Developmental Behavioral Pediatrics Case Reviews

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AAP PREP CME course
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Disclosure Statement

I have no relevant financial relationships with the manufacturers of any commercial products and/or providers of commercial services discussed in this CME activity.
Learning Objectives

At the conclusion of this activity, the participant should be able to:

- Differentiate possible diagnoses for presenting symptom of inattention
- Differentiate nightmares and night terrors
- Counsel families regarding access to early intervention services through federal legislation

ALL assigned Content Specifications are covered:
In slides, * to indicate content spec
Remaining covered in companion Word document
Poll Everywhere

- Text **JILLFUSSELL120** once to **22333** to join the session
  - Then text answers to poll questions to that same #: **22333**
- Or on the web, go to: **PollEv.com/jillfussell120**
  - Poll questions should show there
Just another day at the office...

- “He can’t pay attention and get his work done at school. He gets in trouble for being out of his seat a lot.”
- 7 year old, regular second grade
  - Current teacher worried, because 3rd grade gets harder
- His first grade teacher had similar concerns
Differential Diagnoses

- Developmental Delays
  - Language
  - Cognitive

- Sensory Impairments
  - Vision
  - Hearing

- Medical
  - Thyroid
  - Absence seizures
  - Lead

- Mood Disorders
  - Depression
  - Anxiety

- Autism Spectrum Disorder

- Learning Disability

- Sleep Disorder

- Environmental

- ADHD
History, History, History…

From parent:
- Chief concerns
- History of symptoms
  - age of onset, time course
- Family history
- Past medical history
- Psychosocial history
- Review of systems
- Report of functioning, strengths and weaknesses
History, History, History...

From school:

- **Chief Concerns**
  - Symptoms in one class/subject or across all?
  - Inconsistent performance, or consistently poor?

- **Report on functioning**
  - in academic and/or social interactions

- **Academic records**
  - report cards, standardized testing, psychoeducational evaluations

- **Administrative reports, disciplinary actions**

AAP ADHD: Clinical Practice Guideline *Pediatrics* 2011;128(5), suppl appendix:
History, History, History…

From child (if age/developmentally able):
- Interview
  - concerns regarding behavior, family relationships, peers, school
  - Report of child’s self-identified impression of function, both strengths and weaknesses
- Your observations of child’s behavior
- Physical and neurologic examination

AAP ADHD: Clinical Practice Guideline *Pediatrics* 2011;128(5), suppl appendix:
**Our patient:**

- Already have chief complaint, time course...

### Additional History

<table>
<thead>
<tr>
<th>From Parent</th>
<th>From School</th>
<th>From Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical history benign</td>
<td>Passed vision and hearing screens</td>
<td>Observations: cooperative, conversational</td>
</tr>
<tr>
<td>Family history: older brother, uncle with ADHD</td>
<td>Generally average standardized testing</td>
<td>Physical exam: Normal</td>
</tr>
<tr>
<td>No recent psychosocial stressors</td>
<td>Grades are inconsistent, some “0”s and “incompletes”, conduct grade “Needs improvement”</td>
<td>Informal interview: favorite class is P.E., describes friends and typical play activities, says he’s “good at school” but “doesn’t like it” and “forgets assignments” sometimes</td>
</tr>
<tr>
<td>ROS: Some delayed sleep onset, but no snoring, night waking, no mood or other behavior concerns</td>
<td>Has friends (rambunctious boys), can “get in others’ personal space”</td>
<td></td>
</tr>
</tbody>
</table>
Validated Behavior Ratings

Validated ADHD instruments
- Parent, teacher, adolescent self-report
- Conners’ (long and short versions), ADHD Rating Scale IV, NICHQ Vanderbilt Assessment, others
NI CHQ Vanderbilt Assessment, as a sample
parent ADHD rating

from AAP CARING FOR CHILDREN WITH ADHD: A RESOURCE TOOLKIT FOR CLINICIANS, 2ND EDITION

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Never</th>
<th>Occasionally</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does not pay attention to details or makes careless mistakes with,</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>for example, homework</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Has difficulty keeping attention to what needs to be done</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Does not seem to listen when spoken to directly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Does not follow through when given directions and fails to finish</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>activities (not due to refusal or failure to understand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Has difficulty organizing tasks and activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Avoids, dislikes, or does not want to start tasks that require</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ongoing mental effort</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Loses things necessary for tasks or activities (toys, assignments,</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>pencils, books)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Is easily distracted by noises or other stimuli</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Is forgetful in daily activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Fidgets with hands or feet or squirms in seat</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Leaves seat when remaining seated is expected</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. Runs about or climbs too much when remaining seated is expected</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. Has difficulty playing or beginning quiet play activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Is “on the go” or often acts as if “driven by a motor”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Talks too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. Blurs out answers before questions have been completed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. Has difficulty waiting his or her turn</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. Interrupts or intrudes in on others’ conversations and/or activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Vanderbilt Assessment, cont’d

- Includes screening questions for Oppositional Defiant Disorder, Conduct Disorder, Anxiety/Depression

<table>
<thead>
<tr>
<th>Symptoms (continued)</th>
<th>Never</th>
<th>Occasionally</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Argues with adults</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. Loses temper</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21. Actively defies or refuses to go along with adults’ requests or rules</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22. Deliberately annoys people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Blames others for his or her mistakes or misbehaviors</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. Is touchy or easily annoyed by others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. Is angry or resentful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. Is spiteful and wants to get even</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

- (our patient “0” on all 3)

- Also includes questions about performance
  - Academic, social

- (There are also follow up versions, parent and teacher
  - ADHD symptoms, performance, side effects)
Definition of ADHD (DSM-5)

Inattention

Six or more of the following - manifested often*:

• Inattention to details/makes careless mistakes
• Difficulty sustaining attention
• Seems not to listen
• Fails to finish tasks
• Difficulty organizing
• Avoids tasks requiring sustained attention
• Loses things
• Easily distracted
• Forgetful

DSM-5, 2013
Definition of ADHD (DSM-5)

Hyperactivity/Impulsivity

Six or more of the following - manifested often

**Hyperactivity**
- Fidgets
- Unable to stay seated
- Inappropriate running/climbing (restlessness)
- Difficulty in engaging in leisure activities quietly
- "On the go"
- Talks excessively

**Impulsivity**
- Blurts out answer before question is finished
- Difficulty awaiting turn
- Interrupts or intrudes on others

DSM-5, 2013
Definition of ADHD (DSM-5)


definition of ADHD

Subtypes

Inattentive type (20%)
  More girls
  Suspected/diagnosed later
Hyper/Impulsive type (15%)
Combined type (65%)

Approximate Prevalence Distribution of the Subtypes of ADHD
Definition of ADHD (DSM-5)

- At least 6 of 9 for inattention AND/OR 6 of 9 hyper/impulsive
- Inappropriate for age/gender
- Several symptoms present before age 12
- Present in more than one setting
  - Home and school
- Functional impairment
  - Social, academic, emotional, occupational
- Not better explained by another diagnosis
ADHD and Comorbidities*

Also need to evaluate for co-existing conditions

- Broad-band behavioral ratings can assist with that
  - (More time, more cost)

- Behavioral/Mental Health, Developmental, and/or physical
  - Co-morbid, vs differential diagnosis??

- May require referral
  - Psychiatry, school testing, sleep study, etc.
ADHD Diff Diagnosis/ Co-morbidity

- Some diagnoses could possibly “better explain” symptoms, and should be treated before assuming primary ADHD
  - Newly diagnosed learning disability, severe language disorder, depression, med diagnoses
- Some diagnoses could exist with (“comorbid”) ADHD, and could be monitored as ADHD treatment is begun
  - Anxiety Disorder, Oppositional Defiant Disorder
- Some diagnoses have inattention and/or hyperactivity, and may not be ADHD
  - Autism Spectrum Disorder, moderate-severe developmental delay/intellectual disability
  - Can be co-morbid, but adjust behavioral expectations for developmental level
Management of ADHD*

- **Education and Counseling**
  - Extent of impairment, comorbidities, risks/benefits of treatment, environmental modifications for home and school

- **Setting Treatment Goals**
  - Identify areas of impairment, measurable improvements

- **Initiating Therapy**

- **Developing Long-Term Mgt and Monitoring Plan**
  - Chronic condition, monitor goals, clear plan for follow-up
Management of ADHD*

- **Special Populations**
  - Preschool
    - Start with behavioral therapy
    - Assess development, particularly language
  - Adolescent
    - Verify developmental presentation (not sudden onset)
    - Specifically evaluate mental health and for substance abuse

- **Behavior Therapy**
  - For preschoolers, but may also be helpful for school-age

- **School Modifications/Supports**

School Modifications/ Supports

**Section 504, Rehabilitation Act**
- Eliminate impediments to full participation by persons with disabilities, prevent discrimination
- Children with physical or mental impairments that substantially limit major life activities (i.e., learning) qualify
- Requires “leveling of the playing field” with accommodations, not provision of additional services

**“Other Health Impaired” (OHI), Individuals with Disabilities Act**
- Individualized Education Plan
- OHI requires a medically diagnosed physical health condition
  - OHI does not include mental health diagnoses with the exception of ADHD
    - If deemed ADHD has adverse impact on educational performance
- If the child needs special education services as a result of the disability
Management of ADHD*

**Medication, FDA-approved**

- **Stimulant medications**
  - Mixed amphetamine salts, dextroamphetamine, lisdexamfetamine
  - Methylphenidate, dexmethylphenidate

- **Nonstimulant medications**
  - Atomoxetine
  - Long-acting alpha agonists
    - guanfacine, clonidine

ADHD Medications

- See chart in Supplementary Material, ADHD long-acting Medications handout
Prevalence of ADHD*

- Most recent estimates of prevalence: 5-11% of school-aged children

- Persistence into adulthood...
  - Ranging from 22% (Klein RG et al, Arch Gen Psychiatry. 2012;69(12):1295-1303) up to 66%
  - Self-report: 5-8%
  - Parent-report 50-65%

  (Barkely 2002; http://www.adhdlibrary.org/library/how-often-does-adhd-persist-into-adulthood/)
ADHD: Age-related Clinical findings*

Inattention

Hyperactivity

Impulsivity

---Age---

Factors that influence Attachment*

- Individual characteristics of infant and/or caregiver can enhance or impede the development of healthy attachment.
  - Maternal depression
    - well-studied caregiver characteristic that can significantly negatively impact the development of a healthy attachment relationship
    - associated with a marked impairment in potentially all the relational “building blocks” that are integral for healthy attachment between a mother and infant
      - social eye gaze, responsive affect, parental touch and soothing abilities, physical proximity, and interactive vocalizations
  - Infant factors are also known to provide additional impact on the development of attachment
    - Infants born prematurely, for example, can be more irritable and less able to self-regulate in order to coordinate social participation in a way that fosters healthy development of attachment
    - Temperament
Attachment is a core task of infancy, an innate human drive. Intact attachment reinforces survival.

### Reciprocal contributions to the Development of Attachment

<table>
<thead>
<tr>
<th>Infant Contributions</th>
<th>Caregiver Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefers faces as a newborn</td>
<td>Smiles, eye contact reciprocally</td>
</tr>
<tr>
<td>Develops social smile</td>
<td>Comes to infant’s aid when s/he cries</td>
</tr>
<tr>
<td>• Begins to offer it selectively</td>
<td></td>
</tr>
<tr>
<td>Eye contact</td>
<td>Gives responsive “baby talk,” otherwise talks to infant</td>
</tr>
<tr>
<td>• Selectively (3-6 months)</td>
<td></td>
</tr>
<tr>
<td>Crying is distress call for caregiver</td>
<td>Expresses excitement/cuddles when reunited after separation</td>
</tr>
<tr>
<td>• Responds to comfort offered by caregiver</td>
<td></td>
</tr>
<tr>
<td>Begins babbling</td>
<td></td>
</tr>
<tr>
<td>• More toward caregiver</td>
<td></td>
</tr>
<tr>
<td>Separation/stranger anxiety</td>
<td></td>
</tr>
<tr>
<td>• Demonstrating attachment to caregiver</td>
<td></td>
</tr>
</tbody>
</table>

**Critical components are physical proximity and emotional availability of caregiver.**
Development of Secure Attachment

Affect Synchrony
- Bidirectional, dynamic process
- matching and adjusting emotional states of two individuals during social interactions
- each partner learns the social engagement style and rhythm of the other partner, and adjusts to that
- occurs episodically throughout daily life
  - during frequent, short but intense, playful, face-to-face interactions between caregiver and infant
  - developing and reinforcing the infant’s relational skills
  - contributing to the maturation of the infant’s self-regulation skills
Variations in Temperament and Parenting*

- **Parents**
  - Have expectations for infant’s behaviors, emotional responses
  - Value certain temperament characteristics

- **Infants**
  - Have an inherent temperament that matches those expectations, to some degree (or not)

- **“Goodness of Fit”**
  - Degree to which an infant’s temperament “matches” parents’ parenting style, AND
  - Degree to which parents can adjust those expectations to match their infant’s temperament
    - Parents’ perceptions of the goodness of fit contribute to their notion of their child’s temperament (as “easy,” “difficult,” or “slow to warm”)
## Characteristics of Difficult Temperament*

Table originally developed by J. Fussell for PREP:DBPeds 2012 CME; refs in suppl Word document

<table>
<thead>
<tr>
<th>Major Categories Describing Temperament</th>
<th>Characteristics of the “Difficult Temperament”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Level</td>
<td>Hyperactive, fidgety, restless, impulsive</td>
</tr>
<tr>
<td>Regularity</td>
<td>Unpredictable patterns (such as feeding, sleeping), erratic</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Rigid, not tolerant of change</td>
</tr>
<tr>
<td>Threshold of Responsiveness</td>
<td>Low threshold, Reacts to (or withdraws from) minor stimulation</td>
</tr>
<tr>
<td>Intensity of Reaction</td>
<td>High intensity, forceful, energetic response</td>
</tr>
<tr>
<td>Quality of Mood</td>
<td>Negative, irritable, serious</td>
</tr>
<tr>
<td>Distractibility</td>
<td>Easily distracted, poor concentration</td>
</tr>
<tr>
<td>Approach-withdrawal</td>
<td>Tends to hold back, avoid new situations</td>
</tr>
<tr>
<td>Task Persistence</td>
<td>High, stubborn, excessive tantrums</td>
</tr>
</tbody>
</table>

(A child with difficult temperament does not have to have all these characteristics, but they tend to have extreme degrees of a predominant number of these characteristics)
Parenting the Child with Difficult Temperament*

- Structure and predictable rules
  - Including responses to misbehavior
    - not over-reacting in the “heat of the moment”
  - Rules presented to the child clearly and deliberately in planned discussion
    - not when the misbehavior is occurring

- Active acceptance
  - parents accept their child’s inherent temperamental characteristics (weakness and strengths), and consider that to the degree possible, when planning discipline

Originally developed by J. Fussell for PREP:DBPeds 2012 CME; refs in suppl Word document
Parenting the Child with Difficult Temperament, cont’d*

- Management that is matched to the child’s temperament
  - realizing there are some behaviors parents would prefer not occur, but realize their child “can’t help it,” and it is the result of temperament
    - In those situations, support/help the child make better choices, rather than punish
      - This may include recognizing signs of escalation early and distracting, awareness (and avoidance, when possible) of situations/environments where child is prone to become escalated or misbehave; preparing child for change when possible, respect child’s preferences when possible, etc.

- Rational punishment
  - Ignore minor misbehaviors
  - Select the more significant behaviors for which consequences will occur
  - Be consistent about enforcing those rules
Screening for Maternal Depression

- Recommended in AAP Bright Futures guidelines and Mental Health Task Force
- Centers for Medicare and Medicaid Services (CMS)
  - States are permitted to cover screening, but state(s) have to act/plan to cover it
    - As of Jan 2017, 99420 “administration and interpretation of health risk assessment instrument” has been replaced by:
      - 96160: Administration of patient-focused health risk assessment (for example, a health hazard appraisal)
      - 96161: Administration of caregiver-focused health risk assessment instrument (for example, a depression inventory)

Presented overview in General PREP Session
- 12 months is not a scheduled screening age, per AAP guideline, but now you have a presenting concern that may need more investigation…

Inquire about parental concern

Administer standardized screening tool

http://pediatrics.aappublications.org/content/118/1/405.full.pdf+html
Failed Developmental Screening

- Medical evaluation
  - Comprehensive History
  - Review newborn screen, hearing, vision, exam

- Developmental evaluation
  - Referral for diagnostic evaluation

- Refer to Early Intervention
  - Typically provide evaluation services
  - Can provide services before a diagnostic evaluation is complete

Legislation for Patients with Disabilities*

- **Individuals with Disabilities Act, IDEA**
  - Federal mandate that all children with disabilities are entitled to a free appropriate public education to meet their unique needs and prepare them for further education, employment, and independent living
  - **Part C, Early Intervention, 0-3 years**
    - Appropriate, timely, and multidisciplinary identification and intervention services
    - **Individualized family Service Plan (IFSP)**
      - priorities, resources and concerns of the family
      - goals and services to be provided to the child
      - steps for eventual transitioning of the child into formal education
IDEA Part C Early Intervention

- Must meet at least one of these criteria:
  - Developmental delays in one or more areas
  - Physical or mental condition that has high probability of resulting in developmental delay
  - Per each state’s definition, may also include children “at risk” of experiencing a substantial developmental delay, if early intervention services were not provided

- Can receive various services through the IFSP
  - Developmental therapies, but also transportation, social work, care coordination, etc.
Preschooler presents with sleep problems

- Parent reports...
  - Delayed sleep onset
    - Goal bedtime is 8:30, but usually asleep 10:00 pm
  - Refuses to sleep alone, often sleeps in parents bed
  - Described as a restless sleeper
  - Wakes in the night frequently
    - Sometimes falls back asleep, sometimes extended wakefulness
  - Nightmares
    - Or is it night terrors...?
Usefulness of a Sleep Diary

- If you are not sure what the problem is, or the parent needs convincing:
  - Have parents keep a sleep diary for 1 - 2 weeks
    - Eating, activity and bedtime routine in the evenings
    - Time going to bed
    - Bedtime resistance details (crying, tantrums, parent response, etc.)
    - Time going to sleep
    - Time awakens, for how long, and what happens while awake
    - Naps, daytime behavior, sleepiness
  - Allows opportunity to counsel parents about consistency, discipline and molding of behavior around bedtime and sleep
Normal Developmental Progression of Sleep Patterns*

- Sleep is the *primary* activity of the developing brain
  - Average 2 year old: 13 months sleeping, 11 months awake

- Typical Hours of Sleep by age:
  - 16-18 hours newborn
  - 14 hours for a 1 year old
  - 12 hours for a 3 year old
  - 11 hours for a 5 year old
  - 10 hours by 9 years old

- Naps
  - 2 naps until approximately 1 year of age
  - 1 afternoon nap until age 3-4 years
Potential Interferences

- **Medical**
  - URI, otitis media or other acute illness
  - Milk allergy, gastroesophageal reflux
  - Side effect of medication

- **Physical**
  - Obstructive features
  - Hungry or ate late and/or ate the wrong thing (caffeine, spicy, etc.)

- **Developmental**
  - Separation anxiety
  - Certain diagnoses (autism, ADHD, genetic syndromes)
Potential Interferences, cont’d

- Temperament and/or Adjustment
- Environmental
  - Poor sleep hygiene
  - Poor limit setting by parents
  - Psychiatric
    - Maternal depression, PTSD, child depression, anxiety, etc.
  - Stress
  - Inconsistent routine/ responses to night wakings
  - Needing parent present ("association")
Types of Sleep Problems in Pediatrics

- Bedtime refusal/resistance
- Night waking
  - Normal for newborns
  - 6-12 months: separation anxiety or habit
  - Toddlers and preschoolers
    - Habit, and a harder one to break
- Phase-Shift Sleep Disorder
- True Sleep Disorder
  - Obstructive Sleep Apnea, Narcolepsy
- Parasomnias
- ... or one of those “potential interferences”
Parasomnias
abnormal behavioral or physiologic events associated with sleep

- Night terrors
  - 1 - 6% of preschoolers

- Nightmares
  - 62% across the preschool years

- Sleep Walking
  - 10 - 30% of kids have episodes
  - 1 - 5% have recurrences (disorder)
Distinguish Nightmares and Night Terrors, and Manage Appropriately*

<table>
<thead>
<tr>
<th>Parasomnias</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nightmares</strong></td>
<td><strong>Night Terrors</strong></td>
</tr>
<tr>
<td>Awaken fully</td>
<td>Panicky scream, not awakened fully</td>
</tr>
<tr>
<td>Become quickly oriented, frightened, seek comfort</td>
<td>Disoriented, aroused, difficult to calm, then fall right back to sleep</td>
</tr>
<tr>
<td>Vivid recall of the dream</td>
<td>Amnesia of the episode</td>
</tr>
<tr>
<td>Second half of the night</td>
<td>First third of the night</td>
</tr>
<tr>
<td>Provide comfort, reassurance; efforts during the day to feel safe (check closets, under the bed)</td>
<td>Just barely waking the child just prior to the usual time night terrors occur can sometimes help “reset” sleep cycle</td>
</tr>
</tbody>
</table>
Appropriate Bedtime Hygiene/ Habits*

- **Environment**
  - Dark, quiet, comfortable

- **Schedule**
  - Routine, routine, routine
    - Involve the parent minimally
    - Simple enough for the child to recreate alone
    - Write out the “script” and share with babysitters
    - Stick to consistent waking times
      - Wake time can sabotage bedtime

- **Activities**
  - Soothing, calm, quiet, go to bed awake
  - Transitional object, if needed
  - Limit time in bed for activities other than sleep

- **Monitor evening intake**
  - Limit fluids
  - Limit caffeine
  - Make sure child’s not hungry, but not “stuffed”
  - Think about meds child is taking
Pearls for Sleep-onset Associations and Night Wakings*

- Sleeping alone and self-soothing is a *learned* behavior.
- Prevention is easier than un-doing a learned behavior:
  - i.e., learning to sleep alone
    - *before* 5-6 months
    - (separation anxiety sets in)
- Parents should be counseled that:
  - We all typically wake 5-20 times per night, but do not recall, or wake fully.
Pearls for Sleep-onset Associations and Night Wakings*

- Try to keep the disruption and associated parental attention to a minimum, so as to not reinforce the awakening

- Consistency!
  - Intermittent reinforcement (giving in occasionally) makes it even harder to break the habit
  - Warn parents of ‘extinction burst’

- Gradual withdrawal of sleep-onset associations while providing consistent emotional support
  - Consider using a transitional object linked to parent
    - Shop for something together
    - Parent article of clothing
    - Gradual move out of bed, out of room

*Source: [Link to original source](https://www.sleepfoundation.org/article/sleep-onset-disorders)
Pearls for Bedtime Resistance*

- Given a choice, 90% of children would choose to stay up until their parents bedtime
  - They shouldn’t be given a choice! Parents are in charge.

- Graduated Extinction
  - Spending gradually longer amounts of time ignoring child’s protests at bedtime
    - Decide how much time parent can tolerate between visits to child’s room, then gradually increase that time
    - When enter room, firmly instruct to return to bed, no positive reward

- Bedtime Fading
  - Keeping child up late enough that child falls asleep easily, then gradually moving back to more appropriate bedtime
    - Use sleep diary to establish initial time, and add 15-30 minutes
    - After few consecutive successful nights, move ~ 15 minutes earlier, etc.
Comparing
Graduated Extinction --- Bedtime Fading

- Can use usual bedtime
- Can check on child for reassurance
- Usually works within the 1st week
- Requires listening to the child crying
- Extinction Burst
- Some behaviors cannot be ignored

- No Extinction Burst
- No need to listen to crying
- Someone has to stay up late
- Can take several weeks to get to appropriate bedtime

Sleep Better! V. Mark Durand 2013
Effect of Medication on Sleep*

- Some medications can delay sleep onset or interrupt sleep
  - e.g., stimulants, steroids, albuterol

- Some medications have sleepiness as a side effect
  - e.g., antihistamines, psychiatric medications

- Medications to treat sleep problems
  - Will not work without the environmental and behavioral interventions, too
  - More necessary in patients with developmental disability than the general population in primary care
  - Trials should be limited when possible (i.e. 4-6 weeks) when possible, in hopes to “reset the clock”
# Medications for Sleep

**Developmental Disability (DD) population, not FDA approved for pediatrics**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose range</th>
<th>Evidence base</th>
<th>Cautions, side effects</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melatonin</td>
<td>1-6 mg, up to 10 mg</td>
<td>Most studied across DD diagnoses</td>
<td>? Lower seizure threshold</td>
<td>May be better for sleep onset, rather than maintenance</td>
</tr>
<tr>
<td>Clonidine</td>
<td>0.025-0.3 mg/day</td>
<td>Used often clinically, studies limited</td>
<td>Hypotension; caution for patients with cardiac issues</td>
<td>Can help with onset and maintenance; Do not stop abruptly</td>
</tr>
<tr>
<td>Ramelteon (melatonin agonist)</td>
<td>4-8 mg</td>
<td>Studied in ASD, but studies limited/add’l data needed</td>
<td>? Increase prolactin, do not use with fluvoxamine, liver impairment</td>
<td>Must be taken “whole,” do not administer with high-fat meals</td>
</tr>
<tr>
<td>Clonazepam (benzodiazepine)</td>
<td>0.01-0.03 mg/kg, titrate up to max of 0.2 mg/kg or 1 mg</td>
<td>Studied in Williams Syndrome</td>
<td>Daytime drowsiness/cognitive slowing, habituation, withdrawal</td>
<td>Can target onset, maintenance, sleep duration</td>
</tr>
<tr>
<td>Trazodone (anti-depressant)</td>
<td>Start 25-50 mg, titrate up to 100-200 mg</td>
<td>Data quite lacking, but used fairly often</td>
<td>Avoid with Rett’s, QT prolongation, priapism</td>
<td>Can crush tablet</td>
</tr>
<tr>
<td>Iron</td>
<td>Elemental iron 1-2 mg/kg/d, to max of 6 mg/kg/d divided doses</td>
<td>ASD; others not specifically studied</td>
<td>GI upset, taste not palatable, antacids and PPIs interfere with absorption</td>
<td>Aiming for serum ferritin level 30-50 ng/ml</td>
</tr>
</tbody>
</table>

(Blackmer AB, Feinstein JA Pharmacotherapy 2016;36(1):84-98)
Additional Medication Discussion

- **Antihistamines** (benadryl, hydroxyzine, etc.)
  - Most commonly used
  - Can effect sleep quality and give daytime “hangover”
  - Can have paradoxical effect

- **Nonbenzodiazepine sedative-hypnotics**
  - Zolpidem (Ambien), Zaleplon, Eszopiclone
    - Adolescent/adults
    - Increases GABA activity
    - Safe short-term use in adults with minimal side effects

- **Herbals**
  - Valerian root (BZD-like but less “hang-over”)
  - Lavendar (oil toxic if large amount ingested)
  - Chamomile
  - Kava

Bipolar and Related Disorders,* a quiz:

1. Bipolar I
   - D
2. Bipolar II
   - B
3. Cyclothymic Disorder
   - A
4. Other Specified Bipolar and Related Disorder
   - E
5. Disruptive Mood Dysregulation Disorder
   - C

A. At least 2 years (1 year for children) of numerous periods of hyomania and depressive symptoms, no more than 2 months symptom-free
B. Requires hypomania and history of at least one major depressive episode
C. Severe, recurrent tantrums, inappropriately intense for the situation and developmental level, with persistent angry and irritable mood most of the day, every day
D. Requires history of at least one manic episode
E. Presenting symptoms of bipolar disorder, but not meeting full criteria for a specific reason (such as hypomania without major depressive episode)
Contributors to the development of Bipolar Disorder*

- Family history of bipolar disorder is one of the strongest and most consistent risk factors for being diagnosed with bipolar disorder
  - A 10-fold increased risk has been reported among relatives of individuals with bipolar disorder (APA DSM-5 2013)

- Stress, significant grief, or trauma might trigger bipolar symptoms, particularly among those with familial predisposition

- Mood dysregulation is linked to neurotransmitters (serotonin, norepinephrine, and dopamine) with indirect evidence to suggest neurotransmitters are present in inadequate amounts and/or functioning inadequately at synapses in the brain
  - the basis for which antidepressant medications can be effective, by targeting neurotransmitter levels
DSM-5 Bipolar and Related Disorders*

- Bipolar I Disorder
- Bipolar II Disorder
- Cyclothymic Disorder
- Substance/Medication-induced Bipolar and Related Disorder
- Bipolar and Related Disorder Due to Another Medical Condition
- Other Specified Bipolar and Related Disorder
- Unspecified Bipolar and Related Disorder

Because children and, to a lesser extent, adolescents, experience bipolar-like symptoms that are subthreshold for meeting full criteria for diagnoses of bipolar I, bipolar II, or cyclothymic disorder, the other specified bipolar and related disorder categories may be more appropriate.
Disruptive Mood Dysregulation Disorder

- Related to children’s presentations being different than adults:
  - DSM-5 included a **new** diagnosis/disorder, DMDD
  - A primary contribution to the development of the DMDD diagnostic category was the fact that too often children with severe temper outbursts and chronic **nonepisodic** irritability have been misdiagnosed with bipolar disorder.
    - A 40-fold increase in rate of pediatric bipolar disorder diagnosis in less than a decade
  - Within DSM-5, DMDD is included within the **Depressive Disorders** category, emphasizing the mood component to the disorder, and to further distinguish it from Bipolar Disorders.

(Roy AK et al, DMDD: A New Diagnostic Approach to Chronic Irritability in Youth 2014;171(9):918-924)
Disruptive Mood Dysregulation Disorder

- Severe recurrent temper outbursts grossly out of proportion in intensity or duration
  - inconsistent with developmental level
  - occur, on average, three or more times per week
- Mood between temper outbursts is persistently irritable or angry most of the day, nearly every day
- Symptoms present for 12 or more months, with no period lasting 3 or more consecutive months without all of the above symptoms
- Symptoms present in at least two of three settings (i.e., at home, at school, with peers), severe in at least one
- Not to be initially diagnosed before age 6 years or after age 18 years
  - By history or observation, age of onset before 10 years
- There has never been a distinct period lasting more than 1 day during which the full symptom criteria, except duration, for a manic or hypomanic episode have been met.
- The behaviors do not occur exclusively during an episode of major depressive disorder and are not better explained by another mental disorder
  - ODD specifically listed as a diagnosis that cannot coexist with DMDD

APA, DSM-5, 2013
Disrupitive Mood Dysregulation Disorder

Some controversy about its inclusion in DSM-5
- Lacking published proof of its validity
  - Definition informed by NIMH research on Severe Mood Dysregulation, SMD
    - SMD high co-morbidity with ADHD and ODD, somewhat with anxiety
    - SMD predictive of future ADHD, depression, anxiety, but NOT bipolar disorder
  - But DMDD also differs from SMD
    - Age of onset (10 yr DMDD, 12 yr SMD)
    - Duration of symptom free intervals (3 months DMDD, 2 months SMD)
    - SMD includes hyperarousal symptoms (e.g., pressured speech, racing thoughts, insomnia, agitation), DMDD does not

- Significant clinical overlap with Oppositional Defiant Disorder
  - But DSM-5 excludes children with ODD from being diagnosed with DMDD
Treatment of DMDD

- Evidence-based parenting interventions, other psychotherapeutic interventions
  - Such as used with ODD, pediatric aggression

- Psychopharmacologic intervention
  - Given pathophysiology likely more similar to depression, ADHD, anxiety (rather than bipolar disorder), SSRI's and/or stimulants more effective than antipsychotics

- "A personalized treatment that incorporates psychosocial interventions, liaison with the school, and involvement of all available community resources to treat the actual functional impairments versus sole reliance on medication in an attempt to reduce irritability or aggression."

- Likely still needs more research

Practice Changes

- For your patients with ADHD, counsel parents regarding supports and modifications available in school for their children.

- Use sleep diaries to inform counseling and treatment you provide for sleep problems in your patients.
Questions?

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Long-acting Medication Options for Attention-Deficit Hyperactivity Disorder

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dosing Strengths</th>
<th>Duration</th>
<th>What makes this one unique?</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerta (OROS) Generics available</td>
<td>18, 27, 36, 54 mg 72 mg (36 mg tab x2)</td>
<td>8-12 hrs (~12)</td>
<td>“ascending profile” and have to be able to swallow a pill</td>
<td>Insoluble capsule (will pass through the GI tract, in stool)</td>
</tr>
<tr>
<td>Focalin XR (Dex MPH)</td>
<td>5, 10, 15, 20 mg</td>
<td>8-12 hrs</td>
<td>d-isomer only, so more potent than other MPHs</td>
<td>Can open and “sprinkle”</td>
</tr>
<tr>
<td>Daytrana</td>
<td>10, 15, 20, 30 mg</td>
<td>11-12 hrs (if patch on for 9 hrs)</td>
<td>Only patch delivery stimulant</td>
<td>Will cause skin changes/redness, time of effect can be varied by time on skin</td>
</tr>
<tr>
<td>Quillivant XR</td>
<td>5mg/ml; start dose 20 mg, incr 10-20 mg; max 60 mg</td>
<td>10-12 hours</td>
<td>Only liquid formulation (powder, mixed with water by pharmacist)</td>
<td>Shake vigorously before administering each dose</td>
</tr>
<tr>
<td>Metadate CD</td>
<td>10,20,30,40,50, 60 mg</td>
<td>6-8 hrs</td>
<td>30% initial release, then 70%</td>
<td>Can “sprinkle”</td>
</tr>
<tr>
<td>Ritalin LA</td>
<td>20, 30, 40 mg</td>
<td>6-8 hrs</td>
<td>Mimics BID dosing, with 50%/50% release</td>
<td>Can “sprinkle”</td>
</tr>
<tr>
<td>Adderall XR (mixed amphetamine salts)</td>
<td>5, 10, 15, 20, 25, 30 mg</td>
<td>8-12 hrs (~10)</td>
<td>Long acting amphetamine</td>
<td>Can “sprinkle”</td>
</tr>
<tr>
<td>Vyvanse (lisdexamfetamine)</td>
<td>20, 30, 40, 50, 60, 70 mg</td>
<td>8-12 hrs (~10-12)</td>
<td>“prodrug”</td>
<td>Can dissolve powder in water</td>
</tr>
<tr>
<td>Strattera (atomoxetine)</td>
<td>10, 18, 25, 40, 60, 80, 100 mg</td>
<td>“all day” (response is variable)</td>
<td>Non-stimulant, norepinephrine reuptake inhibitor</td>
<td>Bitter taste if opened; dosed based upon patient’s weight</td>
</tr>
<tr>
<td>Intuniv (guanfacine)</td>
<td>1, 2, 3, 4 mg</td>
<td>10-12 hrs, at least</td>
<td>Non-stimulant</td>
<td>Hypotension, drowsiness side effects</td>
</tr>
<tr>
<td>Kapvay (clonidine)</td>
<td>0.1, 0.2 mg</td>
<td>10-12 hrs, at least</td>
<td>Non-stimulant</td>
<td>Same side effects as Intuniv, but relatively more drowsiness</td>
</tr>
</tbody>
</table>

MPH = Methylphenidate
Not exhaustive list, also short-acting meds available
Fussell Jan ‘17