

# Welcome to VMAP ECHO Deeper Dive

## Sleep Challenges in Young Children

28 September 2023

**Our session will begin promptly at 12pm**

*Please enter your name in the chat box;  
include any guests attending with you*

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## Important information...

**Patient-provider relationship:**  
Project ECHO case consultations do not create or otherwise establish a provider-patient relationship between any VMAP clinician and any patient whose case is being presented in a Project ECHO setting.

**Video recording:**  
For educational and quality improvement purposes, we will be recording this session.  
By participating in this clinic you are consenting to be recorded. We appreciate and value your participation.

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## Important information...

### Respect Private Health Information

To protect patient privacy, please only display or say information that doesn't identify a patient or that cannot be linked to a patient.

- Names: Please do not refer to a patient's first/middle/last name or use any initials, etc.
- Locations: Please do not identify a patient's county, city or town.
- Dates: Please do not use any dates (dob) that are linked to a patient. Instead, please use the patient's age.
- Other common identifiers: Patient's family members, friends, co-workers, phone numbers, e-mails, occupation, place of employment

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## Today's agenda

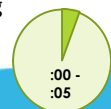
### Let us know you're here!

Please enter your name + any guests into the ZOOM "chat box" so we have a record of your attendance


### Agenda:

:00 - :05	Welcome + introductions
:05 - :30	Didactic: Sleep Challenges
:30 - :55	Case presentation, discussion + recommendations
:55 - :00	Wrap-up


**Our next session is scheduled for:**  
Thurs., Oct. 26 at 12:00 to 1:00 PM  
Tantrums, Discipline & Spanking



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# You're Invited!



- **What:** Triple P – Positive Parenting Program - Level 3 - For primary care providers to learn to apply brief parent behavior management skills in their practice.
- **Who:** For medical providers working in primary care with early childhood patients and their families.
- **When:** December 9-10, 2023
  - Day 1 (12/9): 9 am-4:30 pm
  - Day 2 (12/10): 8 am – 3:30 pm
- **Where:** Medical Society of Virginia, Richmond
- **How:** Contact Kimberly Lewis, VMAP Education Manager at [kewis@msv.org](mailto:kewis@msv.org) to register and for additional information.
- **Other info:**
  - This is a \$2400 value offered at no cost to participants!
  - Ongoing implementation support for the first year (including mandatory monthly calls).
  - Meals and accommodations provided\*

\*Accommodations available for those living outside Metro Richmond

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## ECHO AUTISM STAT

Learn how to assess and diagnose young children with autism

### WHO

Community-based pediatric primary care providers in underserved areas of Virginia interested in screening and diagnosis of young children at high risk for autism spectrum disorder (ASD) to enhance local access to care.

### BENEFITS

- FREE STAT training and kit (valued at over \$1,500)
- Ability to evaluate and diagnose autism in children under 48 months with obvious autism spectrum disorder (ASD) symptoms
- Ongoing specialist support

### WHEN


**October 27-28, 2023**

Join us for a live in-person STAT training in Charlottesville, VA.  
*This program will cover hotel and meals.*

**November 2023 - June 2024**

Follow up on your training with continued ECHO Autism tele-mentorship on Zoom.



**2nd and 4th Tuesdays**  
**12:00-1:30 or similar time TBD**



User's Manual  
ages 24 - 36 months

The **STAT**™ (Screening Tool for Autism in Toddlers) is a specialty screening tool that can help qualified health care professionals diagnose autism in young children.

**INTERESTED?** Email Keith Page [kdp7j@virginia.edu](mailto:kdp7j@virginia.edu) by **September 19th**

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# VMAP Early Childhood Line

*Now accepting calls!*



**1-888-371-VMAP (8627)**
















Consultations with early childhood specialists!  
Such as **developmental/behavioral pediatricians** and **early childhood child psychiatrists**

*In the next year, VMAP plans to expand its early childhood program to increase coverage and types of early childhood specialists available to PCPs via the VMAP line. This will include early childhood care navigation to help PCPs, patients, and families navigate and find referrals for services.*

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VMAP ECHO  
2023  
Deeper Dive  
Cohort  
Members












slide 1 of 2

				
Suzanne Alonso, MSN, CPNP-PC Lynchburg Pediatrics, Forest	Susan Ashton-Lazaroe, MD ALL Pediatrics Lorton	Lelia Binder, MD Sterling AllCare Pediatrics Potomac Falls	Deana Buck Richmond	Brittany Butler, PA-C Tri-Area Community Health Ferrum
				
Walter Chun, MD The Pediatric Center Glen Allen	Robin Church The Arc of Virginia Richmond	Ashley D'Angelo, CPNP-PC Children's Medical Associates of Northern VA, Alexandria	Chrystal Doyle, APRN, FNP- BC, PMHNP-BC Cumberland Hospital	Jadig Garcia, PhD The Pediatric Center Richmond
				
Jenniffer Herrera, MD UVA Neurodevelopmental Behavioral Pediatrics	Vicki Holmes Providence Forge	Morgan Honickel, LCSW Petersburg	Nadia Islam, PhD The Pediatric Center Glen Allen	Stephanie Konkus, MD Town Pediatrics Leesburg

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## VMAP ECHO 2023 Deeper Dive Cohort Members








slide 2 of 2

	 <b>Paula Labriola, MD</b> Woodbridge	 <b>Nair Maya, MD</b> Capital Area Pediatrics Herndon	 <b>Marina McBee, CPNP</b> Capital Area Pediatrics Herndon	 <b>Ayanna McCray, MD</b> New Heights Pediatrics King George	 <b>Nithiyakalyani Panneerchelvam, MD</b> Fairfax
	 <b>Maria Sacoto, MD</b> Sacoto Pediatrics Falls Church	 <b>Liv Gorla Schneider, MD</b> The Pediatric Center Glen Allen	 <b>Lowry C. Shropshire, MD</b> Pediatric Associates of Alexandria	 <b>Allison Siegel, MD</b> Capital Area Pediatrics Falls Church	 <b>Tracy Walters</b> Virginia DBHDS Richmond
	 <b>Jackie Winkelvoss, RN</b> Capital Area Pediatrics Oakton				

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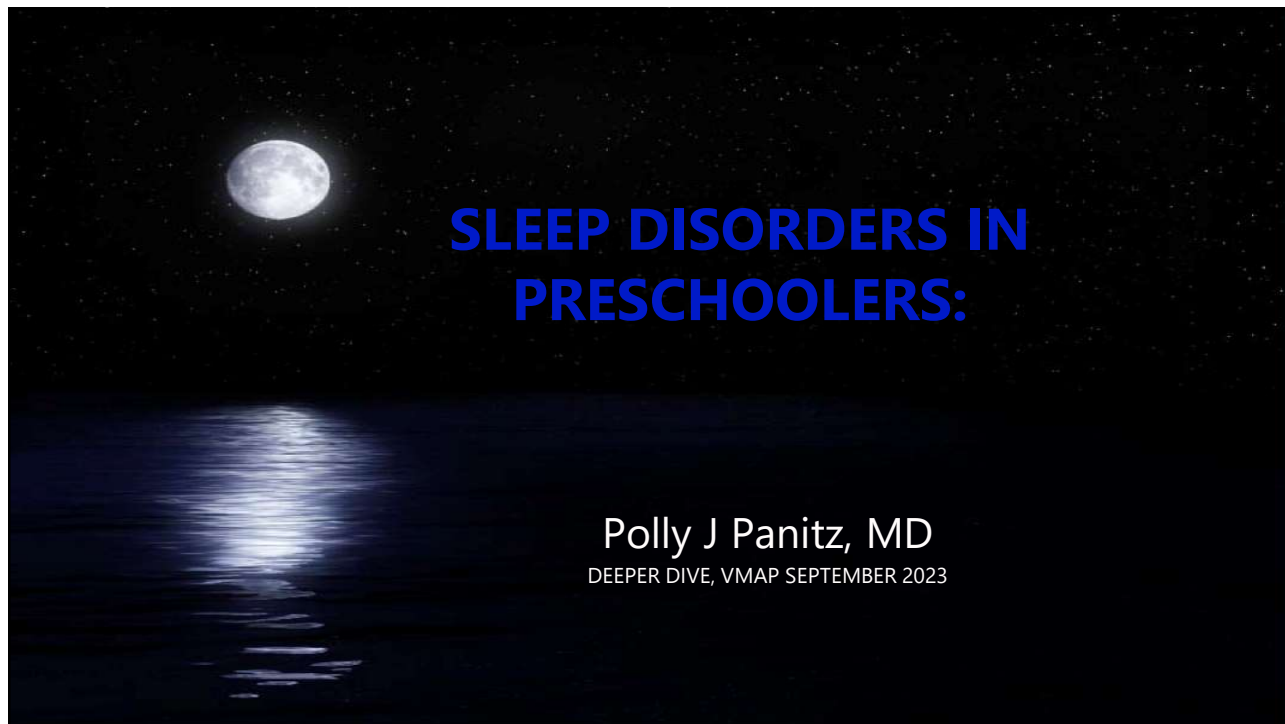
## Hub Faculty

Questions?  
[projectecho@vmap.org](mailto:projectecho@vmap.org)

 <b>Beth Ellen Davis, MD</b> Moderator	 <b>Jacqueline Cotton, MD</b> Pediatrics	 <b>Mary Margaret Gleason, MD</b> Child Psychiatry	 <b>Michael Mintz, Psy.D</b> Psychology
 <b>Polly Panitz, MD</b> Developmental Pediatrics	 <b>Tammy Taylor-Musoke, LCSW</b> LMHP	 <b>Robin Cummings, MSHA</b> Program Coordinator	

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## Goals and Objectives

- Learn about normal sleep physiology and development
- Learn to identify and categorize pediatric sleep disorders
- Increase knowledge of behavioral interventions
- Learn when to refer to specialists
- Understand the common coexisting comorbidities

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## Why Is Sleep Important to address in pediatrics?

- Affects family members
- Evolves developmentally
- Is important for sense of restfulness, memory and learning, and behavioral health
- Is affected by environmental factors
- Can be affected by medical conditions and medications
- Sleep problems are VERY common

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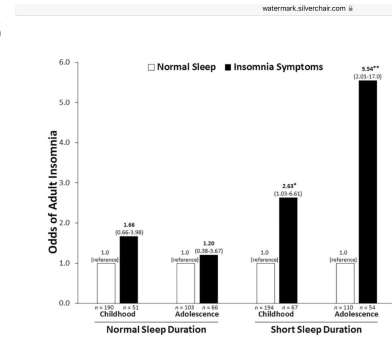
## Sleep Disorder; Preschoolers

- 20-30% have sleep disorders
- May persist into school age
- Bidirectional relationship with frequent co-morbidities: medical, psychiatric, developmental, familial and environmental factors
- 80% respond to guidance and behavioral intervention

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## Insomnia Persists

- Odds of adult insomnia 2.6 times higher for childhood insomnia
- 5.5 times higher for adolescent insomnia
- 57.5% persisted into adulthood



**FIGURE 2**  
Odds of adult insomnia in young adulthood associated with insomnia symptoms in childhood or adolescence (role of objective sleep duration). Data are multivariable-adjusted odds ratios (95% confidence interval) for the association of insomnia symptoms in childhood (V1) or adolescence (V2) with adult insomnia (S3) stratified by the presence of normal sleep duration (PSQI-measured total sleep time  $\geq 7.7$  hours) and short sleep duration (PSQI-measured total sleep time  $< 7.7$  hours) at each developmental stage. \* $P < .05$ , \*\* $P < .01$ .

Pediatrics 02/22, Mendoza et al  
15 year longitudinal study from ages 5-12 years

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## Sleep is....

- Biologic with endogenous structure
- Impacted by psychosocial factors, cultural practices and views, exposures, environmental expectations, child's temperament, parental mental health

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## Normal Sleep Patterns

- Non-REM sleep: divided into 3 stages: regular movement and breathing. Deepest stage is called Slow Wave Sleep.
- REM sleep: no movement, dreams occur, eye movements.
- 50-100 minutes cycles alternating NREM and REM with periods of arousal between

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## Sleep Stages over the life span

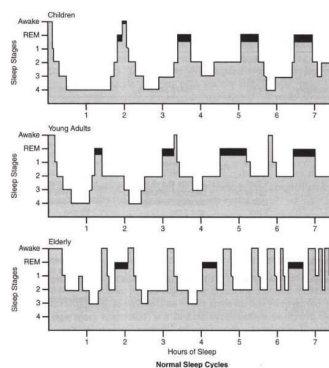


FIG 1.1. Hypnogram: Normal distribution of sleep stages in healthy children, adults, and the elderly.

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## Sleep evolves with age

Newborn: 16-20 hours per day, 50% is REM, sleep begins in REM, 4-6 arousals per night

Infant: 13-15 hours per day, NREM develops stages, decreasing REM, cycles every 50 minutes

Preschooler: 11-12 hours per day, cycles every 90 minutes, decreasing REM

School age: 10 hours, all at night

Teen age: 9 hours, 25% REM

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## Sleep Regulation

- Internal process that regulates the timing and duration of sleep wake cycles.
- Periods of alertness: one in mid-morning and one prior to sleep
- Periods of sleepiness: late afternoon and early in the am (3-5 am).
- Patterns are trained by environmental stimuli (light, eating, routines, etc)

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## DSM-V Insomnia definition

- Difficulty initiating or maintaining sleep
- Early-morning awakening
- Causes impairments in social, occupational, educational, academic, behavioral, or areas of functioning
- Occurs at least 3 nights per week
- Is present for at least 3 months
- Occurs despite adequate opportunity for sleep
- Not attributable to effects of medication, mental health or medical conditions

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## Sleep Deprivation associated with:

- Inattention
- hyperactivity
- Impaired memory
- Impaired executive functioning
- Mood disturbance
- Behavior problems
- Academic difficulties, tardiness
- Increased risky behaviors
- Family stress

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## DSM-V; Sleep Disorders

- Insomnia Disorder
- Breathing-Related Sleep Disorders
  - \*Obstructive Sleep Apnea (OSA)
  - \*Central Sleep Apnea
  - \*Sleep-Related Hypoventilation
- Circadian Rhythm Sleep-Wake Disorders
- Substance/Medication-Induced Sleep Disorder
- Parasomnias

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## Behavioral Insomnia of childhood; BIC

- Sleep-onset association type (BIC-SOA) ; awakenings that require caregiver intervention; poor self soothing
- Limit-setting type (BIC-LST) repeated refusal or protest to go to bed
- BIC combined type
- Roughly 30% of preschoolers

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## Risk factors for BIC

- Co-sleeping
- Feeding to go to sleep
- Medical conditions (asthma, seizures, GERD, eczema, constipation, anxiety, dental pain, medication side effects)
- Schedule changes
- Developmental crises (separation, fears, autonomy)
- Difficult temperament
- Attachment issues
- Parental anxiety or depression

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## Technology use and sleep

- Technology is mobile
- Evening and daytime use associated with decreased sleep (total and onset)
- Evening use and bedtime resistance
- Higher exposure down to 6 months
- Media use predicted worse sleep later
- Up to 85% parents allow up to 2 hours

Nathanson 2020 Child Adol Psych Clin N Am  
Erikson Institute 2016

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## Behavioral Insomnias of Childhood BIC

- Falling asleep is lengthy process (>20 mins)
- Sleep associations are demanding
- Nighttime awakenings require the parent
- In the absence of the conditions, child cannot fall asleep and wakes during the night

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## Types of Sleep Disorders: Breathing Disorders

- Obstructive Sleep Apnea: repeated episodes of obstruction causing low oxygen levels, high carbon dioxide levels and arousal. Associated with enlarged adenoids, tonsils, obesity, allergies, wheezing, prematurity, sinus problems, or family history of OSA.
- Increased ages 2-8 yr (1-11%)
- Snoring: investigate with sleep study to measure indices: apnea-hypopnea index (AHI) or refer to ENT

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## Types of Sleep Disorders (continued)

- Hypersomnias: cataplexy, narcolepsy
- Circadian Rhythm Sleep Disorders: delayed sleep phase disorder. More common in adolescents. Tendency to fall asleep later and sleep later in the morning. Leads to sleep deprivation and daytime sleepiness due to need to wake for school.

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## Types of Sleep Disorders: Movement Disorders

- **Restless Legs Syndrome**: About 2% of children, tends to be familial. Feeling of restless legs when at rest can interfere with sleep onset and maintenance.
- The urge to move is worse at night leads to sleep resistance.
- Can be associated with low iron stores

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## Movement Disorder

- **Periodic Limb Movement Disorder (PLMD)** Associated with RLS in 80%
- Associated with decreased iron stores
- Defined as excessive motor activity during sleep and associated with waking or fragmented sleep.
- Must be diagnosed on sleep study (PSG)
- Significantly increased in ADHD

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## Types of Sleep Disorders: Parasomnias

- Undesirable physical events that are related to specific sleep phases.
- NIGHTMARES: occur during REM sleep, can be recalled, and increase with stress or PTSD
- **NIGHT TERRORS or SLEEP WALKING: occur within 1st 3 hrs of sleep during deep sleep.**
- Dramatic period of screaming, child can not be comforted, variable length, no memory, benign.
- Worse when stressed, ill, or sleep deprived

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## Other Parasomnias

- Occur during transitions in sleep
- Head banging, rocking
- Bruxism (teeth clenching)
- Sleep walking

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## Neurodevelopmental Disorders

- 13-85% have sleep disorders
- Chronic and resistant to treatment
- Intrinsic abnormalities sleep regulation/circadian rhythms
- Sensitivity to environmental factors
- Comorbid medical conditions (seizures, medications, constipation, etc)
- ASD, ADHD, Smith-Magenis, Downs syndrome, ID, Angelman, Williams syndrome

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## Careful history

- Sleep hygiene
- Bedtime routine
- Sleep schedules
- Physical environment
- Severity, frequency of insomnia
- Cultural overlay
- Parental responses
- Prior treatment

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## BEARS sleep screening tool

### BEARS Sleep Screening Tool

BEARS is divided into 5 major sleep domains (B=Bedtime Issues, E=Excessive Daytime Sleepiness, A=Night Awakenings, R=Regularity and Duration of Sleep, S=Snoring) and helps clinicians evaluate potential sleep problems in children 2 to 18 years old. Each sleep domain has a set of age-appropriate "trigger questions" for use in the clinical interview. The screen is free to use.

	TODDLER/PRESCHOOL (2-5 YEARS)	SCHOOL-AGED (6-12 YEARS)	ADOLESCENT (13-18 YEARS)
<b>B</b> EDTIME PROBLEMS	Does your child have any problems going to bed? Falling asleep?	Does your child have any problems at bedtime? (P) Do you have any problems going to bed? (C)	Do you have any problems falling asleep at bedtime? (C)
<b>E</b> XCESSIVE DAYTIME SLEEPINESS	Does your child seem overtired or sleepy a lot during the day? Does he/she still take naps?	Does your child have difficulty waking in the morning, seem sleepy during the day or take naps? (P) Do you feel tired a lot? (C)	Do you feel sleepy a lot during the day in school? While driving? (C)
<b>A</b> WAKENINGS DURING THE NIGHT	Does your child wake up a lot at night?	Does your child seem to wake up a lot at night? Any sleepwalking or nightmares? (P) Do you wake up a lot at night? Have trouble getting back to sleep? (C)	Do you wake up a lot at night? Have trouble getting back to sleep? (C)
<b>R</b> EGULARITY AND DURATION OF SLEEP	Does your child have a regular bedtime and wake time? What are they?	What time does your child go to bed and get up on school days? Weekends? Do you think he/she is getting enough sleep? (P)	What time do you usually go to bed on school nights? Weekends? How much sleep do you usually get? (C)
<b>S</b> NORING	Does your child snore a lot or have difficult breathing at night?	Does your child have loud or nightly snoring or any breathing difficulties at night? (P)	Does your teenager snore loudly or nightly? (P)

(P) Parent-directed question (C) Child-directed question

Source: A Clinical Guide to Pediatric Sleep: Diagnosis and Management of Sleep Problems" by Judi A. Mindoff and Judith A. Owens, Lippincott Williams & Wilkins

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## Preventive measures

- Bedtime routine that is calming/consistent
- Strategies for self-soothing
- Where child falls asleep
- Utilize aids (social stories, visual aids)
- Sleep environment (temperature, light, stimulating activities)

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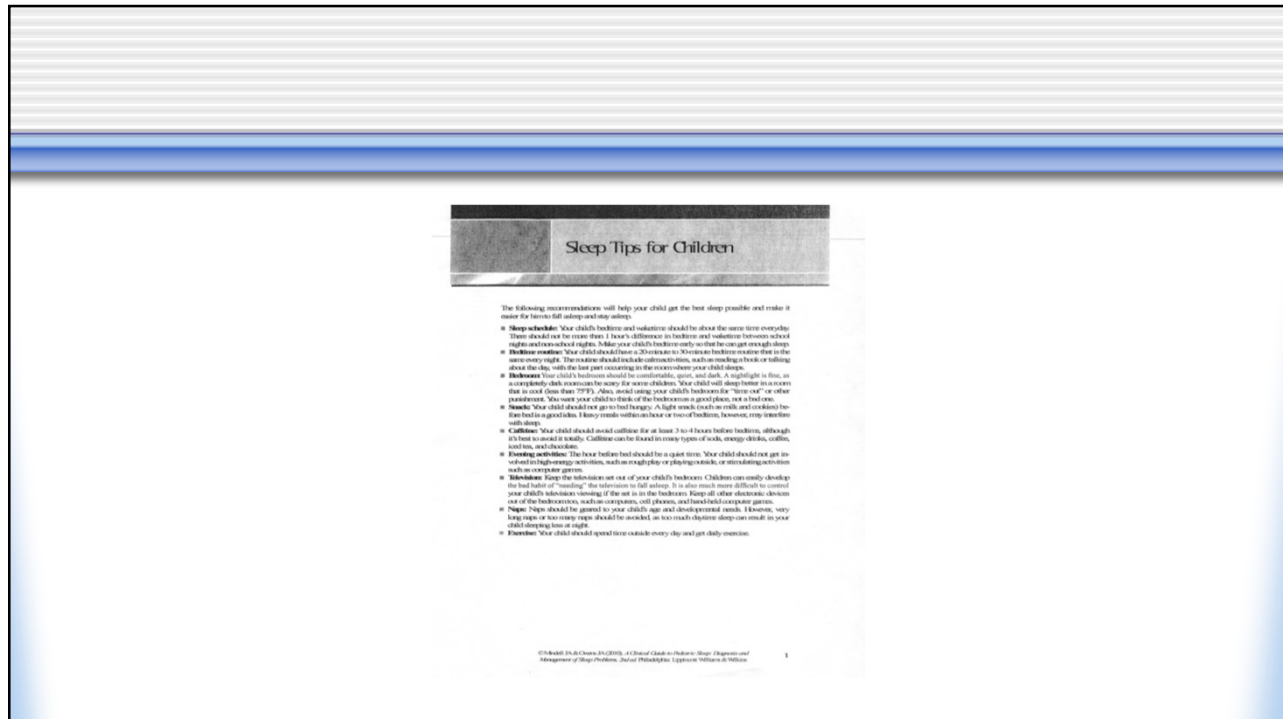
### Sleep Hygiene for Children

- Keep consistent bedtimes and wake times every day of the week. Late weekend nights or sleeping-in can throw off a sleep schedule for days.
- Avoid spending lots of non-sleep time in bed—spending hours lying on a bed doing other activities before bedtime keeps our brains from associating the bed with sleep time.
- Child's bedroom should be cool, quiet and comfortable. Children who stare at clocks should have their clocks turned away from them.
- Bedtime should follow a predictable sequence of events, such as brushing teeth and reading a story.
- Avoid high stimulation activities just before bed, such as watching television, playing videogames, communication with friends, or exercise. Do not do these things during a nighttime awakening either. It is best not to have videogames, televisions, computers or phones in the child's bedroom.
- Having physical exercise as a part of the day often helps with sleep time many hours later.
- Relaxation techniques such as performing deep, slow abdominal breaths or imagining positive scenes like being on a beach can help a child relax.
- Avoid caffeine (sodas, chocolate, tea, coffee) in the afternoons/evenings. Even if caffeine doesn't prevent falling asleep it can still lead to shallow sleep or frequent awakenings.
- If child is awake in bed tossing and turning, it is better for them to get out of bed to do a low stimulation activity, (i.e. reading) then return to bed later. This keeps the bed from becoming associated with sleeplessness. If still awake after 20-30 minutes, spend another 20 minutes out of bed before lying down again.
- Worry time should not be at bedtime. Children with this problem can try having a "worry time" scheduled earlier when they are encouraged to think about and discuss their worries with a parent.
- Children should be put to bed drowsy, but still awake. Letting them fall asleep other places forms habits that are difficult to break.
- Security objects at bedtime are often helpful for children who need a transition to feel safe and secure when their parent is not present. Try to include a doll, toy or blanket when you cuddle or comfort your child, which may help them adopt the object.
- When checking on a child at night, checks should be "brief and boring." The purpose is to reassure the child you are present and that they are okay.
- If your child is never drowsy at the planned bedtime, you can try a temporary delay of bedtime by 30 minute increments until the child appears sleepy, so that they experience falling asleep more quickly once they get into bed. The bedtime should then be gradually advanced earlier until the desired bed time is reached.
- Keep a sleep diary to keep track of naps, sleep times and activities to find patterns and target problem areas when things are not working.

Robert Hill, MD

Primary Reference: *A Clinical Guide to Pediatric Sleep*, by Jodi Mindell and Judith Owens

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## Treatment of BIC

- Use of 2 way monitor
- Circadian rhythm analysis
- Sleep associations (gradual extinction of feedings, parent involvement)
- Eliminate caffeine, use of screen, screen in room
- Assess medical contributors (caffeine, etoh, feeding, medications, possible OSA, seizures, RLS, PLMD)
- Mental health issues (screen for anxiety, depression, trauma, etc)

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## Positive Behavior Strategies

- Parent using positive feedback and engaged in bedtime interaction
- Ample praise
- Use of bedtime pass/behavioral reinforcer
- Visual schedule
- Define expectations and rewards

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## Bedtime Pass



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## Treatment, continued

- Set wake up time
- Bedtime fading: set bedtime when child is falling asleep and gradually move it earlier
- Use of pharmacologic treatment
- Mental health referral
- Sleep study/ ENT referral: snoring, safety, persistent symptoms

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## Medications for Insomnia

- Identify cause first
- Short term use
- Should not be first line intervention
- Monitor for side effects

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## Melatonin

- Non-regulated by FDA: stick with one manufacturer
- Peaks in one hour
- Titrate dose from 0.5 up to 3-6 mg
- Doses higher than 10 mg may increase seizure likelihood

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## Other meds

- Antihistamines (diphenhydramine, hydroxyzine, cyproheptadine)
- Trazadone (antidepressant; serotonin antagonist and reuptake inhibitor) use 25-100 mg
- Alpha-agonists (clonidine more sedating than guanfacine) effects wane
- Mirtazapine (Remeron) (anxiolytic and antidepressant; alpha-2-adrenergic antagonist causes increase in serotonin and Nor) sedating

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## Take Home lessons

- Insomnia is common
- Good history needed
- Make specific diagnoses
- Address family/environmental/cultural issues
- Address underlying/comorbid disorders
- Use behavioral treatments first (80% effective)
- Refer for sleep study/ENT when indicated

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## Resources

- Owens JA, Mindell JA. A Clinical Guide to Pediatric Sleep
- AAP; HealthyChildren.org
- <https://www.healthychildren.org/English/healthy-living/sleep/Pages/healthy-sleep-habits-how-many-hours-does-your-child-need.aspx>

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# Sweet Dreams



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## Case Presentation

**Nair Maya, MD**  
Capital Area Pediatrics, Herndon



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<b>3y, 3m male with concern for excessive biting</b>	
Prior medical, MH dx	Normal birth. Normal growth & development apart from speech delay, for which he received ST and graduated at age 2 (2022). Minor gross motor delays for which he received PT
Symptoms	<ul style="list-style-type: none"> <li>Started biting in summer of 2022 (age 2), which coincided with birth of baby sister.               <ul style="list-style-type: none"> <li>At first, would bite toys when frustrated, then began biting his parents.</li> <li>First bit his mother over frustration from stooling mishap and getting poop on his hands. For the first six months, biting was infrequent. By age 2.5, frequency had increased, as well as tantrums. He would say he will bite his parents multiple times a day, sometimes would act on it and other times would not.</li> <li>Transition times are difficult, takes a long time to move on. Insists on doing everything himself and gets very upset if parents do it. Ex.: mealtimes would take 10 different steps until he would finally eat. Same problem with sleep/bedtime.</li> </ul> </li> <li>Triggers: when parents do something on his behalf, or when he falls and hurts himself. He tends to mouth objects a lot, which helps self-soothe. Lately, he has become more aggressive with baby sister but does not bite her. Does okay with grandparents, but they are very indulgent.</li> </ul>
Family, social hx	<ul style="list-style-type: none"> <li>Lives with parents and younger sister.</li> <li>No daycare. Started preschool one month ago.</li> </ul>
Medications	None
Screens	None
<b>CONSULT QUESTIONS:</b>	
<ul style="list-style-type: none"> <li><b>Addressing increasing aggression towards baby sister?</b></li> <li><b>Easier access to therapy services?</b></li> </ul>	

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## Wrap-up

**Our next session...**

Topic:	Tantrums, Discipline and Spanking
Date:	Thursday, October 26 @ 12:00 to 1:00 PM
Case presenter:	TBD
Didactic presenter:	Michael Mintz, PsyD

Today's session recording will be posted to the cohort webpage @ <http://www.virginiapediatrics.org/vmap/echo/>

VMAP ECHO 23 Deeper Dive → Password = 2019VMAP

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