NCC Pediatrics Continuity Clinic Curriculum: **Sleep Disorders** ***Faculty Version***

Goals & Objectives:

To learn how to identify and treat sleep disorders in children and adolescents:

- Obtain a complete and accurate sleep history
- Distinguish between normal sleep patterns and sleep disorders
- Provide parents with interventions to deal with sleep disorders

Pre-Meeting Preparation:

Please read the following enclosures:

- "Normal Sleep Patterns"
  - "General Principles of Sleep" *(figure- PIR, Oct 2001)*
- "Sleep Disorders in Children" *(PIR, 2023)*
  - "Difficulty Falling Asleep *by Age*" *(figures- PIR, Oct 2001)*
- **Do your *own* BEARS screen:** Score yourself (use the adolescent scale ☺), your child, or your patient. *+1 pt for every positive answer.*

Conference Agenda:

- Discuss Sleep Disorders Self-Reflection Q's
- Review Sleep Disorders Quiz and "Name that Sleep Product"
- Complete Sleep Disorders Mini-Cases

Post-Conference: Board Review Q&A

Extra Credit:

- **American Academy of Sleep Medicine Practice Parameters** *(includes links for behavioral treatment of bedtime problems & indications for polysomnography)*
- SIDS Practice Parameter *(AAP, Oct 2011)*
- "Prevalence, Patterns, and Persistence of Sleep Problems in the 1st 3 years" *(Peds, 2012)*
- The Ferber Method Demystified *(parent resource)*
- Healthychildren.org *(parent resource for infant & toddler sleep issues)*
- Review articles from **AAFP** and **Journal of Clinical Sleep Medicine**
- "Sleep-Disordered Breathing in Children" *(PIR, 2019)*
- "Long term melatonin. . .children with neurodevelopmental disorders" *(BMC Psychiatry, 2020)*
- "Effect of melatonin in children with neurodevelopmental disabilities and sleep disorders" *(J of Family Medicine and Primary Care, 2022)*
- "Even dim light before bedtime may disrupt a preschooler's sleep" *(Science Daily, 2022, U of CO)*

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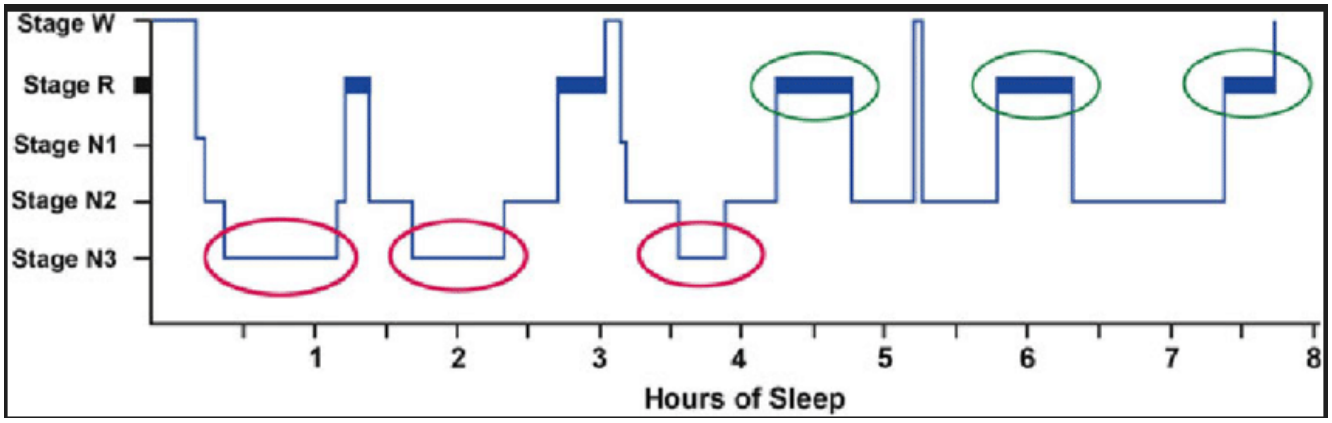
Adapted from NCCPeds Sleep Disorders Addendum by Drs. Jomari S. Torres & Joe McBreen

Normal Sleep

Stages of Sleep Cycle

There are 2 basic types of sleep: **REM** (rapid eye movement)—the active sleep when dreams take place, and **non-REM** or quiet sleep, which is subdivided into **3 stages**. Each stage is marked by changes in brain waves (EEG), muscle activity, eye movements, heart function, and breathing. Alternating cycles of non-REM and REM sleep make up the sleep stages that occur throughout the night. Every person will have stage changes and transient awakenings throughout the night. These are usually so short that the person may believe they did not awaken at all. The first half of the night tends to have a predominance of NREM sleep. The second half of the night is richer in REM sleep.



* **Stage I:** Brief period (up to 5min) of transition from drowsiness to sleep. Brain activity slows and the eyelids close, although the eyes continue to move together slowly beneath the closed lids. A person is easily awakened from this stage. Sometimes, the person may be aware that she is nodding off; some other times she may think that she is day-dreaming.

* **Stage II:** Light sleep; lasts from 10-46min. The brain waves may change with the appearance of vertex and **K-complexes** (large, slow waves interspersed with bursts of rapid waves called **sleep spindles**). There is some data suggestive that sleep

* **Stage III:** Deepest and usually most refreshing stage of sleep. There is further slowing of the brain waves, and breathing and heartbeat become slow and regular. The muscles relax, and the person lies very still; although, there may be some involuntary twitching of the leg. Snoring may also occur. The person is not easily awakened, and if aroused, may take at least a few minutes so to become fully awake. This is when parasomnias such as sleep walking and night terrors are most likely to occur. Characterized by high amplitude **"slow-wave sleep" (SWS)** based on EEG patterns— last up to 60min. Then, there is a gradual return to a lighter stage of sleep.

* **REM Sleep:** Occurs after 1-2 complete cycles of Stage I-III sleep. Referred to as **"active sleep"**, during which most dreams occur. The eyes move rapidly under the closed eyelids, breathing and heart rate become less regular, and muscles are more relaxed, although twitching may increase. The *first* periods of REM sleep during the night usually last for only a few minutes; as the night goes on, REM sleep *lengthens*. This is why many people awaken in the morning while dreaming, and may feel as though the entire night had been spent dreaming.

Other Key Points:

* There are periods of wakefulness between each sleep cycle (stages I-III + REM). The sleeper usually forgets these arousals because of **anterograde and retrograde amnesia** that occurs after sleep onset.

* The relative volume of each of these stages varies both with age and over the course of the night.

* **SWS** predominates during the 1st few cycles of the night, and **REM** predominates in the final cycles.

* There is a physiologic need for *both* REM and SWS. Children and adults who are **sleep-deprived—** whether total or stage-selective— tend to make them up on subsequent nights. "Sleep intrusions" in the forms of **micro-sleep**— EEG-identifiable sleep lasting ≥30s—are inevitable with sleep deprivation.

Sleep Cycle by Age

Table 1. Expected Normal Hours of Sleep by Age

Age	Average Sleep Duration in a 24-h Period	Sleep Patterns
Newborns	16 to 20 h	• 1- to 4-h sleep periods followed by 1- to 2-h awake periods • Amount of daytime sleep=amount of nighttime sleep
Infants (0 to 1 y)	14 to 15 h at 4 mo 13 to 14 h at 6 mo	• Sleep periods of 3 to 4 h for first 3 mo • 6- to 8-h periods at 4 to 6 mo • Day/night differentiation develops between 6 wk and 3 mo • 70% to 80% of babies "settle" (sleep through the night at 9 mo of age) • Naps 2 to 4 h in two naps per day
Toddlers (1 to 3 y)	12 h	• Naps 1.5 to 3.5 h in one nap per day
Preschool (3 to 6 y)	11 to 12 h	• Napping declines; most stop by 5 y of age
Middle Childhood (6 to 12 y)	10 to 11 h	• Low levels of daytime sleepiness
Adolescence (>12 y)	9 h	• Often irregular sleep schedule • Circadian phase delay postpuberty with later bedtimes and later rise times

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Newborn: Sleep **16-20hrs/day**, broken up into **1-4hr sleep periods** and 1-2hr awake periods. They cycle through REM and non-REM sleep **every 50 min** vs. 90 min cycle for older children/adults.

During **REM** sleep, the infant may twitch or flail her arms or legs, and her eyes may move under her thin eyelids. Breathing may be somewhat irregular and she may smile or make sucking motions with her mouth. This behavior may lead parents to believe that their baby is not having restful sleep. During **non-REM** sleep, as in adults, breathing is more regular and the baby will not move as much, although she may occasionally twitch or make a sudden movement. At first, sleep is about evenly distributed between REM and non-REM sleep; this falls to a ratio of 25:75 in an older child or adult.

Based on level of arousal, newborn behavior has been divided into **6 clusters**— two of which are sleep states. Some parents may require help distinguishing active sleep from wakefulness. Active sleep occurs every 50min during a sleep cycle, with an arousal—but not true awakening—at the end of every cycle. Although most newborns return immediately to sleep, some parents see the arousal and immediately pick up the baby, creating a true awakening. *If parents rush to check or feed the infant at every rustle or moan made during active sleep, or every arousal between sleep cycles, the development of sustained sleep is then delayed.*

State	*Description*	*What Your Baby Does*
State 1	**Deep Sleep**	Lies quietly without moving
State 2	**Light Sleep**	Moves while sleeping; startles at noises
State 3	Drowsiness	Eyes start to close; may doze
State 4	Quiet Alert	Eyes open wide, face is bright; body is quiet
State 5	Active Alert	Face and body move actively
State 6	Crying	Cries, screams; body moves in very disorganized ways

2-4 months: Sleep becomes more consolidated and a **preference for nighttime** begins to develop. Remember, though, that every baby is different; therefore, at 2mo some are sleeping for 5-6hrs at night while others are still waking up and wanting to be fed every 2-3hrs. *Parents should not introduce solid foods too early in the hopes that it will get their baby to sleep through the night.*

The more consolidated sleep pattern comes about, in part, thanks to behavioral cues from the parents who encourage the baby to play more during the daytime waking periods. By contrast, *nighttime waking should be kept calm, quiet, and no longer than necessary to change, feed, and burp the baby and return him—comfortable, sleepy, but still awake—to his crib.* Many parents may complain of a 4-month sleep regression. This timeframe is usually characterized by infants having more ability, more advanced wake patterns and the ability to have more attentiveness to their environment. Parents can be counseled that this is normal and as long as interventions are kept minimal should improve within the next 2 months. Even as babies become more alert and playful, many continue to take **≥2 daily naps** for at least the first 6mo.

6-12 months: By the time the infant is 6mo, one can expect him to sleep for **11hrs at night** and to take 2 naps totaling 3-4hrs/day. For some lucky parents, the 11hrs will occasionally take place in a single stretch; *at this age, there is no need for an overnight feeding*. A longitudinal study of 104 infants aged 1-12mo found that 71% of kids "settled" (sleep from MDN to 0500) by 3mo of age; 83% "settled" by 6mo of age; and 10% never completely settled during the 1st year of life.

Sleep cycles now occur every 90-120 min, with nighttime arousals occurring at the end of every cycle. SWS predominates in the 1st half of the nighttime sleep and is a time when the arousal threshold is very high. REM sleep occupies the latter ¼ of the night. *Babies should now have the ability to self-soothe through the arousals and return immediately to sleep.* Gross motor milestones such as rolling over and pulling to stand can also disrupt sleep.

18 months – 4 years : Naps are usually consolidated into **1 regular nap per day**.

5 years- early school age: Napping typically stops. Children may reflexively want to nap if they didn't sleep well in the previous night.

Adolescent: As people grow older, sleep patterns and circadian rhythms change. Many adolescents experience difficulty falling asleep and prefer to awaken late (i.e. "delayed sleep-phase syndrome"—see PIR article). This is not merely a result of teenage rebellion, but a reflection of altered melatonin release during puberty and young adulthood. A similar effect occurs in elderly people who experience the opposite— early to bed and early to rise, with daytime sleepiness.

Adult: Normal adult sleep is marked by recurring cycles of Stages III (SWS) or lighter stages of I & II sleep, followed by varying periods of REM sleep. **Each cycle lasts an average of 90 minutes**, although this varies from one person to another, and even from one night to the next.

Table 7. General Principles of Sleep

- Establish a good sleep environment that is dark and quiet and has a steady. slightly cool temperature. Sleep should be in the same place for night and naps as much as possible.
- Establish a soothing bedtime routine that involves friendly interaction between parent and child. This may indude a snack, followed by tooth brushing, use of the toilet, several stories read o the child in his or her own bed presence of •tovies• or favorite toys, prayers or a song, and he parent leaving the room while the child is still awake.
- Feed infants in the parent's arms and place them in the crib without a bottle.
- Put a child to bed when the child is tired to get enough sleep and to avoid resistance if the child is put in bed when not sleepy
- Teach the child the skill of falling asleep on his or her own by avoiding pacifiers or body contact with the parent as the child drifts into sleep This makes it possible for the child to go back to sleep independently when awakening during the night
- Avoid changing the routine because of demands or tantrums at bedtime, these can become regular problems.
- Avoid television in the child's room because it can delay sleep and become a habit nc ed to fall asleep
- Try to keep bedtime naps. and morning wake-up at the same time 7 days a week to avoid shifting the child's internal dock. Naps should not be too dose to bedtime so that the child will be sleepy.
  Avoid caffeine beverages or cigarette smoke very active play. television or movies, or arguments before bedtime. They stimulate the child and make falling asleep more difficult.

Sleep Disorders in Childhood

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PRACTICE GAP

Significant knowledge and practice gaps among primary care providers pose barriers to adequate screening, identification, and treatment of sleep problems in children. Clinical exposure to sleep disorders remains relatively underemphasized during residency training. In this article, we provide an updated overview of the prevalence and treatment of common sleep disorders in childhood and adolescence.

OBJECTIVES *After completing this article, readers should be able to:*

1. Recognize sleep disorders and distinguish between categories of sleep disorders.
2. Identify the prevalence and presentation of common pediatric sleep disorders.
3. Summarize the commonly used assessment techniques to diagnose sleep disorders.
4. Offer the most up-to-date, evidence-based treatments for common sleep disorders.

AUTHOR DISCLOSURE: Drs Krishna, Kalra, and McQuillan have disclosed no financial relationships relevant to this article. Dr Kalra's current affiliation is Nationwide Children's Hospital, Ohio State University, Columbus, OH. This commentary does contain discussion of potential use of prescription medications to treat sleep difficulties that have not been approved for this use by the Food and Drug Administration (FDA).

ABBREVIATIONS

AHI	apnea-hypopnea index
CBT-I	cognitive behavioral therapy for insomnia
DSWPD	delayed sleep-wake phase disorder
EDS	excessive daytime sleepiness
EMG	electromyography
FDA	Food and Drug Administration
HLA	human leukocyte antigen
IH	idiopathic hypersomnia
KLS	Kleine-Levin syndrome
MSL	mean sleep latency
MSLT	multiple sleep latency test
NREM	non–rapid eye movement
NT-1	narcolepsy type 1
NT-2	narcolepsy type 2
OSA	obstructive sleep apnea
PAP	positive airway pressure
PLMD	periodic limb movement disorder
PLMS	periodic limb movement of sleep
PSG	polysomnogram
RBD	rapid eye movement sleep behavior disorder
REM	rapid eye movement
RLS	restless legs syndrome
RSD	restless sleep disorder
SOAD	sleep-onset association disorder
SOREMP	sleep-onset rapid eye moment period
SSRI	selective serotonin reuptake inhibitor

INTRODUCTION

Sleep evolves from the newborn period through adulthood. Knowledge of these developmental changes is useful in evaluating sleep disorders. Newborns have no circadian rhythm, take frequent naps during the 24-hour day, and spend almost 50% of their total sleep time in rapid eye movement (REM) sleep. (1) Alignment of a baby's circadian rhythm to the solar day occurs during the first several months of infancy, such that a day-night rhythm is well-established by 6 months of age. Daytime sleep consolidates into 1 to 2 well-defined naps during toddlerhood, and naps are gradually discontinued during the preschool period. By adolescence, approximately 25% of the total sleep period is occupied by REM sleep. The cycling between REM and non-REM (NREM) sleep, referred to as the ultradian rhythm, similarly changes across development, with 50-minute cycles in infants and 90-minute cycles in older children. By early childhood, deeper stages of NREM sleep begin to cluster in the first half of the night. (1) The

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recommended number of hours of daily sleep for infants, toddlers, preschool-age children, school-age children, and teenagers are 12 to 16, 11 to 14, 10 to 13, 9 to 12, and 8 to 10 hours, respectively. (2) Bearing in mind these developmental changes, daytime napping in school-age children is unusual and warrants further evaluation. NREM parasomnias (eg, sleep terrors or sleepwalking) generally cluster in the first half of the night, when NREM sleep predominates. Conversely, REM-related sleep apnea symptoms likely occur later in the night and may go undetected by a parent who checks on their sleeping child earlier in the night.

CLASSIFICATION OF SLEEP DISORDERS

The American Academy of Sleep Medicine has put forth the International Classification of Sleep Disorders, which broadly classifies sleep disorders into 6 major categories (Table 1). (3) Within these categories, disorders may additionally occur secondary to medical, substance, or psychiatric factors. For example, opiates may cause breathing problems in sleep. Caffeine may frequently be associated with insomnia or sleep-related movement disorders; caffeine is sometimes consumed unknowingly by those unaware of the ingredients of their favorite beverages. (4) Mood disorders may variably cause hypersomnia or insomnia. Therefore, a thorough history is vital in investigating the etiology of the two most common complaints seen in the sleep clinic: "cannot sleep" or "sleeping too much."

OBJECTIVE ASSESSMENT OF SLEEP DISORDERS

The most common sleep test used to confirm clinical suspicions is polysomnography (PSG). (5) This test essentially comprises several sensors to monitor sleep. Among these, electroencephalography, electrooculography, and chin electromyography (EMG) help distinguish wakefulness from REM and NREM sleep stages. Sensors for oronasal airflow, pulse oximetry, capnography, electrocardiography, and limb EMG are useful for measuring sleep-related breathing, movements, and other motor phenomena, such as parasomnias (Fig 1). A variation of the PSG is a continuous positive airway pressure titration study, during which noninvasive respiratory support is titrated to treat sleep apnea.

The multiple sleep latency test (MSLT) uses an abbreviated array of these sensors to quantify daytime sleep propensity. During this test, the patient is given five 20-minute nap opportunities spaced at 2-hour intervals in the day. The average time taken to fall asleep across all naps is termed the mean sleep latency (MSL). Normative data are available to help diagnose hypersomnia disorders.

Although sleep laboratory tests are crucial for investigating many sleep disorders, other assessment tools may be more accessible and appropriate, depending on the presenting sleep complaints. Sleep logs are manually entered daily diaries of sleep-wake patterns (Fig 2), and actigraphy uses a wristwatch-like device that measures body movements and ambient light to more objectively determine sleep-wake patterns across a 1- to 2-week period.

Table 1. International Classification of Sleep Disorders–Third Edition (ICSD-3)

SLEEP DISORDER CATEGORY	SELECT EXAMPLES OF DISORDERS
Insomnia	1. Chronic: psychophysiological, inadequate sleep hygiene, behavioral insomnia of childhood 2. Short-term (acute or adjustment insomnia)
Circadian rhythm sleep-wake disorders	1. Delayed sleep-wake phase 2. Advanced sleep-wake phase 3. Irregular sleep-wake rhythm 4. Non–24-hour sleep-wake rhythm
Sleep-related breathing disorders	1. Sleep apnea (obstructive; central) 2. Sleep-related hypoventilation 3. Sleep-related hypoxemia
Central disorders of hypersomnolence	1. Narcolepsy (types 1 and 2) 2. Idiopathic hypersomnia 3. Kleine-Levin syndrome 4. Insufficient sleep
Parasomnias	1. NREM parasomnia: confusional arousals, sleepwalking, sleep terrors 2. REM parasomnia: nightmare disorder, REM sleep behavior disorder, recurrent isolated sleep paralysis
Sleep-related movement disorders	1. Restless legs syndrome 2. Periodic limb movement disorder 3. Bruxism 4. Rhythmic movement disorder

NREM=non–rapid eye movement, REM=rapid eye movement.
Modified from the ICSD-3 published by the American Academy of Sleep Medicine. (3) Only selected examples are presented. Please see the cited publication for a complete listing of known sleep disorders.

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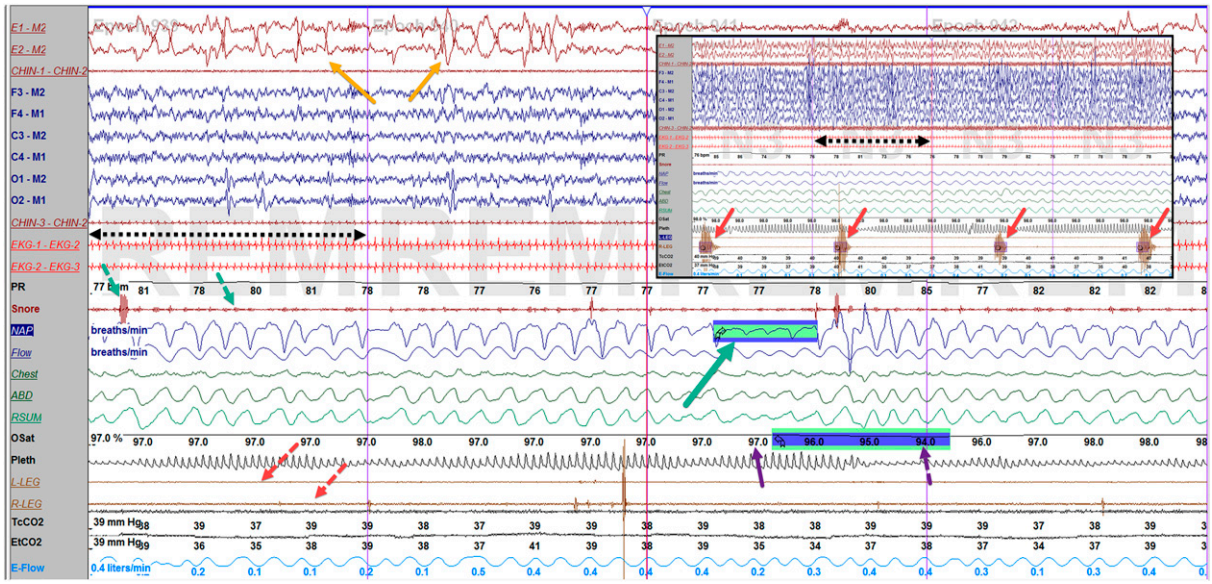

Figure 1. Two-minute sample showing a typical "hook-up" during overnight polysomnography. A 30-second time scale (double-headed broken black arrows) is denoted for both the main and inset figures. Sequentially arranged sensor channels are labeled from top to bottom (left margin) and include bilateral electrooculography (E1, E2), bilateral electroencephalography (F, C, O), chin electromyography (EMG), electrocardiography, pulse rate, snore microphone, oronasal airflow (NAP, flow), chest and abdominal effort, oximetry with pulse oximeter plethysmogram waveform (OSat, Pleth), bilateral leg EMG, and transcutaneous and end-tidal capnometry (TcCO2, ETCO2). The main figure shows this child having rapid eye movements of rapid eye movement (REM) sleep (yellow arrows) and snoring (broken green arrows). There is a single hypopnea event with reduced airflow with continued respiratory efforts (solid green arrow) with an associated 3% oxygen desaturation event from 97% (purple arrow) to 94% (broken purple arrow). There are no significant limb movements (red broken arrows). In contrast, the inset figure shows the same patient, at a different time, in non-REM sleep with a series of 4 prominent periodic limb movements (solid red arrows) but no respiratory events.

INSOMNIA

Insomnia is a sleep disorder that is diagnosed when a patient or caregiver reports one or more symptoms such as difficulty initiating sleep, difficulty maintaining sleep, waking earlier than desired, resistance to going to bed on an appropriate schedule, or difficulty sleeping without parent or caregiver intervention. These symptoms occur alongside one or more associated symptoms, including fatigue, impaired attention, irritability, daytime sleepiness, or dissatisfaction with sleep. (3) These reported sleep/wake complaints cannot be explained purely by inadequate sleep opportunity and must occur at least 3 times per week for at least 3 months to be classified as chronic insomnia disorder. For symptoms less than 3 months, the diagnosis of short-term insomnia disorder is used. The prevalence rate for insomnia diagnosis among children is 11%, but this prevalence rate is much higher (up to 40%) when insomnia symptoms are considered. (6)(7) Two common varieties of behavioral insomnia include sleep-onset association disorder (SOAD) and limit-setting sleep disorder, both of which tend to occur in childhood. Psychophysiological insomnia tends to occur in adolescents.

Sleep-Onset Association Disorder

SOAD is a form of insomnia in which a child needs parental presence and/or certain activities, such as bottle feeding, rocking, or watching television, to fall asleep or return to sleep after waking up in the night. Some developmental norms are important to be mindful of when considering this diagnosis. In infants younger than 5 to 6 months, night wakings are normative and driven primarily by nutritional need. However, in older infants, night wakings requiring parental involvement, often referred to as problematic night wakings, are more likely related to SOAD (8) and are associated with shorter and less consolidated sleep. (9)

To prevent and address these problematic infant night wakings and SOAD, preventive parental education can be provided at appointments during the third trimester, postpartum, and through the first 6 months of an infant's life. This education emphasizes the importance of consistent bedtime routines and consistent sleep schedules, and it offers guidance about appropriate parental handling during infant sleep initiation and night wakings to promote the development of independent sleep skills. (9) A common recommendation is that infants should be put to bed "drowsy but awake." This helps infants develop independent sleep initiation skills and enables sleep resumption without caregiver intervention after naturally occurring night wakings.

For families experiencing problematic infant night wakings, behavioral interventions, including either modified extinction or parental fading, can be introduced. (9) Modified

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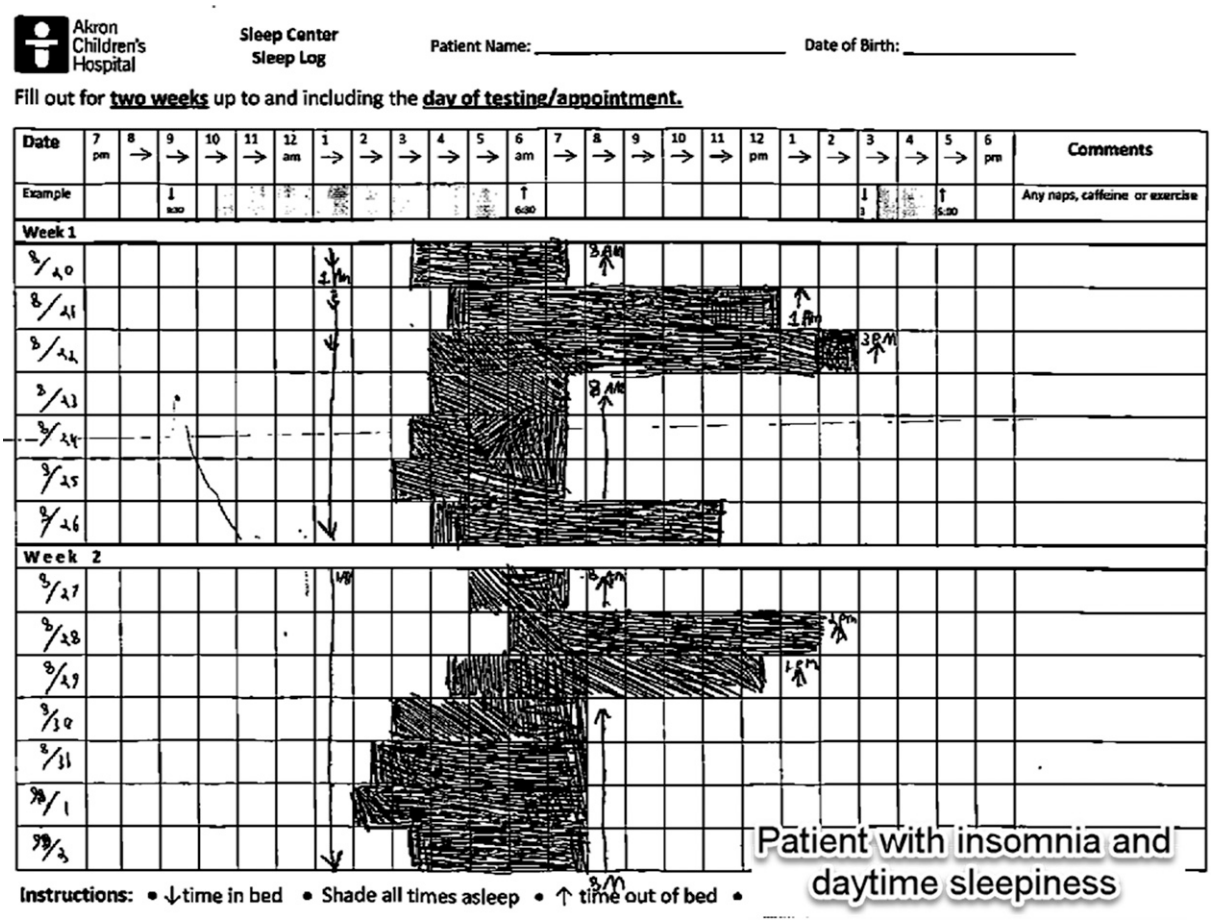

Figure 2. A typical 2-week sleep log. Down arrows denote entry into bed; up arrows, exit from bed; and shaded bars, estimated sleep periods. Dates are noted in the left column. Although this 15-year-old boy who presented with sleep-onset insomnia attempts to go to sleep around 1 AM each night, he does not fall asleep until approximately 2 to 4 AM most nights. He seems to maintain sleep until at least 12:30 to 3 PM on days when he is allowed to rise on his own. However, on other days, when he is forced to wake for school at 7:30 AM, he attains only approximately 3 to 5 hours of sleep.

extinction involves the parent placing their infant in bed awake and then checking on the infant periodically at regular time increments until the infant has fallen asleep. Parental fading involves the parent placing their infant in bed awake, while gradually fading their level of involvement (eg, keeping a hand on their infant as the infant falls asleep, then just standing near the infant as they fall asleep, and then sitting a little further from the infant as they fall asleep). This process helps to gradually train the infant to fall asleep independently. (9)

During interventions for SOAD, it is important to anticipate a potential extinction burst involving escalations in child attempts to achieve parental intervention (eg, more prolonged or intense infant crying in hopes that the parent will eventually give in). If parents observe this escalation, or extinction burst, they may assume that their intervention is not working. However, parents should be assured that this behavior is consistent with an extinction burst in the undesired behavior. Once the child learns that escalated crying is not effective for achieving parental intervention, the crying and resistance typically reduces. In fact, previous research has shown that, on average, infants cry for approximately 45 minutes in the first 3 to 4 days of this intervention before showing a reduction in crying. (10)

Limit-Setting Sleep Disorder

Limit-setting sleep disorder is insomnia characterized by ineffective parental limit setting at bedtime, which can result in bedtime stalling and refusal. To address these factors, providers should first encourage the use of consistent bedtime routines, which have been shown to reduce child bedtime resistance and other sleep problems. (11) During bedtime routines, firm limits on screen time and activating activities should be used, consistent with other general sleep hygiene recommendations (Table 2). Interactive visual schedules to represent the stepwise bedtime routine can help a child

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Table 2. Sleep Hygiene Recommendations

• Practice a consistent sleep schedule, with consistent bedtimes and wake times across the week.
• Practice a consistent bedtime routine with calming activities to promote settling to sleep.
• Avoid spending time in bed awake, both during the day and at night. If you are not sleepy during the designated sleep window, get out of bed and do a relaxing activity in dim light before returning to bed once sleepy.
• Avoid daytime sleep.[a]
• Avoid use of electronics before bed.
• Avoid clock-watching in the night.
• Limit caffeine intake, particularly in the afternoon.
• Engage in regular physical activity but avoid strenuous exercise before bedtime.
• Keep the bedroom cool, dark, and quiet.
• Avoid eating a heavy meal before bedtime.

[a]Children younger than 5 years may still take regular naps.

stay on task and maintain consistency in implementation of the routine across nights, caregivers, and households, as needed. (12) The Bedtime Pass Program is also useful for setting limits on the child's attempts to call out or seek out parents after bedtime, which can further delay sleep onset. (13) The Bedtime Pass Program involves the parent providing the child with 1 to 3 bedtime passes that the child may exchange with their parent for predetermined reasons (eg, a drink of water, a hug, a question). Once the child is out of passes, the parent will remind them that they are out of passes and insist that they stay in bed, using minimal interaction with the child. The child can be motivated to exchange unused passes for a reward the next morning. Other techniques to effectively establish and reinforce bedtime expectations include the Good Morning Light, which is a nightlight programmed to change colors to signal the designated sleep and wake times, and the Sleep Fairy Positive Reinforcement Program. (14) With the Sleep Fairy Program, parents can inform their child that the "sleep fairy" will leave a small prize in the morning if the child follows the established sleep rules. These rules can be modified over time as the child's sleep behavior improves and advances.

Psychophysiological Insomnia

Psychophysiological insomnia is characterized by heightened arousal and conditioned sleep difficulty, resulting in an inability to initiate and/or maintain sleep and decreased functioning during wakefulness. (3) Commonly seen in adolescents, this form of insomnia can be effectively treated by cognitive behavioral therapy for insomnia (CBT-I). (15) Indeed, CBT-I has been established as the recommended first-line treatment for insomnia among adults. (16) CBT-I typically includes promotion of healthy sleep habits, teaching stimulus control, sleep restriction therapy, relaxation skills training, and cognitive modification of thoughts. (15)(16) Some patients may benefit from self-administered CBT-I tools, including phone apps such as the CBT-I coach app, SHUT-I, or SLEEPIO. (17)(18) These resources are easily accessible, low-cost, and effective. (19) If further intervention is deemed necessary, a referral to a behavioral sleep medicine specialist may be indicated. Credentialed behavioral sleep medicine providers can be identified on the Society of Behavioral Sleep Medicine website (www.behavioralsleep.org).

Pharmacologic Management of Insomnia

Behavioral interventions are the first-line treatment for insomnia, but a combined psychological and pharmacologic approach may be useful for certain populations (eg, those with neurodevelopmental disorders, pervasive developmental disorders, chronic medical conditions, and psychiatric disorders). (20) Although no medications are formally approved by the US Food and Drug Administration (FDA) for treating pediatric insomnia, there is expert consensus that medications may be of benefit if used rationally and judiciously. (20) As such, medications commonly prescribed include melatonin, hydroxyzine, trazodone, and clonidine.

CIRCADIAN RHYTHM SLEEP-WAKE DISORDERS

Circadian rhythm sleep-wake disorders involve misalignment of the biorhythms with the external environment (Table 1). Commonly seen in adolescents with a prevalence of 7% to 16%, delayed sleep-wake phase disorder (DSWPD) presents as a chronic and recurrent delay in sleep onset with an inability to fall asleep or wake at the desired time. (3)(21) Actigraphy or accurate sleep logs are very useful in the diagnosis (Fig 2). Behavioral treatment for DSWPD first involves the promotion of healthy sleep habits (Table 2). Further treatment of DSWPD depends on the severity of the disorder but typically involves either advancement of the sleep-wake phase or chronotherapy.

To advance the sleep-wake phase and to address the delayed endogenous melatonin secretion that individuals with DSWPD typically experience, (22) exogenous melatonin may be strategically administered a few hours

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before endogenous dim light melatonin onset, and bright light therapy can be administered on waking (Fig 3). (23)(24) In humans with a typical day-night circadian rhythm, melatonin levels are low during the day and begin to rise when ambient light dims (ie, dim light melatonin onset). Broadly speaking, sleep onset occurs a couple of hours after dim light melatonin onset. (22) Although the identification of endogenous dim light melatonin onset can be challenging (eg, requiring analysis of plasma, saliva, or urine), research has established that it tends to occur between 7 PM and 9 PM in children aged 6 to 12 years, and approximately 30 minutes later as children age. (22) Research on the optimal dosing of melatonin for chronobiologic effects is still in its early stages, but based on current knowledge, practitioners can recommend 0.5 to 3.0 mg of melatonin approximately 3 hours before dim light melatonin onset. This would translate to melatonin administration approximately 5 hours before habitual sleep onset. (22) For bright light therapy, a broad spectrum lamp can be used, emitting 1,000 lux light, for 30 minutes at wake time. (2) As the sleep-wake phase is successfully advanced, with the patient going to bed earlier and waking earlier, the timing of the bright light therapy should also be gradually moved earlier, corresponding with the wake time each morning.

This phase advancement may suffice for cases of DSWPD that are less severe, in which only a few hours of phase advancement is needed. However, in more severe cases, chronotherapy may be necessary. Chronotherapy involves gradually moving the patient's sleep schedule around the 24-hour clock until the desired sleep-wake time is reached and then maintaining this sleep-wake time using sleep hygiene, melatonin, and bright light. (25)

SLEEP-RELATED BREATHING DISORDERS

Pediatric sleep-related breathing disorders can be categorized as conditions with airway obstruction (obstructive sleep apnea [OSA] syndrome), abnormal control of breathing (central sleep apnea syndrome), and ineffective gas exchange (hypoventilation). Of these, OSA syndrome is the most common. Obstructive breathing in sleep comprises a spectrum of conditions, ranging from snoring at the mild end to recurrent OSA at the severe end. OSA is characterized by prolonged partial, or intermittent complete, upper airway obstruction that disrupts normal ventilation during sleep and normal sleep patterns. (3) Snoring is reported in approximately 10% of children, whereas OSA is reported in 1% to 4% of children, with a peak prevalence between 2 and 6 years of age. (26)(27)(28) A higher prevalence of OSA is reported in children with obesity (10%–25%), craniofacial malformations (eg, 50% in achondroplasia), and Down syndrome (60%). (3)(26)(28). In addition, positive family history of OSA increases the risk of OSA in the child. (27) Predisposing factors include airway narrowing, high level of airway collapsibility, and abnormal control of breathing. The most common cause for OSA in children is anatomical obstruction due to large tonsils

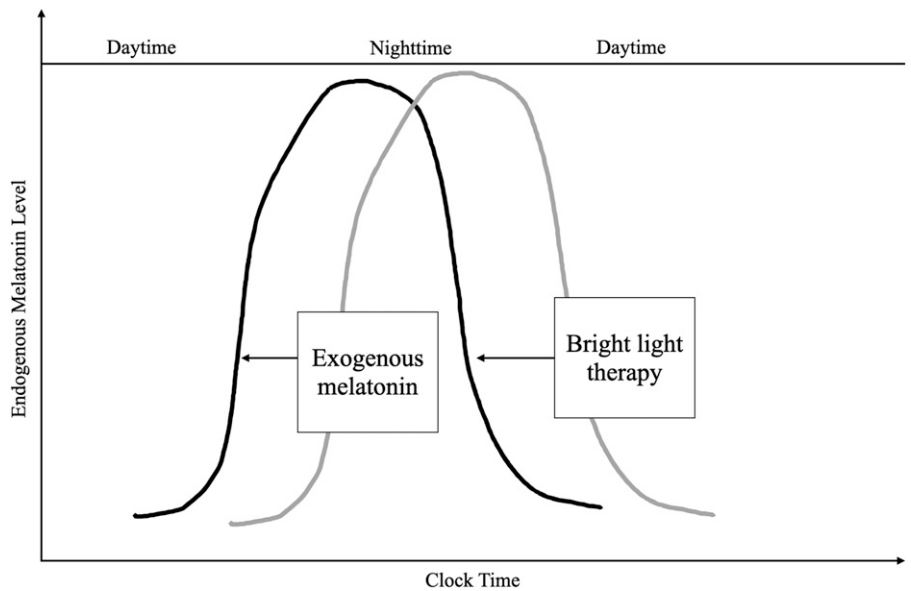

Figure 3. Drawing depicting how typical endogenous melatonin levels rise and fall across the 24-hour day. Relative to delayed sleep phase sleepers (gray line), people with a typical circadian phase (black line) have earlier melatonin rise when the ambient natural light dims (dim light melatonin onset). This rise usually begins 2 hours before natural sleep onset. Specific doses and timing of exogenous melatonin in the evening and application of bright light in the morning can be used to advance the phase earlier (direction of arrows). Modified from Jaquez et al. (24)

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and adenoids. Increased airway collapsibility is contributory in children with obesity or neuromuscular disorders. (29)

The presenting symptoms for OSA can be grouped into nocturnal and daytime symptoms (Table 3). All children should be screened for snoring, per the American Academy of Pediatrics. (30) Suspicion for OSA is high when snoring occurs 3 or more nights per week, is loud, and is associated with restless sleep, daytime sleepiness, or daytime behavior problems. Physical examination must include evaluation of the general appearance, craniofacial characteristics, nasal anatomy, airway patency, and tonsillar size. However, these clinical characteristics, including tonsillar size, cannot reliably identify OSA. (31)(32)

Untreated pediatric OSA has been shown to result in neurocognitive, metabolic, and cardiac morbidity. (26) These effects could be mediated by intermittent hypoxemia, sympathetic activation, and sleep fragmentation resulting from recurrent airway obstruction. OSA may be associated with daytime attention problems, hyperactivity, and cognitive deficits, and these tend to improve with treatment. (33) In addition, abnormal blood pressure control, left ventricular hypertrophy, and left ventricular dysfunction have been reported. (34)(35) Metabolic effects include increased incidence of insulin resistance and fatty liver disease in obese children with OSA. (36)(37)(38)

OSA Diagnosis

A PSG provides an objective measurement of respiratory event frequency and ventilatory impairment during sleep and is the gold standard for diagnosis of OSA. (26)(27)(39) Events are classified as obstructive apneas or hypopneas based on the degree of airflow limitation. (39) The apnea-hypopnea index (AHI) is calculated as the number of apnea events plus hypopnea events per hour of sleep (Fig 1). In children, OSA is defined as an AHI greater than 1. (26) Experts classify the severity of OSA based on AHI scores, with AHI scores of 1 to 5, greater than 5 to 10, and greater than 10 deemed to be mild, moderate, and severe OSA, respectively. (39) Hypoventilation (carbon dioxide >50 mm Hg for >25% of sleep time) may be a key finding of obstructive breathing in children with obesity, Down syndrome, and neuromuscular disorders. (40) Alternative testing modalities, such as home sleep studies and overnight pulse oximetry, hold promise due to increased patient acceptance, reduced cost, and improved access but are not currently recommended for diagnosing pediatric OSA due to the high false-negative rate. (41)(42)

OSA Treatment

Children with suspected OSA should be referred to a sleep medicine specialist or an otolaryngologist (39) or should directly undergo a nocturnal PSG. (26)(39)(40) It is important to note that the American Academy of Otolaryngology–Head and Neck surgery guidelines recommend PSG only for children younger than 2 years, or if they exhibit comorbidities (eg, obesity, Down syndrome, craniofacial abnormalities, neuromuscular disorders, sickle cell disease, or mucopolysaccharidoses), or when the examination findings are not consistent with symptoms. (43)

OSA treatment is indicated for an AHI greater than 5 irrespective of OSA-associated comorbidities as well as for an AHI of 1 to 5 in the presence of OSA-associated comorbidities. (40) Adenotonsillectomy is generally considered the first-line treatment for OSA in otherwise healthy children aged 2 to 18 years with adenotonsillar hypertrophy. (26) Adenotonsillectomy is usually performed in the outpatient setting unless there is an increased risk of postoperative respiratory compromise due to young age (<2 years), severe OSA, obesity, or cardiac and craniofacial abnormalities. The success rate of adenotonsillectomy in otherwise healthy children aged 2 to 18 years is approximately 80%. (33) Risk factors for persistent OSA after adenotonsillectomy include obesity, severe OSA, and craniofacial abnormalities. (33) Weight loss improves OSA in overweight children and can be used in combination with other treatments for moderate to severe OSA syndrome or as the sole treatment for mild OSA. (44)(45)

Delivering positive airway pressure (PAP) via a mask continuously or via bilevel pressures distends/opens the

Table 3. Symptoms of Obstructive Sleep Apnea in Children

NOCTURNAL	DAYTIME
Snoring	Attention problems or poor academic performance in school
Pauses in breathing	Hyperactivity and other behavior problems
Labored breathing	Personality changes, such as being moody, cranky, or irritable
Restless sleep with tossing and turning	Sleepiness (eg, falling asleep in school or napping at unusual times)
Unusual sleep position (seated position, arched back, head tilted back)	Headaches on waking from sleep
Frequent awakenings from sleep	Hyponasal voice
Bed-wetting	Mouth breathing

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airway during sleep and has been shown to improve OSA and its sequelae in children. (46) The PAP compliance rate in children is approximately 50%, with a higher compliance rate among children aged 6 to 12 years. (46)(47) PAP therapy, when tolerated, is very effective for OSA in children, especially those with Down syndrome. (48) PAP adherence may be improved with proper mask fitting and behavioral intervention by a psychologist.

Supplemental oxygen can be used to correct oxygen desaturations during sleep in children with severe OSA who are not candidates for surgical treatment and do not tolerate PAP therapy. It can also be used as a bridge to definitive therapy. Of note, hypercapnia may occur with oxygen supplementation and should be ruled out before prescribing home oxygen. Dental procedures (eg, rapid maxillary expansion) may benefit children who have both OSA and a narrow palate. Mandibular advancement devices are an option in selected patients. (40) Recently, hypoglossal nerve stimulator implants have shown promise in adolescents with both Down syndrome and severe OSA, despite adenotonsillectomy. (49) Alternate treatment options for mild OSA include nasal corticosteroid spray or watchful waiting for 6 months. (50) PSG-confirmed resolution of OSA has been demonstrated in up to 50% of school age children with mild to moderate OSA without specific intervention. (33)

The current management paradigms for OSA commonly use abnormal PSG as a criterion for initiation of treatment. However, improvement in behavioral outcomes after adenotonsillectomy have been shown even in snoring children who do not meet PSG criteria for OSA. (33) Results of the Pediatric Adenotonsillectomy Trial for Snoring are awaited to guide the management of children with mild or subclinical obstructive sleep–disordered breathing in the future. (51)

HYPERSOMNOLENCE DISORDERS

Excessive daytime sleepiness (EDS) is defined as "the inability to stay awake and alert during the major waking episodes of the day, resulting in periods of irrepressible need for sleep or unintended lapses into drowsiness or sleep." (3) Pediatric EDS has a prevalence of approximately 30% and may also manifest as emotional lability, inattentive-hyperactive behaviors, or deteriorating school performance. (3)(52)(53) The modified Epworth Sleepiness Scale and other screening questionnaires may help distinguish EDS from lack of energy or fatigue. (54)(55) In clinical practice, EDS most frequently results from insufficient sleep or inadequate sleep hygiene habits, including late evening alerting activities such as sports or work, caffeine use, or media consumption. (56) Outside of these lifestyle-related factors, EDS in a school-age child should be taken seriously, and a host of interacting etiologies should be considered (Table 4). Central disorders of hypersomnolence include narcolepsy, idiopathic hypersomnia, and Kleine-Levin syndrome (KLS). (3) These central disorders are a distinct category of disorders where EDS cannot be ascribed to other untreated sleep or circadian rhythm disorders. (3)

Narcolepsy

Narcolepsy comprises a tetrad of symptoms, including EDS for longer than 3 months, cataplexy, sleep paralysis, and hypnagogic hallucinations, with a prevalence of 1 in 2,000 in the United States. (57) Although onset is usually in the second decade, the classic symptoms may not manifest all at once, and diagnosis is often delayed 15 years or more. (58)(59) By definition, EDS is seen in 100% of narcolepsy cases, with daily periods of irrepressible sleep, unexpected "sleep attacks," or extreme "sleep inertia" (ie, propensity to continue sleeping), with confusion or even aggression on forced awakening. (3)(54) Daytime naps are generally refreshing, whereas nighttime sleep may be disrupted with frequent awakenings. (3) Sleep paralysis (waking up from sleep unable to move), and visual or auditory hallucinations at wake-sleep transitions may be reported in 33% to 80% of patients. (3) Cataplexy manifests as a sudden, brief

Table 4. Common Causes of Excessive Daytime Sleepiness

LOW SLEEP QUANTITY	POOR SLEEP QUALITY (INTERRUPTED SLEEP)	CIRCADIAN MISALIGNMENT	CENTRAL DISORDERS OF HYPERSOMNIA
• Behavioral insomnia of childhood • Sleep initiation insomnia • Inadequate sleep hygiene (eg, caffeine, TV watching) • RLS with delay in sleep onset • Environmental factors (eg, noisy, hot, cold, bright)	• Sleep-related breathing disorders (eg, OSA, CSA) • Sleep-related movement disorder (eg, PLMS, RLS) • Medical disorders (eg, asthma, eczema, GE reflux) • Environmental factors (eg, noisy, hot, cold, bright)	• Delayed sleep-wake phase disorder • Irregular sleep-wake rhythm disorder • Non–24-h sleep-wake rhythm disorder	• Narcolepsy • Idiopathic hypersomnia • Kleine-Levin syndrome • Behaviorally induced insufficient sleep • Hypersomnia due to medication, substance, or psychiatric disorder

Modified from Owens (54) and Kotagal (56).
CSA=central sleep apnea, GE=gastroesophageal, OSA=obstructive sleep apnea, PLMS=periodic limb movement of sleep, RLS=restless legs syndrome.

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(usually <2 minutes), bilaterally symmetrical loss of skeletal muscle tone precipitated by strong emotions (eg, laughter). Consciousness is preserved, but deep tendon reflexes are transiently suppressed. The suddenness of the spell may mimic syncope or seizure. (60) Mild cataplexy may present with facial droop, ocular ptosis, jaw sagging, tongue protrusion, or unsteady gait. (3) Childhood narcolepsy may coincide with onset of obesity or precocious puberty. (61)

PSG followed by an MSLT the next day are indicated when narcolepsy is suspected. Overnight PSG serves to eliminate alternate causes for EDS (eg, OSA) and document adequate sleep total time. The MSLT tests for daytime sleep propensity. Any sleep-onset REM periods (SOREMPs), defined as REM sleep occurring within 15 minutes of sleep onset, are noted. In the appropriate clinical context, an MSL of 8 minutes or less on the MSLT and a total of 2 or more SOREMPs counted between the PSG and the MSLT are diagnostic. (3) This test is invalid for children younger than 6 years. Careful pretest planning is required to reduce false-positive results from medication effect or poor sleep habits. A urine drug screen is recommended in teenagers. (62)

Narcolepsy is subclassified as type 1 (NT-1) and type 2 (NT-2). (3) The more common NT-1 results from hypothalamic hypocretin (orexin) deficiency. Most patients with NT-1 carry the human leukocyte antigen (HLA) DQB1*0602 subtype and exhibit cataplexy. (63) However, HLA typing is not diagnostic of NT-1 because up to 38% of the general population carries this marker. Association with certain infections (eg, influenza H1N1) and a specific adjuvant-associated influenza vaccine suggests that interacting genetic and environmental factors mediate autoimmune loss of hypocretin neurons. (64)

NT-1 is diagnosed either by an abnormal MSLT result and cataplexy or by a low cerebrospinal fluid hypocretin-1 level (<110 pg/mL). (3) NT-2 is defined by an abnormal MSLT result without cataplexy or cerebrospinal fluid hypocretin abnormalities. Only approximately half of patients with NT-2 carry HLA-DQB1*0602. (63) Less commonly, narcolepsy may be associated with paraneoplastic disorders, hypothalamic lesions, myotonic dystrophy, and Prader-Willi syndrome. (3)(65)

Other Hypersomnias

Idiopathic hypersomnia (IH) presents with EDS for longer than 3 months, long total daily sleep needs (>12–14 hours), unrefreshing naps, sleep inertia, and absent cataplexy. The PSG and MSLT together show fewer than 2 SOREMPs and may record an MSL of less than 8 minutes. (3) KLS is a rare disorder that presents in teenagers, with cyclical EDS accompanied by behavioral changes (eg, hyperphagy, anorexia, hypersexuality) and altered cognition and mood. During the sleepy phase, the patient may sleep 16 to 20 hours a day and cycles may last from 2 days to 5 weeks, with relapses usually multiple times a year but at least once every 18 months. Children are normal between episodes. (3) There are no confirmatory tests for KLS. (66)

Treatment of Hypersomnia

Narcolepsy and IH are lifelong diseases, whereas KLS tends to resolve over several years. (3)(66) Narcolepsy management includes attention to good sleep habits, regular exercise, judiciously planned daytime naps, and specialized educational plans. (54) In older teens, driving safety, alcohol avoidance, and career counseling are important. (56) Alerting agents such as amphetamine and methylphenidate may be useful. Modafinil is FDA approved for individuals older than 17 years with the warning for Stevens-Johnson syndrome, psychosis, and oral contraceptive failure. (67) Tricyclic antidepressants or selective serotonin (SSRI)/norepinephrine reuptake inhibitors such as venlafaxine, protriptyline, or clomipramine are useful for cataplexy. (56) Sodium oxybate and the newer low-sodium formulation of mixed oxybate salts are FDA approved for children older than 7 years for both EDS and cataplexy in narcolepsy. The oxybates are unique in that they are administered at night in divided doses. Of note, the American Academy of Sleep Medicine has recently published evidence-based guidelines for patients with central disorders of hypersomnolence using the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) process and advised a "conditional recommendation" for modafinil and sodium oxybate for pediatric narcolepsy but no recommendations for KLS or IH. (68)

PARASOMNIAS

Parasomnias are defined as "undesirable physical events or experiences that occur during entry into sleep, within sleep, or during arousal from sleep." (3) Human consciousness comprises 3 states: wake, NREM sleep, and REM sleep. A blurring of state boundaries and involuntary activation of primitive locomotor centers (central pattern generators) in the brain stem and spinal cord are believed to result in a complex amalgamation of behaviors, experiences, mentation, and recall. (69) Broadly, the various parasomnias may occur in NREM or REM sleep (Table 1).

NREM Parasomnias

Confusional arousals involve moaning, crying, or sitting up in bed with a confused appearance. (3) Sleep terrors begin with a sudden piercing scream associated with profound autonomic activity, including pupillary dilatation, sweating, tachypnea,

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and tachycardia. (3) Sleepwalking usually involves glassy-eyed wandering out of bed in an aimless or semi-purposeful manner, but sometimes agitated, dangerous, violent, or uncharacteristic behaviors may occur (eg, urinating in unusual places, exiting home). (70)

NREM parasomnias are relatively common in children of both sexes. The prevalence of confusional arousals is approximately 17.3% among children 3 to 13 years of age. (3) Sleep terrors peak at age 1.5 years (34.4% prevalence) and sleepwalking at age 10 years (13.4% prevalence), with approximately one-third of children with sleep terrors going on to develop sleepwalking in later childhood. (71) The prevalence of sleepwalking is higher for children who have one or both parents who had historically sleepwalked. (71) In contrast, adults have a lower rate of sleepwalking (1.5%) and confusional arousals (2.9%–4.2%). (3)(72)

As a group, NREM parasomnias generally arise from deep sleep (NREM stage 3), which is typically most prominent in the first one-third of the night. These parasomnias often last a few minutes but may well exceed 30 minutes. (67) The eyes are generally open yet the child is difficult to awaken, resists or responds poorly to parental intervention, and has very limited or no recall of the event afterward. (3)(67)

Psychiatric pathology is rarely associated. (70) Untreated OSA, gastroesophageal reflux, anxiety, and neurodevelopmental disorders (eg, autism) may increase the risk. (56)(73) Sleep deprivation, social stress, external or internal stimuli (eg, ringing of a phone, fever, full bladder), and certain medications (eg, sedatives) may prime or trigger such events. (3) As a differential diagnosis, certain nocturnal epilepsy may present with brief (<2 minutes), multiple (sometimes in clusters), stereotypical events with complex motor behaviors and vocalizations. (70)(74)

NREM parasomnias are mostly benign and require no investigations, and children usually outgrow them. Parents should be advised not to interfere with the event and ensure the child's safety (eg, install barriers at stairwells, perimeter door alarms). (75)(76) Frequent, injurious, and potentially dangerous parasomnias, high parental anxiety, or suspicion of comorbid sleep disorders merit overnight PSG. Concomitant video electroencephalography is useful if suspicion for seizures is high. Treating any associated sleep disorder (eg, OSA, inadequate sleep hygiene) may benefit. Clonazepam has been used to suppress NREM parasomnia in high-risk patients. (56)

REM Parasomnias

Nightmares are defined as "extremely dysphoric, and well-remembered dreams that usually involve threats to survival, security, or physical integrity." (3) Anxiety, fear, embarrassment, or disgust are common. (3) In contrast to NREM parasomnias, nightmares tend to occur in the second half of the night, when REM sleep is common. During nightmares, children typically awaken easily with vivid recall of the experience.

The prevalence of occasional nightmares is 60% to 75%, whereas recurrent nightmares occur in 20% to 30% of children and in 4% of adults. (76)(77)(78) They may be associated with posttraumatic stress, anxiety, or other psychopathology, as well as certain medications. (3)(56) Nightmare disorder is diagnosed when recurrent nightmares result in significant effects such as mood disturbance, bedtime resistance, nighttime fears, daytime fatigue, effect on education, or familial dysfunction. (3) Reassurance and attention to good sleep hygiene are helpful (Table 2). Depending on the age of the patient, specific psychological interventions may include image rehearsal therapy, relaxation techniques, desensitization, and exposure therapy. (79)

REM sleep behavior disorder (RBD) involves "acting out of dreams" due to loss of the normal skeletal muscle atonia, which is characteristic of typical REM sleep. (3) This results in complex or even violent behaviors (punching, kicking, leaping out of bed). On awakening, the person becomes rapidly alert and coherent (in contrast to sleepwalking). (3) In adults, it is frequently associated with degenerative brain disorders. (3) RBD is very rare in childhood and may sometimes be associated with brainstem lesions, narcolepsy, and SSRI medication use. (56) Diagnostic PSG is always indicated if RBD is suspected to confirm loss of skeletal muscle atonia on limb EMG and to screen for other sleep disorders, such as OSA, which may be associated with motor activity in sleep. (3) Treatment usually involves clonazepam or melatonin and attention to any underlying precipitants. (56)

SLEEP-RELATED MOVEMENT DISORDERS

Sleep-related movements are common in young children and may occur at the transition from wakefulness to sleep, during sleep, or both. (80)(81)(82) Restless legs syndrome (RLS) and periodic limb movement disorder (PLMD) have a prevalence of 2% to 4% in children and adolescents. (83)(84) Although periodic limb movements of sleep (PLMS) are common in RLS, PLMD and RLS are distinct clinical conditions with specific diagnostic criteria. (3) Their pathogenesis is not well-understood, but genetic factors, dopaminergic dysfunction, and iron deficiency have been implicated. (84) RLS and PLMD are associated with cardiovascular, autonomic, and neurocognitive changes. (83)(84)

General symptoms may include leg discomfort, attention deficits, and absence of restful sleep. (3) A complete

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neurologic examination is essential to rule out other causes of leg discomfort, such as positional discomfort, muscle/ligament/tendon sprain, positional ischemia (numbness), dermatitis, peripheral neuropathy, and fibromyalgia. PLMS are defined by specific PSG scoring criteria and comprise repetitive, stereotyped limb movements (Fig 1), with a frequency of greater than 5 per hour considered to be abnormal for children. (3)

RLS is diagnosed clinically by a set of symptoms, including an irresistible urge to move the legs usually accompanied by unpleasant leg sensations that are worse during inactivity, are partially or totally relieved by movement, and occur predominantly in the evening or night. (3) A family history of RLS or PLMS on PSG may be supportive in diagnosing RLS in the child who is too young to describe the classic RLS symptom set (Fig 1). When abnormal PLMS or symptoms of restless legs cause sleep onset or maintenance problems (with or without daytime impairment), which cannot be better explained by another cause, they are deemed PLMD or RLS, respectively (Table 1). (3)

Restless sleep disorder (RSD) is a newly described sleep disorder characterized by large body movements and repositioning throughout the night, with at least 5 large body movements per hour and a significant effect on daytime behaviors. (85) Sleep-related rhythmic movements (eg, head banging, body rocking) are quite common during wake-sleep transitions in typically growing infants and toddlers but are termed *rhythmic movement disorder* if they interfere with sleep, compromise daytime functioning, or result in injuries. (3)

Tests to evaluate iron status, including complete blood cell count, serum iron level, and serum ferritin level, are indicated for RLS, PLMD and RSD. Additional tests may be indicated if neuropathy is suspected, such as thyroid function, fasting blood sugar and insulin, and serum levels of vitamins B_6, B_9, and B_{12}.

Management of Sleep-Related Movement Disorders

Similar to other sleep disorders, attention to good sleep habits is a cornerstone of RLS management (Table 2). Medications, such as SSRIs, that could aggravate RLS and PLMD should be substituted or discontinued. Caffeine should be avoided. Rhythmic movement disorder generally requires reassurance and common sense safety measures.

Pharmacotherapy is used when lifestyle modifications do not suffice. Oral iron supplemented at 3 mg of elemental iron per kilogram per day for 3 months is the first-line treatment in children with RLS, PLMD, or RSD, presenting with low serum ferritin levels (<50 ng/mL [<50 μg/L]). (85)(86)(87) Intravenous iron has been used in children who do not tolerate or fail oral iron therapy. Second-line treatment options for RLS and PLMD include α2δ-1 ligands such as gabapentin, pregabalin, and gabapentin enacarbil. (88) Clonazepam has also been tried. (89)

Summary

- Sleep disorders are common in children and may manifest as fatigue/malaise; attention, concentration, or memory impairment; impaired social, family, occupational, or academic performance; mood disturbance or irritability; daytime sleepiness; reduced motivation, energy, or initiative; and proneness to errors or accidents.
- Behavioral interventions are the first-line treatment for insomnia, but a combined psychological and pharmacologic approach may be useful for certain populations (eg, those with neurodevelopmental disorders, pervasive developmental disorders, chronic medical conditions, and psychiatric disorders). Although no medications are as yet approved by the US Food and Drug Administration (FDA) for treating pediatric insomnia, expert consensus supports a rational approach for use. (Based on expert consensus)
- Psychophysiological insomnia can be effectively treated by cognitive behavioral therapy for insomnia. (Based on research studies with evidence quality grade A)
- Children with suspected obstructive sleep apnea (OSA) should undergo nocturnal polysomnography (PSG), whereas the American Academy of Otolaryngology–Head and Neck Surgery recommends adenotonsillectomy without PSG except if at high risk for postoperative complications. (Based on practice guidelines from the American Academy of Sleep Medicine and the American Academy of Pediatrics)
- OSA treatment is indicated for an apnea-hypopnea index greater than 5 irrespective of any OSA-associated comorbidities as well as an apnea hypopnea index of 1 to 5 in the presence of OSA-associated comorbidities. (Based on practice guidelines)
- Adenotonsillectomy is generally considered the first-line treatment for OSA in otherwise healthy children with adenotonsillar hypertrophy. (Based on expert consensus)

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- Unexplained excessive daytime sleepiness in a school-age child is unusual and should be investigated. Narcolepsy comprises a tetrad of symptoms, including excessive daytime sleepiness for longer than 3 months, cataplexy, sleep paralysis, and hypnagogic hallucinations.
- A multiple sleep latency test preceded by nocturnal PSG is indicated if narcolepsy is suspected. (Based on practice guidelines)
- Frequent, injurious, and potentially dangerous parasomnias; high parental anxiety; or suspicion of comorbid sleep disorders merit overnight PSG. Concomitant video electroencephalography is useful if suspicion for seizures is high. (Based on expert consensus)
- Oral iron is the first-line treatment in children with restless legs syndrome, periodic limb movement disorder, or restless sleep disorder presenting with low serum ferritin levels (<50 ng/mL [<50 μg/L]). (Based on expert consensus and research studies with evidence quality C)

References and teaching slides for this article can be found at https://doi.org/10.1542/pir.2022-005521.

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PIR QUIZ

1. A 4-year-old boy is brought to the clinic by his parents for a health maintenance visit. The parents report that the child is displaying behavioral problems during the day and sleep difficulty at night. The parents state that they must stay with the child until he falls asleep, and the child comes into their bed when he awakens in the middle of the night and will not fall back asleep unless they stay with him. Which of the following is the most likely explanation for this child's nighttime behavior?

   A. Attention-deficit/hyperactivity disorder.
   B. Psychological insomnia.
   C. Separation anxiety.
   D. Sleep-onset association disorder.
   E. The child's temperament.

2. The parents of a 9-month-old boy are at their wit's end and exhausted from the effort of getting their son to sleep. The parents hold the baby until he falls asleep, then lay him down in his crib, and repeat this each time the child awakens, which occurs an average of 4 times per night. You explain behavioral techniques and agree on implementing a modified extinction plan. You warn the parents that in the first few days, they may see "extinction bursts" of excessive crying. Which of the following best describes the average expected duration of these extinction bursts in the first few days?

   A. 5 minutes.
   B. 15 minutes.
   C. 25 minutes.
   D. 35 minutes.
   E. 45 minutes.

3. A 6-year-old is brought to the clinic by his parents for an annual health maintenance visit with no specific parental concerns. The physical examination is notable for a BMI of 32 and mild tonsillar hypertrophy. On pursuing physical activity and diet history, you learn that he is "too tired" to play outside. The mother works the night shift and cannot comment on his sleep hygiene or snoring. A polysomnogram shows moderate to severe obstructive sleep apnea. Recommendations for which of the following interventions is the most appropriate next step in management?

   A. Adenotonsillectomy.
   B. Monitoring.
   C. Prone sleep positioning.
   D. Supplemental oxygen.
   E. Weight loss program.

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4. A 10-year-old boy presents with his mother, who is concerned about his psychological well-being. In recent weeks he has been found wandering around the house at night after he has gone to bed and fallen asleep. Mom reports that he is "zombie-like" and does not respond to her in these wanderings. Your patient does not believe his mother's report and calls her "hysterical." There is a very high level of anxiety and conflict around this topic. Which of the following is the most appropriate first recommendation and measure that should be taken by the clinician for this patient?

   A. Educate the family on parasomnias, their benign nature, and safety measures.
   B. Order a polysomnogram with an electroencephalogram.
   C. Prescribe clonidine to optimize more successful sleep.
   D. Recommend that mom videotape an event to reduce conflict.
   E. Refer to psychiatry to rule out dissociative disorder.

5. A 15-year-old girl who is a sprinter on the high school track team is brought to the clinic for a routine health visit. On inquiry about diet and sleep, she reports that she has a very hard time falling asleep because her "legs are jumpy." She reports that this has been distressing, especially when it occurs the night before a track meet or an examination. The laboratory evaluation for the suspected diagnosis should include which of the following studies?

   A. Blood toxicology screen.
   B. Serum creatinine kinase.
   C. Serum electrolytes.
   D. Serum iron, ferritin, and complete blood cell count.
   E. Urine specific gravity.

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Table 1. Difficulty Falling Asleep—Infants

Type of Problem	Circumstances of Bedtime	Nap Routine	Relationship Factors	Treatment
Sleep Association (>2 mo)	Infant may be put to bed already asleep, in body contact with parent, with the bottle or pacifier	Falls asleep in body contact or with bottle or pacifier	Maternal depression, overresponsive parent, vulnerable child syndrome, inability to see/play with the child during the day	In bed alone and awake for night and naps
Hunger	Last feeding several hours before bedtime or infant needs more calories			Bedtime feeding
Circadian Rhythm Disorder (Phase Shift)	Infant is not tired; bedtime is too early	Long naps during the day or wakes from last nap after 4 PM		Shorten naps, end nap earlier

Table 2. Difficulty Falling Asleep—Preschool

Type of Problem	Circumstances of Bedtime	Nap Routine	Relationship Factors	Treatment
Sleep Association	Put to bed already asleep, in body contact, with bottle or pacifier, or with TV on	Falls asleep in body contact or with bottle or pacifier	Maternal depression, overresponsive parent, inability to see/play with child during the day	In bed alone and awake for night and naps
Circadian Rhythm Disorder (Phase Shift)	Toddler is not tired; bedtime is too early	Long naps or does not wake up until after 4 PM		To bed when tired, then advance by 15 min per night, keeping appropriate wake-up time
Limit-setting	Lack of bedtime routine, parent gives in to "one more" plea by child	Often no nap routine	Inability to set limits, guilt	Set routine; enforce "one more time;" use ticket; one story if comes out, two if stays in; or hold door/turn off light briefly
Bedtime Fears	Can't distinguish reality, little reassurance from parent, frightening environment (eg, TV); may also feign fears.		Inability to set limits, marital discord, exposure to media, chaotic household, family stresses, sexual/physical abuse	Evaluate and resolve stresses, establish soothing routine, use "monster spray"

Table 3. Difficulty Falling Asleep—School-age and Adolescents

Type of Problem	Circumstances of Bedtime	Nap Routine	Relationship Factors	Treatment
Sleep Association	Teen falls asleep with radio or TV on		Lack of limit-setting	Negotiate use of media, depending on success in morning
Circadian Rhythm Disorder (Phase Shift)	Child is not tired; bedtime is too early, given phase shift	Daytime naps exacerbate	Lack of limit-setting, increased social responsibilities of child, child may avoid family or school obligations by staying up late and getting up late	Reset rhythm by delaying bedtime 1 h/d around the clock, keeping total sleep appropriate to desired hour, or advancing 15 min/d. Then maintain 7 d/wk. No naps.
Anxiety at Bedtime	Daytime stresses, asthma, obstructive sleep apnea, restless leg syndrome		Daytime stresses, exposure to violent or frightening media, chaotic household, family stresses, sexual/physical abuse	Evaluate and treat possible medical and psychiatric causes and stresses

Sleep Disorders Self-Reflection/ Quiz:

1. Do you routinely ask about sleep during well-child visits? If so, how do you ask (general questions? specific symptom questions?)? Do you ask at *every* well-child visit from birth to adolescence?
2. What was your/your child's/your patient's BEARS score? Was it what you expected?
3. After reading this module, will you change anything about your own/your child's sleep patterns? Will you change anything about how you screen your patients for sleep disorders?

4. Please complete the following table *(original from PIR, Dec 2006)*:

Common Pediatric Sleep Disorders

Diagnoses	Usual Age Range of Presentation
Sleep Onset Association Disorder	First postnatal year
Limit-setting Disorder	All ages
Obstructive Sleep Apnea Disorder and Sleep-disordered Breathing	2 to 5 y
Night Terrors and Other non-REM Parasomnias	4 to 12 y
Inadequate Sleep Hygiene	All ages
Delayed Sleep Phase Syndrome	Adolescence

5. *Flashback:* Which behavior modification techniques can be used to address **Sleep-onset Association Disorder** and/or **Limit-Setting Disorder**?
   - Standard Extinction (Cry- It Out): Systematically ignoring child until the next morning.
   - Graduated Extinction: Gradually decreasing parental involvement in the child's falling asleep (i.e. "exit plan")
   - Bedtime Fading: Moving bedtime back to child's usual sleep time; gradually advance bedtime.
   - Positive reinforcement: Reward child's compliance with bedtime routine.

6. **Delayed Sleep Phase Syndrome** is characterized by habitual sleep/wake patterns that are delayed relative to conventional sleep times by **≥ 2** hours.

7. Please complete the following table *(original from PIR, Dec 2006)*:

Table 3. Distinguishing Between Nightmares and Night Terrors

Distinguishing Factors	Nightmares	Night terrors
Memory for the event	Yes	No
Dreams	Yes	No
Stage of sleep	REM	Slow-wave sleep (stages 3 and 4)
Time of the night	Last 1/3 of night	First 1/3 of night
Requires parent for comfort	Yes	No
Family history	No	Yes
Common age range	All ages (peak between 3 and 6 y)	4 to 12 y
Associated risk factors	• Sleep deprivation (with resulting REM rebound) • Stress • Anxiety • Medications that increase REM • Withdrawal from REM-suppressing medications	• Sleep deprivation (with resulting slow-wave sleep rebound) • Chronic pain (migraines, otitis media) • Sleep disordered breathing • Seizures • Limb movements • Environmental noise

8. Untreated OSA has been associated with cor pulmonale, pulmonary hypertension, systemic hypertension, poor learning, behavioral problems, morning headaches, and ADHD.

Check out the Consumer Product Safety Commission

Name That Sleep Product -- Safe or Unsafe?

A

SNOO Smart Sleeper ($1295 or rent for $3/day), created by Dr. Harvey Karp of *Happiest Baby on the Block* fame.

B

Doc-A-Tot ($195-275), marketed as a baby lounger or co-sleeper.

C

Snuggle Me ($128-156) like a Doc-A-Tot but with a center "sling," allowing the sides to come in and "hug" the baby.

D

Rock-N-Play ($40 and up) RECALLED in May 2019 after consumer reports identified 32 infants that died in this sleeper.

E

Merlin Sleep Suit ($39.99) Intended for babies too big to be swaddled, theoretical concern for overheating, interference with normal development due to restricted movement. AAP says NO

F

Babocush ($179.99) NOT intended for sleeping, but what are the chances that a baby that has this does not spend time sleeping in it?

G

Nap Nanny Infant Recliner -- RECALLED in 2014 after 6 infants died from suffocation in this device.

*****Review AAP policy statement for safe sleep and information about sleep products*****
https://www.healthychildren.org/English/ages-stages/baby/sleep/Pages/A-Parents-Guide-to-Safe-Sleep.aspx

Sleep Disorders *Mini*-Cases:

Take turns and complete as many cases as you can in the last 30 min of conference (cases are in chronologic order). Sleep training is often more of an art than a science, so the answer key leaves room for a variety of approaches—Share your own! (Residents—review the answer key after conference).

Case 1: My 6 week-old infant thrashes about and cries out when he sleeps. He continually hits himself in the face and wakes up. Is this behavior normal? How do I help him sleep better?

- This may be normal, as during REM sleep, an infant may twitch or flail his arms or legs and breathing may be somewhat irregular. The parent should wait until the infant seems fully awake before picking him up, or else development of sustained sleep may be delayed.
- Otherwise, ensure no other sleep disturbances: Is the baby hungry? Is the diaper freshly changed? Is there real discomfort from GER or gas? Is the baby overtired? Sick?

Case 2: Our 2 month-old baby won't sleep in his own bed. He has slept with us since his birth. We have tried lullabies, talking to him, and letting him cry, but he will only sleep in our arms. Help!

- This may be the start of a sleep onset association disorder: this baby associates being held in his parents' arms with going to sleep, and cannot self-soothe without this stimulus. Sleep training (i.e. letting the baby "cry it out") is not recommended until 6-8 mo; however, these parents can be counseled to try to put their baby in his *own crib* "drowsy but awake". In addition, they can introduce a transitional object (pacifier if not already in use) that the infant can ultimately use to self-soothe. Parents should try to limit the amount of time they are spending holding and soothing the child in the middle of the night. After 4-6 mo of age, parents could try graduated extinction method by time or proximity to help their child learn to self-soothe.
- Co-sleeping: You should also counsel these parents about the risks and benefits of co-sleeping.

Case 3: My baby is almost 3 months of age and still wakes up hungry at least once or twice during the night. My mother-in-law insists that I could solve the problem by giving him some cereal in the evening. Is she right again?

- No. Early solid food introduction *does not* increase the ability to sleep through the night. Early solids may increase the risk of GI infections and childhood obesity.

Case 4: Now that my 5 month-old baby is rolling over by himself, is it safe to let him sleep on his tummy? If not, what is the best way to keep him on his back?

- The AAP Practice Parameter on SIDS recommends placing infants on their back to sleep through 12mo. However, if the infant can roll from supine to prone and vice versa, he may be allowed to remain in the prone position, since repositioning may be disruptive. Parents should ensure that the infant's sleep environment remains free from rolls, dips, comforters, or other loose bedding.

Case 5: My 4 month-old baby used to sleep all night, but suddenly, without any reason, is waking up in the middle of the night. He is not teething, hasn't been sick, and is growing and developing well. What could be the cause?

- This baby is experiencing frequent nighttime arousals. Is the source of arousal environmental (TV, street noise, sibling)? Does the baby have any sleep associations that are now no longer present? Are there any underlying medical issues—snoring, GERD, post-nasal drip, etc?
- Otherwise, this may be related to developmental changes—e.g. separation anxiety and increased gross-motor skills. Parents should be reassured that, in most babies, there is *no need for an overnight feeding beyond 4-6 mo*. Sleep training may begin in earnest with graduated extinction.

Case 6: Our 15 month-old is having terrible sleeping problems. He goes to bed around 2100, wakes up around 0100, and is wide awake until 0400. Then, he sleeps until 0800 and stays up until his 1hr afternoon nap. Thank goodness for Sesame Street in the middle of the night! What can we do?

- This history suggests limit-setting disorder, or more generally, a lack of bedtime routine. 2100 is probably too late for a 15-month old to be put to bed, and he may be overtired, leading to difficulty falling asleep. In addition, he is receiving positive reinforcement for night-waking with Sesame Street. Parents need to establish a clear bedtime routine that does not include TV.

Case 7: My son at 20 months is still waking up at 2-3 hour intervals every night. He usually asks for a drink of milk or something to eat. His daytime caregiver has trouble getting him to eat because he drinks a lot milk and has no appetite for solid foods. Is this normal behavior?

- This history suggests a combination of sleep-onset association (juice/food required to go back to sleep) and limit-setting disorders (parents can't reinforce appropriate sleeping behavior). In addition, as you recall from the Nutrition & Dental Health modules, milk should be limited to daytime drinking 16-24 ounces and discouraged at night due to risk of dental caries.
- Would emphasize general principles of sleep hygiene (see Tables) and discuss graduated extinction/Ferber method & fading with parents.

Case 8: My son is 4 years-old and snores loudly and wakes up several times every night. His tonsils look very large and I wonder if this could be dangerous for him?

- This history suggests OSAS, during which increased work of breathing due to a combination of structural and neuromuscular conditions (adenotonsillar hypertrophy is most common cause), can lead to multiple arousals from sleep. Classic signs include snoring, witnessed apnea, snorts, arousals, restless sleeping, unusual sleeping positions, and mouth breathing. Additional manifestations may include FTT, enuresis, and daytime sleepiness.
- There are numerous long-term consequences including cor pulmonale, pulmonary HTN, and behavioral issues (apparent ADHD, poor school performance)

Case 9: My 4 ½ year-old daughter has frequent nightmares and is now afraid to go back to bed. What should I do?

- First, distinguish between nightmares and night terrors (see Quiz chart). Management varies with age: young children need to be comforted and reassured. Stressors and stimuli need to be diminished and good sleep hygiene must be practiced. Older children may need to learn new coping and relaxation skills. Parents may need to discuss the dreams concretely with the child.

Case 10: It's impossible to wake my 15 year-old up for school. It's so frustrating—he stays up until 0130 playing GTA6 (he tells me he can't fall asleep), and then of course he is exhausted when I try to wake him up for school at 0600. On the weekends, he could sleep straight through lunch if I let him. Can you tell him to stop playing GTA6 and go to sleep?

- This history suggests Delayed Sleep Phase Syndrome (DSPS), a circadian rhythm disorder that results in a shift of the sleep-wake schedule towards later sleep times and later awakening, such that behavior and school performance are affected. In this case, it is also exacerbated by poor sleep hygiene corresponding to excess screen time exposure. Intervention is aimed towards re-shifting the sleep-wake schedule towards times that meet academic and social needs (e.g. 15 min/week). Timed light and bright light therapy may be helpful. It is also important to uncover psychosocial issues that may confound the diagnosis (e.g. school avoidance, depression, anxiety, substance abuse).

Sleep Disorders Board Review

1. The parents of a 3-month-old child are concerned that he is not getting enough sleep and is waking frequently during the night. Every time they check on him at night, he is making sucking movements and his limbs twitch. His past medical history and physical examination findings are within normal parameters. He is being fed a cow milk-based formula.

Of the following, the BEST next step in the management of this infant is to
A. add rice cereal to the infant's formula
B. change the infant's formula
C. obtain polysomnography (sleep study)
D. reassure the parents that this sleep pattern is normal
E. refer the infant for neurologic evaluation

Newborns can sleep 16 to 20 hours in a 24-hour period, alternating between 1- to 4-hour periods of sleep and 1 to 2 hours of being awake. Newborns cycle between rapid eye movement (REM) and non-REM sleep every 50 minutes. At the end of each cycle, the newborn may experience an arousal that is not true awakening. Parents may misinterpret this as the baby being awake and pick up the infant, causing a true arousal. During REM sleep (active sleep in the newborn period), associated movements may occur, which may include facial movements, sucking, and limb movements, as described for the infant in the vignette. By 2 months of age, infants are able to establish a day-night cycle. By 4 months, many infants can sleep uninterrupted through the night. A child of 1 year should be sleeping 13 to 14 hours, primarily during the night.

The parents of the infant described in the vignette should be counseled that their baby is not experiencing a true awakening and should be left to sleep undisturbed. There is no reason to obtain polysomnography or refer the child for a neurologic evaluation. Thickened feedings may reduce the severity and amount of regurgitation in a child who has gastroesophageal reflux, but this child is not having feeding difficulties, failure to thrive, or irritability. In the absence of signs of reflux or adverse reaction to the formula, there is no indication to change it.

2. During the health supervision visit of a term newborn boy, his mother relates that a cousin's child died at age 4 months from sudden infant death syndrome. She asks what she can do to prevent such an occurrence in her son.

Of the following, the single MOST important preventive measure is to
A. avoid use of a pacifier
B. cosleep in the parental bed for close observation
C. ensure side sleep positioning to prevent aspiration
D. ensure supine sleep positioning
E. use home apnea and bradycardia monitoring

Sudden infant death syndrome (SIDS) remains a significant cause of death in the first postnatal year. However, the rate of death has diminished by more than 50% since the recommendation was made more than a decade ago for supine rather than prone sleep position for children younger than 1 year of age.
In the United States, infant co-sleeping with parents increases the risk of SIDS, possibly related to frank suffocation. However, the recommendation to avoid co-sleeping remains controversial when providing support for breastfeeding and considering the prevalence of co-sleeping worldwide. Further risk factors associated with co-sleeping include parental obesity and sleeping on a very soft surface, such as a waterbed. Tobacco smoke exposure increases the risk of SIDS, especially in the setting of co-sleeping.

Although initial recommendations suggested placing the child either supine or on the side to prevent SIDS, subsequent research has shown that the side position also can increase the risk of SIDS, possibly due to the propensity for a bundled infant placed on his or her side to roll forward into the prone position. Therefore, parents should be urged to place the infant supine instead of on the side for sleep.

Home apnea and bradycardia monitoring has not been shown to reduce the risk of SIDS, even in families where a previous child has died from SIDS. Its use is limited to preterm infants who have apnea of prematurity and infants in whom central apnea, known cardiac arrhythmia, or other identifiable cause of events that may respond to monitoring and cardiorespiratory resuscitation is a distinct possibility.

Pacifier use may reduce the incidence of SIDS but is not without controversy due to possible interference with breastfeeding in the early weeks after birth. However, the peak incidence of SIDS occurs between 2 and 6 months, which is primarily after the establishment of successful breastfeeding during the first 2 postnatal weeks. Modeling of appropriate infant sleep position and good patient education in the hospital may be contributing factors to adoption of these practices.

3. An 8-month-old infant often falls asleep while his mother is feeding him. He tends to sleep longest during the day and wakes frequently during the night. The parents are sleep-deprived and ask for your assistance in getting the infant to sleep more during the night.

Of the following, your BEST suggestion is to
A. instruct the parents to feed the infant promptly when he awakes at night
B. instruct the parents to keep the child awake more during the day
C. prescribe diphenhydramine for the infant at night to help him sleep
D. reassure the parents that this is a phase that will pass and recommend a follow-up evaluation in 2 months
E. recommend that the infant sleep with the parents to minimize nighttime disturbances

At birth, infants typically sleep about 18 hours per day, with sleep split evenly between the day and night. By approximately 6 to 15 months of age, most children sleep about 10 to 12 hours at night and take two daytime naps. Spontaneous awakenings are normal and occur often during periods of rapid eye movement sleep. The ability of infants to settle (return themselves to sleep) usually develops around 3 to 4 months of age. Nighttime feedings and prolonged attention at night may prolong nighttime awakenings. To encourage night settling, day sleeping should be limited to 3 to 4 consecutive hours. Infants should be placed in their own cribs to fall asleep and be allowed to calm themselves. Nighttime feedings should be short, with little stimulation.

The infant described in the vignette needs to be stimulated during the day to encourage him to stay awake for longer periods of time. Telling the parents that this is just a phase will not help the baby learn to sleep for longer periods at night. The parents should be instructed to decrease caloric intake during the night and not to feed the infant immediately when he wakes at night.

Giving diphenhydramine at night will not aid the infant in developing an inherent circadian rhythm, and its safety has not been established in infants. Suggesting that an infant sleep with the parents may increase the risk for infant suffocation or strangulation. However, for parents who choose to share a bed with their child, certain guidelines should be followed to minimize risk: use a firm mattress, never use alcohol or drugs, never use cigarettes (babies of mothers who smoke have a higher risk of dying from sudden infant death syndrome), do not place bed against the wall, and do not use heavy and bulky blankets.

4. A 4-year-old boy presents with a 2-year history of persistent bilateral nasal congestion. His parents are worried because at night he snores loudly and has had pauses in his breathing. His symptoms occur daily and have not improved with the administration of oral decongestants, nasal corticosteroids, oral antihistamines, or antibiotics. The boy denies ocular pruritus, sneezing, or rhinorrhea. On physical examination, a low-pitched inspiratory noise is audible, and there is "cobblestoning" of his posterior pharynx. Findings on the remainder of the physical examination, including the tonsils, nose (by nasal speculum examination), and neck, are unremarkable.

Of the following, the MOST likely diagnosis is
A. adenoidal hypertrophy
B. allergic rhinitis
C. choanal atresia
D. chronic sinusitis
E. juvenile nasopharyngeal angiofibroma

Chronic nasal congestion that is bilateral and persistent in children 2 to 5 years of age should prompt evaluation for an obstructive cause, specifically adenoidal hypertrophy. Typical symptoms of adenoidal hypertrophy are chronic mouth breathing, snoring, nasal obstruction, and hyponasal speech; more severe symptoms include obstructive sleep apnea syndrome and recurrent infections (eg, sinusitis, otitis media). Because the adenoidal tissue is located at the posterior aspect of the nasopharynx, it cannot be seen in the usual nasal speculum examination; nasal rhinoscopy or a lateral neck radiograph is required. Further, although enlarged tonsillar tissue may indicate enlarged adenoid tissue, a direct correlation is not always true.

Allergic rhinitis may be seasonal or perennial and can produce symptoms of rhinorrhea and nasal obstruction. Allergic rhinitis usually does not occur until 5 to 10 years of age. The absence of sneezing or rhinorrhea, and the lack of improvement with usual allergy medications (eg, nasal corticosteroids, oral antihistamines) described for the boy in the vignette also make allergic rhinitis unlikely.

Choanal atresia and choanal stenosis are rare congenital structural malformations of the nose that can result in nasal congestion and obstructive sleep apnea syndrome. Obstruction may be unilateral or bilateral and may not present until later in infancy if not complete or bilateral. However, symptoms often are noted at birth because of difficulty during feedings.

Chronic sinusitis can present at any age because the maxillary and ethmoid sinuses are present at birth. Typical symptoms may include chronic rhinorrhea (clear or discolored) and nasal obstruction. The lack of improvement with oral antibiotics for the boy in the vignette suggests that sinusitis is unlikely, but if the evaluation for adenoidal hypertrophy was negative, sinus imaging should be considered.

Juvenile nasopharyngeal angiofibroma has been described in children as young as 2 years, but typically it presents with profuse epistaxis and a nasal mass during puberty. Other causes of obstructive sleep apnea syndrome include certain glycogen storage diseases, hypothyroidism, Down syndrome, achondroplasia, laryngomalacia, and Pierre Robin anomaly.

In younger children and infants, central causes of apnea include myelomeningocele, hydrocephalus, and Arnold-Chiari malformation. Children who have central apnea lack the ability to sense hypercapnia. Finally, a mixed apnea pattern may be present that combines the aspects of central and obstructive causes.

5. A 6-year-old boy presents for evaluation due to an episode of screaming and confusion at night. The boy's parents heard him scream in his room, and when they went to him, he exhibited rapid twitching of his left arm and hand, stiffening of his left leg, rolled back eyes, and some blinking of both eyes. He was incoherent and minimally responsive for 5 to 10 minutes. After the episode, he was weak on the left side of his body. By morning, he had returned to a normal status.

Of the following, the MOST likely diagnosis is

A. benign rolandic epilepsy
B. juvenile myoclonic epilepsy
C. night terrors
D. nocturnal frontal lobe epilepsy
E. rapid eye movement sleep behavior disorder

The first unprovoked seizure described for the boy in the vignette occurred out of sleep and was clearly partial, with vocalization, left-sided motor movements, and transient focal weakness afterward. He is otherwise completely healthy and normal. It is possible he has had other nocturnal seizures that did not awaken his parents. The most common diagnosis for such findings in childhood is benign rolandic epilepsy, a childhood-onset epilepsy that typically occurs between the ages of 3 and 13 years and resolves before adulthood. Seizures may be infrequent, and the child usually has no other problems. Inheritance is autosomal dominant. Interictal electroencephalography showing characteristic centrotemporal spikes is confirmatory. Treatment generally is not needed because the nocturnal seizures are infrequent and do not cause any problems the following day. Partial seizure medications such as carbamazepine are effective, if used.

Juvenile myoclonic epilepsy has a later onset, typically in teenage years, and is characterized by one or more of the following: 1) myoclonic jerks, usually in the morning; 2) generalized tonic-clonic seizures, often in the morning, and 3) absence seizures. Unlike benign rolandic epilepsy, juvenile myoclonic epilepsy is a form of generalized epilepsy.

Nocturnal frontal lobe epilepsy has a variable and unusual nocturnal presentation that involves complex, stereotyped dystonic movements and sometimes vocalizations that can lead to confusion with parasomnias. The associated seizures typically last fewer than 2 minutes and may cluster, occurring many times per night, at any time of the night. The affected child may have some partial recall of the events.

Night terrors are a non-rapid eye movement (REM) sleep parasomnia that can be confused with nocturnal seizures. Night terrors can start as early as 18 months of age, earlier than benign rolandic epilepsy, peak at age 5 to 7 years, and usually resolve by adolescence. The phenomenology involves a sudden arousal, vocalization, and confusion, with autonomic changes such as mydriasis and tachycardia. The movements are not repetitive clonic movements or twitching, like a seizure. The child is unconscious during the episode and does not recall it the next day. Events usually occur, at most, twice per night and during deep slow wave sleep, in the first half of the night, 1 to 2 hours after falling asleep.

REM sleep behavior disorder is an uncommon parasomnia in children. Paralysis normally occurs during REM sleep. In REM sleep behavior disorder, there is a partial or full loss of this paralysis. As a result, the individual may act out dreams that may be vivid, intense, or violent. This disorder tends to occur in adults who have neurodegenerative diseases and is associated with the use of psychiatric medications or alcohol withdrawal. However, cases have been described in children, including those who have autism.

6. A parent requests referral to a urologist for her 7-year-old son because of his bedwetting problem. He has no urinary incontinence during the day and is otherwise healthy. Physical examination reveals normal growth parameters and normal genitalia with a circumcised phallus. Dipstick urinalysis results are normal, with a specific gravity of 1.025.

Of the following, the MOST appropriate next step is
A. a complete blood count
B. psychological evaluation
C. reassurance and a follow-up visit in 6 months
D. referral to a urologist
E. renal/bladder ultrasonography

Nocturnal enuresis is defined as the involuntary passage of urine during sleep in children older than 5 years of age and occurs in approximately 15% of children at age 5 and 1% of teens at age 15. There is a male predominance and often a positive family history.

For the child who experiences no daytime wetting or dysuria and who has normal urinalysis results, such as the boy described in the vignette, the likelihood of renal pathology is low. Therefore, reassurance and a follow-up visit in 6 months are sufficient to address his problem. No other studies are indicated. Children who have both daytime and nighttime wetting (diurnal enuresis) beyond the age of 6 years; enuresis associated with encopresis; or symptoms of dysuria, frequency, or difficulty initiating urination require more evaluation and intervention.

A complete blood count is not helpful in diagnosing or treating enuresis. Urologic referral and imaging studies are not helpful unless there are symptoms or signs suggestive of structural renal disease (eg, recurrent infection, dysfunctional voiding). A careful physical examination should be performed to assess genitourinary anatomy, exclude trauma from sexual abuse, detect lumbosacral spine anomalies, and exclude bladder dilatation or abdominal mass.

Psychological evaluation is unnecessary in uncomplicated enuresis in the developmentally normal and well-adapted child younger than 8 years of age. Older children and children for whom nocturnal enuresis is related to social dysfunction, family stress, or poor self-esteem may benefit from therapy to target those effects. The use of a bedwetting alarm has the highest rate of success in young children.

Dr. Arora's Pediatric Sleep Medicine Clinical Pearls

1. All children sleep.

2. Majority of sleep issues overall have a significant behavioral component to them. This means that the parents/adolescent hold the key in treatment.

3. When treating infant and toddler sleep onset association disorders, understand that you are treating two patients: the child and the parent. Parents often have a lot of anxiety and attachment regarding their infant's sleep and safety, especially in instances of traumatic birth, IVF pregnancy or a postnatal complication. Gently remind the family that they have to be able to manage a little bit of their own anxiety in order for the child's sleep to get better.

4. When making behavioral change, things seem to look like they are getting worse before they get better. Parents must be ready to accept a few weeks of increased crying and tantrums at night in order for therapy to be effective.

5. There is no good data suggesting that Cry It Out (Standard Extinction) method is inferior to Ferber method (Graduated Extinction) method. A lot of the initial statements were made based on expert opinion. Recent research in psychology literature has shown no long-term impact on infant-maternal attachment or behavioral disorders with Standard Extinction method. The decision should be based on parent's parenting strategy and degree of acceptance of transient discomfort.

6. Parasomnias are more prominent in first half of the night and associated with poor/no recall. Nightmares are common in second half of the night and may have a good recall. Majority of the times, treatment for both involves consistent sleep, wake times, adequate sleep duration, safe environment, reassurance and a tincture of time.

7. ADHD and poor sleep are related. Not all ADHD is caused by poor sleep and conversely, not all kids with ADHD have poor sleep. Kids with ADHD have higher likelihood of behavioral insomnia, circadian rhythm disorders and OSAS. Resolution of their sleep issues leads to improvement, but not resolution of ADHD.

8. Poor sleep hygiene and inadequate sleep are more common etiologies for daytime somnolence than OSA. Excess light exposure at night via phone and TV adds to children's delayed sleep onset. For bedtimes to work, they must remain relatively consistent on the weekend. Rule of thumb is no more than 1 hour difference between weekday and weekend sleep-wake times.

9. Consider a referral for a polysomnogram in a child with signs of sleep disordered breathing and any nocturnal or daytime impact.

10. For melatonin, less is more. Due to lack of regulation and differences in formulation, melatonin is often contaminated with a lot of other psychotropic chemicals. Ensure that families keep their melatonin secure. The overall goal should be to gradually come off Melatonin when a child's sleep has become more regulated.

Dream Feed

The goal of a dream feed is to create a long stretch of uninterrupted sleep for both you and your child. Because of concerns related to your child's need to eat during the night, the dream feed will help you decide when she eats, rather than you having to wake multiple times during the night to feed her. The following provides guidance on how to implement the dream feed.

1. **Your child's dream feed should occur approximately two to three hours after she has fallen asleep at bedtime, and close to the time you usually go to bed.** For you, this dream feed should occur at _____.
2. **At that time, go in and gently rouse your child and feed her (nursing or bottle).** Then place her back in the crib (it is okay if she is asleep at this point).
3. **For all additional night wakings, respond consistently to your child but <u>do not</u> feed her.** For you, this response should be _____.
4. **When your child wakes for the final time in the morning (the time she usually wakes up to start the day), have a routine that is different than during the night.** For example, you can get her up, change her diaper and clothes, and take her in a different room before feeding her again.

The dream feed is a helpful intervention for children who still need to eat during the night but who are waking multiple times or at unpredictable times to do so. By gently waking your child to eat before your own sleep onset, you can assure that additional feedings are not needed during the night.

The Good Morning Light

The Good Morning Light is a simple way to teach your child the difference between night and day. As adults, we simply look at our clocks to tell us whether we should go back to sleep or get up. But young children do not have this ability. The following provides guidance on how to create and effectively use the Good Morning Light.

1. Plug a night-light into a timer, the kind you would use to turn your lights on and off if you were on vacation, or to turn your holiday lights on and off. Timers can be purchased at any hardware, home improvement, or large retail store. A reasonable alternative is something like "OK to Wake" alarm clock that can be found on Amazon.

If your child already uses a night-light

2. Set the timer so the light comes on about 30 minutes before your child's bedtime and goes off around the time your child is currently waking up in the morning to start the day. For you, the light should go on at 7:45 PM and off at 7:00 AM.
3. During your bedtime routine and at bedtime, point at the light and say, "The light is on, it is sleeping time!"
4. If your child wakes during the night or before his current wake time, go in and point at the light and remind him, "The light is on, it is sleeping time!"
5. Once the light goes off/ turns green in the morning, be ready to get up with your child. Point at the light and make a very big deal that the light is off and it is time to get up.

If your child does not use a night-light

2. Set the timer so the light comes on around the time your child is currently waking up in the morning to start the day. For you, the light should go on at 6:30 AM__.
3. During your bedtime routine and at bedtime point at the light and say, "The light is off, it is sleeping time!"
4. If your child wakes during the night or before his current wake time, go in and point at the light and remind him, "The light is off, it is sleeping time!"
5. Once the light goes on in the morning, be ready to get up with your child. Point at the light and make a very big deal that the light is on and it is time to get up.

After 1 to 2 weeks of pairing the light with your child's current waking time

6. Once your child understands that the light signals that it is morning time, you can move the timer so his/her wake time is 15 minutes later. You can continue to move the timer 15 minutes later every 5 to 7 days until the desired wake time is reached.
7. Once in place the Good Morning Light can also be used for naptime.

Important Things to Remember

- You must respond consistently to all night wakings for your child to understand that when the light changes, it is time to get up. For example, if you bring your child to your bed before the light changes, he/she will not look at the light to see if it is time to get up but will continue waking up hoping that eventually you'll take him to your bed.
- Make sure your child can see the light, otherwise he/she will not make the association between the light changing and waking up.
- At the same time, make sure your child cannot play with or change the timer.
- Once your child makes the association, do not change the time too quickly!! This can result in frustration and prolonged crying.

The Good Morning Light provides a quick and easy visual cue for your child to learn the difference between night and day. However, for it to really work, you need to have the light change at a time close to your child's current wake time. You also need to provide a consistent response to nighttime awakenings and not "rescue" your child before the light changing.

Nighttime Awakenings—Checking Method

Nighttime arousals are normal. All children (and adults) wake approximately two to six times every night. Problematic nighttime awakenings occur when your child cannot return to sleep without your help after she has a normal nighttime arousal. To teach your child to return to sleep during the night, you must first teach her to fall asleep independently at bedtime. Once she has learned how to fall asleep without your help, in about 2 weeks, you will see that she starts to sleep longer and longer stretches at night without waking. **Keep in mind that this treatment focuses only on bedtime, so your child's nighttime awakenings will continue for at least the next few weeks.**

If you are currently nursing/feeding or rocking your child to sleep, you must first make changes to this behavior. For example, move the nursing/feeding to the first part of your bedtime routine and then rock her to sleep. After a few nights of rocking your child to sleep, rock her for only a few minutes before placing her in the crib awake. The following provides guidance on how to help teach your child to fall asleep at bedtime without your help once you are ready to place your child into the crib awake.

1. **Have a consistent bedtime routine and a consistent bedtime in place.** For your child, this routine should include the following: _____ _____ and should end at _____ p.m.
2. **At the end of the routine, you should place your child in her crib awake and leave the room.**
3. **You can then check on your child as often as you want, but the longer you can stay out of the room, the better!** If your child gets more upset by your visits, then don't go in as often. For the first few nights you should check on your child every _____. After that, the time between checks should increase by _____ every night.
4. **When you check on your child, the visit is brief and boring.** These checks are for you to say, "I love you, it's sleeping time!" and to make sure your child is safe and okay.
5. **It is best if you do not pick your child up to comfort her, as she could snuggle into your shoulder and go right to sleep.** Then all she has learned is that if she cries long enough you will "rescue" her. However, if you feel as if your child is past the point where she will be able to calm down without a brief interaction, you may pick her up for a couple of minutes to try and calm her down. However, she must be returned to her crib awake. If when you put her back in the crib she becomes even more distressed, it may be better in the future to not pick her up again.
6. **When your child wakes during the night, you should respond immediately and consistently.** For your family, this response should be _____ _____.

(*continued*)

Important Things to Remember

- Your child is crying at bedtime because she is tired and knows how to fall asleep only with your help. She will still be very happy to see you in the morning and there will be no short-term or long-term damage by doing this sleep training.
- The second night will likely be worse than the first night! On average, most children cry 45 minutes the first night at bedtime. On the second night, most children cry 90 minutes. By the third night, most children cry about 20 minutes. So, you have to be prepared to do at least 3 nights of this intervention. If you "rescue" your child after prolonged crying and then help her fall asleep (e.g., rocking, nursing), all she has learned is that prolonged crying will get her what she ultimately wants, which is you helping her to fall asleep.
- Although unlikely, it is possible that your child will throw up. To prepare, have a second set of sheets on the bed with a pad in between and a second set of pajamas ready to go. If your child vomits, take her out of the crib and remove the dirty sheets, clean her up and change her pajamas. Then return her to the crib. Although this sounds terrible, it is necessary because children as young as 6 months can learn to vomit on demand. So if you help your child fall asleep after she vomits, she may learn to vomit every night until she gets what she wants, which is you helping her fall asleep.
- Listening to a baby cry when she is learning to sleep independently is very challenging. Here are some strategies you can use to help yourself manage your frustration, worry, guilt, and irritation (all of which are normal feelings!):
  - take a bath;
  - listen to music;
  - meditate;
  - exercise;
  - talk on the phone;
  - play a game;
  - enlist the support of your partner, friends, and/or family to take turns with you monitoring your child so that you can take a break to have time for yourself. This can also be very helpful for children who need their sleep managed in the middle of the night. Taking turns with a partner can help each of you get much needed rest.

Although challenging, this treatment is very successful as long as you are consistent and follow through with all of the recommended steps. Keep in mind that you are doing this to help your child learn to sleep. The short-term benefit is that both you and your child will start sleeping better. The long-term benefits are numerous, including improved child and parent mood, improved parent-child interactions, and improved family functioning.

Nighttime Awakenings—Parental Presence

Nighttime arousals are normal. All children (and adults) wake approximately two to six times every night. Problematic nighttime awakenings occur when your child cannot return to sleep without your help after he has a normal nighttime arousal. To teach your child to return to sleep during the night, you must first teach him to fall asleep independently at bedtime. Once he has learned how to fall asleep without your help, in about 2 weeks, you will see that he starts to sleep longer and longer stretches at night without waking. **Keep in mind that this treatment focuses only on bedtime, so your child's nighttime awakenings will continue for at least the next few weeks.**

If you are currently nursing/feeding or rocking your child to sleep, you must first make changes to this behavior. For example, move the nursing/feeding to the first part of your bedtime routine and then rock your child to sleep. After a few nights of rocking your child to sleep, rock him for only a few minutes before placing him in the crib awake. The following provides guidance on how to help teach your child to fall asleep at bedtime without your help once you are ready to place your child into the crib awake.

1. **Have a consistent bedtime routine and a consistent bedtime in place.** For your child this routine should include the following: _____ _____ and should end at _____ p.m.
2. **At the end of the routine, you should place your child in the crib awake and then stay with him until he is asleep.** For the first few nights, you can comfort or interact with your child by rubbing his head or providing verbal reassurances ("I love you, it's sleeping time").
3. **After a few nights of your child falling asleep in the crib with you present, you have two choices:**
   a. ***Move half the distance from the crib to the door and stay on the floor until your child is asleep.*** After 3 to 5 successful nights (e.g., limited crying), move to the doorway and remain until your child is asleep. After an additional 3 to 5 nights, move into the hallway and remain until your child is asleep.
   b. ***Stay with your child for a few minutes and then take a short break (1–2 minutes), returning and staying with your child until he is asleep.*** Each night, the break should get longer and longer, with the goal of your child falling asleep when you are not in the room. You should always return to ensure your child is asleep, and if not, stay with him until he does fall asleep.
4. **It is best if you do not pick your child up to comfort him, as he could snuggle into your shoulder and go right to sleep.** Then all he has learned is that if he cries long enough you will "rescue" him. However, if you feel as if your child is past the point where he will be able to calm down without a brief interaction, you may pick him up for a couple of minutes to try and calm him down. However, he must be returned to his crib awake. If when you put him back in the crib he becomes even more distressed, it may be better in the future to not pick him up again.
5. **When your child wakes during the night, you should respond immediately and consistently.** For your family, this response should be _____ _____.

(*continued*)

Important Things to Remember

- Your child is crying at bedtime because he is tired and knows how to fall asleep only with your help. He will still be very happy to see you in the morning, and there will be no short-term or long-term damage by doing this sleep training.
- The second night will likely be worse than the first night!
- Although unlikely, it is possible that your child will throw up. To prepare, have a second set of sheets on the bed with a pad in between and a second set of pajamas ready to go. If your child vomits, take him out of the crib and remove the dirty sheets, clean him up and change his pajamas. Then return him to the crib. Although this sounds terrible, it is necessary because children as young as 6 months can learn to vomit on demand. So if you help your child fall asleep after he vomits, then he may learn to vomit every night until he gets what he wants, which is you helping him fall asleep.

Although challenging, this treatment is very successful as long as you are consistent and follow through with all of the recommended steps. Keep in mind that you are doing this to help your child learn to sleep. The short-term benefit is that both you and your child will start sleeping better. The long-term benefits are numerous, including improved child and parent mood, improved parent–child interactions, and improved family functioning.

The Bedtime Pass

Children rarely want to go to bed, preferring instead to stay up and play or simply spend time with parents. The result can be bedtime protests, stalling, or "curtain calls" (getting out of bed over and over to ask for something). The Bedtime Pass is one way to teach your child to stay in bed and fall asleep independently with minimal protests. The following provides guidance on how to use the Bedtime Pass with your child.

1. **Have a consistent bedtime routine and a consistent bedtime in place.** For your child this routine should include the following: _____ _____ and should end at _____ p.m.
2. **Following the bedtime routine, your child should be placed in his own bed and given a Bedtime Pass.** A Bedtime Pass is a notecard that he can decorate or some other type of tangible ticket or token. The first few nights, you may want to give your child two or three Bedtime Passes until he fully understands how the Bedtime Pass works.
3. **Your child should be reminded that if he calls out or gets out of bed, he will have to give up the Bedtime Pass.** Otherwise, if he keeps the pass, it can be exchanged in the morning for a small age-appropriate prize (e.g., sticker, small toy, 15 extra minutes of screen time). One of the best rewards is not food or money but special time with a parent doing a favorite activity (e.g., bike ride, painting fingernails, going to the playground).
4. **Once he is in bed, you should leave the room.** If your child calls out or gets up, you should respond to his request (e.g., another hug, a drink of water), return him to bed, and remove the Bedtime Pass.
5. **If your child calls out or gets up after he no longer has a Bedtime Pass, you should return him to bed with minimal interaction, ignoring any other requests.**

Important Things to Remember

- The Bedtime Pass can also be a Nighttime Pass for those children who wake you up in the middle of the night for an unnecessary reason.
- The rewards you and your child choose need to be motivating enough that he will want to hold on to his Bedtime Pass. Over time, the rewards may have to change to keep your child motivated. In addition, after the first week, you can require your child to earn more than one Bedtime Pass in order to earn a prize.
- When responding to your child, your interactions should be very brief, minimal, and boring. Otherwise the requests and curtain calls will continue as he is getting the attention he desires.

Parental attention is very motivating to children, this is why they will make "curtain calls" or protest at bedtime. The physical presence of the Bedtime Pass allows him to decide whether he would rather have immediate attention or a reward in the morning. That said, once the pass is gone, your child will quickly learn it is better to keep the pass, as he will not be getting your attention as desired.

The Sleep Fairy

Children rarely want to go to bed, preferring instead to stay up and play or simply spend time with parents. The result can be bedtime protests, stalling, or "curtain calls" (getting out of bed over and over to ask for something). The Sleep Fairy is one way to encourage your child to stay in bed and fall asleep with minimal protests. The following provides guidance on how to use the Sleep Fairy with your child.

1. **Your child should be told that there is a Sleep Fairy who will come to visit her if she goes to bed when asked and falls asleep, leaving a small prize under her pillow.** Depending on the age of the child, prizes can include stickers, a penny, a small toy from the dollar store, or a couple of favorite treats (chocolate chips) in a bag.
2. **Following a consistent bedtime routine and bedtime, your child should be placed in bed.** She should be reminded that the Sleep Fairy will come to visit after she is asleep. Every night for 2 weeks, you should place a small prize under your child's pillow after she is asleep.
3. **After those initial 2 weeks, your child should be told that you don't know when the Sleep Fairy is going to come now because she has a lot of houses to visit.** You can leave a prize every second or third day initially and then on other random days to keep your child guessing.

Children who are old enough to understand the Tooth Fairy often respond quickly to the Sleep Fairy, who rewards them for falling asleep. By receiving a prize every night for 2 weeks, your child learns to fall asleep at bedtime with fewer protests. After that, the use of a more irregular rewards schedule will help keep your child going to bed and falling asleep, as she is unsure if this is one of the nights the Sleep Fairy will come to visit.

Take a Break

We all have our favorite ways of falling asleep; for your child, that is falling asleep with you present. "Take a Break" is used to teach your child to fall asleep independently at bedtime with minimal protests. The following provides guidance on how to "Take a Break" with your child.

1. **Have a consistent bedtime routine and a consistent bedtime in place.** For your child this routine should include the following: _____ _____ and should end at _____ p.m.
2. **At the end of the routine, you should place your child in bed awake.** If you are not already consistently staying with your child in her bed at bedtime, for the first few nights, you should simply stay with her until she falls asleep. This will help to solidify her bedtime and ability to fall asleep at this time.
3. **After bedtime and sleep onset are consistent, stay with your child for 5 to 10 minutes (or less than half the time it takes her to fall asleep), then take a break!** Tell your child, "I'll be right back, Mommy has to use the potty" or "Daddy needs to brush his teeth, I'll be back shortly." For the first few nights, this break should only be 1 to 2 minutes (or less if you have a highly anxious child or a child who won't stay in bed alone for a long time).
4. **Return from your break and praise your child for staying in bed and trying to fall asleep.** Then remain with your child until she falls asleep.
5. **Each night, your break should get a little bit longer.** The goal is for your child to fall asleep while you are not in the room.
6. **Always return to check on your child after a certain amount of time.** If she is not asleep, stay with her until she falls asleep.
7. **If your child wakes during the night, you should respond immediately and consistently.** For your family, this response should be _____ _____.

Important Things to Remember

- As your break gets longer each night, be sure to set a timer to remind you to go back and check on your child.
- If your child gets out of bed before you return, return her to bed with minimal interaction, simply saying, "It's sleeping time, you need to stay in bed." The next night, you may need to shorten your break and then provide even more verbal praise for when the child does stay in bed as instructed.

Some children cannot fall asleep without a parent close by, whether in their bed or in their room. Take a Break is a gradual way to teach your child to fall asleep at bedtime without you present. Although it takes a little while to reach the goal of your child falling asleep independently, this approach reduces "curtain calls" and bedtime protests, making bedtime less stressful for everyone in the house.

The Second Goodnight

Children rarely want to go to bed, preferring instead to stay up and play or simply spend time with parents. The result can be bedtime protests, stalling, or "curtain calls" (getting out of bed over and over to ask for something). The Second Goodnight is one way to teach your child to stay in bed and fall asleep independently with minimal protests. The following provides guidance on how to use the Second Goodnight with your child.

1. **Have a consistent bedtime routine and a consistent bedtime in place.** For your child, this routine should include the following: _____ _____ and should end at _____ p.m.
2. **For each step of the bedtime routine, your child should earn a token for completing the task in a timely fashion.** Some examples of tokens are poker chips, tickets, or marbles placed in a jar. You will need to create some type of reward system where he can exchange tokens in the morning for a small age-appropriate prize (e.g., sticker, small toy, 15 extra minutes of screen time). One of the best rewards is not food or money but special time with a parent doing a favorite activity (e.g., bike ride, hitting baseballs, painting fingernails).
3. **Following a consistent bedtime routine and at a consistent time each night, your child should be placed in his own bed.**
4. **Once he is in bed, you should leave the room and return for a "second goodnight."** If your child is still lying quietly in bed, he earns a token.
5. **If your child calls out or gets out of bed, return him to bed with minimal interaction other than to remind him it is bedtime.** Then remove one token.
6. **The first few nights, you should return for multiple goodnight checks (e.g., every 5 minutes).** Each time, the child should be verbally praised and given another token. After the first few nights, the time in between goodnight checks should be increased each night.
7. **If your child wakes during the night, you should respond immediately and consistently.** For your family, this response should be _____ _____.

Important Things to Remember

- Although it may feel as if you are bribing your child for staying in bed, you are actually rewarding him for doing what you want. Over time, the need for rewards at bedtime will decrease as your child learns the skill of quickly and easily falling asleep at bedtime.

Parental attention is very motivating to children, this is why they will make "curtain calls" or protest at bedtime. The Second Goodnight provides your child the desired attention, but in this case for the behavior that you want to see—him staying in bed and falling asleep. By regularly checking on your child and rewarding him for staying in bed, you are providing brief, frequent, and positive interactions that will reduce the stress of bedtime and help your child fall asleep easier.