Update on ADHD: AAP Revised Guidelines

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Disclosures

• I have no financial relationships to disclose.

Learning Objectives

At the completion of this presentation, participants will be able to:
• Report on the major changes in the revised ADHD guidelines
• Discuss evidence-based assessment for ADHD
• Identify the variations in treatment recommended for children and adolescents
• Describe common comorbidities with ADHD
• Describe the importance of considering ADHD as a chronic condition
ADHD Historical Timeline


Bradley - Benzedrine
Hyperkinetic Impulse Disorder
MPH created
Attention Deficit Hyperactivity Disorder (DSM-III-R)
Minimal Brain Dysfunction
Attention Deficit Disorder with or without Hyperactivity (DSM-IV)
Updated criteria

George Still described ADHD symptoms

So what is ADHD? What causes it??

• Most common neurobehavioral disorder of childhood
• Can profoundly affect academic achievement, well-being, and social interactions of children
• Heterogeneous Etiology:
  • Genetics, Brain injury, environmental exposures, alcohol and tobacco use during pregnancy, prematurity, low birth weight
• What DOES NOT cause ADHD? Research does not support the popularly held views that ADHD is caused by
  • Eating too much sugar
  • Watching too much TV
  • Parenting
  • Social factors (poverty, family instability)

Impact of ADHD

ACCORDING TO 2011 CDC DATA:

• Approximately 11% of children 4-17 years of age dx with ADHD

• Prevalence varies by state
  • Texas 10.1%
  • Oklahoma 11.9%

• Boys (13.2%) are more likely than girls (5.6%) to have ever been dx with ADHD

Impact of ADHD

ACCORDING TO 2011 CDC DATA:

• Average of age of ADHD dx is 7 years of age

• Children with ADHD ~ 3x as many peer problems than children without ADHD

• Annual societal cost estimated to be b/w $36-52 billion ($12,005-$17,458 annually per individual)

Role of Primary Care Providers in Treating ADHD

FACT: There are not enough child psychiatrists, child neurologists and developmental-behavioral pediatricians to care for all the children with ADHD

AAP Clinical Guidelines for ADHD: 2011

Practice Parameters: American Academy of Pediatrics

“The clinician should recommend medication and/or behavior therapy, as appropriate, to improve target outcomes in children with ADHD”
ADHD Guideline Recommendations

1. Primary care clinicians should initiate an evaluation for ADHD for any child 4-18 years of age who present with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity (B/strong recommendation)
   1. Diagnostic criteria can be used for children age 4-6 years
   2. Evidence for the safety and efficacy of behavior therapy and methylphenidate use
   3. Prevent negative outcomes

ADHD Guideline Recommendations

2. To make a diagnosis of ADHD, the primary care clinician should determine that DSM criteria have been met (including documentation of impairment in more than 1 major setting) with information obtained from parents, teachers, and other school and mental health clinicians ruling out any alternative cause (B/strong recommendation)

What does an evaluation entail?

• Identifying core symptoms
• Assessing impairment
• Identifying possibly underlying or alternative causes
• Identifying comorbid conditions

DSM-V ADHD Diagnostic Criteria

• Core symptoms must be present for the past 6 months
• Several inattentive or hyperactive-impulsive symptoms need to be present in 2 or more settings
• Several inattentive or hyperactive-impulsive symptoms need to be present before 12 years of age
• Clinically significant impairment in social, academic, or occupational functioning
• Cannot be better explained by another disorder

ADHD Subtypes

- Inattentive Subtype
- Combined Subtype
- Hyperactive-Impulsive Subtype
DSM-V Core Symptoms of Inattention

- Manifestations of the following symptoms must occur often*
  - Careless
  - Difficulty sustaining attention in activity
  - Doesn’t listen
  - Difficulty following through
  - Avoid/dislikes tasks requiring sustained mental effort
  - Can’t organize
  - Loses important items
  - Easily distracted
  - Forgetful in daily activities

* Must have 6 or more symptoms for at least 6 months to a degree that is maladaptive and inconsistent with developmental level


DSM-V Core Symptoms of Hyperactivity-Impulsivity

Hyperactivity

- Squirms and fidgets
- Can’t stay seated
- Runs/climbs excessively
- Can’t play/work quietly
- “On the go”/“Driven by a motor”
- Talks excessively
- Loses important items
- Easily distracted
- Forgetful in daily activities

Impulsivity

- Blurs out answers
- Can’t wait turn
- Intrudes/interrupts others

* Must have 6 or more symptoms for at least 6 months to a degree that is maladaptive and inconsistent with developmental level


Making the diagnosis

- **GOOD CLINICAL HISTORY**
  - Use of ADHD specific rating scales
  - Vanderbilt ADHD Parent and Teacher* Forms (available on public domain)
  - Connors Rating Scale, Revised: Parent, Teacher*, and Adolescent Self-Rating forms
  - DuPaul ADHD Parent and Teacher* Rating Scales
  - Children with ADHD can focus long enough to watch TV, play videogames, or sit still at the doctor’s office

*Input from teachers about behavior in the school environment is key to a diagnosis!

How do I assess for impairments?

- Academic performance
- Peer relations
- Sibling relations
- Parent relations
- Community activities

ADHD Guideline Recommendations (cont)

3. Evaluation of children with ADHD should include assessment for coexisting conditions including emotional or behavioral, developmental, and physical conditions (B/strong recommendation)


What comorbid conditions should I look for?

- Cognitive Disorders
- Learning disabilities (~30-40%)
- Language disorders
- Disruptive Behavior Disorders (40-50%)
  - Oppositional Defiant Disorder
  - Conduct Disorder
  - Anxiety disorders (~30%)
- Depressive disorders
- Motor disorders
  - Tic disorders including Tourette
  - Developmental Coordination Disorder

MTR Cooperative Group, 1999
ADHD Guideline Recommendations (cont)

4. The primary care clinician should recognize ADHD as a chronic condition and, therefore, consider children and adolescents with ADHD as children and youth with special health care needs (B/strong recommendation)


Treating ADHD as a Chronic Condition

• Need to educate parents AND patients about ADHD
• Need to develop a partnership with the family
• Need to develop a management plan with specific targeted goals
• If at all possible include teacher input
• Requires ongoing monitoring and anticipation of developmental changes


Mental break part 2!

Preschool children

A. Prescribe evidence-based parent-and/or teacher-administered behavior therapy as the first line of treatment. (A/strong recommendation)

B. May prescribe methylphenidate if the behavior interventions do not provide significant improvement and there is moderate to severe continuing disturbance in the child’s function (B/recommendation)


ADHD Guideline Recommendations (cont)

5. Recommendations for treatment of children and youth with ADHD vary depending on the patient’s age
   a. Preschool-aged children 4-5 years of age
   b. Elementary school-aged children 6-11 years of age
   c. Adolescents 12-18 years of age


Preschool Age Treatment Issues

• Stimulant medications are appropriate for preschool age children based on recent research
• BUT- given that 1/3 of the children in a multi-site study improved on behavioral interventions alone, it is more appropriate to initiate a parent training program first before utilizing medication
• Generally have a slower metabolism of medications
  • can start at a lower dose and titrate at a slower rate

Behavioral Interventions

- Behavioral therapy techniques
  - Positive reinforcement
  - Time out
  - Token economy
  - Modeling
  - Response cost (loss of privileges)
- Parent Child Interaction Therapy (parent training)
  - Evidence based therapy shown to improve oppositional, disruptive, aggressive behaviors
  - Goal: increase pro-social behavior and decrease negative behavior


Elementary school-aged children

A. Prescribe US FDA-approved medications for ADHD (A/strong recommendations)
   1. Evidence strong for stimulant medications
   2. Sufficient but less strong for atomoxetine, guanfacine, and clonidine (in that order)
B. And/or evidence-based parent and/or teacher-administered behavior therapy as treatment for ADHD (B/strong recommendation)
C. Preferably both

And let’s not forget about our adolescents!

A. Prescribe FDA-approved medications for ADHD with the assent of the adolescent (A/strong recommendation)
B. May prescribe behavior therapy as treatment for ADHD (C/recommendation)
C. Preferably both

Neurochemical Pathophysiology of ADHD

ADHD Pharmacological Treatment Approved by U.S. Food Drug Administration

Stimulants
  a. Methylphenidate (immediate and extended release)
     i. Dexmethylphenidate
     ii. Racemic
  b. Amphetamines (immediate and extended release)
     i. Dextroamphetamine
     ii. Mixed amphetamine salts (75% dextro- & 25% levo-amphetamine)
     iii. Lisdexamfetamine (extended release only)

ADHD Pharmacological Treatment Approved by U.S. Food Drug Administration

Non-stimulants
  • Alpha 2 agonists
    a. Guanfacine
    b. Clonidine
  • Selective noradrenergic reuptake inhibitors (SNRIs)
    a. Atomoxetine
ADHD Guideline Recommendations (cont)

6. The primary care clinician should titrate doses of medication for ADHD to achieve maximum benefit with minimum adverse effects (B/strong recommendation)
   a. Stimulant dosing: start low but can titrate rapidly (weekly)
   b. SNRI (atomoxetine) dosing: start at 0.5mg/kg/day x1 week then increase to average dose of 1mg/kg/day. Max dose is 1.4mg/kg/day
   c. Alpha 2 agonists:
      i. Intuniv (guanfacine): 1-4mg/day, can increase 1-2 weeks by 1mg/day
      ii. Kapvay (clonidine): 0.1-0.4mg/day in 2 divided doses, increase 1-2 weeks by 0.1mg/day

Adverse Effects

Stimulants
- Appetite suppression
- Stomachache
- Headache
- Sleep disturbance
- Mood/irritability
- Tics
- Hallucinations
- Mild elevation in HR and BP

SNRI
- Abdominal pain and GI sxs
- Appetite suppression
- Suicidal thoughts

Alpha 2 Agonists
- Sedation
- Fatigue
- Hypotension/bradycardia

Impact of previous ADHD guideline recommendations

- Increased use of DSM based parent and teacher rating scales
- Increased use of stimulant medications as first line
  - Use of second stimulant if first didn’t work increased as well
- Increased recommendations for parent training
- Increased use of child interviews to assess anxiety and mood

Summary

- ADHD is a highly prevalent neurobehavioral disorder that is associated with chronic impairment in functioning
- Pediatricians are diagnosing and treating the majority of children with ADHD in the US
- Stimulant medications and behavior therapy are currently the only established evidence-based treatments for ADHD
- Primary care clinicians should be aware of and screen for common comorbidities that exist with ADHD
- ADHD is a chronic condition that requires partnering with the patient and the family for long term care and management
MTA Study: Study Design

- Multimodal Treatment of ADHD (MTA) Study
- 6 sites
- N=579 children, Age 7-9 years
- Looking at ADHD combined type
- Assigned to 14 months of
  - Medication management
  - Intensive behavior therapy
  - Combined treatment
  - Treatment as usual (TAU) in the community
- 2/3 received medication

MTA Cooperative Group, 1999

MTA Study: Overall Results

- All groups showed reductions in ADHD symptoms over time
- For primary outcome measure (ADHD sx), medication alone and combined treatment did better than behavioral treatment alone and treatment as usual (TAU) in the community
- On many measures, combined treatment was not significantly better than medication alone
- Only combined treatment was better than TAU on oppositional symptoms, aggression, depression/anxiety symptoms, social skills, parent-child relationship, and reading achievement
- Higher medication doses were needed in the medication only group relative to the combined treatment group

MTA Cooperative Group, 1999

MTA Study: Combined treatment superior in several areas

- Parent and teacher satisfaction with treatment
- Normalization of child behavior
- Improvements in functional outcomes
  - Family interactions
  - Peer relationships
  - Academic functioning

MTA Cooperative Group, 1999

Additional Information: MTA Study

Thank you!

Questions?
MTA Study: 6-8 year follow-up

- Original treatment assignment not associated with any of the 24 outcomes 6-8 years later
- ADHD symptoms trajectory in the first 3 years predicted 55% of the outcomes
  - Children with the best initial treatment response and most favorable clinical presentation at baseline fared best over time
  - Children with behavioral and socio-demographic advantage with the best response to any treatment had the best long-term prognosis
- As a group, children with combined-type ADHD exhibit significant impairment in adolescence on 9 of 21 measures
- This suggests a need for sustained treatment over the long term

Molina et al., 2009