Diagnosis of Attention Deficit Hyperactivity Disorder and its comorbidities

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Disclosures

- Present (2008-2009 state fiscal year)
  - Research grant to UTHSCSA- Orthro McNeil Janssen Scientific
- Past years
  - Speakers bureau: Shire, McNeil Pediatrics
  - Consultant: Shire, McNeil Pediatrics
  - Research grants: Eli Lilly, Astra-Zeneca, Shire

Objectives

- Understand major theories regarding the pathophysiology of ADHD
- Discussed prevalence and outcome of ADHD
- Differential diagnosis of ADHD
- Using the SUPPORT therapist to expand your diagnostic reach
  - Clinical interview for the patient with suspected ADHD
  - Screening for comorbid psychiatric disorders-how does comorbidity affect treatment

ADHD Historical Timeline

- MPH created
- Attention deficit/hyperactivity disorder (DSM-III-R)
- DSM-IV updated criteria

Prevalence of ADHD

- The most common mental health disorder in children
- Affects 4% to 12% of primary-school-age children (6 to 12 years)
  - Diagnosed in boys 3 to 4 times more than in girls, but …
  - Girls are less likely to be recognized and diagnosed, because their behavior is generally less overactive and disruptive
- Affects 2% to 8% of preschool-age children
- Affects 3% to 8% of adolescent children
- Accounts for 30% to 50% of mental health referrals

References:

ADHD Prevalence into Adulthood

- 38% still had full ADHD syndrome by age 19
- 72% showed persistence of at least one third of their original symptoms
- 90% of adults demonstrated evidence of significant impairment
- Recent NIH Multi-modality treatment of ADHD study showed a more optimistic outcome
- Rate of adult ADHD ~4%


DSM-IV Symptoms of Inattention

Manifestations of the following symptoms must occur inappropriately often*:  
- Inattention  
  - Careless  
  - Difficulty sustaining attention in activity  
  - Doesn’t listen  
  - No follow-through  
  - Avoids/dishes tasks requiring sustained mental effort
- Can’t organize
- Loses important items
- Easily distractible
- 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-IV Symptoms of Hyperactivity-Impulsivity

Manifestations of the following symptoms must occur often*:  
- 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
- Impulsivity  
  - Blurts out answers  
  - Can’t wait turn  
  - Intrudes/interrupts others  
  - Inappropriate start

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

DSM-IV ADHD Diagnostic Criteria

- List of symptoms must be present for past 6 months
- Some symptoms are present before 7 years of age
- Some impairment from symptoms must be present in 2 or more settings (eg, school and home)
- Significant impairment: social, academic, or occupational
- Excludes other mental disorders


Neurobiology of ADHD

- Genetics accounts for ~75% of the variance in ADHD symptoms
- Prenatal injury, low birth weight, prematurity, maternal smoking in pregnancy
- Parenting is not a cause of ADHD, but parenting influence the outcome of ADHD
- Diet, culture have little or no role in the etiology
- Multiple genes involved, each has a small effect
- Multiple brain regions involved

Brain maturation in ADHD

Typically developing controls
Brain Mechanisms in ADHD


Differential diagnosis

- Principle goal is to distinguish ADHD from age appropriate inattentiveness or impulsivity/hyperactivity
- "All kids do that" becomes a cliché that leads to under diagnosis
- Input from multiple sources is key
- Under-diagnosis is more serious than over-diagnosis, ineffective medication can always be stopped

Differential Diagnosis

- Few, if any, medical conditions masquerade as ADHD with no other signs or symptoms of the possible medical disorder
  - Hyperthyroidism- other physical signs should be present
  - Petit mal seizures- not associated with hyperactivity, child has normal concentration when not seizing, LOC has acute onset
  - Movement disorders- have stereotypical features not since with hyperactivity
  - Sleep disordered breathing- a controversial subject

Don't make things too complicated

- Physicians feel need to "rule out" everything before treating with medication.
- Extensive evaluations (EEG, Sleep studies, allergy evaluations, MRI) add little, if anything to diagnosis and may delay treatment.
- "Full Psychological" not necessary to diagnosis and treat ADHD.
- Stimulant treatment of ADHD will not make most comorbid disorders worse (with exceptions to be noted) and may often help them.

A quantitative disorder-like hypertension

- DSM-IV criteria designed to identify those at top of bell curve
- Impairment must be associated with symptoms
- Common for symptoms to be present at school only, or school + home, but symptoms present only at home is inconsistent with ADHD
- Children who misbehave at home due to lax discipline will behave outside the home once exposed to consequences- children with ADHD cannot adapt even when consequences are applied consistently
Learning Disorders (LD)

- Myth: LD can exactly mimic ADHD symptoms, so LD must be “ruled out” before ADHD can be diagnosed. Leads many PCP’s to require a full psychological evaluation before making diagnosis.
- Fact: Poor school performance is more likely due to ADHD if there are reports of inattention or impulsivity/hyperactivity. Controlling ADHD clarify whether poor school performance is due to inattention or LD per se.

Presentations not consistent with LD

- Child is inattentive and impulsive in class, rushing through work, but still makes adequate grades
- Child understands work perfectly well when he is one-on-one with adult
- No history of language delays in early childhood
- Can sound out words in an age appropriate manner
- “He does fine when he wants to”

Clinical Interview in SUPPORT (done by therapist)

- Obtain parent and teacher rating scales
- Review ADHD and ODD/CD symptoms with parent
- Semi-structured interview with parent
  - Depression/Mania
  - Anxiety
  - Screen for Psychosis
  - Screen for Autism Spectrum Disorder (not covered this module)
Oppositional Defiant and Conduct Disorder

- Up to 50% of children who meet criteria for ADHD also meet criteria for ODD/CD
- In young child ODD/CD occurs in addition to the ADHD or is secondary to it.
- If the child has very late onset of ADHD symptoms (>10 years of age) and has ODD, the child does not by definition meet criteria for ADHD and only here would it be appropriate to view the inattention symptoms as secondary to the ODD
- ODD/CD does NOT change medication treatment, though added behavioral treatment may be needed.

Oppositional Defiant and Conduct Disorder

- Multiple studies (Klein et al. 1997; Spencer et al., Newcorn et al.) show that ODD/CD symptoms respond to treatment with ADHD medications
- Aggressive outbursts (in the absence of psychosis or mania) are not a contraindication to stimulants or ADHD medication
- Only uncontrolled acute abuse of EtOH or substances is a contraindication to ADHD medication treatment
- Adjunctive behavior therapy will be provided by SUPPORT counselor

Aggression

- Often co-occurs with ADHD + ODD/CD
- Range of aggressive behaviors
  - Objects
  - People
  - Animals
  - Self (as an expression of anger rather than suicide)
- Assess affect associated with aggression
  - Daily or nearly daily rage attacks or bizarrely cruel aggressive acts suggest mania/psychosis

Aggression Questionnaire

<table>
<thead>
<tr>
<th>Impulsive</th>
<th>Predatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non profitable damaging of own property</td>
<td>Hides aggressive acts</td>
</tr>
<tr>
<td>Is aggressive in front of people</td>
<td>Can control their own behavior</td>
</tr>
<tr>
<td>Completely out of control when aggressive</td>
<td>Very careful to protect self when aggressive</td>
</tr>
<tr>
<td>Exposes self to physical harm when aggressive</td>
<td>Tried to get something from being aggressive</td>
</tr>
<tr>
<td>Fights with stronger children</td>
<td>Plans aggressiveness</td>
</tr>
<tr>
<td>Is aggressive without a purpose</td>
<td>Fights with weaker children</td>
</tr>
<tr>
<td>Aggression is unplanned, out of the blue</td>
<td>Looks proud of being aggressive</td>
</tr>
<tr>
<td>Expresses remorse after aggression</td>
<td>Steals</td>
</tr>
</tbody>
</table>

Aggression

- Exclusively predatory items suggest aggression secondary to conduct disorder, though child may still benefit from treatment of ADHD and behavioral therapy
- Exclusively impulsive or mixture of impulsive/predatory symptoms suggest uncontrolled affective aggression
  - May be sign of mania/psychosis, but if psychosis/mania ruled out (see next sections) it is safe to proceed with medication treatment of ADHD
  - May require psychotropic medication in addition to ADHD medication

SUPPORT tools for mood/anxiety screening

- Child Mania Rating Scale (CMRS). The Child Mania Rating Scale, Parent Version (CMRS-P) is a mania rating scale designed to be completed by parents. It includes 21 items reflecting the DSM-IV criteria for a manic episode, each item is answered on a four-point Likert-type scale anchored by 0 (Never/Rare), 1 (Sometimes), 2 (Often), and 3 (Very Often)1.
- Mood and Feeling Questionnaire (MFQ). Parent and child self-report versions of a 37 item scale covering a wide range of depressive symptoms. No charge for use, but permission of author required. See website: http://brsrep.mc.duke.edu/MFQ.htm
- Self Reported Child Anxiety Related Disorders (SCARED). 38 item scale with parent and child forms. Subject responds to each item with 0-not true, 1-sometimes true or 2-often true. Yields five factors: somatic/panic, general anxiety, separation anxiety, social phobia, & school phobia. Discriminates depressed/anxious children from disruptive behavior disorders, in the public domain2.

1 J Am Acad Child Adolesc Psychiatry 2006; 45:550-60
2 J Am Acad Child Adolesc Psychiatry 1997; 36:545-53
### SUPPORT therapist screen for Depression

- **Ask about current mood first**
- **Use many words to describe depression—**
  - Do your child have times when he is…
    - Sad, grouchy, down in the dumps, irritable, unhappy?
- **Quantify—**
  - How often do they occur? (daily, weekly, 2-5/month)
  - How long do they last? (minutes, hours, all day)
  - How long has your child felt this way?

- **Ask about neurovegetative signs**
  - Insomnia, hypersomnia
  - Low energy level
  - Increased/decreased appetite
- **Self esteem/Suicidal ideation**
  - Is your child down on himself, mad at himself, calls himself names
  - Wishes he were dead/thoughts of hurting/killing self
  - Any history of attempts

- **Ask about Past episodes of depression**
  - Has he had episodes like this in the past? Was he like this every day for two weeks or more?
  - Has your child had a time in the past when he was sad/depressed/irritable grouchy for up to two weeks
- **If a child has a currently depressed/irritable mood lasting at least an hour (3-5 times per week) or suicidal ideation is present defer ADHD diagnosis until this can be explored**
  - (see depression module for more details)

- **Using the Mood and Feeling Questionnaire**
  - Score below 20 indicates Major Depressive Disorder unlikely
  - If score above 20, look at items:
    - Items 2, 7, 9-10, 20-22, 25-27, 29-31- often endorsed by children with ADHD and ODD- if no other items endorsed and parent does not report depression, depression diagnosis unlikely
    - Items 1, 8, 15-18, 19 (suicide) 23-24, 28, strongly suggestive of depression, defer ADHD treatment until discussion with psychiatry consultant
    - Items 3-6, 26, 32,33 suggest somatic complaint or are neurovegetative in nature- suggest Major Depression when associated with sad/irritable mood

### SUPPORT therapist screen for Mania

- **Does your child act so happy that you (or other people) think something is wrong?**
- **Does he get so silly and giddy that is gets him into trouble?**
- **Is he so full of himself that people think he is odd or strange?**
- **Does he have behaviors people think are very odd or strange?**

- **Using the Child Mania Rating Scale**
  - Score of less than 20 suggests Mania is unlikely
  - High score does **not** rule in Mania, must look at individual ratings
  - Mania is suggested by scores of 2 or 3 on items 1, 3-4, 8, 12-14, 17, 19-21. Therapist should discuss with consulting psychiatrist before recommendations to pediatrician
  - Severe ADHD is more likely if score >20 caused by high scores on items other than items above; may proceed with ADHD treatment
SUPPORT therapist screen for Anxiety

- Follows same principles as depression interview
- Some parent use “anxious” to describe/explain oppositional behavior and negative affect
- Be sure they mean worrying, fear, discomfort, separation fears, not just fear of punishment
- As with depression, quantification is key. Anxious episodes lasting up to an hour, 3-5 times a week suggest anxiety disorder

Using the SCARED

- Scores of 20-25 suggest anxiety disorder
- Anxiety disorder not considered an contraindication to ADHD treatment unless
  - Child is having full blown panic attacks or panics on separation
    - Shortness of breath, choking, screaming, sense of doom
  - Full blown flashbacks associated with PTSD
    - Trauma reoccurring/hallucinatory activity
    - Agitation, explosive aggression when reminded of trauma

SUPPORT therapist screen for Psychosis

- Does your child ever say that he hears voices talking to him? Does he talk to people who are not there? (Exclude imaginary friends in young children)
- Does your child ever say he is seeing things?
- Does your child feel people are always trying to get him or does he act paranoid?
- Does he believe strange things that other kids his age just don’t believe?
- Refer for evaluation in psychiatric clinic

Decision Tree Step 1

<table>
<thead>
<tr>
<th>Parent Rating Scale</th>
<th>Teacher Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated ADHD highly probable</td>
<td>Elevated ADHD not probable</td>
</tr>
<tr>
<td>Not Elevated ADHD ruled out</td>
<td>Not Elevated ADHD</td>
</tr>
</tbody>
</table>

Decision Tree Step 2

- All screens negative for comorbidity
  - Proceed to medication treatment for children age 6 and up
  - Consider trial of behavior management for children under age 5 before using medication
- Screen positive for ODD/CD
  - Proceed to medication treatment
  - SUPPORT therapist can also do behavior management concurrent with medication

Decision Tree Step 3

- Screen positive for aggression
  - Occasional fighting, hitting without serious injury, short lived tantrums
    - Medication treatment and behavior management
  - Severe rage attacks, self injurious behavior, cruelty to people or animals
    - More in depth assessment for psychosis or bipolar
### Decision Tree-Step 4

- Screen positive for depression/anxiety
  - Sad/irritable/anxious mood 3-5 times week for a least an hour
  - Neurovegetative signs (sleep, appetite disturbance)
  - Separation problems
    - See Mood and Anxiety Disorders module
  - If symptoms below this threshold, may proceed to ADHD medication treatment
- Screen positive for mania
  - Defer treatment with ADHD until diagnosis clarified

### Speaking with parents

- Medication should not be avoided because of unrealistic fears
- Dietary and herbal supplement treatments are not effective
- Behavior management works, but has its limits
- School failure is not an option and special education not the answer to every school issue
- It is not “the school’s job” to deal with the behavior