

The sleepless child approaches for the GP

The GP has an important role in managing the sleepless child and providing advice and reassurance to the child's parents. Often parents do not discuss their child's sleeplessness with their doctor because they feel guilty or inadequate.

ARTHUR TENG

MB BS(Syd), DipPaed(NSW), FRACP

KIT CHEE

MB BS, Hons (Syd), FRACP

Dr Teng is Staff Specialist Paediatrician and the Director of Sleep Medicine, Sydney Children's Hospital, Randwick, and Associate Physician at the Royal Prince Alfred Hospital and The Children's Hospital at Westmead, Sydney. Dr Chee is Consultant Paediatrician at The Sydney Learning Clinic, Edgecliff, and Associate Physician at The Children's Hospital at Westmead, Sydney, NSW.

Sleeplessness in children is a common problem that is often trivialised. Its psychosocial effects are often underestimated. The sleepless child may be a significant factor in the development of post-natal depression, marital discord and child abuse. For the child, sleep disruption can be the cause of learning, attentional and behavioural problems. Sleep disorders, including disorders of initiating and maintaining sleep, can affect children from newborn infants to teenagers and they often precede adult sleep disorders.

Assessment

When assessing the sleepless child, the GP should take a careful history and examination. Ask the parents to keep a sleep diary for at least two weeks (see the box on page 51). Sometimes this in itself is therapeutic as it helps the parents to note objectively the sleep patterns of their children and indicates that the symptoms are being taken seriously. Parental expectations of what constitutes normality (see the box on page 52) can sometimes be an issue.

The time of onset of a sleep problem is usually an important pointer to the cause – for example,

the problem may have started during a time of stress, such as after a burglary or parental separation, or during peer conflict.

Types of sleep problems causing sleeplessness

It is useful to divide sleep problems into three groups:

- disorders of initiating sleep
- disorders of maintaining sleep
- problems with sleep phases.

Disorders of initiating sleep

Some children have difficulty in settling at night; this can start well before bedtime and involves the sleep onset routine. Parental discipline and limit setting are important to help establish a good sleep onset routine.

Bedtime refusal

A child may oppose the suggestion of going to bed. Keeping to a regular bedtime routine helps to prevent this behaviour.

The sequence of activities leading to bedtime should be kept constant and predictable so that

IN SUMMARY

- Sleeplessness in children is common and often trivialised; however, its psychosocial effects cannot be overestimated.
- When assessing the sleepless child, GPs should take a careful history and examination.
- Sleep problems can be divided into disorders of initiating sleep, disorders of maintaining sleep and sleep phase disorders.
- Other sleep disorders such as obstructive sleep apnoea, which can disrupt sleep, should be excluded.
- Children need to learn to fall asleep alone without parental intervention.
- Often parents of children who don't sleep well need respite care and encouragement.

This image is unavailable due to copyright restrictions

the child feels secure with this structure. For the primary school-aged child, the sequence of bedtime activities can be set out explicitly in words or pictures. This word or picture list provides the visual cue that reinforces the verbal cue from parents. Such visual lists provide permanent reminders, unlike verbal instructions, which are transient.

There should be six or fewer activities in the bedtime routine; these may include switching off the television, brushing teeth, getting changed, reading a story, hopping into bed, and lights out. If brushing teeth and changing are instructions that the child defies, preventing him or her from getting into bed, these activities should be completed at least half an hour before bedtime.

In some cases, such as when parents work late or undertake shift work, disruption of the regular bedtime routine cannot be avoided and the inconsistency from one night to another may generate limit-testing behaviour. Building in set variations to the routine may be helpful for such families. For example, in the case of the mother working in the evening, the change in routine may involve the father supervising bedtime half an hour later than usual after he has returned home from work. By clearly telling the children about this change in routine, and repeating this

same alternative routine whenever the mother works in the evening, parents will lessen any debate generated by inconsistencies.

Sleep onset association disorder

Although most parents find it hard to believe, children have a very strong propensity physiologically for sleep onset; however, they need a set

Compiling a sleep diary

Parents should record the following information during each 24-hour period:

- The time the child first gets into bed at night
- The length of time it takes the child to fall asleep – i.e. the sleep latency
- The time the child falls asleep – i.e. the time of physical sleep onset
- The time and duration of arousals during the night
- The time the child wakes up in the morning – i.e. the morning sleep offset time (note also if the child is woken up by an alarm)
- The length of time the child spends lying in bed awake in the morning
- The time the child gets out of bed in the morning
- The time and duration of daytime naps
- The sleep environment – e.g. whether in the child's own room, the distance from the parents' room, etc.
- Bedtime rituals, including the time of bathing
- The time the child eats normal meals and snacks during the day
- The time the child exercises

of environmental cues that are consistent. For some children, the sleep onset association could be having a bottle in their mouth. Other examples include being rocked to sleep or, in an extreme

case, being driven around the block by the parent. When a child can fall asleep only under specific circumstances such as these, he or she has a sleep onset association disorder.

Children (and adults) can have normal brief arousals throughout the night. During some or all of these the child with a sleep onset association disorder may need the same set of sleep onset associations to fall back to sleep. For the child who is used to sucking a dummy at sleep onset, the parents may have to go through the same ritual in the middle of the night of giving the child the dummy before he or she returns to sleep. Some parents use the so-called 'sprinkling technique' if their child is dependent on the dummy. In this case six or more dummies are scattered inside the cot to increase the chance of the child picking one up, putting it back in his or her mouth and falling back to sleep. For another child a 'security blanket' could be the sleep onset association.

The treatment for sleep onset association disorder is to minimise the active participation of parents in the sleep onset routine and substitute this with a special 'sleep-toy' or 'sleeping-buddy'. This new toy is given to the child during the new sleep onset routine, such as when the child is read to in the lounge before bedtime. The toy is locked away during the day. Once the child is used to having the new sleep onset associations, hopefully he or she will be able to fall back to sleep without parental help during spontaneous arousals in the night.

Getting into the parents' bed

For the child who tries to sleep in the parents' bed, prevention is better than cure. Often, allowing the child to lie in the parents' bed during an illness is the precipitating event. Once the illness is over, parents should firmly instruct the child to sleep in his or her own bed. Any movement to the parents' bed in the middle of the night should be tackled with the same firmness. The parent may need physically to guide the child back to his or her own bed, and there should be no lingering, hugs or kisses. A quick goodnight and definite breaking of eye contact are appropriate.

Sleep in children and adolescents

Newborns

- REM and NREM sleep states differentiated in third trimester
- Three sleep states in term newborns: active, quiet and intermediate; enter sleep through REM
- Total sleep time: 16 to 20 hours/day; equal diurnal and nocturnal sleep amounts
- Sleep episodes 3 to 4 hours, 1 to 2 hours awake; breastfed newborns have more frequent waking

Infants

- Critical sleep reorganisation period at 8 to 12 weeks; establishment of diurnal cycle
- Development of NREM sleep by 6 months; decreased REM amounts
- At 6 months, total sleep time 13 to 14 hours; sleep episodes 6 to 8 hours
- 'Sleeping through the night': 70 to 80% of infants at 9 months

Toddlers

- Total sleep time: 12 to 14 hours
- Most give up second nap at about 1 year
- Developmental issues: separation anxiety leading to night time fears; mastery of independent skills leading to power struggles
- Sleep problems common (20 to 40% of all toddlers)
- Important to establish bedtime routines, transitional objects

Preschoolers

- Total sleep time: 11 to 12 hours
- Sleep cycles (REM/NREM): 90 minutes

- By age 4 to 5, many children have given up regular daytime naps
- 'Signaled' night wakings occur often (in up to 60% of preschoolers); parental reinforcement to return to sleep important
- Sleep problems may become chronic

Children aged 6 to 12 years

- Total sleep time: 9 to 11 hours (10 to 11 hours in 6- to 7-year-olds; 9 to 9.5 hours in 8- to 12-year-olds)
- Sleep pattern becomes more stable, night to night consistency
- Low level of daytime sleepiness; naps are rare
- School and lifestyle influences may result in later bedtimes, earlier rise times, irregular sleep/wake schedules and consequently insufficient sleep

Adolescents

- Average sleep time in high school students: they need 9 to 9.25 hours/night; they get 7.25 hours
- Delayed sleep onset may develop due to development of a relative phase delay at puberty or to environmental factors; advanced wake times (sleep offset) may develop due to earlier school start times
- Decreased sleep/wake regularity may occur due to discrepancy in weekday and weekend sleep cycles
- Daytime alertness may be reduced
- Daytime sleep tendency at mid-puberty is increased
- Parental control over sleep time reduced

Source: Owens J. Sleep in children and adolescents [slide set]. Sleep Academic Award Program and the American Academy of Sleep Medicine, slides 8-15. (www.asda.org/MEDSleep/medsleepprogram.htm)

For the more obstinate child, the controlled crying technique, which was originally described by Dr Christopher Green in 1980,¹ is useful (see the parent handout on this page).

Reward systems are useful for persuading children to remain in their own beds; however, the reward must be of sufficient value to them. Providing rewards that are generated from the child's own requests for 'luxuries' is usually the best way to ensure this. The rewards might include a request for a favourite dessert or a special toy, or for time playing 'screen games'. In addition to keeping to the reward plan, parents should be encouraged to shower praises the next morning if their child has remained in his or her bed all night.

'Sleep hygiene' issues

Often children have poor 'sleep hygiene', meaning that they do not prepare their minds and bodies for sleep. For example, they might watch horror videos before going to bed and then have difficulty in going to sleep or they wake up with nightmares. The box on page 57 lists some principles of good sleep hygiene.

Children who have problems falling asleep should not have caffeine containing food or drinks (e.g. chocolate or cola drinks) after about noon. They should also not go to bed until they are ready to go to sleep. It is bad sleep hygiene to spend an hour reading in bed, watching television, or listening to music before going to sleep. If children want to do these things, they should do them, for example, in a quiet corner of the lounge room before going to bed. The aim is to spend a minimum amount of time in bed before trying to go to sleep. For a child, the only reason to go to bed should be to sleep.

Heavy meals and exercise immediately before bedtime should be avoided.

Disorders of maintaining sleep

Some children have no problems in going to sleep initially but wake later in the night. These nocturnal awakenings, which

The controlled crying technique*

- Your toddler wakes up during the night, say at 3 a.m. crying gently initially, then noisily.
- Leave him or her crying for about 5 minutes (10 minutes if you can stand it, 2 minutes if that's all you can stand and 1 minute if you are very fragile). Avoid giving in easily to grumbling or noisy crying with 'dry' tears, but quickly comfort the child who is genuinely upset with fear and hysteria.
- Go into the bedroom and comfort your toddler. It is better, if possible, to comfort your toddler by patting rather than by picking him or her up.
- When the crying abates and turns to sniffs, leave the room decisively.
- Your toddler will be taken aback and immediately start crying again in protest.
- Leave him or her to cry for 2 minutes longer than the first time.
- Return to the room and comfort your toddler. Again, as soon as the crying becomes controlled, leave the room immediately.
- Repeat this procedure, each time increasing the period of crying by 2 minutes before comforting your toddler.
- Be extremely firm and continue this process until your toddler falls asleep.
- After half an hour of unsuccessful controlled crying technique, give your toddler some sedation. This will take a further half an hour to act, during which time the technique should be continued.
- If your toddler wakes up again later in the night, repeat the process; do the same, night after night as long as it is needed.
- If the technique does not seem to be working, and you have reached your limit of endurance, try combining the technique with sedation.
- It may be useful to enlist a friend as a 'sponsor' to whom you report your efforts the next morning.

* Adapted from Green C. Toddler taming. Sydney: Doubleday, 1984: 126-127,² with the author's permission.

may happen once or twice a night, arise from a disorder of sleep maintenance rather than from normal brief arousals and are often associated with problems returning to sleep. The resultant effects are sleep deprivation both for the child, with attendant behavioural problems during the day, and for the parents.

A child who has a predominant disorder of maintaining sleep rather than initiating sleep is more likely to have a medical disorder. Such disorders include:

- obstructive sleep apnoea
- chronic ear infection with effusion
- congenital heart disease
- asthma
- eczema
- gastric reflux
- any other cause of chronic pain or irritation

- parasomnias – for example, night terrors, sleep walking
- nocturnal seizures and other neurodevelopmental disorders.

In the case of obstructive sleep apnoea, a history of snoring, witnessed apnoeas and increased effort to breathe should be noted and a sleep study arranged if symptoms are significant.

For children with any of the above disorders, treatment should be aimed primarily at the underlying medical condition and referral to a sleep clinic might be indicated.

Nocturnal feeding disorder

Beyond the age of 8 to 9 months there is no nutritional reason why an otherwise healthy baby should be fed during the night. Children with a nocturnal feeding

disorder are overfed at night, which can contribute to problems both in initiating and, especially, in maintaining sleep. In most cases, the child is put to sleep while he or she is feeding from a bottle. The child may then feed continuously, sometimes throughout the night. Ideally, a child's last meal should be about two hours before sleep onset.

The reasons why a big meal at bedtime or drinking through the night might fragment sleep include the following:

- the increased metabolic rate associated with digestion could raise body temperature and disrupt the circadian

rhythm; in the normal circadian rhythm, low body temperature coincides with sleep onset times

- the discomfort of having wet nappies through the night
- the feeding may be part of a sleep onset association disorder (see above).

To treat a nocturnal feeding disorder, the amount and concentration of milk given through the night should be reduced during a period of about two weeks. This involves volume reductions of about 10 to 20% each night and diluting the formula gradually at the same time. In addition to eliminating the nocturnal feeds, the parents may need to teach their child to fall asleep by him or herself – that is, to address the sleep onset association disorder, if relevant, as described above.

Disorders associated with sleep phases

Sometimes a child's body clock is out of phase with his or her environment, resulting in symptoms akin to jet lag, even though the child has not physically travelled. It is as if the child is living in another time zone, as illustrated below.

Sleep-phase delay disorder

Someone who lives in Sydney but whose body clock is in, for example, the Perth time zone will have a sleep-phase delay disorder. If a boy with such a disorder has to get up at 7 a.m. Sydney time for school, it will feel like 5 a.m. to him (i.e. the time in Perth). Thus, when his mother awakes him at 7 a.m. he will feel groggy and unrefreshed and have difficulty dragging himself out of bed. He will not feel like getting up until 9 a.m. Sydney time.

Similarly, at the end of the day when the boy needs to go to bed at say 9 p.m. he will not be ready for sleep yet as it feels like 7 p.m. to him. Thus he has a problem initiating sleep.

Sleep-phase delay disorder is common in teenagers and amplified because there is a greater sleep requirement at this age. Its cause is unknown; however, there is

some evidence of delayed secretion of melatonin, a hormone that helps regulate our circadian rhythms. Secretion of melatonin from the pituitary gland coincides with sleep-onset times in most people. A second theory is that the tendency of teenagers to stay up late and then sleep in late the next day somehow changes the body clock toward phase delay.

Whatever the cause, a sleep-phase delay disorder can have a profound impact on the well being and academic performance of affected children. In North America this has led to the suggestion that high school starting times should be delayed.

The treatment of a sleep-phase delay disorder can be complicated and take some time. A secondary aversion to going to bed often develops as the child finds it unpleasant to lie awake for a long time trying to fall asleep. This is overcome by delaying bedtime initially so that there can be a faster onset of sleep. Then the bedtime should be moved 15 minutes earlier every three days to the desired sleep time, fixing the wake-up time all the time. The disadvantage of this is that for the first few weeks the child might feel a bit sleepy when waking up in the

Principles of 'sleep hygiene' in children

- The sleeping environment should be quiet and dark; watching television, listening to the radio, reading books and playing computer games in bed should be discouraged.
- The morning wake time should be strict and consistent as this helps establish a routine.
- The bedtime should be strictly enforced.
- The bedroom temperature should be kept at a comfortable level, usually less than 25°C.
- Environmental noise should be minimised.
- At bedtime children should not be hungry, but they should avoid excessive fluid intake.
- Children should learn to fall asleep alone without parental intervention.
- Vigorous activity should be avoided for the hour or two before bedtime.
- Caffeine containing foods (e.g. chocolate, coffee, tea and some medications) should be avoided before bedtime.
- Daytime naps should be developmentally appropriate; prolonged and frequent napping should be avoided.

morning. Bright light exposure (which helps the body entrain its clock) in the morning may be helpful.

Melatonin is widely available as a health food supplement in North America and can be effective in helping sleep onset as a 'chronotropic' or sleep promoting agent. However this substance is not listed by the Australian Therapeutics Goods Administration, and is not readily available in Australia.

Sleep-phase advance disorder

The opposite can happen with a sleep-phase advance disorder, in which, for example, a boy who lives in Sydney has a body clock in the Auckland time zone. In this case the boy may wake up readily at 5 a.m. because his body clock tells them it is 7 a.m. This may be disruptive to the family as well as to the boy himself. He might then start falling asleep at dinner-time and need a very early bedtime, for example, at 7 p.m.

Treatment of a sleep-phase advance disorder involves a gradual delay of the bedtime. Meal times and other activities may also have to be altered. The use of bright light in the evening and dim light in the morning may be helpful.

Other treatments

Often parents of children who don't sleep well need respite care and encouragement. A babysitter, preferably a relative such as the grandparent, may be happy to take the child for two or three hours during weekends so that the parents can spend time together away from the child. Most parents are sleep deprived and on edge. Often just talking to the GP helps to solve the problem by giving them something to work from. It helps to know that someone is taking the problem seriously.

When to refer

A child with sleeplessness should be referred to a paediatric sleep physician or paediatrician when:

- obstructive sleep apnoea or other sleep-disordered breathing is suspected
- other medical sleep problems that may fragment sleep (such as night terrors or other parasomnias) are present and distressing to the family
- the family is in crisis over the child's sleeplessness
- the effects of sleeplessness in the child are severe (for example, inability to cope with normal activities during the day).

Summary

Sleeplessness in children should be taken seriously. Often parents do not discuss sleeplessness in their child with their doctor because they feel guilty or inadequate. The psychosocial consequences can be serious.

A careful history and examination can often identify potential causes. An understanding of normal sleep physiology is helpful, and often reassurance is all that parents need. Trying to ascertain whether the problem is one of predominantly sleep initiation or sleep maintenance is helpful in the assessment. Respite and support for the parents is part of the treatment. Appropriate referral may be needed if a potential medical problem is identified. **MT**

References

1. Green C. J Maternal Child Health 1980; Feb: 64-71.
2. Green C. Toddler taming. Sydney: Doubleday, 1984.

Further reading

1. Green C. Toddler taming. Sydney: Doubleday, 2001.
2. Ferber R. Solve your child's sleep problems. Sydney: Dorling Kindersley, 1999.