PRESCHOOL ADHD
A CASE-BASED WORKSHOP

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March 27, 2020
40th Annual Birdsong Pediatric Conference
NOTHING TO DISCLOSE

Participant Worksheet includes (updated for recording):
- Case Part 1, Part 2 (now in slides)
- PSC-17 for scoring and interpretation (now in slides)
- Vanderbilts for scoring and interpretation (now in slides)
- **Davis Developmental Cheat Sheet**
- Handouts and Resources (now in slides)
OBJECTIVES

At the end of this case-based workshop, providers will be able to address preschool ADHD:

1. Prevalence in community
2. Clinical presentations- “WIDE OPEN” Use of PSC-17
3. Diagnostic approach, tools, coding
   Vanderbilts versus Preschool ADHD versus Conners
   Not a single visit– use step wise approach
4. Differential diagnoses
   Use of the Davis Developmental Cheat sheet
   Consider ACES and Trauma
5. Treatment approaches
   Behavioral or psychosocial approaches
   Medication management
   VMAP
All we know is a “4 2/12 year old boy” is coming in next and presenting complaint is: “kicked out of day care for repeated aggressive behaviors”

PSC-17 - The screen is intended to facilitate the recognition of emotional and behavioral problems so that appropriate interventions can be initiated as early as possible

Give to parents at least 2-3 minutes BEFORE clinic visit.......  
   Available FREE  
   Quick score  
   Multiple languages  
   for parents of 4-18 years

SCORE YOUR PATIENT’S PSC-17
4 2/12 year old boy with disruptive and aggressive Behaviors

Summary:
Total- 15- Elevated Subscales
I=1; A=9; E=5
Significant ADHD behaviors
PREESCHOOL ADHD CHARACTERISTICS

- Worldwide prevalence 7.2% (9.4% USA) among school aged children, 3:1 boys vs girls

- Among Preschoolers (2-5 years), 2-6% meet criteria for ADHD (2.4% primary care and 59% in child psych clinic)

- STABILITY of diagnoses by age 12 yrs is 70%, if standardized assessment used ages 4-6! HA/IMP decreases, Inatt/distractibility, poor organization, low frustration persists. Childhood ADHD persists into adulthood (29%), with significant morbidity.

- FUNCTIONAL IMPAIRMENT – suspensions, academic deficits, injuries/accidents, peer difficulties and parental aggression, new data of increased suicidality

- CO-MORBIDITES: Oppositionality, Conduct disorder (50%), anxiety or depression (30%), Learning difficulties, Language delay

Wolraich et al 2019, Barbaresi et al 2020
IS THE DIAGNOSIS AFFECTED BY DIVERSITY?

In 2011–2013, the prevalence of diagnosed ADHD among children aged 4–17 was 11.5% among non-Hispanic white children, 8.9% among non-Hispanic black children, and 6.3% among Hispanic children.

Race - YES
Ethnicity - YES
Insurance - YES
Poverty level - YES
Biological and Environmental CONTRIBUTORS

- Genetic factors (70% of kids with ADHD have a parent with ADHD)
- Prenatal substance exposure (smoking)
- Maternal infections/ Nutritional deficits (Thy/Iodine, Folate, Cu)
- Maternal stress and early adverse events (ACES)
- Prematurity
- Familial and psychosocial risks (negative milieu)

Frietag et al 2012, Froehlich et al 2012
ADHD: YES OR NO?
WORKSHEET: CASE PART 2

- Screen for developmental delay FIRST, psychological, functional consequences and safety risks (see DAVIS Developmental Surveillance Cheat Sheet)
- Use of specific screening tools (Vanderbils work for 4-5 year olds, and DSM-5)
- ADDRESS PERVERSIVENESS, FUNCTIONAL IMPAIRMENT
- Subtyping not valid/stable but, all types of ADHD are observed among 4-6 yrs
- Using special educators (Head start) as systems of feedback

Read Part 2 of the case, screening or surveillance of development, score parent/day care Vanderbils

PART 2 CASE

- Mother states she has had concerns about her son’s hyperactivity and impulsivity since he was 2 years old and he was always “wide open” compared to the other kids and her older daughter. He can be very loving, but gets over-stimulated easily. He also has low frustration tolerance.

- Birth history: born at 35 6/7 weeks due to maternal pre-eclampsia. Weight 2756 grams. Apgars 8/8. SVD. No difficulties with temperature and bottle feeding. Home with mother in 3 days.

- Walked at 12 months. First words at 15 months, un-corrected for late preterm. Potty trained at 3.5 years. In center based day care from 18 months until recently, when his aggressive behaviors toward other children warranted a “break” until seen by his PCP. Maternal grandmother is caring for him currently.

- Passed ASQ screening at 4 year WCC, passed hearing/vision screen, growing well with typical HT WT OFC. Normal PE. ROS: trouble falling asleep but once asleep, sleeps all night with no snoring, no day time naps. Occasional constipation. No LOC or seizures.

- Family history- lives with mother and maternal grandmother and older 4th grade sister. Parents divorced 2 years ago. Sees father on weekends. Mother works at bank, finished HS, has anxiety. Father got GED, had ADHD and conduct problems as teen. Sister “smart, but disorganized”.

**SCREEN!**
Vanderbilt ADHD forms: For Q 1-47, Give a point for every question that is answered “often or very often”
Assess degree of impairment.

<table>
<thead>
<tr>
<th>Rater</th>
<th>Mother Parent form</th>
<th>Father Parent form</th>
<th>Day care provider Parent form</th>
<th>Mat. Grandmother Parent form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 1-9 (inattention/distractibility)</td>
<td>6/9</td>
<td>2/9</td>
<td>5/9</td>
<td>5/9</td>
</tr>
<tr>
<td>Questions 10-18 (hyper/impulsivity)</td>
<td>9/9</td>
<td>4/9</td>
<td>9/9</td>
<td>8/9</td>
</tr>
<tr>
<td>Questions 19-26 (ODD)</td>
<td>5/8</td>
<td>1/8</td>
<td>4/8</td>
<td>4/8</td>
</tr>
<tr>
<td>Questions 27-40 (Conduct D)</td>
<td>4/14</td>
<td>0/14</td>
<td>2/14</td>
<td>0/14</td>
</tr>
<tr>
<td>Questions 41-47 (Anxiety and Depression)</td>
<td>4/7</td>
<td>0/7</td>
<td>0/7</td>
<td>2/7</td>
</tr>
<tr>
<td>Impaired??</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+/-</td>
</tr>
</tbody>
</table>
ADHD  DIAGNOSIS  DSM-5

- Onset of symptoms before 12 years
- 6 months duration
- 2 or more settings
  - Clinically significant impairment
- Not explained by other disorder
- 6 symptoms of inattention or hyperactivity or a combination

Wolraich et al 2019
DIFFERENTIAL DIAGNOSES

To diagnose symptoms MUST be >1 setting, >6 months, < 12 yrs

- Sleep disorders, including OSA
- Adjustment
- Anxiety
- PTSD/ Abuse/ACES
- Autism Spectrum Disorder or other genetic condition
- Developmental delay, prenatal and perinatal insults, prematurity, LBW even at term
- Thyroid disorder, Seizures, anemia, brain injury, lead toxicity
- Mood D/O, Disruptive mood dysregulation D/O – DMDD
- Hearing loss, visual loss
### Table 1. Child’s Response to Trauma: Bodily Functions

<table>
<thead>
<tr>
<th>SYMPTOM(S)</th>
<th>FUNCTION</th>
<th>CENTRAL CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty falling asleep</td>
<td>Sleeping</td>
<td>Stimulation of reticular activating system</td>
</tr>
<tr>
<td>Difficulty staying asleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nightmares</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid eating</td>
<td>Eating</td>
<td>Inhibition of satiety center, anxiety</td>
</tr>
<tr>
<td>Lack of satiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food hoarding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of appetite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other eating disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>Toileting</td>
<td>Increased sympathetic tone, increased catecholamines</td>
</tr>
<tr>
<td>Encopresis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enuresis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2. Child’s Response to Trauma: Misunderstood Causes

<table>
<thead>
<tr>
<th>RESPONSE</th>
<th>MORE COMMON IN</th>
<th>MISUNDERSTOOD CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detachment</td>
<td>Females</td>
<td>Depression</td>
</tr>
<tr>
<td>Numbing</td>
<td>Young children</td>
<td>ADHD inattentive type</td>
</tr>
<tr>
<td>Compliance</td>
<td>Children with ongoing trauma/pain</td>
<td>Developmental delay</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Children unable to defend themselves</td>
<td></td>
</tr>
<tr>
<td>Exaggerated response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypervigilance</td>
<td>Males</td>
<td>ADHD</td>
</tr>
<tr>
<td>Aggression</td>
<td>Older children</td>
<td>ODD</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Witnesses to violence</td>
<td>Conduct disorder</td>
</tr>
<tr>
<td>Exaggerated response</td>
<td>People able to fight or flee</td>
<td>Bipolar disorder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anger management difficulties</td>
</tr>
</tbody>
</table>
HOW TO DIAGNOSE ADHD?

- ADHD is a *clinical* diagnosis
- Does an MRI or CT scan help with diagnosis? NOT unless other SX
- Are there other medical tests that help make the diagnosis? NO
- Do rating scales “make” the diagnosis? NO
- If symptoms improve with stimulants does this *make* the diagnosis? NO
- Does the diagnosis require psychological testing? NOT unless poor learning
- What happens when parents and teachers disagree?

PAL 2018, provider slide show, Wolraich et al 2019
PRESCHOOL ADHD STUDY - PATS

- NIMH funded multi-center randomized efficacy trial
- 3-5.5 yo with severe ADHD unresponsive to 10 week psychosocial intervention
- 37/279 parents reported behavioral treatment alone resulted in satisfactory improvement.

PATS – RESULTS

- Stimulants are generally effective – short term efficacy and symptom proportional to dose
- Highest responders had less comorbidities
- Lower doses provide balance of benefits and side effects
  - Dose used = 0.7+/-0.4 mg/kg/day; best TOTAL dose was 14mg/day START LOW, GO SLOW
- Preschoolers respond LESS compared to older children (effect size 0.4-0.8 largest ES with 7.5mg TID dosing).
- Preschoolers have higher rates of side effects (emotional outburst, repetitive thoughts, insomnia, appetite decrease, irritability, growth reduction).

PATS FOLLOW UP IN 6 YEARS

- ADHD diagnosis is stable over time - 89.9% still meeting diagnostic criteria
- Patients with comorbid ODD or conduct disorder had higher rates of ADHD.
- Girls experienced a steeper symptom decline (severe baseline symptoms)
- Some indication of long-term benefit based on parent ratings
- Although stimulant medication continued to be used by most children, about 1 child in 4 was off medication, and about 1 in 10 was on an antipsychotic

WHAT TO DO IN THE CLINIC?
ITS NOT ONLY ONE VISIT!

TREATMENT PRINCIPLES

- Diagnostic focus
- Collateral sources of information for diagnoses and outcomes
- Parent Behavioral Management Training (PBMT) and School support
- Review Comorbid conditions and baseline sleep, exercise, appetite
- Add stimulant, low dose trial START LOW GO SLOW
- Track side effects, efficacy and titrate as tolerated, NEEDS weekly follow up initially
- Monitor vitals, growth, tolerance and outcomes NEEDS quarterly follow up
For preschool-aged children (age 4 years to the sixth birthday) with ADHD, the PCP should prescribe evidence-based behavioral PBMT and/or behavioral classroom interventions as the first line of treatment, if available (grade A: strong recommendation). In areas in which evidence-based behavioral treatments are not available, the clinician needs to weigh the risks of starting medication before the age of 6 years against the harm of delaying treatment. (Grade B: strong recommendation.)

Methylphenidate may be considered if these behavioral interventions do not provide significant improvement and there is moderate-to-severe continued disturbance in the 4- through 5-year-old child’s functioning.

Children randomized to enter Behavioral training (daily report card at school and 8 sessions of parent training) or MPH ER dose (equiv to 0.15mg/kg bid). After 8 weeks, re-randomized to secure increased dose of behavioral training or medication addition.

In follow up,
- Behavior First group improved classroom behaviors more than Medication First, regardless of whether Behavior therapy ever occurred later....
- Parents more engaged when offered Behavioral First
- Adding medication improved classroom behaviors and oppositional tendencies.

**OVERALL – BEST TO START BEHAVIORAL INTERVENTIONS FIRST**
PSYCHOSOCIAL THERAPIES

- Parent training (ES 0.55) – EBP= Parent Behavior Management Training (PBMT), Contingency Training (8 >4>1>0)
- Teacher training (ES 0.6) – keeping a Daily Report Card is sufficient “dose”.
- Social skills training. LACK SKILLS
- Aerobic exercise training
- Sleep training
- Cognitive Behavioral Therapy for ADHD
- Complementary approaches – diet, Omega 3 fatty acids, neurofeedback

Pelham2008, Wolraich 2019
CORE ELEMENTS OF PARENT TRAINING

- Parent–child attachment is foundational for adaptive functioning of the child
- Breaking the coercive parenting cycle (**ABC frame is critical**)
- Repair and strengthening of emotional climate of parent-child relationship **“create atmosphere of committed compliance”**
- Effective commands
- Child centered play **“special time”**
- Token system
- Time outs/ selective ignoring

CDC Parent Training videos: see resources! GREAT BRIEF VIDEO SERIES TO RUN IN YOUR OFFICE? TO GIVE TO FAMILIES
TEACHER TRAINING

- Functional Behavioral Assessment to identify ABCs
- Providing 2 choices or FIRST /THEN instructions
- Clear instructions and consistent rules (Use visual strategies!)
- Quick and smooth transitions
- Selective ignoring
- Praise for positive behaviors
- Token economy
- Learn to use a DRC=daily report card
PRACTICAL SCHOOL STRATEGIES

- Homework notebook (if KG or 1st)
- Extended time for tasks
- Daily report card
- Reduced distractions (seat away from window, doors, sit next to teacher)
- Frequent breaks
- Physical movement

- Tutoring (if older)
- Visual Signal from teacher (color cards)
- Occupational therapy tools
- Prevent elopement

Benefits sustained only as long as interventions continued
MEDICATIONS

- Act on dopamine and noradrenaline pathways.
- FIRST CHOICE: SHORT ACTING methylphenidate or amphetamine
- Amphetamines FDA approved > or = 3 yo (no safe doses)
- Methylphenidates FDA approved > or = 6 yo
- Side effects may be more pronounced
- May have protective effect on comorbid disorders (opposition, anxiety, substance use, anti) and functional outcomes (family functioning, repeating a grade) (Biederman et al. Peds 2009; Pliszka S. JAACAP 2007)
EQUIVALENT DOSES FOR STIMULANTS

Relative Effect Size of ADHD Medication Choices
Effect size of all stimulants -1.0
Effect size of atomoxetine -0.7
Effect size of guanfacine -0.65 (using Cohen’s d-statistic)

Stimulant Relative Potencies:
Methylphenidate 10mg ≈ dexamethylphenidate 5mg
Methylphenidate 10mg ≈ dextroamphetamine 5mg
## Short Acting Stimulants

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Duration</th>
<th>Dosages</th>
<th>Stimulant Class</th>
<th>Usual Starting Dose</th>
<th>FDA Max Daily Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylphenidate (Ritalin, Methylin)</td>
<td>4-6 hours</td>
<td>5, 10, 20 mg</td>
<td>Methyl</td>
<td>5mg BID 1/2 dose if 3-5yr</td>
<td>60mg</td>
</tr>
<tr>
<td>Dexamethylenidate (Focalin)</td>
<td>4-6 hours</td>
<td>2.5, 5, 10 mg</td>
<td>Methyl</td>
<td>2.5mg BID</td>
<td>20mg</td>
</tr>
<tr>
<td>Dextroamphetamine (Dexedrine, Dextro-Stat, Dextedrine SA, Pro Centra, Zenzedi)</td>
<td>4-6 hours</td>
<td>5, 10 mg tabs</td>
<td>Dextro.</td>
<td>5mg QD-BID 1/2 dose if 3-5yr</td>
<td>40mg</td>
</tr>
<tr>
<td>Amphetamine Salt Combo (Adderall)</td>
<td>4-6 hours</td>
<td>5, 7.5, 10, 12.5, 15, 20, 30 mg.</td>
<td>Dextro.</td>
<td>5mg QD-BID 1/2 dose if 3-5yr</td>
<td>40mg</td>
</tr>
</tbody>
</table>
ALPHA-AGONISTS

- Better for hyperactivity than inattention
- Most common side effect is sedation (clonidine > guanfacine)
- Affects blood pressure (↓) and heart rate (↓ or ↑)
- Can take a while to work (4 weeks)
- Risk of serious side effects if cardiac problems, given with stimulants or if over dosed
- Used by DBPs for younger hyperactive, aggressive kids. ?Call VMAP


DBP Net study
Virginia Regions
Northern (CNMC/Inova), Central (VCU/VTCC), Eastern (CHKD), **Western (UVA/Centra)**, Southwestern (Carilion)

**Call from PCP**
- PCP calls for services (Psychiatrist/Psychologist/SW Consult, or Care Navigation)
- Enters intake data
- Routes request to regional resource

**PCP Office**
- Telehealth Appt
  - If face-to-face visit required, telehealth appt set up and conducted
  - Referral to Care Navigation if needed

**Telepsych Visit**
- Returns call to PCP
- Enters outcome data
- Referral to Care Navigation if needed

**Regional Team Paged/Called**
- Calls to regional resource
- Enters outcome data
- Referral to Care Navigation if needed

**Psychiatrist/ Psychologist/SW consult**
- Follow up conducted
- Resources Database maintained

**Care Navigation**
- Care Navigator works directly with patient’s family
- Follow up conducted
- Resources Database maintained

**Call Center**
- VMAP
  - Call Center
    - PCP calls for services
    - Enters intake data
    - Routes request to regional resource

**VMAP**
- Mental Health Education
- Regional Care Navigation

**How Does VMAP Work?**
- PCP calls for services (Psychiatrist/Psychologist/SW Consult, or Care Navigation)
- Enters intake data
- Routes request to regional resource
- Care Navigator works directly with patient’s family
- Follow up conducted
- Resources Database maintained
1-888-371-VMAP (8627)

PRIMARY CARE PROVIDERS – WE ARE OPEN FOR YOUR CALLS FOR PATIENTS 18 YEARS AND UNDER!

MON, TUES, FRI 9-5
WED, THURS 9-1

**IMPORTANT – YOU NEED TO ENROLL YOURSELF AND YOUR PRACTICE FIRST (WWW.VMAPFORKIDS.ORG)

THE CALL CENTER WILL TAKE YOUR INFORMATION AND INFORMATION ABOUT THE PATIENT, THEN EXPECT A CALL BACK FROM THE PSYCHIATRIST WITHIN 30 MINUTES
Need to complete 1 Practice Form Per Practice

Each Provider Needs to Enroll
ADHD RESOURCES

- PAL care guide and conference ADHD resources

- CDC videos /parenting resources / English and Spanish


www.parentsmedguide.org – great question/answer format for medication use

My favorite parent training Program of all times! There is Group video training, a book, Online. It works for 2-12 year olds. It works for ADHD, DRD, ODD