

Table 15-2 Prevention of Pediatric Behavioral Sleep Disorders

Consistent and appropriate bedtime and wake-up time
Consistent bedtime routine (~30 min) to cue sleep
Consistent ambient noise, light, temperature in bedroom
Adequate food, hydration, socialization, and physical activity during the day
No television or other electronics in bedroom
Avoidance of naps (unless developmentally appropriate)
Caffeine avoidance
Child feels safe and protected
Child allowed to develop self-soothing strategies
Parents are comfortable setting limits/boundaries

These include having a consistent and appropriate bedtime and bedtime routine, and close attention to sleep hygiene (see Table 15-2). A bedtime routine should consist of three or four soothing activities that help calm the child and signal that it is time for sleep. It should last no more than 30 minutes. Activities may include bathing, brushing teeth, reading a story, or singing a song. Even older children and adolescents require a consistent pre-bed routine. A transitional object such as a blanket or stuffed animal can be used to promote positive sleep associations and encourage self-soothing. The bedtime should be set early enough to allow for sufficient nighttime sleep, and both bedtime and morning wake time should be consistent, including on weekends. Televisions and other electronic devices should be removed from the bedroom because these can lead to delayed sleep onset and maladaptive sleep associations.

Sleep-onset association disorder in infancy usually can be prevented by parental understanding of infant sleep physiology, developmentally appropriate expectations, and planning the infant sleep environment to coincide with family needs. It is recommended that infants be put in bed drowsy, but still awake, after they have had a diaper change, food, and comfort. Some toleration of infant crying is required for the infant to achieve self-regulation of sleep. A safe sleep environment is essential. It is important for parents to understand that it is normal for their infant to wake frequently for the first 6 weeks before settling into a routine of waking every 3 to 4 hours for feeding. Infants typically do not sleep through the night before 6 months of age, and some do not sleep through the night before 12 to 18 months of age. Even though co-sleeping (mother and infant sleeping together) is common, it is not recommended because of increased risk of SIDS. Proactively considering the desirability of bed sharing allows parents to be in control rather than ceding control to the young child.

Behavioral interventions comprise the mainstay of treatment for behavioral sleep disorders. In addition to meticulous attention to sleep hygiene and bedtime practices, difficulty falling asleep and bedtime resistance in young children are treated by specific behavioral strategies. *Systematic ignoring* consists of not responding to a child's demands for parental attention at bedtime. *Unmodified extinction* ("cry it out") involves putting the child to bed and then ignoring the child's demands until the next morning. *Graduated extinction* involves waiting successively longer periods of time before briefly checking on the child. Both methods are effective in decreasing bedtime resistance and enabling young children to fall asleep independently. Positive reinforcement strategies can also be used in preschool-aged and

older children. These include rewards (e.g., stickers) for meeting a bedtime goal (e.g., staying in bed). Rewards should be provided immediately (first thing in the morning) to increase effectiveness and better link the reward with the positive behavior. Children with nighttime fears can benefit from behavioral therapy aimed at reinforcing feelings of safety.

Infrequent or nonintrusive parasomnias do not need treatment beyond education and reassurance. Ensuring a safe environment is important. Sleep terrors are best managed by minimal intervention, because conversation with the child is impossible during the episode. Anticipatory brief awakening of the child shortly before the typical occurrence of a parasomnia may be effective in aborting the event. Children with frequent or prolonged parasomnias may need a sleep study to evaluate for possible coexisting sleep disorders or nocturnal seizures. Medications that suppress slow-wave sleep may be indicated in severe cases.

Circadian rhythm disorders are also treated by ensuring sleep hygiene practices and gradual resetting of the biologic clock. Bedtime fading involves allowing the child to go to bed at the time he or she naturally feels tired, then gradually advancing the bedtime forward over the course of several weeks.

Rarely children with insomnia are treated pharmacologically. Melatonin (dose, 2.5 to 10 mg) has soporific properties useful in treating delayed sleep phase syndrome. It has been used successfully in both children with normal development and those with developmental delays. Melatonin is available without prescription in stores that sell dietary supplements. The α -agonist clonidine acts preferentially on presynaptic α_2 neurons to inhibit noradrenergic activity. Somnolence is a side effect of clonidine, which can be put to use in cases of refractory sleep difficulties; this is an *off-label* use in children. Clonidine is usually started with a dose of 0.05 mg at bedtime and increased to 0.1 mg if needed. There are data on treating children as young as 4 years old with clonidine. Weaning off clonidine is recommended at the end of treatment.

Complications

The most obvious and serious complication associated with childhood sleep disorders is impairment of cognitive ability and emotional regulation. This impairment puts children at risk for school failure, family difficulties, and social problems. It is likely that sleep-deprived children are at increased risk for acute illness and psychiatric disorders.

Suggested Reading

- Blass EM, Camp CA: Changing determinants of crying termination in 6- to 12-week-old human infants, *Dev Psychobiol* 42:312-316, 2003.
- Glazener CM, Evans JH, Peto RE: Alarm interventions for nocturnal enuresis in children, *Cochrane Database of Syst Rev*(2): CD002911, 2005.
- Mindell JA, Owens JA: *A Clinical Guide to Pediatric Sleep: Diagnosis and Management of Sleep Problems*, ed 2, Philadelphia, 2010, Lippincott Williams and Wilkins.
- Potegal M, Davidson RJ: Temper tantrums in young children: 1. Behavioral composition. 2. Tantrum duration and temporal organization, *J Dev Behav Pediatr* 24:140-154, 2003.
- Rubin G, Dale A: Chronic constipation in children, *BMJ* 333:1051-1055, 2006.
- Subcommittee on Attention-Deficit/Hyperactivity Disorder. Steering Committee on Quality Improvement and Management Wolraich M, Brown L, Brown RT, et al: ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents, *Pediatrics* 128(5):1007-1022, 2011.