
CHAPTER 14

Pediatric Sleep Disorders

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Sleep problems are highly common, occurring in 25–40% of typically developing children (Meltzer & Mindell, 2009). When children and adolescents do not obtain sufficient sleep, there are numerous consequences, affecting growth, development, cognitive functioning, performance, health, mood, and family functioning (Mindell & Owens, 2009). Further, disrupted sleep can often be associated with concomitant physical or psychiatric illness.

Psychologists play a primary role in the treatment of pediatric sleep disorders, with many pediatric sleep centers including psychologists as part of their teams. One study (Meltzer, Moore, & Mindell, 2008) of 265 consecutive patients evaluated in an interdisciplinary sleep center that included attendings in pulmonary medicine, neurology, and psychology found that over half of the patients seen had comorbid medical diagnoses and that 31% had comorbid psychiatric diagnoses. Over one-third of patients received at least one behavioral recommendation.

As with most areas of pediatric psychology, a thorough evaluation of a wide array of underlying medical and psychiatric contributors to sleep disturbances is essential, especially as the same symptom can be related to physiological or behavioral causes. In an exemplary situation, the patient is

evaluated by an interdisciplinary team that has a wide array of expertise, but a thorough assessment within a psychological practice that incorporates an understanding of the plethora of factors that can contribute to sleep disturbances can be done (for complete information on assessment, see Mindell & Owens, 2009). This chapter provides an overview of three cases that exemplify treatment of behaviorally based interventions for a broad spectrum of sleep disturbances.

CASE EXAMPLE 1: OSCAR

Oscar was an 8-month-old boy who presented with his mother with difficulties falling asleep at bedtime and naptime without nursing, as well as frequent night wakings.

Assessment and Further Evaluation

Clinical Interview

Sleep History. Oscar had an evening routine that included a bath at approximately 8:30 P.M., followed by reading stories with his 3-year-old sister, and then being nursed to sleep around 9:15–9:30 P.M. Oscar was then placed in his crib asleep, which was in his parents' bedroom. Once put down at bedtime, he would often wake and begin crying. His mother would then have to pick him back up and nurse him until he returned to sleep. Once asleep, Oscar woke 2–4 times per night. His mother would again nurse him to help him return to sleep. By the second waking, she would bring him to her bed, where he would continue to wake, crying, at least another two times during the night. Nap times were also difficult, with Oscar's mother again nursing him to sleep, but she would then need to hold him throughout nap time so that he would remain asleep.

Other Relevant History. Oscar was born full term with no complications. He had a significant history of reflux-related symptoms, which had not been treated. His mother was highly tearful throughout the appointment. She had been assessed for depression at 6 weeks postpartum but had not pursued treatment, as she was "overwhelmed." She did have an appointment scheduled for the following week to see a therapist. Her husband was a full-time MBA student, and the family lived in a one-bedroom apartment with a den, where the older daughter slept. The family had moved to the area 1 year prior, and the mother had no local support system. She did attend a play group, but it only met once every 2 weeks.

2-Week Sleep Diary

Oscar's mother completed a daily sleep diary for 2 weeks prior to the appointment (Figure 14.1). Highly fragmented sleep was indicated throughout the night, with highly variable nap times.

Differential Diagnosis

Reflux is highly common in infants and often contributes to sleep difficulties. Reflux could be contributing to Oscar's nighttime awakenings but would not account for his difficulties in falling asleep independently. Oscar clearly met diagnostic criteria for behavioral insomnia of childhood—sleep onset association type (American Academy of Sleep Medicine, 2005), given his association of nursing with sleep onset at bedtime, following naturally occurring night wakings, and at nap times.

Intervention and Outcomes

Oscar was referred to a gastroenterologist for evaluation for reflux. His symptoms had been progressively getting better, so no medical intervention was implemented.

Behavioral interventions are highly successful in the treatment of bedtime problems and night wakings in infants and toddlers (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006). First, an earlier bedtime of 7:00 was established, as late bedtimes are noted to be associated with increased difficulties falling asleep and maintaining sleep in young children (Mindell, Meltzer, Carskadon, & Chervin, 2009). Second, nursing was moved to the start of the bedtime routine and occurred in the living room rather than in the bedroom. During the first week, his mother continued to rock him to sleep at bedtime. Once nursing was no longer associated with falling asleep at bedtime, a graduated extinction approach was recommended, with Oscar to be put down awake at bedtime and his parents to institute a checking method every 5–10 minutes until he fell asleep. It was recommended that Oscar's father manage the bedtime sleep training, as his mother was unsure whether she could be consistent if Oscar became upset. While helping Oscar to fall asleep independently, his mother was to respond consistently to night wakings, nursing him back to sleep. After 5 days, Oscar was falling asleep easily on his own at bedtime, and he began to sleep for significantly longer stretches at night. At week 3, his mother stopped all nighttime nursing, and at 1-month follow-up Oscar was sleeping well at night. His mother was starting to work on putting him down awake at nap times.

Issues and Challenges

Postpartum depression was a significant concern in this case, and it is known to be associated with sleep disruption (Dorheim, Bondevik, Eberhard-Gran, & Bjorvatn, 2009). Oscar's mother was encouraged to keep her upcoming appointment with a therapist. A thorough evaluation at the sleep clinic appointment was conducted to ensure that Oscar's mother was not at risk of harming herself or either of her children, and recommendations were made as to what she should do if she began having such thoughts. A plan was developed to have Oscar's father manage more of the child care over the upcoming weeks, while the sleep intervention was being implemented. Oscar's mother was also encouraged to initiate contact with other mothers from her play group on a more frequent basis. Initially, daily calls were made with the mother to provide support and continually assess her functioning.

CASE EXAMPLE 2: TONY

Tony was a 9-year-old boy with high-functioning autism spectrum disorder (ASD), eczema, and allergic rhinitis who presented, with his parents, with complaints of a lifetime history of prolonged sleep onset latency, as well as frequent and prolonged night wakings.

Assessment and Further Evaluation

Clinical Interview

Sleep History. Tony's sleep routine included a "bedtime goal" of between 8:00 and 8:30 P.M. on weekdays and 9:00 P.M. on weekends. However, he would often "dawdle" at bedtime and not want to get ready for bed. Once he was finally in bed it would take about 60 minutes for him to fall asleep. Most nights his mother would return to the room and rub Tony's back until he was "pretty close to asleep." His mother thought that on some nights he was asleep prior to her leaving the room.

While asleep, Tony had frequent congestion at night but no symptoms of sleep-disordered breathing. He would wake once each night and come into his parents' room. Sometimes he would complain of itching or a bad dream, but most often he would complain that he could not sleep. His parents would attempt to return him to his bed, but most nights he would return to the parents' bed. These night wakings would last up to 2 hours. Tony did not nap during the day.

Other Relevant History. Tony was diagnosed with high-functioning ASD and was taking hydroxyzine twice a day for his eczema. He was also

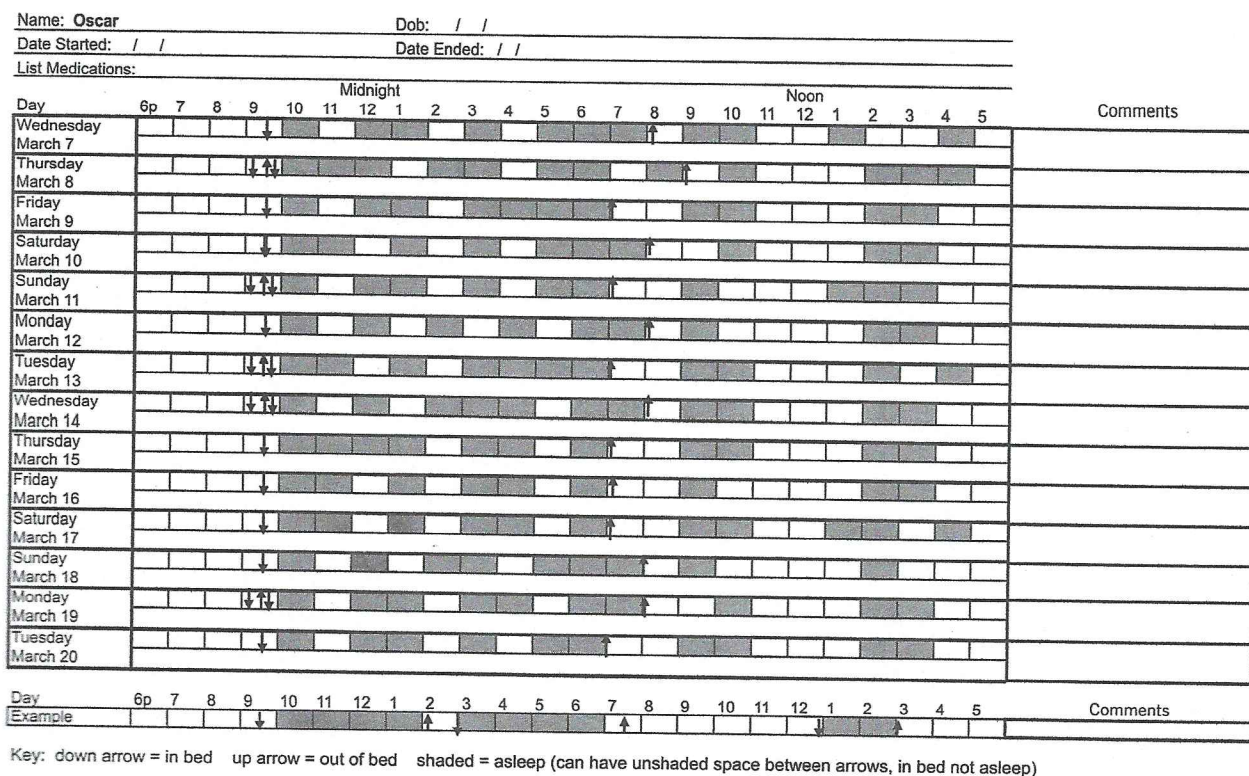


FIGURE 14.1. Sleep diary for Oscar.

taking "half a dropper" of melatonin, although his parents did not know the dosing of the melatonin.

2-Week Sleep Diary

Prior to his appointment, Tony's parents completed a daily sleep diary for 2 weeks (Figure 14.2). A prolonged sleep onset latency was recorded for only one night; however, prolonged night awakenings were clearly visible every night.

Differential Diagnosis

A number of factors likely contributed to Tony's sleep difficulties. First, 44–83% of children with ASD have difficulties with sleep initiation, sleep maintenance, early morning sleep termination, and/or shorter total sleep duration (Richdale & Schreck, 2009). This would suggest a possible diagnosis of insomnia due to a psychiatric condition. Second, 60–83% of children with eczema have difficulties with sleep initiation and/or sleep maintenance due to itching (Canferman, Kennedy, Gold, Martin, & Lushington, 2010), suggesting a possible diagnosis of insomnia due to a medical condition. Third, Tony's bedtime resistance, followed by an inability to fall asleep or return to sleep without a parent present, is suggestive of behavioral insomnia of childhood, combined type. Any one of these diagnoses would have been appropriate in this case.

Intervention

Tony's parents were encouraged to follow up with his allergist to better manage Tony's eczema. The following plan was designed to target the behavioral aspects of Tony's sleep problems. First, a bedtime chart was recommended to prevent bedtime stalling and resistance. A bedtime chart includes a picture of each step of the bedtime routine (e.g., snack, bath, toilet, toothbrush, book, bed). In general, children with ASD respond well to consistent routines and visual cues. Thus this chart provides a constant reminder and a predictable routine every night. Second, to help teach Tony to fall asleep independently, his mother began taking a short break at bed-time, returning to help Tony fall asleep. Each night this break was progressively longer, with the goal of Tony falling asleep while his mother was in the room. Once he fell asleep, Tony earned an immediate reward of a sticker under his pillow. Finally, as melatonin has been shown to improve sleep onset in youth with ASD (Doyen et al., 2011; Malow et al., 2011; Ros-sterick et al., 2011), Tony began taking a full dropper of melatonin (which was the equivalent of 1 mg of melatonin) 30 minutes before bed.

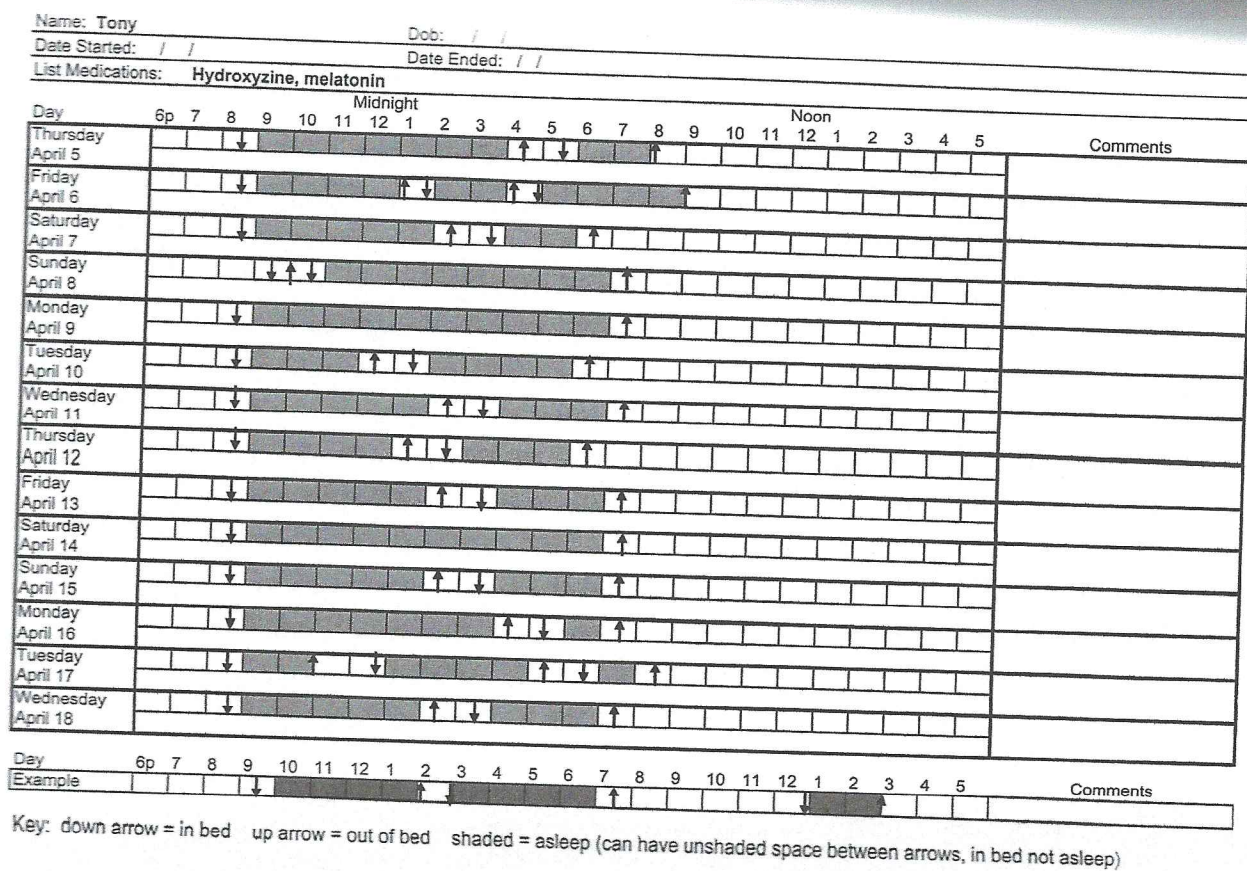


FIGURE 14.2. Sleep diary for Tony.

For his night wakings, Tony was given a "nighttime pass" each night (Moore, Friman, Fruzzetti, & MacAleese, 2007). If he came into his parents' room seeking attention, he would have to give up the pass. However, if he chose to stay in his own bed, he could save and exchange the passes for small rewards (e.g., a bike ride with his father, an extra 5 minutes of television).

Outcomes Assessment

Tony had a difficult time falling asleep the first night but began sleeping through the night immediately, using his nighttime passes for desired rewards. On night 5, he again had difficulty falling asleep, but his parents noted on the diary that this was due to a special event that day that got him overexcited. On night 10 Tony had two night wakings, but his parents attributed this to coughing that required cough syrup, and he returned to sleep in his own bed. At the follow-up appointment the family reported a less stressful bedtime routine, shorter sleep onset latency (with Tony consistently falling asleep independently), and almost no night wakings.

Issues and Challenges

As previously noted, sleep problems are highly prevalent among children with ASD, as well as children with chronic medical conditions such as eczema. For children with ASD, the etiology of sleep problems is not well understood (Richdale & Schreck, 2009). However, individually tailored behavioral interventions have been shown to be highly effective (Piazza, Fisher, & Shener, 1997; Reed et al., 2009; Reynolds & Malow, 2011). Further, parents of children with ASD prefer behavioral interventions over pharmacological interventions (Wiggs & Stores, 1996). That said, a recent randomized placebo-controlled trial found that melatonin in combination with behavioral treatment was the most effective short-term intervention for children with ASD (Cortesi, Giannotti, Sebastiani, Panunzi, & Valente, 2012).

CASE EXAMPLE 3: ALLISON

Allison was a 15-year-old girl who presented, with her mother, with complaints of a multiyear history of difficulties falling asleep at bedtime, as well as infrequent night awakenings.

Assessment and Further Evaluation

Clinical Interview

Sleep History. Allison's sleep routine included taking a shower at 10:00 P.M., after doing homework, followed by texting her friends and

being on the computer while in bed. Between 11:00 and 11:30 P.M. she would turn out the lights and "toss and turn," finally falling asleep between 1:00 and 2:00 A.M. If she felt frustrated that she was not asleep, she would turn her computer back on or text. Most nights, Allison reported waking between 3:00 and 4:00 A.M. and would not return to sleep for another 30–45 minutes. Her wake time on school days was 6:00 A.M. On weekends, lights-out was usually between midnight and 1:00 A.M., and it would also take her 1–3 hours to fall asleep. She would usually "sleep in" until 11:00 A.M. on weekends. Allison reported having sleep problems for the past few years, although it had gotten worse in the past year.

Allison had no symptoms of sleep-disordered breathing. She did not report any uncomfortable sensations in her legs at bedtime, and she was not described as a restless sleeper. Allison reported feeling tired during the day, especially after a poor night's sleep, but she did not report any significant daytime sleepiness, and she did not take any planned or spontaneous naps. Allison stated that she often worried throughout the day about how well she was going to sleep that night and "dreaded" bedtime.

Other Relevant History. Allison reported that she thought that she was more anxious than her peers. She excelled in school, although her poor sleep had begun to interfere with her school performance over the past year. Family history was significant for insomnia in her mother.

2-Week Sleep Diary

Prior to her appointment, Allison completed a daily sleep diary for 2 weeks (Figure 14.3). Allison consistently reported a sleep onset latency of 1–3 hours, and night wakings were indicated on 10 of the 14 nights recorded.

Differential Diagnosis

Poor sleep hygiene is a common reason that adolescents have difficulty falling asleep. Although Allison did engage in electronic use prior to bed and sometimes after lights-out, she did have a consistent bedtime and bedtime routine, she did not take daily naps that interfered with sleep onset, and she did not drink any caffeinated beverages. Other sleep disorders, primarily restless legs syndrome (RLS) and delayed sleep phase disorder (DSPD), can also result in difficulties falling asleep. RLS involves uncomfortable sensations in the legs, primarily at bedtime, and an uncontrollable urge to move the legs, which relieves the sensations (American Academy of Sleep Medicine, 2005). Allison denied symptoms of RLS. DSPD is highly common during adolescence, with a prevalence rate of approximately 7% (Mindell & Owens, 2009). However, in DSPD there is typically no difficulty falling asleep when lights-out is at the adolescent's naturally occurring sleep

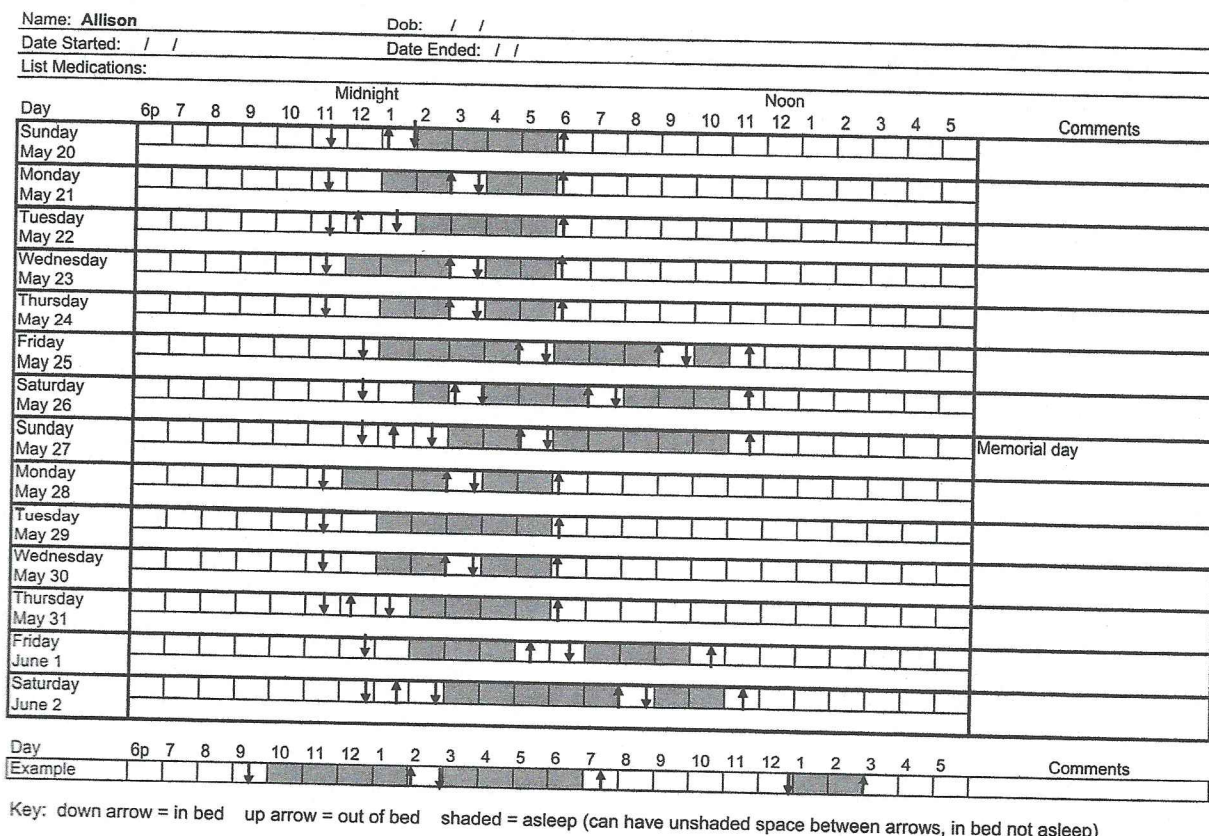


FIGURE 14.3. Sleep diary for Allison.

onset time, and rarely are night awakenings present. Allison had a prolonged sleep onset latency regardless of bedtime, as well as frequent night awakenings. Allison clearly met diagnostic criteria for psychophysiological insomnia (American Academy of Sleep Medicine, 2005), as indicated by (1) complaint of difficulties initiating and maintaining sleep for at least 1 month, (2) heightened arousal about sleep, including excessive focus on anxiety about sleep, (3) adequate opportunity and circumstances for sleep, and (4) daytime impairment. Approximately 9–13% of adolescents experience chronic insomnia, with up to 35% experiencing frequent insomnia symptoms (Dohnt, Gradisar, & Short, 2012). Insomnia is more common in girls postpuberty.

Intervention

A behavioral intervention plan was developed in conjunction with Allison and her mother, starting with stimulus control. This included (1) no activities in bed that were not conducive with sleep (e.g., electronics use), (2) moving her alarm clock across the room so that she was not watching the clock throughout the night, (3) moving lights-out closer to her naturally occurring sleep onset time, (4) getting in bed only when she was sleepy (in this case, 1:00 A.M.), and (5) getting out of bed if she was not asleep after 15–20 minutes and engaging in a nonstimulating activity (e.g., reading a book that she had read many times), only returning to bed when she felt sleepy. Once she began falling asleep more quickly, Allison was instructed to begin moving her bedtime earlier by 15 minutes every few nights.

Outcomes Assessment

Although resistant at first to the idea of getting out of bed when she was not asleep, Allison found that she had to get out of bed only one time per night for the first week or so. She found that going to bed much later was quite helpful, as this initially restricted her sleep duration, with the increased sleepiness reducing her cognitive arousal at bedtime. After 2 weeks, Allison was falling asleep within 20–30 minutes most nights.

Issues and Challenges

Behavioral interventions are highly effective for insomnia (Morin, Hauri, et al., 1999), although there is limited research on its use with adolescents. As expected, the recommendation to limit electronics use in bed was met by resistance, as well as the instruction to get out of bed after 20 minutes of wakefulness. Furthermore, families may expect pharmacological

management with immediate results and can be frustrated by behavioral recommendations that require significant effort and diligence. However, there are no Food and Drug Administration–approved medications for insomnia in children and adolescents. Furthermore, research indicates that behavioral interventions are as effective as medications in the short term and have better outcomes long term (Morin, Colecchi, Stone, Sood, & Brink, 1999).

SUMMARY

As exemplified by the preceding cases, the key to successful treatment is the inclusion of a thorough evaluation, as well as tailoring evidence-based interventions to meet the needs of individual patients. Referral to a medical sleep specialist should occur in situations in which a child or adolescent has symptoms of other underlying sleep disrupters (e.g., obstructive sleep apnea) or excessive daytime sleepiness despite sufficient sleep duration. For patients who fail to respond to common behavioral interventions, a referral to a behavioral medicine specialist with expertise in treating sleep problems may be warranted.

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