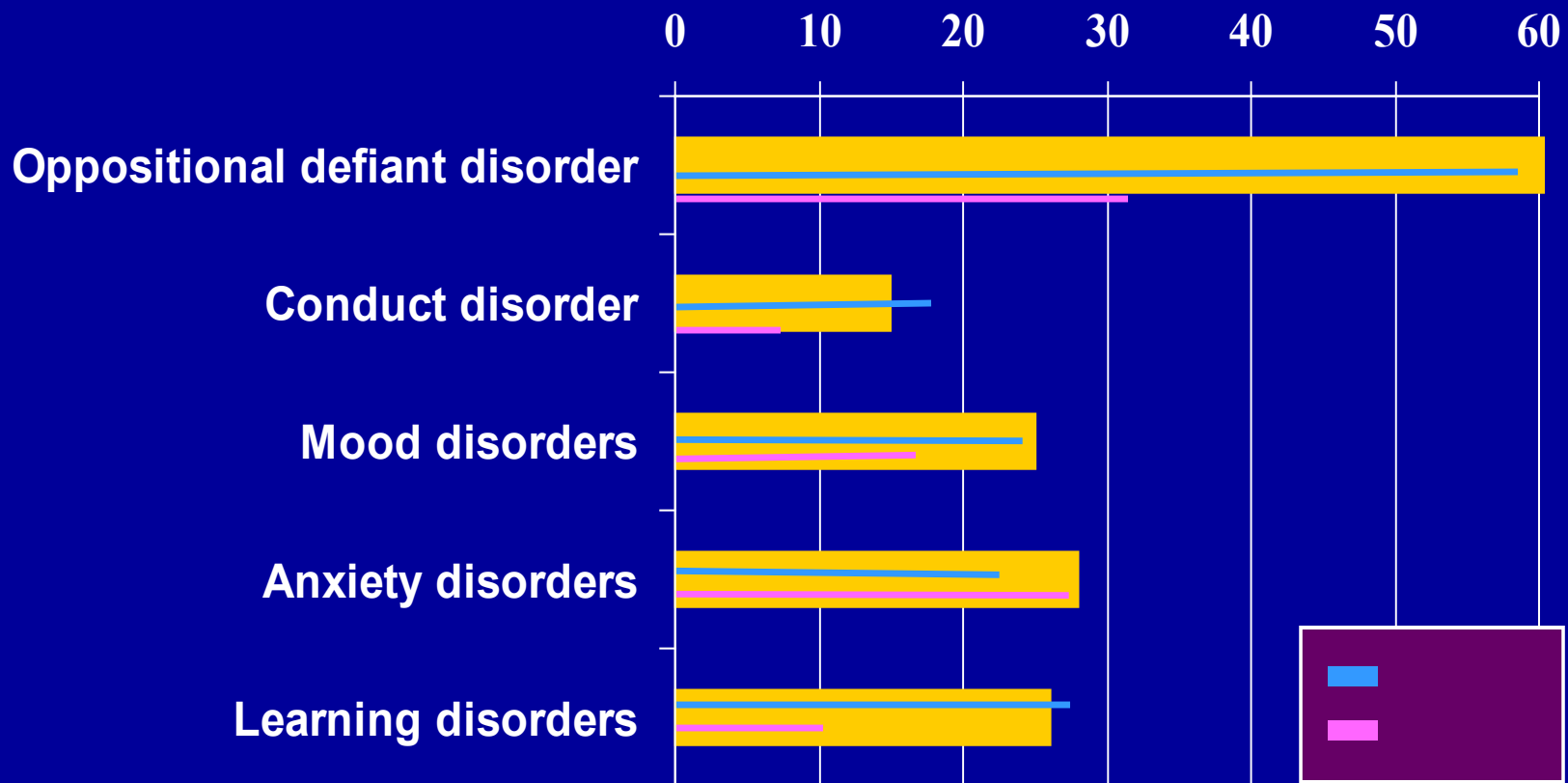
- ▶ ALPHA 2 AGONIST.
- ▶ Increases norepinephrine in the brain cells.
- ▶ Improves focus, emotional dysregulation, hyperactivity and impulsivity.
- ▶ Does NOT suppress appetite and does NOT worsen tics.
- ▶ Does NOT cause insomnia – in fact can cause some daytime sedation for the 1 to 2 days.
- ▶ Requires daily dosing; Requires 4 to 6 weeks to see full therapeutic effect.
- ▶ Uncommon side effects = dizziness, daytime sedation, low blood pressure.



ADHD—Childhood

Common Comorbid Diagnoses

Approximate Prevalence Rate in Children With ADHD (%)

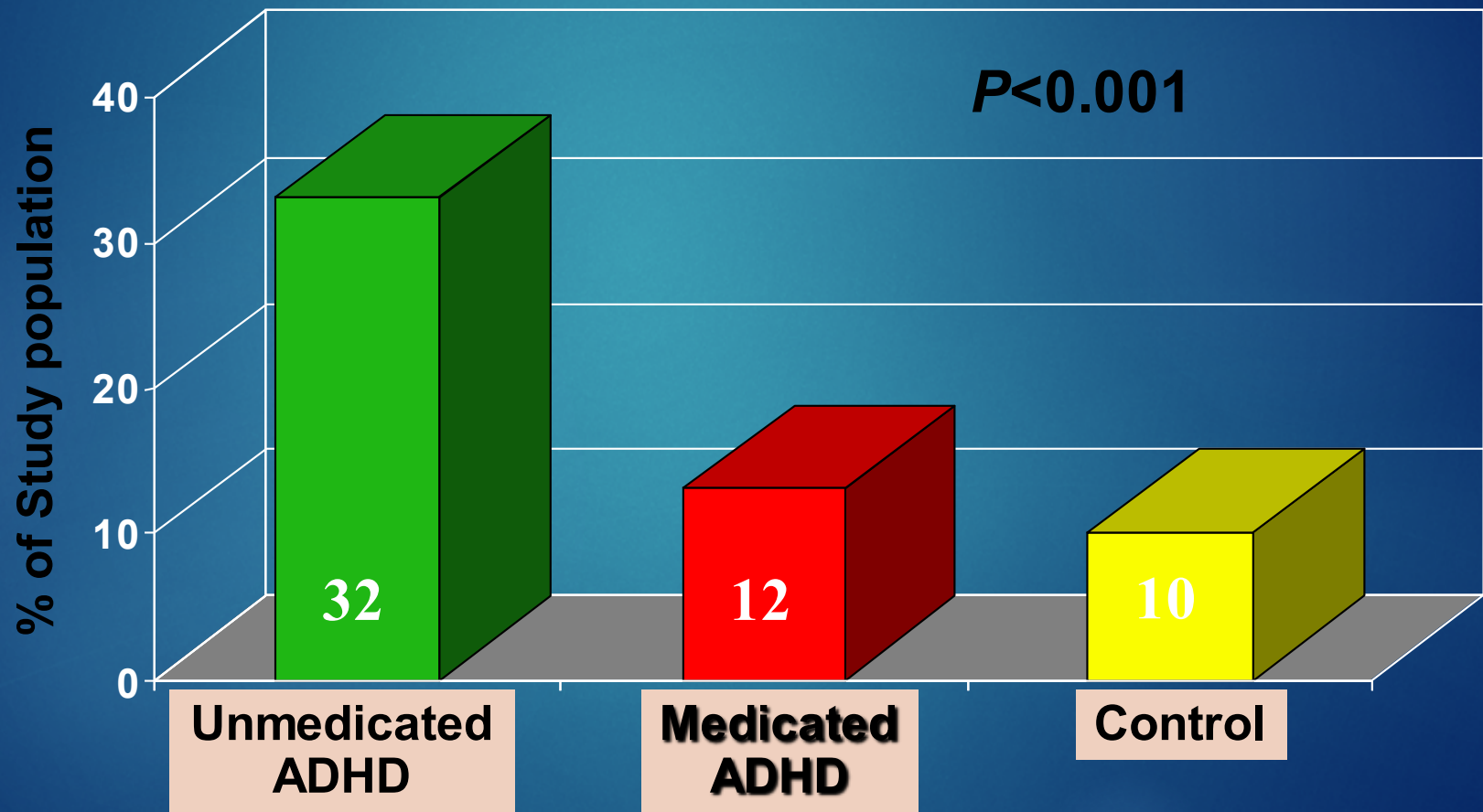


TREATMENT OF ANXIETY ± DEPRESSION IN ADHD YOUTH

- ▶ For moderate to severe = use SSRI (fluoxetine, sertraline, or citalopram) and start very low and go slow + CBT.
- ▶ For mild to moderate, but ADHD med ≠ therapeutic dose or too many side effects from ADHD med = use SSRI and start very low and go slow + CBT.
- ▶ CBT options: Taming the Worry Dragons group (BCCH, some schools), Cool Kids group (CYMHT), indiv CBT (CYMHT, private).
- ▶ Mindfulness CBT new therapy for teens/adults.

ADHD RX PREVENTS ADULT DRUG ABUSE

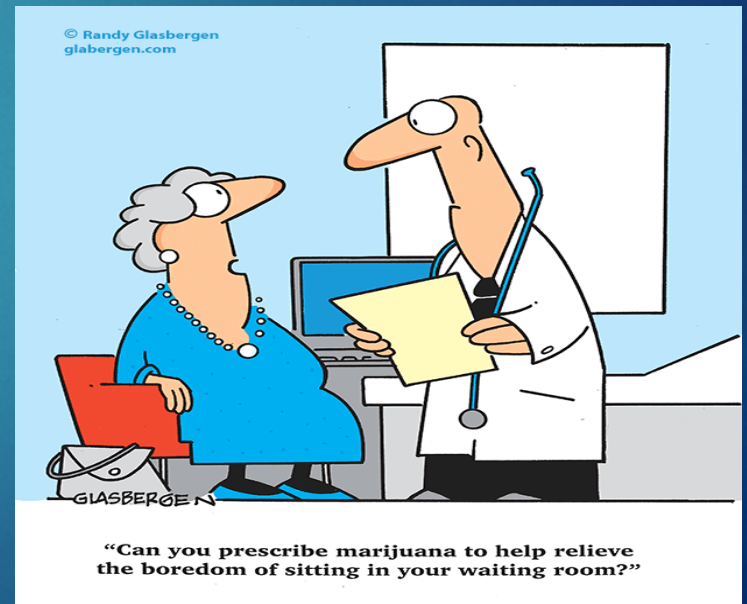
Effect of pharmacotherapy



Biederman, Wilens, Mick, et al. *Pediatrics*. 1999; 104:e20-e25.

SO WHAT ABOUT BC BUD? IT'S NATURAL...

- ▶ No good scientific studies yet to show “Yay” or “Nay”.
- ▶ BC Bud is high in THC; decreases working memory and processing speed aka “ADHD-Like” effects.





19. "Binoid CBD Bottle" by Binoid CBD; Pexels.

CBD OIL

- Cannibinol oil has low THC content, and has been shown in preliminary studies to have an anti- inflammatory effect. But no evidence that inflammation in ADHD.
- Don't have any replicated positive effect with ADHD kids.
- Effective dose also not determined yet.
- CBD oil can negatively interact with medications.

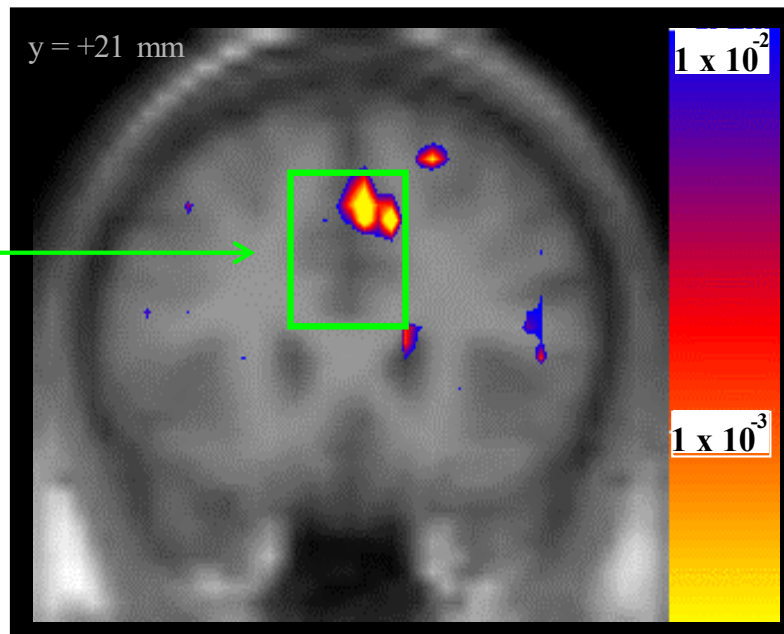
THE NEUROPROTECTIVE EFFECT OF STIMULANTS

- ▶ Several studies now with long acting stimulants (LAS) which show normalization of frontal lobe function with ADHD youth
- ▶ Also see improved brain volumes in LAS Tx ADHD youth
- ▶ The LAS Tx ADHD youth brain scans were indistinguishable from the non ADHD kids

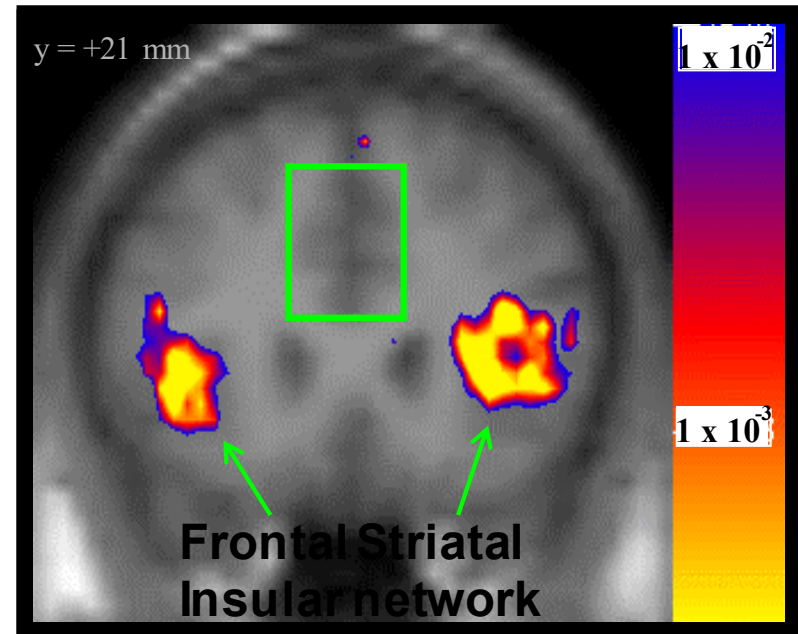
Neuroimaging and ADHD

Anterior Cingulate (Cognitive Division) Fails to Activate in ADHD

Normal Controls



ADHD



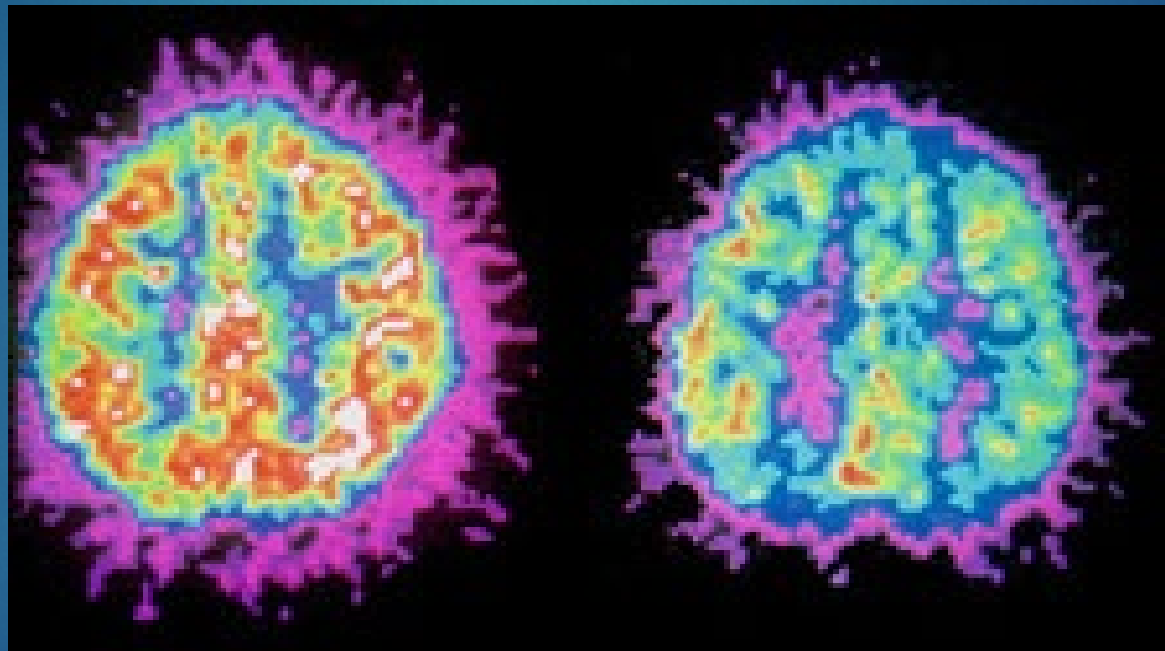
MGH-NMR Center & Harvard- MIT CITP Bush, et al. *Biol Psychiatry*. 1999;45:1542-1552.

Neuroimaging and ADHD

Positron-emission tomography (PET) Scanning

No ADHD

ADHD



Zametkin, et al. N Engl J Med. 1990;323:1361-1366.

CONCLUSIONS

- ▶ Treatment of Complex ADHD is multi faceted. For best outcomes, need to consider **both non pharmacologic and pharmacologic treatment**.
- ▶ The presentation of Complex ADHD changes overtime. Therefore the treatment must adjust accordingly.
- ▶ There are several excellent ADHD medications. Use of medications has been shown to be **neuroprotective**. ADHD stimulant medications are safer than taking a baby aspirin.



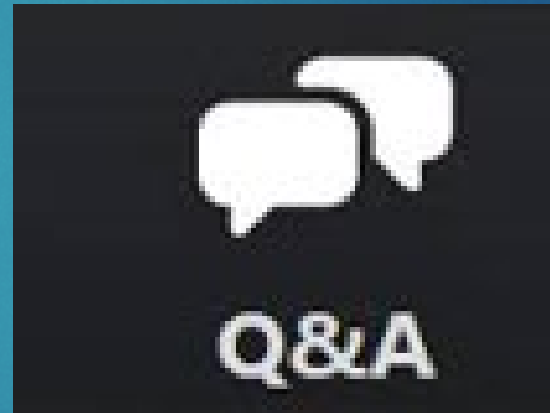
20. "Boy with Painted Hands" by Sharon McCutcheon; Pexels.

EDUCATIONAL TOOLS FOR PARENTS

- ▶ Provincial ADHD Clinic
Parent workshop and parent group
- ▶ ADHD Centre private clinic
- ▶ CADDAC/CHADD/CADDRA
Parent Conferences
- ▶ ADHD Parent group thru
CYMH teams if Vancouver
resident
- ▶ Confident Parenting Thriving
Kids telephone consultation
- ▶ www.adhdcentre.ca
- ▶ www.caddac.ca
- ▶ www.chaddcanada.com
- ▶ www.caddra.ca
- ▶ Google “The Developing
Brain” in New York Times
- ▶ YouTube – Dr. Russell Barkley
- ▶ YouTube – How to ADHD

Questions for the speaker?

Please use the “Q&A” icon



"Question mark made of puzzle pieces" by Horia Varlan is licensed under CC BY 2.0



Thank-you for joining.

Contact the Kelty Mental Health Resource Centre:

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