Disclosures
Relevant Financial Relationship(s)
None

Off Label Usage
• There are no FDA approved sleep aids for children.

Objectives
• Understand the prevalence and implications of sleep problems in children
• Recognize the clinical features of common sleep difficulties in children
• Describe evaluation and management strategies for common sleep problems in children
What is insomnia?
• Repeated difficulty with sleep initiation, duration, maintenance, consolidation, or quality
• Occurs despite adequate time and opportunity for sleep
• Results in some form of daytime impairment
• In children, subject to caregiver perception

Conditions Associated With Insomnia
• Behavioral
• Drug or substance
• Medical condition
  • Pain/chronic illness: Sickle cell, cystic fibrosis
  • Neurologic conditions: MR, CP, autism, ADD/ADHD
  • Genetic syndromes: Rett, Angelman, Prader Willi, Smith–Magenis

Insomnia Secondary to Sleep Disorder
• Obstructive sleep apnea
• Restless legs syndrome
• Delayed sleep phase disorder
• Periodic limb movement disorder
Prevalence

- Varies with age and specific sleep problem
- Up to 40% of infants experience difficulty settling and frequent night awakenings
- 25-50% of preschool aged kids with bedtime resistance and night awakenings
- 30-40% in school children/adolescents
- Population wide studies suggest high prevalence of inadequate sleep

Persistence of Sleep Problems

- 84% of sleep-disturbed children aged 15 to 48 months at initial assessment also demonstrated sleep disturbances 3 years later
- Only 3% of the children with no sleep disturbances at initial assessment had disturbances 3 years later
- Reliable longitudinal data not yet available

How much sleep is adequate?

- Newborns: 16-20 hours
- Infants (1-12 months): 13-15 hours
- Toddlers/Preschool (2-5 years): 11-12 hours
- School age (6-12 years): 10-11 hours
- Adolescents (13-18 years): >9 hours
Effects of Sleep Loss
• Learning and cognitive difficulties
• Impairment of attention
• Behavioral problems
• Anxiety and depression
• Obesity
• Family distress

Sleep Loss and Obesity
• Sleep loss associated with:
  * Increased cortisol
  * Disruption of human growth hormone secretion
  * Increased ghrelin (signals hunger)
  * Decreased leptin (suppresses appetite)
• Slow Wave Sleep important for proper insulin sensitivity and glucose tolerance

Evaluation
• Thorough history!
• BEARS
  * Bedtime Problems
  * Excessive Daytime Sleepiness
  * Awakenings during the night
  * Regularity and duration of sleep
  * Snoring
• PMH, ROS, Meds, Family/Social Hx, PE
Advanced Evaluation

- Validated age-specific sleep questionnaires
- Sleep diary
- Actigraphy
- Polysomnography

Actigraphy

Polysomnography
Case 1
- 2yo girl “never” a good sleeper
- Falls asleep with mother lying next to her
- Frequently awakens crying and can only fall back to sleep with mother in bed
- Mother frustrated, sleep deprived, quit job

Behavioral Insomnia, Sleep-Onset Association Type
- Most common cause of sleeplessness in toddlers
- Frequent nightwaking
- Dependent on specific stimulus from caregiver to fall asleep
- Management: Behavior Modification

Behavior Modification
- Graduated Extinction
- Fading
- Prevention is Key!
  * “Always put your baby to bed drowsy, not asleep.”
Case 2
• 4yo boy has a bedtime “routine” but after 2 hours he’s still awake
• Demands repeated drinks
• Once asleep, “awakens” about an hour later screaming, sweating, upset but not interactive
• Parents worried “something is wrong”

Behavioral Insomnia, Limit-Setting Type
• Stalling or refusing to go to sleep
• Frequent demands for parental attention
• Management: Behavior Modification
  * Consistent bedtime routine & schedule
  * Clear bedtime rules
  * Put child to bed drowsy but awake
  * Positive reinforcement
Parasomnias

- Unusual behaviors at night: Sleep terrors, sleepwalking and talking
- Common in the first third of the night
- More common in first decade
- Often genetic predisposition
- Treatment: Address triggers (OSA, PLMs), avoid sleep deprivation, reassurance, safe environment, low dose benzodiazepine

Case 3

- 6yo boy goes to bed at 9 but secretly plays video games
- Afraid to be in the dark
- School and impulse control problems
- Snores and has obstruction on PSG

Poor Sleep Hygiene and OSA

- Poor sleep hygiene common in this age group (social, educational and parent demands).
- Fears and anxiety can be problematic and may need behavioral health help.
- OSA needs referral to ENT initially.
Case 4
• 16 yo girl goes to bed at 11 pm but doesn’t fall asleep until 2 am
• Struggles to get up when parents awaken her at 6:15 for school
• Sleeps during first classes
• On weekends, sleeps 4 am to 3 pm

Circadian Rhythm Sleep Disorder, Delayed Sleep Phase Type
• Adolescents: Shift in circadian rhythm
• Management
  • Proper sleep hygiene key!
  • Not to sleep in more than 1-2 hrs past weekday wake time
  • Consider Melatonin
  • Bright light therapy
  • Chronotherapy

Pharmacotherapy
• NO approved sedative-hypnotic medications for children
• Judicious use of agents should be considered on an individual basis
• Numerous herbal supplements need further study
• Melatonin
  • Down syndrome, autism, delayed sleep phase
• Clonazepam
  • May help treat parasomnias if injurious
• Iron supplementation for RLS/PLMD if low ferritin
## Conclusion

- Pediatric sleep problems are commonly encountered in pediatric practice.
- Sleep difficulties can lead to significant mood and behavioral problems, neurocognitive difficulties, growth problems and stress on families.
- Behavioral treatment of insomnia is safe and effective.
- All children should be screened for sleep disorders using the BEARS screening tool.

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## Thank You

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Bibliography