9. Common causes of sleep disruption and daytime sleepiness: childhood sleep disorders II

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Promoting good sleep hygiene can prevent or alleviate behavioural sleep problems

ABSTRACT

- There are strong associations between childhood sleep disorders and behavioural, concentration and mood problems. Sleep disorders caused and maintained by behavioural factors (eg, sleep-onset association disorder) are common in young children, and have a significant impact on families.
- Evaluation should include a medical history, a physical, neurological and developmental examination, a description of any nocturnal events or daytime effects of the child's disturbed sleep, and a good understanding of the family situation and parental management of the child.
- Management involves recognising the developmental age of the child and the family dynamics, and educating and supporting families in applying behavioural techniques to establish good sleep hygiene.
- Children with parasomnias (eg, night terrors) also benefit from good sleep hygiene, while those with respiratory or neurological causes of sleep disturbance should be referred for specialist treatment.

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Children's sleep disorders differ from those in adults. There are differences in the physiology and pathophysiology of sleep in children, and behavioural, psychological and developmental aspects of childhood sleep patterns. These factors contribute to age-related differences in presentation for sleep disorders.

Sleep disorders in children are common, and much can be done in primary care when parents present with their children and report "sleeping problems". Specific considerations include:

- Is it a true sleep disorder or just a variation of the normal pattern at the child's developmental stage?
- Is the "sleep problem" a problem for the child or the family?

Disruption to children's sleep patterns can occur for many reasons, including behavioural disorders, respiratory and airway disorders, and neurological disorders. This article will focus on sleep disruption and daytime sleepiness caused by behavioural factors, circadian rhythm disorders and hypersomnia.

Normal sleep patterns in children

Newborn babies in general sleep 16–18 hours per 24 hours. In premature and very young infants, each sleep period may be as short as 2 hours and almost half the time will be rapid eye movement (REM) sleep. In the first month, the influences of daylight and dark cycles start to produce more wakefulness during the day. At this age, children often enter sleep through REM sleep, whereas REM sleep in older children and adults usually occurs later in the night.[1]

By 12 months of age, most children will sleep for 14–15 hours per 24 hours; most of their sleep occurs at night, with usually two naps of short duration up to 2 hours during the day. Most children will give up daytime nap(s) on starting primary school. Throughout the rest of the life cycle, there is a proportional decrease in REM sleep and in the average total amount of sleep. Children of 5–13 years require about 10 hours sleep, and those aged 14–18 years need about 8 hours.

The ability to self-soothe and regulate sleep is a developmental attribute. In the first months of life, 95% of infants will cry after waking, requiring a response to help them settle. By 12 months, 60%–70% of children will be able to "self-soothe", but will still wake once or twice per night.[2]

Prevalence and morbidity of childhood sleep disorders

A study of sleep disturbances in children found up to 25% of children (42% for night waking) may have behavioural sleep disorders at some stage; the prevalence of settling problems ranged from 22% at 9 months to 16% at 3 years while that of night waking ranged from 42% at 9 months to 14% at 3 years.[3]

Epidemiological studies have shown a relationship between sleep disorders and significant behavioural difficulties,[3,4] while subjective observations indicate increased behavioural difficulties in children described as poor sleepers. Parents also report increased oppositional and aggressive behaviour, as well as anxiety symptoms, in children with sleep disorders.

The morbidity associated with disturbances to childhood sleep architecture caused by sleep-disordered breathing and obstructive sleep apnoea syndrome is described in the companion article (see *Investigation and treatment of upper-airway obstruction: childhood sleep disorders I — MJA* 2005; 182: 419-423). Recent studies[5] have suggested that the neurocognitive effects observed in children with sleep-disordered breathing may also be evident in children with other types of sleep disorders.

Sleepiness and fatigue

Sleepiness is a common reason for presentation in primary care (particularly in adolescents), but may be under-recognised and misinterpreted because of misconceptions about variations in normal sleep patterns, developmental issues and chronicity. Excessive sleepiness in a child can be defined as generally sleeping for longer than other children of the same age, requiring naps when other children of the same age do not, or changing sleep pattern to sleeping for a longer time.

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Symptoms of sleepiness may develop for one of three reasons: insufficient sleep; sleep fragmentation; and increased need for sleep (Box 1).

Evaluation of sleepiness

Infants, toddlers and preschoolers: It can be difficult to evaluate sleepiness in infants and toddlers, given their normal high requirements for sleep. Toddlers and preschoolers can exhibit high levels of activity when tired, and it is important to obtain a sleep history when evaluating behavioural problems in young children. Tiredness can also be associated with emotional lability, irritability and aggression.

School-age children: In these children, daytime manifestations are likely to be the presenting problem and can include attention and behaviour problems at school.[4,6]

Adolescents: The lifestyle of adolescents often perpetuates poor sleep hygiene, and sleepiness can be a particular problem. Adolescents often do not recognise that their problems are sleep related, and they can present as disinterested or lazy. Sleep deprivation can also be associated with depression in adolescents.

History

This should include time of going to bed, time of going to sleep, night wakings and what happens at each waking, what time the child wakes in the morning, whether he or she needs to be woken and is difficult or easy to wake, as well as any daytime symptoms. A sleep diary can be useful in eliciting this history. Deviations from normal routine (eg, at weekends) should also be recorded.

In evaluating daytime sleepiness, it is important to distinguish between sleepiness and fatigue. A child who falls asleep in unusual places has a different problem from one who feels tired but takes a while to fall asleep. Furthermore, fatigued children may have other disorders (eg, chronic fatigue syndrome or hypothyroidism). Young children may find it difficult to describe their symptoms. On the other hand, the reliability of parental reporting decreases the older a child gets. Older children and adolescents should provide their own sleep history.

Insufficient sleep

Of the sleep disorders characterised by disturbances in the quality, amount or timing of sleep (dysomnias), those that are behavioural in origin and maintenance are common in young children and often result in primary care presentations. They include sleep-onset association disorder, limit-setting problems, and sleep maintenance problems (night waking). Circadian rhythm sleep disorder, also in the dyssomnia group, is more often a problem in adolescence.[7]

Sleep-onset association disorder

A child may develop a habit of falling asleep in a particular situation (eg, on the couch with a parent) and, unless similar conditions are present, will have difficulty settling to sleep in the evening or getting back to sleep after waking during the night. This may also occur with children used to having a dummy or being fed during the night, who then associate these things with falling sleep. This disorder can present at all ages, but is more common in toddlers (*see* Case study 1).

Limit-setting problems

Parents have difficulty with firm and consistent discipline regarding the location and timing of sleep. These problems may reflect behavioural struggles within the family, and cause difficulties getting toddlers and early primary-school children to bed.

Management of behavioural sleep disorders

In general, behavioural sleep disorders respond very well to behaviour-modifying techniques instituted by parents, with education and support provided in primary care. Night settling and/or night waking problems that arise because of limit-setting difficulties and sleep-onset association disorder are generally treated with "extinction" or ignoring methods. This involves the parents leaving the child to cry until he or she falls asleep, after first reassuring themselves that all is well and there is no other reason for the distress. It is also important to treat or exclude medical reasons for a child's sleeping problems (eg, eczema). Parents need to set clear limits regarding sleep location and timing. A gate across the door to keep a child in his or her room may be helpful.

Studies have shown an 82% response rate when this method is used.[8,9] Ignoring methods need to be talked through with parents. If a parent does "give in" then the behaviour is likely to worsen. Many parents cannot leave their child to cry, despite good evidence that change can be effected within 3–5 days. Graded measures — gradually prolonging the time the child is left to cry — are often more acceptable to parents and can also be effective, but it takes considerably longer to achieve the desired result.[9]

Many parents need support to be able to make these changes when they themselves are tired from lack of sleep. The changes need to be achievable and the rewards immediate[10-13] (eg, it is often better to initially reward a child for trying, rather than delay praise until the problem is solved). A number of useful books are available to assist parents (*see* **Recommended reading**).

1 Common causes of daytime sleepiness in children

Insufficient sleep

- Behavioural origin — sleep-onset association disorder, limit-setting problems, timing of sleep (eg, to fit with family schedules)
- Circadian rhythm sleep disorder — delayed sleep-phase syndrome, sleep entrainment difficulties (in blind children and those with developmental delay)

Sleep fragmentation

- Behavioural origin — sleep-onset association disorder
- Sleep-related breathing disorder — snoring, sleep apnoea
- Parasomnias — night terrors, sleep talking, sleep walking
- Medical causes — asthma, eczema, epilepsy
- Environmental causes — noise, light

Increased need for sleep

- Temporary hypersomnolence — medical illness, drug use (illicit and prescribed)
- Recurrent hypersomnolence — depression, Kleine–Levin syndrome (periodic hypersomnia, hyperphagia, hypersexuality, and abnormal behaviours), menstrual-associated hypersomnia
- Idiopathic hypersomnolence (no cause is identified)
- Narcolepsy (excessive daytime sleepiness, cataplexy, hypnagogic hallucinations, and sleep paralysis)

Case study 1 — a 10-month-old girl with incessant crying whose sleep duration is 1 hour at the most

A mother brings her 10-month-old daughter to you with concerns about the child's lack of sleep. She was born at 36 weeks' gestation after a ventouse delivery because of fetal distress. She has been well, and, apart from some mild asymmetry in developmental milestones, she is progressing normally.

The mother reports that she breast feeds her daughter on demand, up to 16 times a day. The child screams if her demands are not met immediately. If she is put down in her cot, she screams until picked up or she vomits. Her parents have been taking care of her in shifts, but when she is with one parent she screams for the other one.

The mother describes how they have tried letting the child cry, increasing her daytime activity, keeping her from sleeping during the day, but to no avail. At times, the child is inconsolable and cries for up to 8 hours. The mother says that her daughter has never slept for more than 60 minutes at a time, and most of the time is spent with one or other parent holding her, or struggling to get her to sleep.

Her mother is in tears as she recounts the problems they have had, and is clearly ambivalent about her daughter.

An examination of the child shows no abnormalities, apart from asymmetric tonic neck reflex and a tendency to use her left side more. There are no other abnormal neurological findings. Your examination eliminates any reasons for the child's irritability (eg, eczema) or any sources of pain, such as neurodisability or cerebral irritation. (Any reported sudden change in behaviour, abnormal development, or gastrointestinal symptoms would require appropriate referral.)

Management

- You explain to the mother that her daughter has never learnt a feeding or sleeping routine, because no limits have been set. She associates going to sleep with being with both her parents, and has not learnt to self-soothe and put herself to sleep after waking.
- As a first step, you suggest that the mother regulates her daughter's feeds. You and the mother agree on a feeding regimen of four breast feeds per day, with regular solid food. At all other times, the mother will offer the child water. This change is achieved very quickly over 1 week, before attempts are made to change the child's sleep pattern.
- To modify the sleeping pattern, you recommend that the mother tries "controlled crying" (gradually increasing the amount of time the child is left to cry and giving only verbal comfort without picking her up), and you refer the child and mother to a paediatric physiotherapist or occupational therapist for regulation of stimulation (sensory modulation) training.
- The mother asks whether there are any medications to help her child to settle. You explain that, in children who are otherwise well, there is no evidence of long-term benefits of medication.

The child responds by settling to a routine of one nap a day and sleeping through the night.

Difficulties with self-regulation

Children who are slow to learn to regulate their behaviour may require more parental intervention. It is often helpful to discuss this with parents, so that the increased level of parental support that these children require can be addressed without the family feeling that they are to blame.

Maternal and family considerations

When assessing children with sleep problems, the impact of family dynamics and external pressures must be considered. For instance, in some families getting their child to sleep early is important, but may have the adverse effect of producing an early waking time. An understanding of the family is important to understand the motivation for change. Mothers with depression may find it difficult to settle their child if they are feeling anxious themselves. The mother–infant relationship is crucial in establishing good sleeping patterns and is discussed elsewhere in the Paediatrics series.[14]

Promoting good sleep hygiene

Health promotion, emphasising good sleep hygiene (Box 2), should be part of universal early intervention for new parents. It is clear that poor sleep affects the functioning of both children and their parents. Primary care practitioners are ideally placed to deliver this type of health promotion.

Circadian rhythm disorders

Circadian rhythms are internal daily rhythms regulated by the suprachiasmatic nuclei in the hypothalamus. Disorders of circadian rhythm occur when the sleep–wake cycle is advanced or delayed, as in the "jet lag" experienced by international travellers.

The intrinsic rhythm is based on the 24-hour light–dark cycle, but there may be a natural tendency to advance our body clock; hence, the ease with which many people stay up late and sleep in on the weekend, but find it difficult to get up at the usual time on Monday ("mondayitis"). This is a common problem for adolescents whose social or other demands often keep them up late on the weekend, and then they have to return to a normal sleep–wake cycle for school during the week. Letting a tired child or adolescent stay up late and sleep-in on the weekends may result in delayed sleep phase. It is important to establish consistent bedtime and waking times (for management, *see* Case study 2).

Children with developmental disorders may need a combination of establishing routine light–dark cycles, behavioural cues and melatonin to regulate their sleeping patterns.[15]

2 Good sleep hygiene — general tips for a good night's sleep

- Maintain a routine for daytime naps for younger children, avoiding late afternoon naps (ie, after 15:30)
- Develop an evening routine that provides children with positive time with the parents (eg, story time)
- Avoid giving children caffeine-containing foods or drinks in the evening
- Provide a sleep-conducive environment, and reward good night-time behaviour
- Decide on a bedtime routine and stick to it, and try to have the same bedtime and wake-up time every day
- Put your child to bed while still awake
- Try not to let your child fall asleep with a drink
- Avoid taking your child into your bed for sleep or to settle
- Try to be as "boring" as possible when dealing with your child during the night

Case study 2 — a 14-year-old girl with delayed sleep phase

A 14-year-old girl comes to see you complaining of daytime sleepiness for the past 2 years, which is getting worse. She falls asleep in class at least three times a week and her test marks are deteriorating. She says that she has lost her former keen interest in sport, but still plays hockey twice a week.

She is worried about having put on weight. You calculate her body mass index and note from her medical record that it is crossing centiles upwards.

She says that she sleeps well at night, but cannot get to sleep until around 01:00 most nights. On Sundays when she does not have sport, she sleeps until at least 13:00. After sport on Saturdays, she will often come home and go to bed for up to 4 hours.

You explain to the girl that she has delayed sleep phase — her "body clock" is out of phase with "normal" sleeping and waking times.

Management

- You recommend that she brings forward the time of sleep onset slowly by 15 minutes every 3 days and uses a sleep diary to record this change. You prescribe melatonin to be taken before bedtime to assist this process.
- To eliminate any other causes or confounding factors, you refer her for thyroid function testing. If resolution of her delayed sleep phase does not occur, you will refer her for further investigations including magnetic resonance imaging and a polysomnography and/or a multiple sleep latency test for narcolepsy.

Her sleep pattern returns to normal with the therapy. She is able to do more exercise and better manage her weight.

Melatonin

Extensive use in adults and children has shown melatonin to be useful in modifying sleep phase; it is also thought to have a sleep promoting effect.[15-17] It should be used with caution, as there have been case reports of children (and I have had personal experience of at least one child) who developed seizures while taking melatonin.[18] Anecdotal reports give the dose range as 3–9 mg at night, but clear guidance on doses in children is not available. Melatonin should be given at night to bring the sleep phase forward, and in the morning to delay it. It has been reported to be useful in children with developmental delay, autism, or identified sleep-phase disorders.[15] The quality of the drug may vary, particularly if it is bought over the Internet. It is best to recommend a regulated product (via a Special Access Scheme prescription, or from hospital pharmacies, where available; or some pharmacies can obtain melatonin from the compounding pharmacies).

Sleep fragmentation

Parasomnias (Box 3)[19,20]

These are disorders characterised by abnormal transition between or arousal from sleep states. The cause is unknown, but is thought to be related to central nervous system immaturity.

Investigations

- Comprehensive history, with a detailed description of the nocturnal events (videorecording of episodes is very useful), daytime behavioural and developmental anomalies, sleep–wake schedules, excessive daytime sleepiness, snoring or other respiratory events, as well as family history;
- Complete physical, neurological and developmental examination; and
- An overnight polysomnogram or electroencephalogram to confirm the diagnosis, if required.

It is important to distinguish between night terrors, nightmares and nocturnal seizures (Box 4). If the history suggests seizures, or there are any unusual features, evaluation by a neurologist or sleep specialist may be required. Indications may include automatisms (stereotypic movements) or daytime symptoms, such as hypersomnolence or behavioural disturbance. A diagnosis of seizure disorder in sleep should not be made without supporting evidence.

3 Classification of parasomnias[19,20]

Sleep–wake transition disorders

- Rhythmic movement disorder — repetitive movements involving large muscles (usually of head and neck), typically occurring during sleep onset. Occurs in up to two-thirds of children, more commonly boys; usually resolves by age 4 years
- Sleep starts or hypnic myoclonia — sudden, brief muscle contractions when falling asleep. Normal in childhood
- Sleep walking (or somnambulism); sleep talking (or somniloquy)

Arousal disorders (limited in nature, usually settle spontaneously)

- Confusional arousals — confusion after arousal from sleep
- Night terrors (*see* Box 4)

Rapid eye movement (REM) sleep-related disorders

- Nightmares (*see* Box 4)
- Sleep paralysis — unable to move or speak just before dropping off to sleep or on fully awakening from sleep. Most children will experience this at some stage.
- REM sleep behaviour disorder — a rare disorder. Normal atonia associated with REM sleep is absent and the child may act out dreams.

Management of parasomnias

This depends on the diagnosis, but, in general, parasomnias do not cause sufficient sleep disturbance to warrant aggressive treatment. Tiredness causes symptoms to increase in frequency and severity. Therefore, establishing good sleep hygiene will often result in improvement.

Rhythmic movement disorders rarely require treatment, but may respond to behavioural contracts (when attention-seeking is part of the problem), restricting time in bed before sleeping, or judicious use of benzodiazepines.

Sleep walking is generally not treated, but safety is paramount and measures should be taken to ensure the child cannot get out of the house and on to roads.

Nightmares and night terrors (Box 4) rarely need treatment, but are less common when good sleep hygiene is adhered to.

REM sleep behaviour disorder may be treated with low-dose clonazepam.

Sleep disorders associated with medical conditions

Asthma, pain, pruritis, eczema **and** ***arthritis*** can cause fragmented sleep with recurrent arousals.

Epilepic seizures can result in sleep deprivation, which can, in turn, lower seizure thresholds. Some epilepsy syndromes present with seizures in sleep (seizures of sleep onset, benign rolandic

Case study 3 — a 4-year-old boy with night settling problems and night terrors

A mother brings her 4-year-old son to you complaining that he is hyperactive and sleeps poorly. He has been "expelled" from preschool. His mother is clearly upset and exhausted, and requests medication "to calm the boy down".

She reports that her son goes to sleep at around midnight each night after a protracted battle that involves him screaming and getting up on numerous occasions, and eventually falling asleep on the couch and being carried to bed when his parents retire.

The boy wakes during the night, occasionally screaming like "he is being murdered" and looking strange.

The boy's behaviour has deteriorated recently with increased soiling, tantrums and feeding battles, leaving his mother further exhausted. At times she has felt that she might harm the boy, but has been able to seek help from her mother at those times.

When the boy stays with his grandmother, he sleeps with her but is still difficult to settle. The mother has tried to ignore his crying, but has been unable to persist. She worries that her marriage is breaking down.

Management

- You explain to the mother that the difficulties she has experienced with getting her son to sleep at night are a result of limit-setting problems, and that the boy associates sleep with being with his parents. You also explain that he has occasional night terrors and that these will cease with time.
- You suggest that she should always put her son to sleep in his own bed, and reward him for complying with this. After a night-terror episode, the boy should be gently settled to sleep again. To assist the parents in changing their behaviour, you recommend some parent information leaflets and books.
- Initially, the parents arrange for the boy to spend some time with his grandmother, while they have time to themselves. When their son returns home, the parents maintain a firm, consistent approach to settling him to sleep in the evening.

Partner support, with understanding of the need for consistent strategies, results in improvement within 3 weeks.

epilepsy, and electrical status epilepticus in sleep). Treatment should be guided by a neurologist or sleep physician.

Children with developmental disabilities are at particular risk of sleep fragmentation, because of abnormal sleep–wake cycles, obstructive sleep apnoea, or problems with central nervous system control of breathing. These include children with autism, Angelman syndrome, Prader–Willi syndrome, spina bifida, Smith–Magenis syndrome, and Cri du Chat syndrome.

Attention deficit hyperactivity disorders often present with night-settling problems and a perceived need for less sleep, possibly complicated by the use of stimulants. Limiting afternoon dosing, or moving to long-acting medication given in the morning, helps to avoid rebound hyperactivity at bedtime. Maintenance of firm behavioural strategies is also important.

Increased need for sleep

Hypersomnolence

Hypersomnolence can be a symptom of intracranial tumours, or secondary to intracranial irradiation, acquired brain injury, or chemotherapy. Temporary hypersomnolence can occur after infectious illnesses, or with illicit drug use. It is important to ask what medications are being taken, as many can cause daytime sleepiness (eg, anticonvulsants, benzodiazepines) and others can disrupt night-time sleep architecture (eg, steroids, stimulants). Investigations dictated by symptoms and/or clinical suspicion should eliminate these as causes of hypersomnolence.

Narcolepsy

Cause and prevalence: Narcolepsy is primarily a disorder of hypersomnolence. Its cause is still not clearly understood, but a clear association with specific human leukocyte antigens (HLAs) and deficiencies of hypocretin level in cerebrospinal fluid have been identified in narcoleptic patients. Its prevalence in children is not known given the complexities of diagnosis in children.

Diagnosis: Narcolepsy may be underdiagnosed in children, as adults often report symptoms for more than 10 years before diagnosis. Diagnosis requires a combination of excessive daytime sleepiness, cataplexy (sudden loss of muscle tone), hypnagogic

4 Differentiating between common parasomnias and night seizures[19]

	Nightmares	Night terrors	Seizures (nocturnal frontal lobe epilepsy)
Timing during sleep	Often later in the night (REM sleep)	Occur once or twice a night in the first 90–180 minutes of sleep (deep non-REM sleep)	Occur anytime — emergence from non-REM sleep, on awakening and throughout the night
Age at presentation	Commonly occurs in childhood	Onset ⩽ 12 years (peak, 5–7 years)	Onset late childhood/adulthood
Duration	Takes time to return to sleep	Last 3–5 minutes	Brief stereotypic attacks
Arousal	Recall of events frequent in older child, easily comforted, alert on waking	Unresponsive to parents and no recollection. Confusion on waking	Produce arousal from sleep with very little postictal confusion
Associated features	Mild autonomic activity	Associated with tachycardia, tachypnoea, diaphoresis	Dystonic posturing or complex automatisms
Description of event	Wakes crying and responds to comforting	Begins with few incoherent words or whimpering — then screaming	Explosive onset and abrupt offset — can be very agitated or fearful
Treatment	Reassurance — if frequent then examine underlying medical and psychological attributes	Benzodiazepines (only when diagnosis confirmed and problem extreme), but with caution and infrequently. The evidence for effectiveness is variable.	Antiepileptic medication

REM = rapid eye movement

Evidence-based practice tips

- When a child presents with daytime behavioural and schooling problems it is important to take a good sleep history. Sleep disturbance or not enough sleep are commonly associated with daytime symptoms (III-2).[6]
- Behavioural management (eg, ignoring crying and tantrums related to sleeping) will alleviate sleep-onset problems and night-time waking (I).[11]
- Melatonin can be useful in treating circadian disorders (delayed sleep phase or advanced sleep phase (IV).[15,16]

Levels of Evidence (I-IV) are derived from the National Health and Medical Research Council's system for assessing evidence.[22]

hallucinations (vivid dreams at sleep onset), and sleep paralysis (experience of being unable to move on waking). In children, the onset of daytime sleepiness (falling asleep in unusual places) is the usual manifestation, with cataplexy presenting later in adolescence. The impact on the child's functioning, on school and social relationships, can be lifelong.

Investigations: Polysomnography and multiple sleep latency testing are used to exclude other causes of hypersomnolence, and demonstrate sleep-onset REM sleep in the daytime. Polysomnography also eliminates other causes of disturbed sleep (eg, periodic leg movements, seizures, sleep-disordered breathing). A positive family history may be present.

Treatment: Schedule naps and, if required, give stimulant therapy (dexamphetamine, methylphenidate). Stimulants have been shown to improve school performance, behaviour and daytime sleepiness. There are new agents (eg, modafinil[21] — a wake-promoting agent listed on the Pharmaceutical Benefits Scheme in April 2005) for hypersomnolence, but cataplexy is more difficult to treat. Tricyclic antidepressants have been used in the past. The safety and effectiveness of any of the newer treatments have not been demonstrated in children.

When to refer

Referral is recommended when respiratory (see *Investigation and treatment of upper-airway obstruction: childhood sleep disorders I — MJA* 2005; 182: 419-423) or neurological causes of sleep disturbance are suspected. Investigation of hypersomnolence will usually require assessment by an accredited paediatric sleep disorders unit, but good sleep hygiene methods can be instigated by a primary care practitioner.

Recommended reading

Health professionals

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