TREATMENT OF ADHD

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Speaker:
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Disclosures

Neither I nor my spouse/partner have a relevant financial relationship with a commercial interest to disclose
• Think of ADHD as a 3 legged stool
  Inattention, Impulsivity, Hyperactivity

• Think of treatment as a 3 pronged approach
  Pharmacotherapy, Behavior therapy, Accommodations
Treatment

- The defining study for school age children is the M.T.A study
- 1) medication alone – methylphenidate
- 2) medication and behavior therapy
- 3) behavior therapy alone
- 4) treatment as usual

Results: Meds alone – very good
   Meds and behavioral therapy- confers 10% advantage especially for anxious kids
   Behavior therapy ALONE little benefit
   Treatment as usual - poor
MTA Study:
Remission Rate Increased with Increasing Dose

- Remission rates
- Average dosing, mg

The ADHD Medication Guide

Thanks to Dr. Andrew Adesman, Dev. Peds Northwell Health
ADHD Meds

- Methylphenidate derivatives – 70-90% response rate
- Amphetamine derivatives – 70-90% response rate
- Atomoxetine
- Alpha 2 agonists – short acting Catapres (Clonidine) and Tenex (Guanfacine) long acting Kapvay and Intuniv
- Wellbutrin
- Tricyclics – Imipramine, Desipramine
- May need trials of several doses and preparations to find best response. Weight based dosing NOT valid
- Use rating scale data to determine place of optimum response and duration of action of AM dose
- Supplement as needed for across the day coverage
Stimulants: Similarities and Differences

• Stimulants first line (effect size 1.0 VS. 0.6 for atomoxetine, alpha agonists)
• 65-75% respond to one class; up to 90% respond to either
• Differences in preps primarily in duration of action (AMP>MPH, LA vs. IR)
Dose Effect Time of Stimulant Preparations (hours)-

- Methylphenidate (Ritalin)(Focalin) 4
- Dextro/Levo amphetamine (Adderall) 6
- Ritalin LA/Metadate CD/ 6-8
- Focalin XR 8
- Concerta MPH 10-12
- Adderall XR 8-12
- Vyvanse 10-12

**Different charts say different things and people are variable!**
Side Effects

- Insomnia
- Headaches
- Stomachaches
- Decreased appetite/growth
- Possible increase in tics
- Increased emotionality/social withdrawal
- Over focusing/blunting
- Rare – psychosis
- Palpitations, ↑ blood pressure
- Sudden death with structural cardiac abnormalities
- Diversion
Titration and Follow-Up

- Stimulants work right away
- Side effects can occur right away
- Follow up in one week either by phone or in-person
- You want dose that causes maximum effect with minimum side effects.
- Keep going up until remission is hit—Improvement is not enough!
- You can always dial down if you went too high.
- Get new rating scales and side effect scales.
- Follow-up after each dose change (don’t wait a month).
- Once correct med and dose is found, see monthly as multimodal plan is put in place.
- Every three months once all is stable.
- Reassess every new school year about 3 weeks into school
- Monitoring: height, weight, pulse and blood pressure
Alternative to Stimulants
(None, really)

Atomoxetine
(Strattera)

Alpha 2–
Agonists
(Clonidine,
Catapres,
guanfacine,
Intuniv, Kapvay)

• Although there is evidence to support their relative effect compared to placebo, the gold standard is the stimulants due to a much larger effect size
Atomoxetine

- Dosing based on weight: see table
- Rare accounts of liver damage, suicidal ideation
- Common AEs: irritability, sedation or insomnia, decreased appetite, GI
- Advantages:
  - Once Daily dosing
  - Little abuse potential (adolescents)
  - No apparent effects on growth
  - Does not seem to exacerbate tics
- Disadvantages:
  - Delayed onset (takes 3-6 weeks)
  - Generally not as effective
Child Dosing (Aged 6 and Older)

Dosing Information

<table>
<thead>
<tr>
<th>Weight Range</th>
<th>Starting Dose</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-49 lb</td>
<td>10 mg</td>
<td>20 mg</td>
</tr>
<tr>
<td>50-69 lb</td>
<td>20 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td>70-99 lb</td>
<td>30 mg</td>
<td>60 mg</td>
</tr>
<tr>
<td>100-129 lb</td>
<td>40 mg</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

Starting the first month's dose with or without starting pharmacotherapy

Provide patients with a starter pack and an ongoing prescription

Standard prescription for children

- Starting dose: 10 mg
- Maintenance dose: 10 mg
- 1 capsule by mouth once a day

Target dose: 20 mg

- 1 capsule by mouth once a day

Maximum dose: 40 mg

- 2 capsules by mouth once a day

- Strattera capsules are available in 15 mg, 30 mg, 45 mg, 60 mg, and 90 mg strengths

- Start dosing at approximately 5 mg/kg/dose; no dose increase after a minimum of 3 days

- For patients weighing over 70 kg and adults, start dosing at 45 mg/increase the dose to a maximum of 80 mg/dose

- Maximum recommended daily dose in patients should not exceed 1.4 mg/kg or 100 mg, whichever is less

- Promote efficacy with once- or twice-daily dosing

- Discontinuous dosing is recommended for patients or caregivers with TDDs

- Please see full prescribing information provided by your Lilly Representative

- © 2017 Lilly USA, LLC. INDICATIONS: ADD, ADHD

Adult Dosing

Starting Dose (Minimum 3 days)

<table>
<thead>
<tr>
<th>Dosing Information</th>
<th>Starting Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mg</td>
<td>40 mg/day</td>
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</tbody>
</table>

Target Dose

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>10 mg</td>
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</table>

Maximum Dose

<table>
<thead>
<tr>
<th>Dosing Information</th>
<th>Maximum Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 mg</td>
<td>100 mg/day</td>
</tr>
</tbody>
</table>

- Time release and timed release with a 6 mg/kg capsule for recommended step dose
- Use in children
Alpha Agonists

- Dosing: Tenex/Guanfacine- start at 0.5mg once or twice a day
- Catapres/Clonidine- start at 0.05mg once or twice a day
- Common AEs: sedation, lower BP- max for Clonidine 0.4mg daily (MUST taper when stopping)
- Better for hyperactivity/impulsivity than inattention- max for Guanfacine 6mg daily
- Intuniv start at 1mg daily- advance weekly or longer to max of 6mg per day

Advantages
- Sedating (sleep difficulties)
- LA forms given once daily (Kapvay may need BID)

Disadvantages
- Must have reliable parent(s)
- Generally less effective than stimulants
Clonidine Added to Stimulants to Treat ADHD: Efficacy

Clonidine mean daily dose: 0.25 mg (alone) and 0.28 mg (combination)
Methylphenidate mean daily dose: 25.7 mg (alone) and 26.1 mg (combination)

Medication Treatment
Responsive Groups

- Children
- Teenagers
- Adults
- Preschoolers (Short et al. 2004, Greenhill et al., 2007)
- Individuals with Intellectual Handicaps (Pearson et al. 2004)

- ADHD co-morbid with Other Diagnoses
  - Tourette’s Disorder
  - Autistic Spectrum Disorder
  - Anxiety/Mood Disorder
  - Conduct Disorder
  - Oppositional Defiant Disorder
  - Substance Abuse Disorder
Garden Variety ADHD

1. Diagnostic Assessment

2. Multimodal treatment plan with family and child

3. MPH or AMP (plus parent management usually)

4. Alternate Class (MPH or AMP)

5. GFXR (alpha agonist) alone or as add on

6. ATX alone or as add on

7. Bupropion (not FDA approved)
ADHD + Anxiety/Depression Comorbidities and ADHD

1. Diagnostic Assessment

2. Multimodal treatment plan with family and child

3. Psychosocial tx + MPH or AMP

4. Alternate Class (MPH or AMP)

5. ATX alternate as first line

6. If residual anxiety, add SSRI
Non-pharmacological Interventions

• Behavior therapy/parent training
• Social skills training if needed
• Educational interventions – 504 plan, IEP, co-teaching etc.
  Instructional modification
• Organizational skills training
• Peer tutoring
• Computer assisted instruction – targets attention and working memory- popular in research sector and commercially. Evidence not clear- reviewed by Rutledge 2012
• Homework focused interventions
• Dealing with co-morbid conditions
Principles of Behavior Therapy

• Positive reinforcement is much better than negative reinforcement
• Motivation can be improved with pairing preferred and non-preferred activities - work before play!
• Most of us thrive with structure and routine ADHD child needs lots of this!
• Tight collaboration with school - behavior plan, daily report card
• Avoid shaming and excessive punishment
Social Supports

• Support groups (e.g. CHADD)

• Online
  • www.teachingkidstolisten.com
  • www.Help4ADHD.org

• Books
  • 1-2-3 Magic (Tom Phelan)
  • Making the System Work for Your ADHD Child (Peter Jensen)
  • Taking Charge of ADHD: The Complete Authoritative Guide for Parents (Russell Barkley)
  • ADHD: What Every Parent Needs to Know (M Reiff)
Treatment Take Homes

- Remember psychosocial treatments and school interventions!

- Titrate closely and relatively quickly

- Follow up every 3 months only after stable

- Use your algorithms

- Higher stimulant dose is usually the first step
• My thanks to Dr. J. Wallace at University of Rochester for the following accommodations menu
Accommodation Menu

Focus and Attention

- Seat in the front of the classroom
- Seat away from distractions (fish tank)
- Seat near quiet peers and away from disruptive peers
- Increase space between seats
- Private cue to stay on/return to task
- Involve student in discussions/activities
- Make instructions clear and brief
- Select teachers with energetic, engaging style
- Pair written and oral instructions
- Check to be sure assignments are copied correctly
- Break large assignments into parts with deadlines
- Make extra eye contact with student
- Each in close proximity to student
- Consider need for smaller environment with more adult support
Accommodation Menu

Impulsivity and Hyperactivity

- Ignore minor impulsive behavior
- Keep student occupied and active
- Supervise closely during transitions
- Reprimand(s) should be brief and private if possible
- Seat near good role model
- Notice and reinforce positive behaviors
- Set up behavior contract with clear short-term goals
- Encourage hand-raising and waiting
- Rewards and consequences should be immediate
- Implement home/school reward token system
- Allow student to stand and move at times
- Provide movement breaks between seated activities
- Consider need for smaller environment with more adult support
Accommodation Menu

Organization and Planning

____Use adults to support organization – teachers, parents, resource teachers
• ____Create “Homework Loop” to complete daily assignments
• ____Check to see that assignments are written down correctly
• ____Be sure correct books go home or consider extra copies
• ____Encourage parents to set up homework time and place and assistant
• ____Have teachers ask for completed assignments
• ____Empty and reorganize book bag and locker at least weekly
• ____Use colored dividers and folders
• ____Consider peer assistant for organization
• ____Use multi-sensory approaches for giving assignments and teaching
• ____Consider allowing tape recording of assignments and lessons
• ____Use consistent repetitive approach to getting organized
• ____Ask student to repeat instructions
Accommodation Menu

Academic Struggles

• ___Consider referral for testing for any learning concerns/disabilities
• ___Explore other possible impairing conditions (speech, hearing, learning disabilities)
• ___Use multi-sensory techniques in all phases of teaching
• ___Use games, songs and chants/raps for rote learning and memorization
• ___Accommodate weaknesses in learning – math, reading, foreign language
• ___Be aware that learning weaknesses worsen attentional problems and vice versa
• ___Schedule regular meetings/communication with parents about learning concerns
• ___Direct parents to practice skills with student
• ___Parents can consider private tutoring or after-school homework support
• ___Consider need for formal 504 accommodations or Special Education support
• ___Consider different levels of support (resource room, consult teacher, self-contained setting)
• ___Emphasize any areas of interest in academics content