AUTISM, ADHD AND SLEEP IN CHILDREN

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Developmental Behavioral Pediatrics
Michigan Medicine
Conflict of Interest Disclosures for Speakers

1. I do not have any relationships with any entities producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients, OR

X 2. I have the following relationships with entities producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients.

<table>
<thead>
<tr>
<th>Type of Potential Conflict</th>
<th>Details of Potential Conflict</th>
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</thead>
<tbody>
<tr>
<td>Grant/Research Support</td>
<td>T20 MCO7463 - Collaborative Office Rounds - PI</td>
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<td>T77 MC31740-01-01 – DBP Training Program - PI</td>
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<td>RO1 5RO1HDP82129 Health Literacy &amp; Sleep – Co-I</td>
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<tr>
<td>Consultant</td>
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<tr>
<td>Speakers’ Bureaus</td>
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<tr>
<td>Financial support</td>
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<tr>
<td>Other</td>
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X 3. The material presented in this lecture has no relationship with any of these potential conflicts, OR

X 4. This talk presents material that is related to one or more of these potential conflicts, and the following objective references are provided as support for this lecture:

1. 
2. 
3.
Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of The American Academy of Sleep Medicine and The Michigan Academy of Sleep Medicine. The American Academy of Sleep Medicine is accredited by the ACCME to provide continuing medical education for physicians.
Objectives

• Review expectations for sleep in typically developing children
• Review criteria for two neurodevelopmental conditions:
  • Attention Deficit Hyperactivity Disorder (ADHD)
  • Autism Spectrum Disorder (ASD)
• Review what we know about sleep & behavior in ADHD & ASD
• Review things to consider when evaluating and managing children with ADHD & ASD for their sleep problems
Outline

• Expectations for sleep in children (in general)
• Autism
  • Diagnostic criteria
  • Behavior and sleep
• ADHD
  • Diagnostic criteria
  • Behavior and sleep
• Considerations for sleep evaluation and management
  • ASD & ADHD
Outline

• Expectations for sleep in children (in general)
• Autism
  • Diagnostic criteria
  • Behavior and sleep
• ADHD
  • Diagnostic criteria
  • Behavior and sleep
• Considerations for sleep evaluation and management
  • ASD & ADHD
Case – 3 year old boy presents for “not sleeping”

• Normal birth weight for delivery at 35 weeks.
• Brief NICU stay for phototherapy and feeding support
• Developmentally normal until about 18 months – language lag
• By 2 years hyperactive, easily agitated, anxious, over-reactive
• Poor diet – high milk intake
• Now complex routines & parent presence needed to get to sleep in 2 hrs
• Snores, sweaty, restless sleeper, screaming out episodes
• Total sleep duration is 5 hours; wakes early and refuses naps
• The parent and family are very stressed
• Can you help?
Is your patient (and their parent) getting enough quality sleep?

https://www.sleepfoundation.org/
Expectations for Sleep Duration in Children

Sleep Duration

2016 AASM Recommendation

<table>
<thead>
<tr>
<th>Age</th>
<th>Sleep in 24 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-12 mo</td>
<td>12-16 *</td>
</tr>
<tr>
<td>1-2 yr</td>
<td>11-14 *</td>
</tr>
<tr>
<td>3-5 yr</td>
<td>10-13 *</td>
</tr>
<tr>
<td>6-12 yr</td>
<td>9-12</td>
</tr>
<tr>
<td>13-18 yr</td>
<td>8-10</td>
</tr>
</tbody>
</table>

* Including naps

Zurich Longitudinal Studies: Iglowstein, Ped 2003
Paruthi, Consensus Statement, JCSM 2016
Factors to Remember about Sleep in All Children

- Child age
- Developmental stage
- Circadian preference
- Temperament

Medical - Mental Health Factors
- Anatomy
- Neuromuscular
- Obesity
- Mental health
- Medications
Factors Affecting Sleep for all Children and Families

• Parent circadian preferences
• Parenting style & child’s temperament

• Parental medical health
• Parent mental health
• Family stressors
Sleep Problems are Common in Children

• 20-30% clinically significant problem
• 70% have a sleep – related problem at least weekly
<table>
<thead>
<tr>
<th>Condition</th>
<th>Prevalence</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep-disordered breathing</td>
<td>OSA: 1-5%</td>
<td>Any age but more common 2-6 yoa Mouth breathing, snoring, gasps, sweaty sleep</td>
</tr>
<tr>
<td>RLS/PLMD</td>
<td>RLS: 2-4%</td>
<td>Restless sleep; sleep onset and maintenance problems; Urge to move legs + uncomfortable sensations; Worse at rest; Relieved by movement; Primarily evening</td>
</tr>
<tr>
<td>Sleep walking, night terrors</td>
<td>2-6 y: 15-40%</td>
<td>Complex movements associated with NREM sleep. Typically the first 1/3rd of sleep period. SDB, RLS-PLMS, sleep deprivation can trigger.</td>
</tr>
<tr>
<td></td>
<td>6-11 y: 1-6%</td>
<td></td>
</tr>
</tbody>
</table>
# Common Sleep Problems in Typically Developing Children

<table>
<thead>
<tr>
<th>Condition</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Insomnia Childhood</td>
<td>Overall prevalence: 20-30%</td>
</tr>
<tr>
<td>• Sleep onset association type</td>
<td>Any age but often infants and younger children; Certain elements are required, usually involving parent; Absence of elements increases risk of night arousals</td>
</tr>
<tr>
<td>• Limit-setting type</td>
<td>Typically toddlers - older children; Resistance, protests, “curtain calls”</td>
</tr>
<tr>
<td>• Combined type</td>
<td>Commonly occurs and has features of both: sleep onset association and limit-setting types</td>
</tr>
</tbody>
</table>
Screen Sleep: BEARS (R)

- **Bedtime Problems**
- **Excessive Daytime Sleepiness**
- **Awakenings during the night**
- **Regularity of sleep/wake cycles and average sleep duration**
- **Snoring – mouth breathing**

- **(Restless)**

Owens, 2005
General Advice for Good Sleep Hygiene for all Families

Daytime habits
• Adequate exercise
• Light exposure
• Limit caffeine
• Limit naps

Evening habits
• Decrease stimulation
• Decrease light
• Decrease electronics

Sleep environment
• Cool
• Minimal sound
• Minimal light
• Stable location night to night

Bedtime routines
• Short regular set of steps
• Include a light snack
• More → less active
• Avoid electronics

Sleep schedule
• Stable bedtime
• Stable wake time
  Every-every night
Comparing Conditions – Data Limitations

- Parent report of child sleep and behavior
  - Time in bed / bedroom unobserved
  - Reporter bias
- Memory for extraordinary or recent events
- Questionnaires may not capture important details
- Sleep logs
- Actigraphy
- PSG
Autism Spectrum Disorder
Autism Spectrum Disorder Criteria (ASD)

A. **Persistent deficits** _social communication-interaction_ across contexts; 3 of following, current or history:
   - Deficits in social-emotional reciprocity
   - Deficits in nonverbal communicative behaviors used for social
   - Deficits in developing, maintaining, and understanding

B. **Restricted, repetitive patterns** of _behavior, interests, activities_; ≥ 2 of following, current or history:
   - Stereotyped or repetitive motor movements, use of objects, or speech
   - Insistence on sameness, inflexible adherence to routines, ritualized patterns or verbal nonverbal behavior
   - Highly restricted, fixated interests that are abnormal in intensity or focus
   - Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment

C. **Symptoms present in early developmental period** (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).

D. **Symptoms cause clinically significant impairment in social, occupational, other areas of functioning.**

E. **These disturbances are not better explained by intellectual disability or global developmental delay.**

Adapted from the Diagnostic Statistical Manual 5; 2013 5th ed.; American Psychiatric Association
Prevalence of Sleep Disorders in ASD

• 50-80% of parents of children with ASD report sleep problems
• Higher prevalence than other neurodevelopmental disorders
• Level of intellectual disability may or may not contribute to risk
• Lack of sleep is associated with increased ASD symptoms:
  • Stereotypic behaviors
  • Self-injurious behaviors
  • Aggression
  • Impaired social connectivity

Singh 2015
Sleep Patterns in Children with ASD

• Avon Longitudinal Study
• 1991-92 cohort
• Children with ASD n=73
• Reduced night sleep duration
  • 17-43 min less
  • Due to later bedtimes
  • Earlier wake times
  • Frequent waking (≥ 3x/night)

Humphreys 2014
Common Sleep Problems for Children with ASD

Problems getting to sleep and/or staying asleep

- **Insomnia**
  - Prolonged sleep onset latency - bedtime resistance
  - Sleep maintenance insomnia - poor sleep efficiency
  - ↓ sleep duration

- **Sleep Disordered Breathing**
  - ↑ risks hypotonia, craniofacial abnormalities, obesity related to genetic conditions (i.e., Downs, Prader Willi Syndrome)

- **Associated issues**: GI, eczema, sensitivities

Singh 2015, Malow 2016
# Types of Sleep Disorders in Children with ASD

<table>
<thead>
<tr>
<th>Condition</th>
<th>Features in children</th>
</tr>
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</table>
| Insomnia: onset (SOI) and maintenance  | Among most common; up to 53% SOI  
Prolonged sleep latency; Decreased sleep efficiency;  
Reduced time in bed and total sleep time |
| Sleep Disordered Breathing             | May be higher in ASD  
Risks: obesity, craniofacial abnormalities, abnormal muscle tone |
| Arousals (sleep walk, night terrors, confusional arousal) | Higher in ASD: and awake for longer once aroused  
Unusual-disruptive behaviors (grunt, laugh, head bang). |
| REM-associated changes                 | Prolonged REM latency, reduced REM percentage. |
| RLS-PLMS                               | Harder to diagnose due to challenges with language and ability to obtain necessary studies |

Singh 2015, Malow 2016
Pathophysiology of Sleep Problems in ASD

- Difference in levels/patterns of neurotransmitters or melatonin
- Reduced melatonin levels
- Gene polymorphisms in melatonin regulating pathways
- Altered serotonin (precursor for melatonin) and perhaps GABA
- Co-morbid medical issues:
  - Epilepsy
  - Constipation
  - GERD
  - Rash-eczema

Singh, 2015
Pathophysiology of Sleep Problems in ASD

• Other co-occurring medical and mental health factors
  • Depression, anxiety, poorer emotion regulation
  • Stereotypic – repetitive behaviors; Rigid – obsessive behaviors
  • Sensory dysfunction and hypersensitivity to the environment
  • Communication barriers, Self-injurious behaviors
  • Poor-atypical eating -> Nutritional deficiencies -> iron deficiency
  • Medications may disrupt sleep – some AEDs, psychotropics

• Increased severity of ASD is the strongest predictor of sleep problems

• Poor sleep in ASD -> increased mental health problems for patient and family stress

Singh, 2015, Herrmann, 2016
Contributors to Sleep Disturbance – ASD (and others!)

- Poor sleep habits
- Poor ability to use communication / social cues
- Hypersensitivity to environmental stimuli
- Difficulty with self-regulation
- Repetitive thoughts/behaviors
- Medical concerns with associated discomfort
- Seizures
- Co-occurring psychiatric or genetic conditions
- Psychototropic medications
- OSA
- RLS/periodic limb movements
- Circadian rhythm abnormalities
Attention Deficit Hyperactivity Disorder
ADHD DSM 5 Criteria – Inattention (6 of 9; ≥5 if ≥17 years)

• Fails to give attention to details
• Difficulty sustaining attention
• Not seem to listen
• Not follow through on instructions/duties
• Difficulty organizing tasks/activities
• Reluctant re: tasks requiring sustained effort
• Loses things necessary for tasks/activities
• Easily distracted by extraneous stimuli
• Forgetful in daily activities

Adapted from the Diagnostic Statistical Manual 5; 2013 5th ed.; American Psychiatric Association
**ADHD DSM 5 Criteria – Hyperactive-Impulsive**
(6 of 9; ≥5 if ≥17 years)

**Hyperactivity**
- Fidgets with hands/feet, squirms
- Leaves seat when staying seated expected
- Runs or climbs excessively
- Difficulty playing quietly
- “On the go" "driven by a motor"
- Talks excessively

**Impulsivity**
- Blurts out answers
- Difficulty waiting turn
- Interrupts/intrudes on others

Adapted from the Diagnostic Statistical Manual 5; 2013 5th ed.; American Psychiatric Association
DSM 5 Criteria for ADHD Diagnosis

• Symptoms present before 12 years of age
• Symptoms present in 2 or more settings (school or work and home)
• Evidence symptoms interfere with or reduce the quality of functioning at school or work
• Symptoms are pervasive – do not happen only during the course of another diagnosis

Adapted from the Diagnostic Statistical Manual 5; 2013 5th ed.; American Psychiatric Association
Percent Ever Diagnosed with ADHD by State
2011 National Survey of Children's Health: 4-17 years

https://www.cdc.gov/ncbddd/adhd/data.html
Medication and Behavior Therapy among Children with **ADHD** with Special Health Care Needs by State: 2009-10; Ages 4-17 y

Michigan’s Profile
- Medication 88%
- Behavior: 44%
- Both: 36%

Sleep and **ADHD** Behaviors

- 25-50% of children and adults with ADHD have sleep problems
- Sleep problems are associated with worse ADHD symptoms
  - Does a sleep problem affect behavior and look like ADHD?
  - Are sleep problems part of ADHD?
- Relationship may be bi-directional
- However, inconsistent evidence
  - Parent report
  - Objective measures
  - Medication effects
  - ADHD sub-types
Sleep Problems in Children with ADHD

- **Parent Questionnaires**
  - Increased sleep onset latency - insomnia
  - Increased night waking
  - Snoring – SRBD

- **Objective Measures (PSG, Actigraphy)**
  - More variable findings
  - Increased sleep onset latency
  - Increased daytime sleepiness
  - Increased REM sleep latency
  - Parasomnias and nightmares
  - Reduced total sleep time
  - Daytime sleepiness
  - ↑ and ↓ percent REM
  - ↑ and ↓ total sleep time
  - Some – no finding with ADHD
  - ? due to different methodologies

Singh 2015, Li 2009
Sleep and ADHD

ADHD sub-types
- Inattentive:
  - More daytime sleepiness
  - Increased sleep duration
  - Later circadian preference
- Hyperactive-Impulsive and Combined: more PLMS
- Combined:
  - Insomnia
  - Restlessness
  - Night waking

Pathophysiology - Multifactorial
- Medication effects:
  - Longer sleep onset latency
  - Reduced total sleep time
  - Reduced sleep efficiency
- Psychiatric co-morbidities
  - ODD, Anxiety, Mood, Learning Problem, Tic
- Intrinsic to ADHD – “hard to turn off my thoughts".
Considerations for Evaluation and Management
Children with ASD and/or ADHD
Evaluation of Sleep Problems in the ASD and ADHD Contexts

• Ask about medical symptoms (SRDB, RLS-restless sleep, sleep-wake pattern, behaviors around bedtime, during the night and the day)
• Excessive tiredness or sleepiness may present differently:
  • Hyperactivity, inattention
  • Increase in stereotypies
  • Increase rigidity, anxiousness and aggression (including SIB)
• Consider including further data collection
  • Sleep log – for pattern and TST estimates
  • Behavioral ratings – Conners, Child behavior checklist (CBCL), SCQ
  • Sleep questionnaires - Children’s sleep habits questionnaire (CSHQ), Pediatric Sleep Questionnaire (PSQ), Family inventory of sleep habits (FISH).
• Family history of ADHD, learning problem, psychiatric disorder
• Consider consultation with a psychiatrist, psychologist, DBPediatrician

Singh, 2015
### Nighttime and Sleep Behavior:

**While Sleeping, Does Your Child…**

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ever snore?</td>
<td></td>
<td></td>
<td>A1</td>
</tr>
<tr>
<td>snore more than half the time?</td>
<td></td>
<td></td>
<td>A2</td>
</tr>
<tr>
<td>always snore?</td>
<td></td>
<td></td>
<td>A3</td>
</tr>
<tr>
<td>snore loudly?</td>
<td></td>
<td></td>
<td>A4</td>
</tr>
<tr>
<td>have “heavy” or loud breathing?</td>
<td></td>
<td></td>
<td>A5</td>
</tr>
<tr>
<td>have trouble breathing, or struggle to breathe?</td>
<td></td>
<td></td>
<td>A6</td>
</tr>
</tbody>
</table>

**Have You Ever…**

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>seen your child stop breathing during the night?</td>
<td></td>
<td></td>
<td>A7</td>
</tr>
<tr>
<td>been concerned about your child’s breathing during sleep?</td>
<td></td>
<td></td>
<td>A8</td>
</tr>
<tr>
<td>had to shake your sleeping child to get him or her to breathe, or wake up and breathe?</td>
<td></td>
<td></td>
<td>A9</td>
</tr>
<tr>
<td>seen your child wake up with a snorting sound?</td>
<td></td>
<td></td>
<td>A11</td>
</tr>
</tbody>
</table>

**Does Your Child…**

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>have restless sleep?</td>
<td></td>
<td></td>
<td>A12</td>
</tr>
</tbody>
</table>

---

**Table 1. Family Inventory of Sleep Habits**

<table>
<thead>
<tr>
<th>Habit</th>
<th>1. My child gets exercise during the day.</th>
<th>2. My child wakes up at about the same time each morning.</th>
<th>3. In the hour before bedtime, my child engages in relaxing activities.</th>
<th>4. My child engages in exciting or stimulating outdoor activities.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Never</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**PEDIATRIC SLEEP QUESTIONNAIRE**

Chervin 2000

Malow 2009

Owens 2000
Evaluation of Sleep Problems in **ASD** and **ADHD**

- Lower threshold for evaluation of medical areas due to:
  - Communication and behavioral limitations
  - Challenges with monitoring over time
- Modalities:
  - Labs: Iron status, Thyroid function
  - Actigraphy for sleep-wake pattern – circadian disturbance
  - PSG for evaluation sleep disordered breathing and PLMS
  - MSLT for evaluation daytime sleepiness
  - Video-monitoring for unusual behaviors

_Singh, 2015_
Evaluation of Sleep Concern in ASD and ADHD Screen for Coexisting or Alternative Conditions

• Child Depression Inventory (CDI)
• Screen for Child Anxiety Related Disorders (SCARED)
• Generalized Anxiety Disorder 7-item (GAD-7)
• Patient Health Questionnaire-9 (PHQ-9)
• Social Communication Questionnaire (SCQ) (ASD)
• Vanderbilt (ADHD)
Behavioral Strategies to Consider for Sleep Studies

• Pre-PSG visits and visual schedules so the study steps are shared
• Individualize experience based on patient and family needs
• Allow favorite toys, pillow, foods, books
• Include the same routine steps in lab as at home
• Allow caps, head phones, video games
• Lower the lights, the sounds, the number of people involved
• Way until after sleep onset to attach leads that can wait
• Allow for co-sleeping at sleep initiation if that has been the routine
• Consider a medication to promote sleep initiation
Sleep Problem Management in **ASD** and **ADHD** Contexts

**Similar approach for medical components**

- **SRBD:**
  - ENT and surgical intervention if indicated
  - CPAP but adjustment to use may require work with specialist

- **PLMS and/or RLS concerns with iron deficiency:**
  - Iron supplementation
    - ≤ 6y: 3-6 mg/kg elemental iron
    - > 6y: 45-65 mg.
  - Oral products may be aversive; patch available
Behavioral Insomnia

- Behavior changes are central to management
- **Good sleep hygiene**

- Assess and honor family’s readiness for changes
- Discuss pace of change of onset habits with family
  - Speedy - Extinction
  - Staged - Graduated extinction
    - Gradual habit changes
Good Sleep Hygiene Important for ASD and ADHD

**Daytime habits**
- Adequate exercise
- Light exposure
- Limit caffeine
- Limit naps

**Evening habits**
- Decrease stimulation
- Decrease light
- Decrease electronics

**Sleep environment**
- Cool
- Minimal sound
- Minimal light
- Stable location night to night

**Sleep schedule**
- Stable bedtime
- Stable wake time
  Every-every night

**Bedtime routines**
- Short regular set of steps
- Include a light snack
- More → less active
- Avoid electronics
Autism Treatment Network TIPS: Help for Children with ASD to Sleep Better

Address Sleep Habits
• Use steps that will work with the family
• Assure you have the energy to implement
• Begin with one small change
• Then slowly add more
• Be patient!

ATN TIPS: Help for Children with ASD to Sleep Better

Address Sleep Habits
- Use steps that will work with the family
- Assure you have the energy to implement
- Begin with one small change
- Then slowly add more
- Be patient!

Good for ADHD too!

Sleep Problem Management in ASD and ADHD Contexts

Behavioral Insomnia Sleep onset association type:

- Consider the parent(s)’ goals for independent or co-sleeping
- Consider developmental level of the child
- Sleep log to track sleep onset and arousals
- Consider all sensory factors
  - Light-dark
  - Temperature
  - Kinesthetic
  - Time of day-night
  - Sound
  - Smells
  - Pressure
  - Tactile
Management of Sleep Problems in ASD and ADHD Contexts

Behavioral insomnia – Sleep Onset Association Type

• Goal is to eliminate need for adult intervention
• Systematic ignoring
  • Unmodified extinction – “crying it out”
  • Graduated extinction – waiting progressively longer periods before checking in
• Bedtime fading
  • Addresses mismatch between set bedtime and actual falling asleep time
• Gradually eliminate associations and parent presence
Management of Sleep Problems in ASD and ADHD Context

For Behavioral Insomnia Limit-setting type: **Bedtime pass**

- Meets child ½-way
- Provides support for child and a “script” for parents
- 2-3 special passes to turn in for requests
- Once passes used, expected to stay in bed
- Earn stickers – other incentive for success
- Doctor can provide the larger incentive after review of sticker chart
Medication Management of Sleep Problems in ASD and ADHD Context

• No “approved” medications for insomnia in children
  • **Melatonin** decreases sleep onset latency and increases duration
    • Typically 1-3 mg and rarely > 6 mg
    • 30-90 min before sleep onset; ½-life 20-50 min
    • Align with current sleep onset time
  • **Melatonin** to advance circadian pattern, < 1 mg

• **Clonidine** few studies; ↓ sleep onset latency and night arousals

• **Diphenhydramine** – studies in non-ASD individuals

• Other medications may be primarily used for co-morbid concerns
Autism Spectrum Disorder – Next Steps

• If you suspect – act early and notify the primary care provider.
• Consider directing to Intermediate School District for evaluation for special education services
• Once ASD diagnosis in place:
  • Applied Behavioral Analysis – ABA: routines, flexibility, compliance
  • Speech and Language Therapy: improve communicative ability
  • Occupational Therapy: improve sensory sensitivities
  • Physical Therapy: improve-maintain activities and routines
  • Social Skills: enhance communication - multiple levels
  • Sleep routines and regularity
Attention Deficit Hyperactivity Disorder – Next Steps

• If you suspect – act early and notify the primary care provider.
• Consider directing to Intermediate School District for evaluation for special education services
• Once ADHD diagnosis in place:
  • Preschool age: Behavior Therapy and consider medication
  • School age: Medication and strongly consider behavioral therapy
  • Sleep routines and regularity
  • Consider medical sleep conditions – SRBD, RLS/PLMS
  • Monitor response to treatment regimen
Consider Consultation with PCP and/or Further Referral:

- Poor response to sleep interventions
- Evaluation and management of co-existing condition
  - Psychiatry - Anxiety or mood disorder
  - DBP or Psychiatry – ADHD or ASD
  - SLP-Neuropsychology – communication-learning
  - Genetics – concern for syndrome
  - Psychology - Parent management training
- For assistance with case coordination
Parent and Provider Resources for ASD and ADHD

• Autism Speaks  https://www.autismspeaks.org/sleep
• Autism Alliance of Michigan  https://autismallianceofmichigan.org/
• American Academy of Child & Adolescent Psychiatry  http://www.aacap.org/
• American Academy of Pediatrics Parent resources http://www.healthychildren.org
• Children and Adults with ADHD (CHADD)  http://www.chadd.org/
• NIMH Autism Spectrum / Attention deficit hyperactivity disorder
  

• National Resource Center on ADHD  http://www.help4adhd.org/
• U.S. gov (educational rights): Department of Education
  http://www2.ed.gov/about/offices/list/osers/osep/index.html
  http://idea.ed.gov/explore/home
Case – 3 year old boy presents for “not sleeping”

- Normal birth weight, late preterm, brief NICU stay
- Developmentally normal until about 18 months – language lag
- By 2 years hyperactive, easily agitated, anxious, over-reactive
- Poor diet – high milk intake
- Now complex routines & parent presence needed to get to sleep in 2 hrs
- Snores, sweaty, restless sleeper, screaming out episodes
- Total sleep duration is 5 hours; wakes early and refuses naps
- The parent and family are very stressed

ASD?
Case – 3 year old boy presents for “not sleeping”

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ASD?  ADHD?  Iron def?  BIC-SOA
Case – 3 year old boy presents for “not sleeping”

- Normal birth weight, late preterm, brief NICU stay
- Developmentally normal until about 18 months – language lag
- By 2 years hyperactive, easily agitated, anxious, over-reactive
- Poor diet – high milk intake
- Now complex routines & parent presence needed to get to sleep in 2 hrs
- Snores, sweaty, restless sleeper, screaming out episodes
- Total sleep duration is 5 hours; wakes early and refuses naps
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Case – 3 year old boy presents for “not sleeping”

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ASD?  
ADHD?  
Iron def?  
OSA?  
BIC-SOA

Short-sleeper
Case – 3 year old boy presents for “not sleeping”

• Normal birth weight, late preterm, brief NICU stay
• Developmentally normal until about **18 months** – language lag
• By 2 years **hyperactive**, easily agitated, anxious, over-reactive
• Poor diet – high milk intake
• Now complex routines & parent presence needed to get to sleep in 2 hrs
• Snores, sweaty, restless sleeper, screaming out episodes
• Total sleep duration is 5 hours; wakes early and refuses naps
• The parent and family are very stressed

**PLAN:** PSG, Iron studies, Talk with Primary doctor, consider psychology consult


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- UpToDate 2019: Assessment of sleep disorders in children; Behavioral sleep problems in children; Sleep-related movement disorders in childhood.
Questions?

Thank You
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