ADHD: Presentation, Assessment and Medication Management

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Overview of ADHD

- Symptom Presentation
- Assessment
- Medication Management
18 official symptoms
6/9 symptoms of inattentiveness or hyperactivity/impulsivity for under 17 yo, only 5 in 17yo and older
Lasting at least 6 months
Maladaptive and exceeding norm for age
Begins prior to age 12
 Causes clinically significant impairment in two or more settings
Not better accounted for by another disorder
### Inattentive Symptoms

- Fails to give close attention to details or makes careless mistakes
- Difficulty sustaining attention in tasks or play activities
- Doesn’t seem to listen when spoken to directly
- Doesn’t follow through on instructions and fails to complete tasks
- Difficulty organizing
- Avoids, dislikes or reluctant to engage in tasks that require sustained mental effort
- Loses things
- Easily distracted
- Forgetful
<table>
<thead>
<tr>
<th>Hyperactivity</th>
<th>Impulsivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fidgets</td>
<td>Blurts our answers before questions have been completed</td>
</tr>
<tr>
<td>Leaves seat when expected to remain seated</td>
<td>Has difficulty waiting turn</td>
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<tr>
<td>Runs or climbs excessively</td>
<td>Interrupts or intrudes on others</td>
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<tr>
<td>Difficulty playing or engaging in leisure activities quietly</td>
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<tr>
<td>Often “on the go” or acts as if “driven by a motor”</td>
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<tr>
<td>Talks excessively</td>
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</table>
Associated Symptoms

- Irritability
- Aggression
- Boredom
- Impaired social skills
- Sleep difficulties
ADHD Quick Facts

- Symptoms present before age 3 but often not diagnosed until in school setting
- Effects 2 million school aged children
- 1-2 kids in each US classroom
Why is it Important to Seek Treatment?

- 30-50% are retained at least once
- 20% have set fires
- 30% have engaged in theft
- 40% engage in early tobacco or ETOH use
- 4X as many auto accidents
- 3X as many driving citations
Developmental Course: Preschool (ages 3-5)

- 57% recognized by age 4
- Overactive
- Fearless
- Aggressive
- Excessive tantrums
- Destructive play
- Difficulty with early developmental tasks
- Decreased or restless sleep
Developmental Course: School Aged (ages 6-12)

- Often first noticed by teacher their first year of school
- Unable to sustain attention
- Carless mistakes on school work
- Poor social skills and difficulties with peers
- Impulsive interrupting
- Homework is disorganized and incomplete
- Disrupt the class
- Seem immature
- Might be retained
Developmental Course: Adolescence (ages 13-18)

- 60-85% are symptomatic into adolescence
- “Inner restlessness”
- Clash with authority figures
- Unorganized school work
- Engaging in risky behaviors
- Poor peer relationships
- Emotionally labile
Adults too

- 60% are symptomatic into adulthood
- Increased risk for:
  - Substance abuse or antisocial behavior
  - Frequent job or partner changes
  - Divorce
  - Difficulty with money management and schedules
  - Driving accidents
  - Unplanned pregnancy
  - Major Depression
Gender Differences

- **Males:**
  - Often referred due to disruptive behavior

- **Females:**
  - Less disruptive symptoms
  - More attention problems
  - More internalizing problems such as depression and anxiety
What causes ADHD?

- Genetic factors
- Developmental factors
- Neurochemical factors
- Neurological factors
- Psychosocial factors
Genetic Factors

- Heritability is 75%
- Compared to the general population, family members of children with ADHD have higher rates of:
  - Disruptive Behavior Disorders
  - Anxiety Disorders
  - Major Depression
  - Learning Disabilities or other academic difficulties
  - Substance Abuse
Contributing Developmental Factors

- May have suffered subtle brain damage during fetal or perinatal periods
  - In utero exposure to alcohol
  - Direct or second hand exposure to smoke
  - Poor health of mother during pregnancy
- Pregnancy or birth complications
  - Prematurity
  - Low birth weight
- Poor health in infancy or developmental delays
Inadequate amount of DA and NE available in specific areas of the brain associated with:

- Verbal fluency
- Memory
- Sustaining and focusing attention
- Prioritizing behavior
- Behaving based on social cues
- Starting appropriate actions and stopping inappropriate reactions
- Mediating energy levels
- Motivation
- Interest
Neurological Factors

ADHD children have:
- Decreased blood flow in regions dealing with higher level brain functioning
- Brain wave patterns that are characteristic of younger children
- Smaller brain volumes in all regions
  - Some normalize over time or with meds
Psychosocial Risk Factors

- A single parent with low education
- Low socioeconomic status
- Disruption of family equilibrium
- Prolonged emotional deprivation
Assessment and Diagnosis of ADHD in the Medical Setting
Assessment


- Assessment of Child
  - Medical history
  - Neurological exam/history
  - Rating scale
  - Mental Status Exam
Assessment

- **Family Assessment:**
  - documentation of symptoms (use ADHD checklists)
  - age of onset
  - duration of symptoms
  - degree of functional impairment
  - Rating scales for parent/guardian
  - family history
  - prenatal and developmental history
  - medical history
Assessment

- School Assessment
  - documentation of symptoms (teacher specific ADHD checklist)
  - teacher narrative, classroom behavior, learning patterns, classroom interventions, degree of functional impairment
  - evidence of schoolwork (report card, samples of work)
Rating Scales

- Can be completed by patient, parents or teachers
- Positive score on rating scale does not equal a diagnosis
- Rating scales should be used throughout treatment not just for baseline data
Making a Diagnosis Can Be Tricky

- Medical rule outs
  - Hyperthyroidism, seizures, lead toxicity, food or food additive sensitivities, sleep apnea
- Subjective
- 18 symptoms so it’s possible for two patients to be diagnosed with few symptoms in common and look very different
- Medications have high abuse potential
- Commonly not just ADHD
- Many symptoms overlap with other disorders
### Comorbid Disorders

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Oppositional Defiant Disorder or Conduct Disorder</td>
<td>50%</td>
</tr>
<tr>
<td>Anxiety Disorder</td>
<td>25-30%</td>
</tr>
<tr>
<td>Learning Disability</td>
<td>20-25%</td>
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<tr>
<td>Initial Insomnia</td>
<td>30%</td>
</tr>
<tr>
<td>Increased risk for mood disorders</td>
<td></td>
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<tr>
<td>Depression</td>
<td>10-30%</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>Up to 20%</td>
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<tr>
<td>Tourette’s</td>
<td>2%</td>
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- Much higher than general population or other psych DOs
- Other disorders increase the impairment associated with ADHD
Differential Diagnosis

- Anxiety Disorders (PTSD)
- Depression
- Bipolar Disorder
- Autism Spectrum Disorder
- ODD/CD
- Substance Use
- Intellectual Disability
- Speech and/or language disorder
- Sudden life changes (divorce, death, move)
- Typical development
Differential: Symptoms Specific to Anxiety

- Phobias
- Worries
- Stress induced onset
- Obsessions
- Compulsions
- Perfectionism
- Somatic complaints
- Posttraumatic play
Differential: Symptoms Specific to Depression

- Depressed mood
- Anorexia/ Weight loss
- SI
- Excessive Guilt
- Psychomotor retardation
- Mutism
- Fatigue
Differential: Symptoms Specific to Bipolar Disorder

- Positive family history
- Prolonged rages/ explosive irritability
- Episodic
- Euphoria- giddy or silly
- Grandiosity
- Risky acts without concern for safety
- Decreased need for sleep
  - Nearly continuous need for 1 or more less hours per night than avg child without feeling tired
- Pressured speech
  - So much or so fast they can’t be understood or interrupted
- Racing thoughts
  - Unintelligible, rapid changes in thought pattern, flight of ideas, sentence fragments
Differential: Symptoms Specific to Autism Spectrum Disorder

- Impaired nonverbal and verbal communication
- Restricted Interests
- Stereotyped/ repetitive movements
- Inflexible adherence to routine/ rituals
- Lack of:
  - Fantasy play
  - Social relatedness
  - Imaginative play
Treatment of ADHD
Treatment Guidelines

  - 579 children ages 7-9 with ADHD treated for 14 months
    - Monthly medication management with stimulant by specialist only
    - Behavioral management only (35 group sessions, therapist visited school multiple times to work with staff, summer camp)
    - Combined group: meds plus behavioral management
    - Routine community care/ treatment as usual (TAU)
      - PCP visits 1-2 times / year

- RESULTS: Medication only and combined groups were superior to behavioral therapy alone and routine community care
Follow-up to MTA

- Superiority persisted for med and combination treatment over behavioral management and TAU
  - Effect size was 50% smaller after 24 months
- Med only groups dosages were significantly higher than combination at 24 months
Psychopharmacological Interventions in ADHD
## Medication Options

<table>
<thead>
<tr>
<th>Stimulants</th>
<th>Nonstimulants</th>
</tr>
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<tbody>
<tr>
<td>Amphetamines</td>
<td>Atomoxetine (Strattera)</td>
</tr>
<tr>
<td>Methylphenidates</td>
<td>Alpha-2 Agonists</td>
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<td>Bupropion (Wellbutrin)</td>
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Stimulants
Stimulants

- Compared to other pharm options:
  - most studied, commonly used and effective
  - first line agents
- In RCTs, effect sizes for stimulant treatment of ADHD are usually large for teacher ratings (0.8) and for parent ratings (0.5)
- 70% of children will respond to 1st trial
- 90% will respond to 1st or 2nd trial
- Compared to placebo, stimulants:
  - Reduce hyperactivity and disruptive behavior
  - Improve parent-child interaction
  - Improve problem solving with peers
  - Reduce aggressive and antisocial behavior
<table>
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<tr>
<td>Methylphenidate</td>
<td>Amphetamine/dextroamphetamine</td>
</tr>
<tr>
<td>Ritalin</td>
<td>Adderall</td>
</tr>
<tr>
<td>Methylin</td>
<td>Evekeo</td>
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<tr>
<td>Focalin</td>
<td>Dexedrine</td>
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<tr>
<td>Ritalin SR</td>
<td>Dexedrine Spansules</td>
</tr>
<tr>
<td>Metadate ER</td>
<td>Dextro Stat</td>
</tr>
<tr>
<td>Methylin SR</td>
<td>Adderall XR</td>
</tr>
<tr>
<td>Ritalin LA</td>
<td>Dyanavel XR liquid</td>
</tr>
<tr>
<td>Metdate CD</td>
<td>Vyvanse</td>
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<tr>
<td>Focalin XR</td>
<td></td>
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<tr>
<td>Daytrana</td>
<td></td>
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<tr>
<td>Quillivant XR liquid</td>
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<tr>
<td>Concerta</td>
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### Most Common Stimulant Side Effects

<table>
<thead>
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<th>Decreased appetite and weight loss</th>
<th>Overstimulation</th>
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<tbody>
<tr>
<td>Headache</td>
<td>Nervousness</td>
</tr>
<tr>
<td>Stomachache</td>
<td>Picking at skin/ nail biting</td>
</tr>
<tr>
<td>Difficulty falling asleep</td>
<td>Irritability</td>
</tr>
<tr>
<td>New onset tics</td>
<td>Aggression</td>
</tr>
<tr>
<td>Rebound crankiness and tearfulness (immediate release)</td>
<td>Depressed mood</td>
</tr>
</tbody>
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Used with Caution

- Some types of cardiac problems or hypertension
- Patients or patients with family members with history of Substance Abuse Disorders or history of diversion
- Family preference
- Psychotic or bipolar disorders
- High levels of anxiety
- Known intolerance to other stimulants
Nonstimulant Medications
Nonstimulants

- Atomoxetine (Strattera)
- Guanfacine (Tenex, Intuniv)
  - Short-acting not FDA approved
- Clonidine (Catapres, Capvay)
  - Short-acting not FDA approved
- Bupropion (Wellbutrin)
  - Not FDA approved for tx of ADHD in children
Nonstimulants

- Typically used when:
  - Inadequate response to stimulants
    - Monotherapy
    - Adjunct treatment
  - Unable to tolerate stimulants
  - Tic disorder
  - Patient or family history of SUDs
  - Caregiver preference
  - Comorbid disorders
Indications For More Than One Medication

- Partial response to monotherapy
- Breakthrough or rebound symptoms
- Insomnia
- Comorbid Disorder
FAQs About Medications

- How often will we need to follow-up?
- When should I call the med provider?
- How long before the medication starts working?
- How long will my child need to be taking this?
- If my child is on a high dose does that mean he has “bad” ADHD?
- Does he need to take it every day?
“I haven’t been counting.”
References


