

**Better Sleep**  
for your  
**Baby & Child**

# Better Sleep for your Baby & Child

A Parent's Step-by-Step Guide  
to Healthy Sleep Habits

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**The Hospital for Sick Children**

**Robert**  
**ROSE**

*To my daughters, Abby and Jenna, my first and best teachers about sleep in children.*

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# Introduction

Our book is designed to dispel confusion about sleep problems by offering you the best information on children's sleep available, based on recent scientific research and our extensive clinical experience at The Hospital for Sick Children.

**I**F YOU HAVE PROBLEMS with getting your baby, toddler, school-aged child, or teenager to sleep at night (or in the case of teenagers, getting them to wake up in the morning), you are not alone. Many parents have concerns about their children's sleep, no matter the age of their child. Research studies tell us that approximately 25% of all children experience some type of sleep problem. Even though some of these problems are not disruptive, severe, or long-lasting, others may result in significant consequences for your child's daytime behavior, family function, and academic performance. Your child's sleep problems may also have a significant impact on your sleep. Coping with multiple sleepless nights while caring for or worrying about your child is not easy, to say the least. Sleepless parents can quickly become as irritable as their sleepless children.

Thankfully, there are many ways to prevent and treat sleep problems in children. In addition to speaking to your child's medical doctor or nurse, you can read about sleep problems in various parenting magazines and numerous books on this topic. There is also a world of collective wisdom concerning children's sleep — every grandparent, friend, neighbor, and co-worker seems ready to offer advice based on their personal experience. However, much of this information, including that offered by the experts, is confusing. Our book is designed to dispel confusion about sleep problems by offering you the best information on children's sleep available, based on recent scientific research and our extensive clinical experience at The Hospital for Sick Children.

We have written this book for expectant parents who want to prevent childhood sleep problems, as well as for parents who want to solve existing sleep difficulties in their children. How you expect your child to sleep is ultimately your choice, based on your own sleep experiences, cultural influences, parenting style, and knowledge of sleep in children. There is no single correct method to improve sleep in children in all families, but some methods are more effective than others for establishing healthy sleep habits and for restoring healthy sleep once it has been disrupted.

*Better Sleep for Your Baby & Child* is divided into three sections. In Part 1, we present basic information on healthy sleep, answering such questions as, What is sleep? and How much sleep does my child need? We present preventive strategies for good sleep hygiene and discuss the various options for sleep arrangements, including sleeping with your infant in your own room. In Part 2, we describe various sleep disorders as they occur through the ages, from birth to adolescence, and introduce behavioral and drug treatment strategies. In Part 3, we provide a step-by-step guide to treating specific sleep disorders, ranging from childhood insomnia and sleepwalking to nightmares and bed-wetting. Although many childhood sleep problems can be solved with a behavioral approach, we indicate when you need to consult your doctor for medical or surgical options for other sleep disorders, such as narcolepsy (medical) or sleep apnea (often surgical).

We trust that the prevention and treatment strategies we recommend will enable your child to establish better sleep habits that will help lay the foundation for lifelong health and well-being.

— *Dr. Shelly K. Weiss, MD*

**PART 1**



# Healthy Sleep

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## Chapter 1

# Sleep Basics

### Did You Know?



#### Sleep Health and Distress

Healthy sleep is a source of parental pride and pleasure. If your child is not sleeping well, however, this can lead to difficulty functioning during the day for your child and for you, anxiety about the general health of your child, conflict in your marriage, and a host of other personal and family problems.

#### Probable Functions of Sleep

- Restoration and regeneration of body systems
- Protection and recovery from infections
- Consolidation of memory
- Optimum daytime function of learning, memory, mood, attention, and concentration
- Growth and development of body and brain

THERE'S NOTHING IN the world more peaceful than watching your newborn baby sleep. You can only imagine what your child is dreaming about as she smiles sweetly. There's no greater joy than watching your toddler, who never seems to stop, finally nod off to sleep, restoring his energy for another day of adventure, or admiring your teenager spread across his unmade bed, sound asleep after a day at the beach.

However, there are few things more disturbing to our sense of being a good parent than the distress of sleep problems in our children. This can occur at any age, from trying to comfort a sleepless baby who you know just needs to get some sleep, to dealing with a sleep-deprived adolescent who argues with you until you are worn down about why his activity schedule does not leave time for sleep.

To understand why and how your child sleeps, let's turn to the textbooks. Sleep specialists have studied the biology of sleep for many years now. Their discoveries will help you not only to understand the basics of sleep but also to use this knowledge for improving your child's sleep so that everyone in the family sleeps better, wakes easier, and functions better during the daytime. If you suspect your child has a serious sleep problem, these same basics will help you describe the symptoms to your doctor and cooperate in any recommended treatments. In this case, a little bit of knowledge does go a long way.

## What Is Sleep?

Sleep is a reversible state, where you have reduced responsiveness to your environment and minimal movement. Sleep is as essential to our well-being as food and water. We cannot survive without sleep. When you are deprived of sleep, you will become ill and may die. However, we are not sure exactly how sleep sustains and refreshes us. Beyond this life-sustaining role, what are the functions of sleep?

We can infer the functions of sleep based on what happens to us when we don't get enough sleep. Sleep offers more than a time to rest our body and our brain, though this regenerative or

## case study: Sarah

Jerome and Claire brought their 2-month-old infant Sarah to our sleep clinic. Claire is nursing Sarah about every 3 to 4 hours on demand, and although she is gaining weight well, Jerome and Claire have some concerns. Sarah seems to have her days and nights mixed up, being more wakeful during the night. This is tolerable for now, but Claire has to return to work in 1 month and does not know how she will cope. She wants to continue to nurse Sarah, but needs to get some sleep.

Jerome and Claire have also noticed that Sarah has some funny movements, including making funny faces, sometimes smiling, sometimes grimacing, and often twitching during sleep. They have not noticed this activity at all when she is awake. They are quite concerned that this movement is not normal, but are not sure what is causing it. To alleviate Jerome and Claire's concerns about Sarah, we gave them a quick course in sleep basics. Sarah is thriving, but apparently has not yet developed a circadian pattern to her sleep. That's why her days and nights are mixed up. This is a normal pattern for a newborn up to the age of 3 months. The movements they describe sound normal. Learning about the different stages of sleep and what happens in each stage will help Jerome and Claire to understand that they are probably watching Sarah during the dreaming phase of sleep. Jerome and Claire can rest easy knowing that Sarah, too, is resting normally. Her grimacing, smiling, and twitching at night are part of her normal dreaming sleep pattern.

Over the next few months, soon after Claire had returned to work, they were able to change their interactions with Sarah, playing with her more during the day and decreasing playtime during the night. She began to sleep more at night by 4 months of age.

restorative function is vital. We all know that a lack of sleep affects our memory, mood, attention, and concentration adversely. When you miss a night of sleep, you are probably grouchy and irritable the next day. Imagine how it will affect your child if he is getting less sleep than needed on a constant basis.

Less obviously, poor sleep reduces our ability to deal with serious infections. When our body fights an infection or has some repair work to do (in response to a sunburn, for example), the immune system releases substances to promote sleep and ensure rest. Especially important in children, disturbed sleep can disrupt long-term physical and mental growth. Approximately 75% of brain growth occurs after birth. Healthy sleep is thought to be important for this growth.

## Did You Know?



### Growth Hormone

All growth in children occurs during sleep. Growth hormone is released from the pituitary gland in the brain while a child sleeps. If something prevents normal sleep on a long-term basis, growth and development may slow down or even stop. All children grow slightly during sleep, and shrink slightly while awake. Fortunately, children grow more than they shrink, but, in extreme cases of poor quality or quantity of sleep, the rate of growth can be adversely influenced.

## Sleep States

It seems obvious, but how do we really know when someone is sleeping? Can you tell just from looking at someone if she is truly sleeping? When we sleep, are we in one continuous sleep state? When we sleep, there are important changes in our behavior, body functions, and brain activity that are different from the waking state.

### *Behavioral Changes*

When you are asleep, you do not respond to stimulation in the same way as when you are awake. At times when your baby is sleeping, he is deeply asleep and no amount of noise will wake him, but at other times, it seems like the sound of your whisper across the room easily rouses him. This is because not all sleep is the same. During some of the sleep stages, we can be aroused easily, and during others, we seem to be able to sleep through anything. This is important for deciding what type of sleep problem your child may be experiencing. For example, if your child is experiencing a nightmare, he awakens easily, but if he is in the midst of sleepwalking, it will be difficult to wake him.

### *Physical Changes*

When we fall asleep, the body functions somewhat differently than when we are awake. If you watch your sleeping child, you will notice that there are two different types of sleep. For example, when your child is in the resting state of sleep, you may notice that his breathing rate and heart rate are slow and steady. His eyes do not move rapidly beneath his closed eyelids in this state, which is why it is called non-rapid eye movement sleep, or NREM sleep. When your child is in the dreaming state of sleep, you may notice that his muscle tone is decreased so that, other than some muscle twitches, he has little movement. In this dreaming state, his breathing rate and heart rate will be irregular,

# Q.

What is a brain wave?

# A.

The nerve cells (called neurons) in the brain produce electrical signals, which can be captured and displayed as brain waves. These brain waves change, depending on the activity of the nerve cells in the brain. During REM sleep, the waves resemble waking brain waves because your brain in this stage of sleep is active. During NREM sleep, the waves are slower, which reflects that your brain is in a resting stage.

and you may see bursts of eye movement under his eyelids. This is called rapid eye movement sleep, or REM sleep. Scientists who study sleep monitor these changes in awake and sleep states by analyzing heart rate, breathing rate, muscle tone, eye movements, and brain waves.

## **Brain Changes**

Sleep is not simply the absence of wakefulness, and not all sleep is the same. During the night, your child moves in and out of sleep states in a predictable way. If you wait 10 to 20 minutes after your child first falls asleep, you can change his pajamas, move him, or make lots of noise and he will continue to sleep. This is because soon after falling asleep, he is in a stage of deep sleep, from which he is less likely to arouse. At other times, your child appears restless, moving, and may talk in his sleep. While we do have a diminished conscious awareness of our surroundings during sleep, there are times during sleep, especially while we are dreaming, when our brain is as active or, occasionally, more active than when we are awake.



## **Did You Know?**

### **REM Facts**

Infants and children spend a greater percentage of their sleep in the REM stage. In fact, newborns spend 50% of their sleep in REM sleep. This gradually decreases to 20% to 25% as an adult. REM sleep is thought to be important for consolidating learning and memory in children.

## **SLEEP STATES**

**REM:** Rapid eye movement sleep or dreaming sleep. Although REM is commonly referred to as dreaming sleep, you dream during all stages of sleep, but dreams are more vivid and complex during REM sleep.

**NREM:** Non-rapid eye movement sleep

### *Four Stages of NREM Sleep*

The four stages (1 to 4) of NREM sleep go from the lightest (stage 1) to the deepest (stage 4) of sleep.

#### *Stage 1: Transitional sleep or light NREM sleep*

This stage is called transitional because it is the stage of sleep through which children (after the first 3 months of age) and adults transition from wake to sleep when feeling drowsy.

#### *Stage 2: Medium NREM sleep*

This stage can be thought of as the 'glue of sleep' as it is the stage in which both children and adults spend almost one-half of their sleeping time. Like glue, this stage is important for holding together the pattern or 'architecture' of sleep.

#### *Stages 3 and 4: Deep NREM sleep or slow-wave sleep*

These are the most restful, restorative phases of sleep.

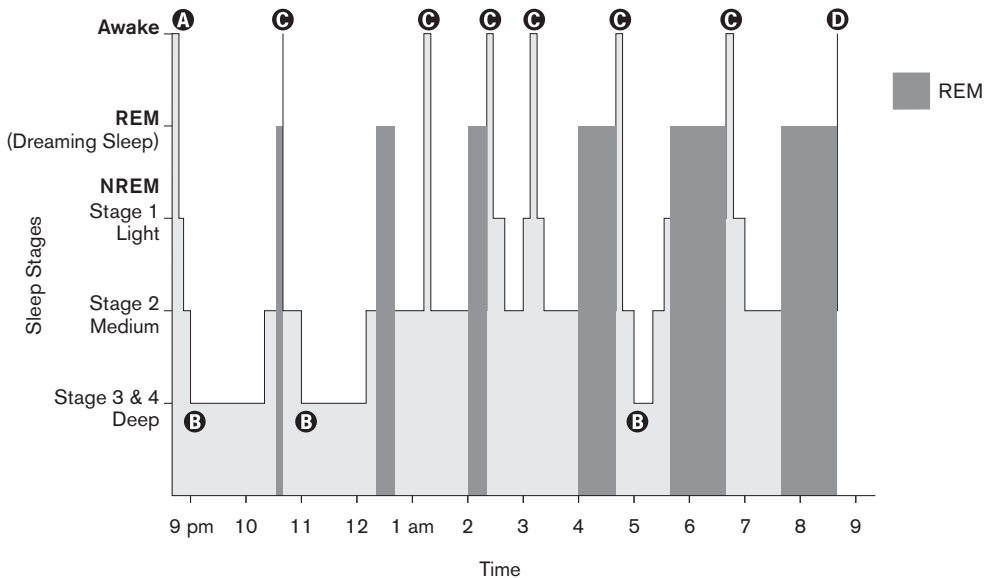
### ***NREM and REM Sleep States***

There are two different states of sleep: NREM and REM sleep. During the night, we cycle in a predictable way from one state to another, between NREM and REM sleep. When we change from one sleep state to another, we may have a brief period of waking, called an arousal. If the arousal is brief, then we just move to the

<b>REM versus NREM Sleep</b>		
	<b>NREM Sleep</b>	<b>REM Sleep</b>
<b>Function of this state</b>	Transitional and restful, restorative stage of sleep	Most dreaming (especially dreams we are able to remember) takes place; thought to be important for formation of memory
<b>Ability to move muscles</b>	All muscles are more relaxed than in the awake state but still able to move	All muscles are relaxed, almost paralyzed except for muscles controlling eye movement, hearing, and breathing
<b>Movement</b>	Able to turn over, change position in bed	Muscle twitches, facial grimaces, and sounds related to dreaming
<b>Eye movement</b>	No rapid eye movement	Bursts of rapid eye movement
<b>Breathing rate</b>	Breathing rate is more regular If you watch your child, you will notice steady breathing	Breathing rate is more irregular If your child has sleep apnea, he will have more episodes during this phase when he has decreased muscle tone
<b>Brain activity</b>	Brain activity shows slowing of function into four stages from stage 1 (drowsy) to stage 4 (deepest) stage with most slowing of activity	Brain waves look similar to when awake Your child's brain uses the same amount of oxygen as when he is awake
<b>Time of night (sleep cycle)</b>	The deepest stage of sleep (slow-wave sleep stages 3 and 4) is in the first one-third of the night Children may have another episode of deep sleep in the early morning	Most REM sleep is in the last one-third of the night
<b>Ability to be woken from sleep</b>	Easy to be aroused in lighter stages 1 and 2 Hardest to be aroused in deeper stages 3 and 4	Easy to be aroused

## SLEEP HYPNOGRAM

This chart of sleep states, called a sleep hypnogram, shows a normal sleep pattern for a child during one night of sleep. This predictable sleep pattern is called sleep architecture, and should be quite stable from one night to the next.



- A** Your child typically falls asleep quickly, in less than 30 minutes. Transitional sleep is brief and easily reversed.
- B** Your child will quickly have her first episode of deep sleep, and continue to have her most deep sleep in the first one-third of the night. Your child may have a briefer episode of deep restorative sleep in the early morning hours before waking.
- C** There may be periods of brief arousal during the night. When your child ends one sleep cycle and starts the next, he may have a brief period of awakening. These arousals occur out of the REM or the lighter stages of NREM sleep. In normal sleep, your child will not remember these episodes in the morning.
- D** Your child should wake up spontaneously in the morning.

**Dreaming Sleep:** The first episode of dreaming sleep happens about 1½ hours after falling asleep. The dreaming episodes become longer throughout the night, with most dreaming happening in the last one-third of the night.

**Sleep Cycles:** Your child will cycle from dreaming (REM) to restorative sleep (NREM) throughout the night. The cycles lengthen with development. At 1 year of age, the cycle may last 45 to 50 minutes, and at age 5 to 10 years, the cycle lengthens to 60 to 70 minutes. The cycles continue to lengthen with growth to adult levels of 90 to 110 minutes.

## Did You Know?



### Child vs. Adult Sleep Cycles

There are some differences between how children and adults sleep, but there are also remarkable similarities. The cycles develop with age, but by 6 months of age, an infant will have a sleep pattern similar to an adult.

next sleep stage, and in the morning, we do not remember being awake or feel any adverse effects of this normal arousal. If the arousal is longer (lasting more than a few seconds), then we experience a short period of waking, and, whether or not we remember it, it may cause daytime fatigue.

## Regulating the Sleep/Wake Cycle

How do you regulate your baby's sleep/wake cycle so that he is awake during the day and sleeping at night? What helps him get enough sleep to feel well rested during the day? There are two processes that work together to regulate sleep and wake, called process S and process C. These processes help us to sleep at the right time and to ensure that we get an adequate amount of sleep.

### Process S

The longer your child goes without sleep, the stronger will be her drive to fall asleep. If the pressure to sleep is great enough, she may not be able to maintain wakefulness and become drowsy and even fall asleep in a dangerous situation. This can lead to motor vehicle accidents if your teenager is sleep-deprived and becomes drowsy while driving. The longer we go without sleep, the deeper and longer we will sleep to catch up. If, for example, your teenager gets less sleep than required several nights of the week, staying up late to work, study, or socialize, and waking up early to get to school, when the weekend comes, he is able to sleep for 12 or more hours because process S is pulling him to try and catch up on his sleep debt.

### Process C

The other important regulator of sleep is called the circadian process, or process C. This is the biological clock that sets the daily pattern of sleep and waking and other activities that recur about every 24 hours. Our natural sleep/wake schedule is a bit longer than 24 hours, so each day we need to reset our biological clock by using internal and external biological cues to stay on a 24-hour day cycle. These cues are called *zeitgebers* (from the German — *zeit*:time; *geber*:giver). Newborn infants are not born with a functioning rhythmical (circadian) process and initially sleep and wake on an erratic schedule. As they develop, gaining the ability to respond to internal and external cues over the first few months of life, they are able to develop a more mature schedule that resembles yours, sleeping longer at night and being more awake during the day.

## Did You Know?



### Deep and Dream Sleep

Children have their deepest sleep in the first one-third of the night and are most difficult to arouse then. Children may also have some deep sleep in the early morning before waking up. Most children (and adults) dream primarily in the last one-third of the night.

## ZEITGEBERS (CIRCADIAN CUES)

Can you imagine what life would be like if you lived in a dark world without sunlight or structure, and you had no commitments forcing you to wake up each day at the same time to get to work or school? It would be hard for you to maintain a 24-hour day-night schedule because of the lack of zeitgebers, or cues to your circadian rhythm. Zeitgebers are the time cues that keep our biological clock working on a 24-hour day. These signals are relayed through complex pathways in the brain to adjust our biological clocks constantly and affect our daily rhythms, including the release of hormones, such as cortisol, growth hormone, and melatonin, as well as the regulation of metabolism and body temperature, which all have unique timing in relation to the sleep/wake cycle.

**Light/Dark:** Sunlight is the most important cue to the circadian rhythms to keep us functioning on a 24-hour cycle. Take, for example, two different 12-year-old children, who wake up differently on Saturday morning. Eliza wakes up at 8:00 a.m. and drags her blanket into the den, where the curtains are tightly shut, and turns on cartoons. She lies on the couch in the darkened room and watches television, half asleep, until 11:00 when the rest of the family wakens. At 11:00, she eats breakfast in another room with the bright morning light streaming in. Another child, Madeline, wakes up on Saturday morning at 8:00 a.m., and takes her dog outside for a walk in the sunshine. She returns after 20 minutes, and, hungry from the exercise, sits down to eat breakfast. Which child will have an easier time falling asleep on Saturday night? Although Eliza and Madeline woke up at the same time, because Eliza rests without natural light until 11:00 a.m., her biological clock didn't receive this cue until then. Madeline provided her clock with the most important cue – light exposure early in the morning.

In addition to the importance of being exposed to sunlight in the morning, it is also important to sleep in a darkened room, another cue signaling the biological clock that it is now night and time to rest. A night-light or a dim hall or closet light left on through the night is fine, provided the bedroom is dark.

**Meal Timing:** Eating breakfast in the morning at a regular time is another cue to the body that it is morning. At the end of the day, it is important to avoid heavy meals when the body is ready to rest. This prevents your stomach from being busy digesting food when you are trying to sleep.

**Social Activities:** Another cue to our biological clock is a social cue. We are motivated to be awake in the morning and sleep at night by school, work, and social schedules. For example, if you have an early morning meeting, you know that you should get to sleep at a time that will give you enough hours of sleep to be refreshed in the morning. Children who are developmentally delayed may lack this motivation and do not have this cue to help keep their internal clocks working properly.



**Environmental Temperature:** There is a natural rhythm to our core temperature, which is at its lowest when we are sleeping in the early morning hours. If the bedroom temperature at night is too hot or too cold, this adversely affects our ability to sleep and keep our biological clock working properly. Therefore, you want your child's room (and your own bedroom) to be at a comfortable cool temperature at night. This will be the temperature at which an adult who is lightly clothed would be comfortable.

**Noise:** Another important cue to keep our sleep/wake cycle on a 24-hour day schedule is quiet at night and noise in the day. For example, when your infant wakes at night and needs to be fed or changed, try to do so as quietly as possible to reinforce the difference between night and day. It is not necessary for you to make lots of noise during the day to keep your baby awake, just a reasonable amount will let him know it is time to be awake.

## What Is Normal Sleep?

We know that our tendency or desire to sleep at different times of the day changes in a predictable way with age. For example, if you and your teenage daughter decide to attend a lecture in the evening at 9:00 p.m., who would have more difficulty staying awake? The answer is that your teenager (like most teenagers) will likely be much more alert than you (his parents) in the evening. Don't you remember being more alert in the evening when you were a teenager?

What if you were asked to give the lecture and to choose the time to deliver it? If your goal is to have your audience wide awake and listening to you speak, you would not choose to give a lecture right after lunch in the early afternoon. No matter what our age, this is the time of day when our tendency to sleep is very high (like in the early morning before sunrise), whereas we are less likely to be sleepy later in the morning.

These alert/drowsy times change as your child grows from infancy to adolescence. For example, a school-age child will have a strong desire to sleep in the late evening hours, but a teenager will not have the same biological drive to sleep at this time. The timing of sleep tendency is determined by process C. The magnitude of this tendency is determined by process S.

### Did You Know?



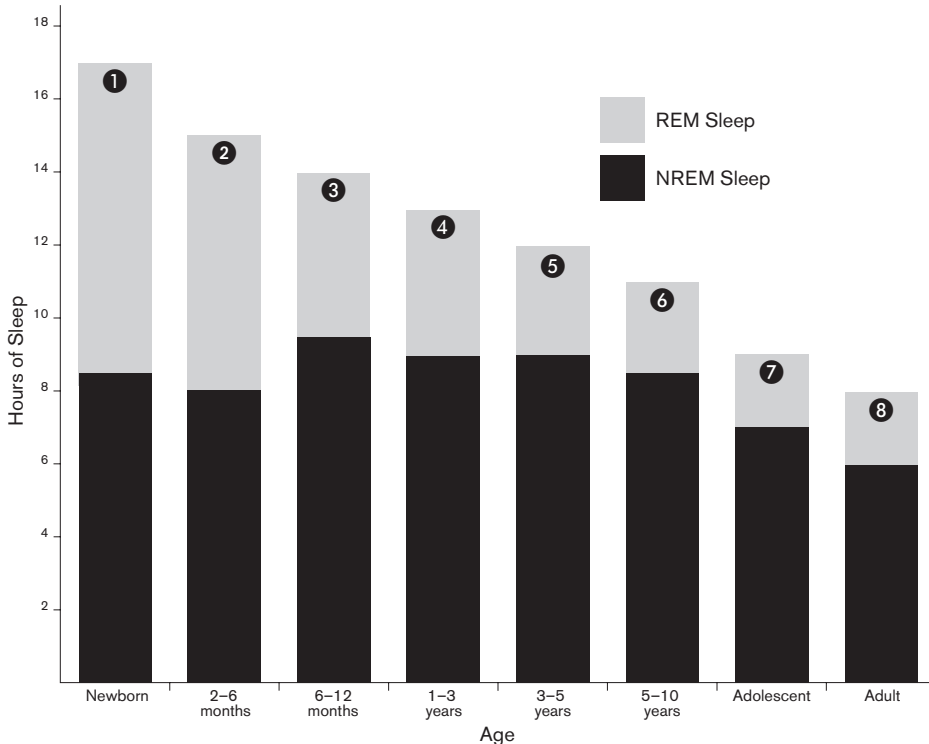
#### Sleep Cycle Changes

Each night, infants have 8 to 10 cycles of sleep. The cycles get longer until adulthood, when they drop to 5 to 6 cycles a night.

## Fetal Sleep Patterns

It is remarkable what scientists can tell us about sleep even before birth. Babies show clear sleep/wake patterns from about the sixth month of pregnancy onward. Researchers have shown

## AVERAGE SLEEP REQUIREMENTS FROM BIRTH THROUGH ADULTHOOD



This graph shows a gradual decrease in the average amount of sleep required from birth through adolescence. It also shows the percentages of REM and NREM sleep and how they change at each stage of life.

### Bars

- 1** *Newborn (0 to 2 months)*  
Average sleep: 16 to 18 hours  
REM: 50%
- 2** *Infant (2 to 6 months)*  
Average sleep: 14 to 16 hours  
REM: less than 50%
- 3** *Infant (6 to 12 months)*  
Average sleep: 13 to 15 hours  
REM: decreases to 30% by 12 months
- 4** *Toddler (1 to 3 years)*  
Average sleep: 12 to 14 hours  
REM: 25% to 30%
- 5** *Preschooler (3 to 5 years)*  
Average sleep: 11 to 13 hours  
REM: decreased to 25% by 5 years
- 6** *School Age (5 to 10 years)*  
Average sleep: 10 to 11 hours  
REM: 20% to 25%
- 7** *Early-late Adolescence*  
Average sleep: 8.5 to 9.5 hours  
REM: 20% to 25%
- 8** *Young Adult*  
Average sleep: 8 hours  
REM: 20% to 25%

clear activity-rest cycles that, to some extent, follow the mother's activity-rest cycle. During the last 2 months of pregnancy until your baby is born, the sleep cycles develop so that we see clear evidence for periods of wake, periods of quiet sleep (early form of NREM) sleep, and periods of active sleep (early form of REM or dreaming sleep). What does a fetus dream about? We can only guess.

## Did You Know?



### Sleeping Fetus

Researchers can study sleep in the fetus before birth by monitoring rest-activity cycles. We know from these studies that a 30-week fetus sleeps approximately 53% of the time and a fetus close to term sleeps approximately 60% of the time.

## Newborn Sleep Patterns (0–3 Months)

Newborn babies are beautiful human beings, perfect in every way except, you might say, for their newborn sleep-wake cycles. Newborns sleep and wake without regard for day or night. From the moment of birth, we all know too well that the sleep-wake cycle of a newborn is very different from the rest of the family's.

Newborns need much more sleep than an older child, teenager, or adult. Most newborns sleep between 16 and 18 out of 24 hours. Newborns will usually sleep after 60 to 120 minutes of wakefulness, and each sleep period will be for 2 to 4 hours. You should look for signs of drowsiness in your baby and help him fall asleep after he has been awake for this amount of time.

Newborns also have no ability to regulate when they sleep. Babies do not regulate their sleep and wake to the day-night cycle, but rather they will wake when they are hungry, and sleep when their tummy is full or when they are tired. This unusual sleep-wake pattern is normal for the first few months of life. The best thing for the baby's mother to do, though not always possible, is to sleep when her baby sleeps, so both mother and child are getting as much rest as possible.

## *Sleep and Development*

During this period of your newborn's life, sleep and brain development are closely related, particularly development of your child's biological clock:

### Brain Development

The brain develops so that sleep stages can be clearly recognized. During the first 3 months of life, there is rapid development of your baby's brain, which is reflected in changes that you see in every aspect of his life. Some of these changes are seen in his social development, such as smiling and becoming more social, and some changes are seen in his motor skills, such as holding up his head and gaining control over other body muscles. Other

**Q.****Why do newborns need so much sleep?****A.**

Half of your baby's sleep will be in the dreaming state and half in the non-dreaming state. During the 8 hours a day that your baby spends in dreaming sleep, his brain is growing and developing at an astonishing rate. Sleep scientists hypothesize that dream sleep stimulates brain growth and development, which is important for learning and memory formation. However, your baby also needs to spend about 8 hours a day in non-dreaming sleep. This part of sleep is responsible for body growth. These are just two important reasons why your baby needs so much sleep.

changes are reflected in his sleep patterns. By the age of 3 months, a baby will develop some of the brain-wave patterns seen during sleep that reflect further brain development. This timing of brain development and the beginning of more mature sleep patterns are both seen simultaneously at about 3 months of age.

### Biological Clock

Your baby's internal biological clock begins to recognize signals, which help him to sleep longer periods at night instead of randomly sleeping day or night. The timing of an infant's sleep is also very different in the first 3 months of life. Your newborn baby will have no preference for the longer sleep periods at night. By 3 months of age, due to the ongoing maturation of the brain and the influence of cues or signals to the brain about day and night, he will begin to develop a new sleep pattern, where he can have longer sleep periods during the night and shorter sleep periods during the day. The cues are social, from interacting more during the day than at night, and biological, from his ability to develop a rhythm based on the light-dark cycle of day and night.

**Q.****How do we know when a baby is dreaming?****A.**

Your baby will have these signs: sucking, fine twitches, tremors, grimaces, smiles, and intermittent stretching and movements of the limbs. If you watch your baby sleep and see some of these signs, you will know he is dreaming.

## Infant Sleep Patterns

### 3 to 6 Months

#### Average Sleep

- At 3 months, an infant's average sleep is 14 to 16 hours per 24 hours.
- At 6 months, an infant's average sleep is 13 to 15 hours per 24 hours.

#### Average Sleep

- At 6 to 12 months, your baby's average sleep is 13 to 15 hours per 24 hours, more or less.
- In a study of 500 healthy children at 6 months, parents reported that 50% slept between 13 and 15.5 hours; 25% slept between 10.5 and 13 hours; and 25% slept between 15.5 and 18 hours a day.
- In a study of 500 healthy children at 12 months, parents reported that 50% slept between 13 and 15 hours; 25% slept between 11.5 and 13 hours; and 25% slept between 15 and 16.5 hours.

Although your baby's brain matures rapidly and changes do occur in his sleep by 3 months of age, up until about the age of 6 months, the part of the brain that controls the timing of sleep is not fully developed. So, your baby develops the ability to control this sleep-wake cycle during the first 6 months of life.

During this time, an infant's waking, sleeping, and feeding are done in a rather random fashion. In fact, the sleep-wake pattern is almost entirely driven by the repeated need for feeding during these first few months. Sleep researchers are studying whether you can start to change these patterns during these early months. However, it is already known that from 3 to 6 months of age, you can start to make changes to the signals that you give your baby to help lengthen nighttime sleep. Some babies can settle on their own, even as infants. If you need to help your baby to fall asleep, you can help him establish good sleep habits by slowly decreasing the nurturing (feeding, cuddling, rocking) that helps him fall asleep and by putting him in bed drowsy but awake. You can also let natural light into the room in the morning and keep the room dark at night, using only a night-light when changing or feeding him at night.

### 6 to 12 Months

By the time your baby is 6 months old, she has developed rapidly in many ways. Some developmental skills are easy to recognize, such as an incredible increase in muscle strength. A newborn cannot support her own head, but by 6 months, your baby is already learning to sit. Other growth is not so readily visible, notably maturation of the brain cells that control sleep and allow your child to develop a more mature sleep-wake pattern.

At approximately 6 to 8 months, the brain center that controls the timing of sleep is finally working, and your baby will slowly begin to synchronize with the schedules of the family. Your baby will start to sleep for longer periods during the night and wake for longer periods during the day. Infants will typically continue to have two naps during the day. Of course, these are all welcomed stages of development for helping you and your family to create some routines.

By 9 months of age, 70% to 80% of infants will sleep through the night (which will be at least 6 hours at a time). Your baby will be able to go for longer periods between feedings, which explains the longer sleep periods. Your baby in every way will begin to respond more and more to all sources of stimulation in the environment that you provide.

## TYPICAL SLEEP/WAKE PATTERN AT 9 MONTHS

**Bedtime:** 6:30 to 7:30 p.m.

**Sleep at night:** 10 to 12 hours (maybe interrupted by brief wakings)

**Wake time:** 6:00 to 7:00 a.m.

**First nap:** 2 to 3 hours after waking

**Second nap:** 2 to 3 hours after waking from first nap

**Third nap:** By 6 to 12 months of age, most babies will decrease the number of daytime naps from 3 to 2

## Toddler Sleep Patterns

The sleep-wake cycle continues to develop so that by the time your baby is 2 years old, this pattern should be well developed. Between 1 and 3 years of age, your child now requires about 12 hours of sleep a day. You may be getting up with your toddler at night (like many parents with children of this age), but this is probably now just a habit that you and your child have developed. We know that babies can learn to sleep through the night around 6 months of age, and definitely by the age of 2 years. Your toddler also has the capacity to learn to do this. At this age, sleep should

Q.

**When should afternoon naps be discontinued?**

A.

There is no definite age when your child should give up her afternoon nap. It depends on your child. If your child is at daycare and all the other children nap in the afternoon, she will likely continue this pattern until she graduates from day care and starts school. However, if your child happens to be enrolled in an afternoon preschool, nursery, or kindergarten program, then she will have to give up her afternoon nap, maybe even earlier than you would have chosen. She may then adopt a schedule with one longer nighttime sleep episode.

The best way to know if your child is ready to give up her nap is to watch how she does during the day and if it takes her longer than 30 minutes to fall asleep at naptime. Notice if she seems well rested. There can be many causes why children have trouble with behavior, attention span, or playing with peers, but remember that one possibility in your toddler and preschooler may be that she is not getting enough sleep and needs longer sleep at night or a regular afternoon nap.

## TYPICAL SLEEP/WAKE PATTERN FOR A YOUNGER TODDLER WITH ONE AFTERNOON NAP

**Bedtime:** 7:00 to 8:00 p.m.

**Sleep at night:** 10 to 12 hours

**Wake time:** 6:00 to 7:00 a.m.

**Afternoon nap:** 12:00 to 1:00 p.m. (1 to 3 hours)

### Average Sleep

- At 1 to 3 years of age, your toddler's average sleep is 12 to 14 hours per 24 hours, more or less.
- In a study of 500 healthy children at 3 years of age, parents reported that 50% slept between 12 and 14 hours; 25% slept from 10.5 to 12 hours; and 25% slept from 14 to 15 hours.

### Average Sleep

- At 3 to 5 years of age, your child's average sleep is 11 to 13 hours per 24 hours.

be continuous at night. However, your toddler will still require a nap (usually in the afternoon) so her sleep will occur in two phases — an afternoon nap and nighttime sleep.

This pattern is very natural. In fact, adults in many cultures maintain this pattern of two sleep cycles a day — one short sleep in the afternoon and one longer sleep episode at night. For most adults living in North America, the afternoon nap is no longer possible given work schedules.

Your toddler's sleep patterns will also be changed when she learns to climb out of her crib and starts to sleep in a child- or adult-size bed. This may present new challenges if you are having trouble getting her to sleep at night or to stay in bed.

## Preschool Sleep Patterns

Most children between 3 and 5 years will consolidate the nap and night sleep into one continuous sleep period at night. However, a few children will continue to have an afternoon nap until starting school around the age of 6 years. Until adolescence, this pattern will remain constant 7 days a week. There is no sleeping-in on the weekends for your child, and probably not for you. Children tend to wake at the same time each day, and this is why it is important to try and have bedtime also at the same time each night.

## TYPICAL SLEEP/WAKE PATTERN FOR A PRESCHOOLER WITHOUT AN AFTERNOON NAP

**Bedtime:** 7:00 to 8:00 p.m.

**Nighttime sleep:** 11 to 13 hours

**Wake time:** 6:00 to 7:00 a.m.

## Child Sleep Patterns

By the time your child is 6 years old, sleep is as perfect as it will ever get. Children between ages 6 and 12 years should fall asleep rapidly and stay asleep throughout the night. Sleep is consolidated into one sleep episode at night. There should be no need for napping during the day. Children at this age may not have this well-developed, healthy sleep/wake pattern if there are sleep problems that started prior to school age.

### *Sleep Pattern Changes*

- Now similar to the adult sleep pattern
- About 50% of the night is spent in medium NREM sleep
- About 25% is spent in deep NREM sleep
- About 25% is spent in dreaming (REM) sleep

## Adolescent Sleep Patterns

The pattern of sleep in teenagers is similar to that of adults. There is a decrease in deep slow-wave (stage 3 and 4 NREM) sleep from the age of 5 to 15, with a concurrent increase in the amount of lighter stages of NREM sleep. The amount and timing of sleep changes for a variety of reasons.

### *Aging*

As your child grows from a child to a teenager, less sleep is needed in most cases.

### *New Demands*

Teenagers experience more academic demands, become more involved in extracurricular activities, take on part-time employment, and regularly socialize with friends — all contributing to less time for sleep.

### *Inadequate Sleep*

Many teenagers obtain less sleep than is required. Although the duration of sleep that is needed, between 8.5 and 9.5 hours of sleep according to research, does not change significantly between 12 and 18 years, many studies show that teenagers (on average) usually get less sleep. Research also shows that older adolescents are sleepier during the daytime than younger adolescents.

#### Average Sleep

- At 6 to 12 years, your child will sleep approximately 10 to 11 hours per night, gradually declining to just over 9 hours per night by age 12.



### Did You Know?

#### Fewer Dreams

The change in required sleep from newborn to age 12 is almost entirely due to the reduction in the need for dreaming sleep. A newborn may spend 8 to 9 hours a day in dreaming sleep, which decreases to 2¼ hours for a 12-year-old. This change parallels the development of the brain and acquisition of many of the most complex behaviors that we must learn (for example, walking and talking).



### ***Parental Involvement***

Parents generally become less involved in the bedtime of teenagers and more involved in ensuring that teenagers rise in the morning. This is compounded by the next development of adolescent sleep patterns — sleeping in.

### ***Sleeping In***

Teenagers tend to go to sleep later and wake up later on non-school days. There is both a biological and social reason for this change once puberty begins. The biological change is a lengthening of the internal clock, which makes teenagers less sleepy at night, preferring to be ‘owl types’ who stay up later at night. The social reason for this change is the demands on many teenagers such as, homework, part-time jobs, extracurricular, and sporting activities, in addition to using the telephone, Internet, television, and video games in the evening.

### ***Irregular Patterns***

Teenagers tend to have a larger difference between their sleep schedules on school days and non-school days. Bedtime and waking times become delayed (except on school mornings). A pattern develops where there is a large discrepancy between the time of sleep onset and rise time between school nights and weekends. In some school districts, teenagers have to start school earlier in high school than in middle school.

### ***Sleep Disturbances***

Teenagers may use substances that impact the onset of sleep and sleep continuity. Substances that may be used or abused by some teenagers, such as nicotine, caffeine, alcohol, and nonprescription drugs, all have the ability to cause significant sleep disturbances.

## **Did You Know?**



### **Sleep and School**

Research studies show that teenagers with less of a difference in the timing of bed and wake times on school days and non-school days obtain better academic scores, showing the association between sleep regularity and academic success.

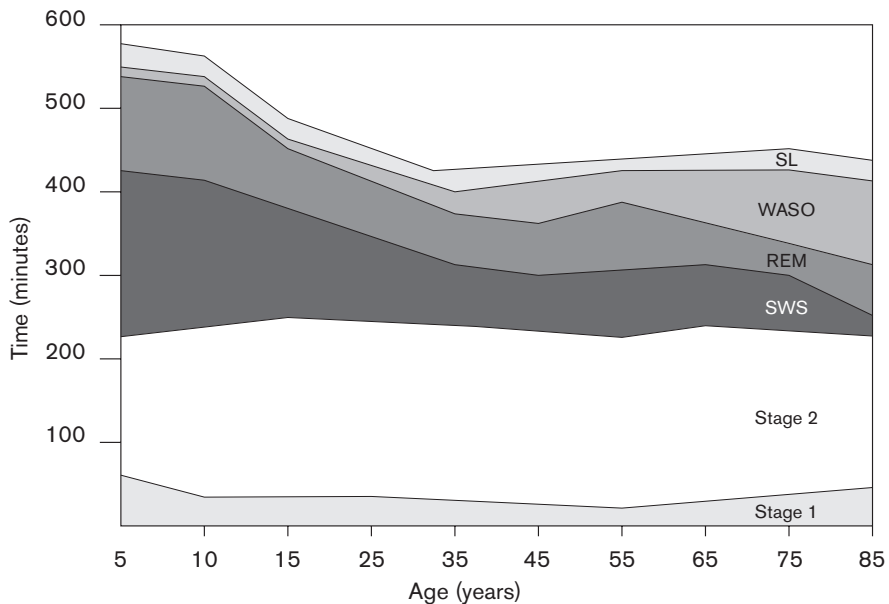
## **Sleep Questions**

Although considerable research has been directed to studying how we sleep and why we may not sleep well, there are still many things we do not know about sleep, including children’s sleep. For example:

- We believe that by treating sleep problems in childhood, we will prevent sleep problems as adults, but this theory has not been scientifically tested.
- We do not know what (if any) the long-term consequences are of successfully treating sleep problems in childhood.

## SLEEP CHANGES FROM AGE 5 TO 85

This graph was recently published by sleep experts who reviewed all the available studies of normal sleep and then combined the data to make this summary of how sleep changes from the ages of 5 to 85 years. Each stage of sleep and wakefulness during the night is shown separately.



1. **SL (sleep latency):** This is shown on the top line of the graph. Sleep latency means the time it takes you to fall asleep once you are in bed and the lights are out. As you can see, the sleep latency is similar throughout life in healthy children and adults.
2. **WASO:** “Wake after sleep onset” is a measure of how much time you spend awake between the time you first fall asleep and wake up in the morning. You will notice that from 5 to 10 years of age, children sleep most of the night and are awake very little. The amount of time spent in waking state through the night increases in adults compared to children and teenagers.
3. **REM (rapid eye movement sleep or dreaming sleep):** You can see that children between 5 and 10 years of age have a large amount of dreaming sleep, which then decreases slightly.
4. **SWS (slow-wave sleep):** This is the deep sleep (stage 3 and 4 non-REM) that is so prevalent in childhood. The black bar showing the amount of SWS is quite striking. The amount of slow-wave (deep restorative) sleep decreases from childhood to adulthood and then again markedly decreases in the elderly.

5. **Stage 2 NREM (non-rapid eye movement) sleep:** This is medium deep sleep. You can see that the amount of Stage 2 NREM sleep is fairly constant throughout life and makes up a large part of our sleep.
6. **Stage 1 NREM sleep:** This is transitional sleep. We are in Stage 1 briefly when transitioning from wake to sleep and back, and you can see from the graph that the amount of Stage 1 sleep is fairly constant and makes up a small amount of our nightly sleep.

(Adapted by permission from Ohayon MM, et al. Meta-analysis of quantitative sleep parameters from childhood to old age in healthy individuals: Developing normative sleep values across the human lifespan. *Sleep* 2004;27(7):1255-73.)

- Most studies that have been done focus on children with difficulty settling at bedtime or trouble sleeping through the night. We need more studies on all the other types of childhood sleep problems.
- There are few studies on the use of medications in treating sleep disorders in children. Therefore, we do not know the exact rationale for using medications, which ones (if any) would be best, and how long to use them.
- There is some research that shows that the hours children sleep may vary from one country to another, but we do not know if children raised in one country need more or less sleep than another.

We do know that different children need different amounts of sleep to feel rested in the morning and to remain alert during the day. But how much sleep does your child need? That is the subject of our next chapter.

## Chapter 2

# Sleep Needs

**T**HE MOST COMMON question that parents ask sleep specialists is, “How much sleep does my child need?” The answer is simple, but not conclusive. Children need different amounts of sleep depending on their age, and within each age group, your child may sleep more or less than the average, but still be getting enough sleep.

### How Much Sleep Does My Child Need?

We know from research studies how much sleep children get on average as they grow. These studies are based on questionnaire surveys of parents in different countries around the world. While the desired average amount of sleep that children need at different ages is known, there are individual children who sleep more or less than average and remain healthy and well rested.

#### Quick Guide to Average Sleep Needs

You may want to record your child's average sleep duration in comparison with sleep studies of many other children.

Age	Average hours	My child sleeps...
0 to 2 months	16 to 18	_____ hours
2 to 6 months	14 to 16	_____ hours
6 to 12 months	13 to 15	_____ hours
1 to 3 years	12 to 14	_____ hours
3 to 5 years	11 to 13	_____ hours
5 to 12 years	10 to 11	_____ hours
12 to 18 years	8.5 to 9.5	_____ hours

## Sleep Adequacy Studies

Research has also revealed other facts about sleep needs in different age groups and in different cultures.

### Age Groups

- Infants need the most sleep and their need decreases with age.
- School-age children are the least sleepy during the day and the least likely to nap.
- Preadolescents are the second least sleepy age group.
- Teenagers in mid to late adolescence, even if they are getting the correct amount of sleep at night, are sleepier during the daytime than in childhood or in early adolescence.

### Cultural Groups

Studies in several countries, including the United States and Canada, document that teenagers are generally getting less sleep than they need.

Sleep need varies somewhat by where you live. In some countries, children obtain either more or less sleep on average, but we do not know if this is because they need more or less, or if cultural differences in parenting practices dictate different amounts of sleep.

### Did You Know?



#### Increasingly Less Sleep

Over the last several decades, children and adults have been getting less sleep on average, regardless of their age.

## case study: Gail

Gail was 4 years old when her parents brought her to our sleep clinic. At that time, she resisted bedtime, which was usually at 8:00 p.m., and by the time she settled down and fell asleep, it was usually 10:00 p.m. Gail attends an afternoon preschool program, and because her mother works from home, she can sleep until 9:00 a.m., therefore getting 11 uninterrupted hours of sleep.

During the day, Gail is a happy, well-adjusted child, but her parents worry that she is not getting enough sleep to stay healthy. After further discussion, it was apparent that Gail was not showing any signs of sleep deprivation. She was sleeping within the average for her age category (between 11 and 13 hours). One of the reasons that Gail was able to get enough sleep (which would not apply to all families) is that her mother works from home, and, therefore, she is able to sleep later in the morning. Gail's parents were reassured to hear that she was getting enough sleep and learned from attending the clinic that the important question is not "How much sleep should my child get?" but rather "What are the signs that my child is not getting adequate sleep?"

## How Do I Know If My Child Is Getting Enough Sleep?

For you and your child, a more important question than “How much sleep does my child need?” is “How do I know if my child is getting enough sleep?”

If children show symptoms of being sleepy during the day, they are likely not getting enough sleep, regardless of how their

### SLEEP CHECKUP GUIDE

#### Healthy Sleep Signs

If your child is getting enough healthy sleep at night, you will be able to answer yes to the following questions. Check them off.

- My child falls asleep in less than 20 to 30 minutes of bedtime.
- My child wakes easily in the morning, at an expected time.
- My child appears well rested during the day.
- My child stays awake without taking a nap during the day. (This question only applies to children who have outgrown their daytime nap.)
- My child stays awake during quiet activities, such as driving in the car or watching television.

#### Inadequate Sleep Symptoms

However, if your child is not getting enough healthy sleep, you or his teacher will be able to answer yes to the following statements. Check them off.

- My child has difficulty getting up in the morning.
- My child falls back asleep after being woken and needs parent to wake again or repeatedly.
- My child yawns frequently during the day.
- My child complains of feeling tired.
- My child prefers to lie down during the day, even if she misses activities with family or friends.
- My child wants to nap during the day.
- My child lacks interest, motivation, and attention.
- My child falls asleep or seems drowsy at school during class or at home during homework.

sleep duration stacks up against the average child. Sleep quantity is not the only factor to be considered. Sleep quality can also play an important role in determining if your child gets enough good sleep. We can approach an answer to this question by determining symptoms of inadequate sleep and poor quality sleep.

## Mistaken Symptoms

When adults are sleepy, they generally look fatigued. In adults, it is easy to recognize the symptoms of fatigue, but this is not always true in children. When children are tired, some may look fatigued like an adult, but others may not look sleepy and instead exhibit other symptoms, which are, at times, the apparent opposite of being tired:

- Irritable
- Inattentive
- Hyperactive
- Low tolerance to frustration

These symptoms of inadequate sleep may be misdiagnosed as attention deficit/hyperactivity disorder (ADHD) or a behavioral problem. If your child displays these symptoms, you should first think about his quality and quantity of sleep. Try to determine if he is getting enough sleep or if anything is disturbing his sleep. Is he showing any signs of breathing difficulties at night, which could be the signs of sleep apnea disturbing his sleep? Talk to your doctor about these concerns. If he is getting adequate sleep, without any signs of sleep problems, then you can evaluate with his doctor other causes of these symptoms.

## Teenage Symptoms

Teenagers may present different symptoms than adults when they are tired. In a teenager, you may see these symptoms of inadequate sleep:

- Use of excessive caffeine in food or drinks for the stimulant effect
- Problems with memory and learning
- Drowsiness or napping during classes
- Difficulty staying awake in the afternoon

### Did You Know?



#### Mismatched Needs

Sometimes there is a mismatch between the amount of sleep that you or your partner may need and the amount of sleep that your child needs. Although you might like it if your child slept longer and allowed you to have more rest, your child may be getting adequate sleep for her needs.

## ***Consequences of Inadequate Sleep***

Teenagers suffering from inadequate sleep may experience the following consequences and complications:

- Excessive fatigue, such as falling asleep in non-stimulating activities
- Drop in school performance
- Mood changes
- Drowsy driving motor vehicle accidents
- Reliance on stimulant substances and drugs to stay awake during the day

**Q.**

**How do I know if my teenager is not getting enough sleep?**

**A.**

Inadequate sleep in adolescents can be hard to detect, and the consequences can be severe. To determine if your teenager is sleep deprived, try asking yourself these questions:

- Is my teenager excessively sleepy during the day?
- Has my teenager's school performance decreased?
- Does my teenager have a mood disturbance (which can be both caused by or causing the sleep problems)?
- Has my teenager been involved in motor vehicle accidents and other problems caused by daytime sleepiness?
- Does my teenager rely on stimulants and/or drugs to stay awake during the day?

If you answer yes to any one of these questions, you may want to consult your child's doctor.

## **What Causes Inadequate Sleep?**

The most common cause of sleepiness during the day at any age, for children and for adults, is, simply, inadequate sleep. However, there are other causes to consider, including sleep disruption, an increased need for sleep in some people, and several sleep disorders and syndromes.



**Did You Know?****Good Quantity,  
Poor Quality**

If your child has an adequate amount of sleep (quantity), but poor sleep continuity (quality), then he will be tired.

**Did You Know?****Good Quality,  
Poor Quantity**

If your child is getting restful sleep (quality), but inadequate amount of sleep (quantity), she may need more sleep than she is obtaining.

## Sleep Disruptions

There are specific sleep disorders, medical and psychiatric problems, and side effects of medications that can disrupt sleep and cause daytime sleepiness. Anything that causes your child's sleep to be disrupted at night will cause daytime sleepiness.

While there are many reasons for sleep to be disrupted, the most common causes in children are based on problems that are easily resolved with behavioral management.

### ***Common Causes of Nighttime Sleep Disruption***

- Obstructive sleep apnea
- Nightmares
- Night terrors and sleepwalking; these sleep disrupters can disturb your sleep but not necessarily your child's sleep
- Environmental factors, such as noise, light in the bedroom
- Drugs, either prescribed or street drugs, including nicotine, alcohol, caffeine
- Medical problems, such as asthma, eczema, seizures

## Increased Need for Sleep

There are rare sleep disorders where your child may need extra sleep at night. Medical, psychiatric problems, and medications can also contribute to an increased need for sleep. This is the least common cause of sleepiness during the day, but the most common reason to consult your doctor.

### ***Factors in Need for Extra Sleep***

- Illness
- Effect of medications, such as antihistamines used in medicine for allergies, motion sickness, or cold medications
- Depression or other mood or psychiatric disorder
- Narcolepsy (a rare cause of excessive daytime sleepiness)

## Other Common Causes of Inadequate Sleep

There are several other common problems that can cause your child to have trouble falling asleep at night, staying asleep, or waking too early in the morning.

**Difficulty falling asleep at the beginning of the night:**

- Inadequate sleep hygiene: for example, having an irregular schedule and inconsistent sleep habits.
- Sleep-onset association disorder: a problem where your child has not learned to fall asleep without you or certain conditions present at bedtime.
- Limit-setting disorder: includes numerous 'curtain calls' from your child who resists bedtime.
- Delayed sleep phase syndrome: a problem with the timing of sleep and wake, where both are delayed.

**Difficulty maintaining sleep through the night:**

Sleep-onset association disorder: a problem where your child is unable to self-soothe and fall back to sleep on his own when he has brief normal arousals at night until certain conditions (the same as those present at time of sleep onset) are recreated for him.

**Waking up too early in the morning:**

Advanced sleep phase syndrome: another problem with the timing of sleep and wake, but in this case, your child has advanced his pattern, falling asleep and waking earlier than desired.

Many of these disorders and syndromes have been studied extensively by sleep specialists, but before we turn to describing their diagnosis and treatment, let's look at strategies for preventing sleep problems with improved, consistent sleep hygiene. In this case, a pound of prevention is worth a ton of cure.

## Chapter 3

# Sleep Hygiene

**W**HAT HAPPENS IN your home at night when it is time to put your child to bed? In many homes, where parents may be working long hours and may not have the support of extended family close by, the evening can be hectic. When you arrive at home after work, you contend with preparing dinner, tidying up, helping your children with homework, and, finally, trying to get them into bed. If this wasn't challenging enough, it is even harder to accomplish all these tasks when you, too, are exhausted.

The key to making the transition from daytime activities to nighttime sleep is to develop good sleep hygiene. Good sleep habits are fundamental for preventing your child from developing a sleep problem and the very first place to start if a problem already exists.

### How Do I Develop Healthy Sleep Habits for My Children?

#### Did You Know?



#### Adult vs. Childhood Insomnia

When adults have insomnia or sleeplessness, they can educate themselves about improving sleep hygiene, understand the rationale, and make independent decisions about changing their sleep habits. Children, however, do not have the insight to change their sleep hygiene habits, so the responsibility for developing healthy sleep habits resides with the parents.

You can think of healthy sleep habits like other good habits in life. We teach our children at a young age to follow healthy habits so that they will become part of their daily or evening routines. For example, we may teach our children the habit of brushing their teeth every morning and evening, providing them with their own toothbrush and toothpaste, placing this in a designated place near the bathroom sink, and establishing a regular time for brushing. Children quickly learn these habits and follow a routine. After a while, there's no need to talk about the habit; it just gets done. Well, most of the time...

Good sleep hygiene is similar to good dental hygiene. There are habits you need to teach your children so they become routine. Even adults who have sleep problems could start by reviewing these healthy habits to see what they can improve in their own sleep hygiene or sleep health. You may be better prepared to help your child if you do so.

## Behavioral Changes

First, you have to understand what needs to be changed and why, and then you need to introduce the changes slowly, along with rewards and consequences for your child's compliance to the new

### case study: **Vivian**

Vivian's parents brought her to our office because she is always complaining of being tired, and in the last school term, her report card average dropped from a B to a C. Vivian is a 13-year-old girl with trouble settling to sleep at night due to problematic sleep habits. In her house, there is no routine or schedule. The family practices a relaxed, unstructured lifestyle. There are no rules about sleeping and waking.

When it comes to bedtime, Vivian goes to bed when she is tired. This can range from 9:00 p.m. to staying up as late as midnight. She gets to school each morning, but it's a big struggle. Often she misses breakfast, rushing to get to school on time. She always seems to be tired, even when she tries to catch up on her sleep on the weekends by sleeping until noon. Her parents asked us if we could help.

First, we helped her parents to identify Vivian's bad sleeping habits, and then we choose one habit at a time to change. We recommended establishing a bedtime routine. This could involve Vivian reading quietly in her bedroom for 30 minutes every night. At Vivian's age (13 years), she needs between 8.5 and 9.5 hours of sleep. If she has to wake up for school at 7:00 a.m., then she should be asleep between 9:30 and 10:30 p.m. They could start by setting her bedtime routine at 9:30 and lights out at 10:00, so that she can fall asleep by 10:30. After a week of this schedule, Vivian's bedtime routine could be moved 30 minutes earlier to 9:00 with lights out at 9:30, so that she is consistently falling asleep by 10:00 p.m.

Vivian's reward for cooperating with this new schedule should be something that she likes to do, rather than money or gifts. For a younger child, a reward could be a sticker chart, and if enough stickers are gained, a reward of special time with parents, a special activity, or time on the computer. For an older child or teenager, the reward could be similar, but chosen by the child/teenager and parents together, such as a movie night with friends. If Vivian does not cooperate, the consequences would be the removal of a privilege, such as computer time or a desired social outing or activity.

Using rewards and consequences, Vivian's parents gradually changed each problematic behavior and they were able to develop a regular routine and schedule for sleep and wake. Vivian is no longer overly tired during the day and her academic performance has improved.

routines. You might choose to make a sticker chart and decide with your child to adopt one new habit from the list below. Then you can gradually work on each problematic behavior that you identify to promote better sleep hygiene in your child.

## BAD SLEEP HABITS IDENTIFICATION WORKSHEET

In order to know where to start improving your child's sleep hygiene, you can work through the following list of bad sleep habits. Check off the behaviors your child exhibits and you permit. Then use the next worksheet to begin the process of gradually changing these problematic sleep habits.

- No bedtime routine
- No predictable bedtime
- No regular wake time
- Bedtime or wake time not consistent 7 days a week
- No expectations set by parents for consistency in schedules
- Large difference in sleep/wake times between school days and weekend days
- No regular mealtimes and often skips breakfast
- Eating heavy meals late at night
- Inadequate exercise or exercise late at night, close to bedtime
- Stimulating exercise, activity, discussion, computer or video games before bedtime instead of having quiet, relaxing, winding down time
- Sleeping in a bedroom that is noisy, light, or warm
- Child being in charge at bedtime (or anytime), demanding, for example, that only one parent can put her to bed
- Falling asleep out of the bedroom
- Falling asleep in bed with the television, radio, or music on
- Excessive caffeine intake, especially later in the afternoon and evening
- Not being exposed to sunlight in the morning
- Napping during the day, especially in the late afternoon (applies only to children beyond preschool)
- Use of nicotine, alcohol, or recreational drugs

## BETTER SLEEP HYGIENE WORKSHEET

The following are some questions related to sleep hygiene. Fill in your answers to the following questions about sleep hygiene. Discussion of each question is then provided so you can take the first step to improving your child's sleep hygiene.

1. **Activities before bedtime:** What kind of activities does your child do between finishing supper and going to bed?  

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2. **Bedroom environment:** Is the bedroom she sleeps in quiet, comfortable, dark, and cool? Describe the bedroom atmosphere.  

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3. **Bedroom use:** What else is the bedroom used for? Does your child have a computer, television, MP3 player, telephone, or cell phone in the bedroom? How are these activities monitored at bedtime?  

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4. **Bedtime routine:** Do you have a bedtime routine? Is the bedtime routine short (under 30 minutes) and predictable? Does your child allow either parent to carry out the bedtime routine?  

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5. **Bedtime and wake time:** Does your child have a regular bedtime? Is this bedtime appropriate for your child's age, allowing time for sufficient sleep at night? Is it the same 7 days a week? Does your child have a regular wake time? Is it the same 7 days a week?  

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6. **Mealtimes:** During the day, are your child's meals regular? Are they regular 7 days a week?  

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7. **Caffeine:** Does you child eat or drink foods with caffeine? Take an inventory of the caffeine listed on food and drink nutritional facts labels.  

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**8. Exercise:** Does your child get regular exercise during the day? Does your child have any sport, dance, or other exercise activities in the evening after dinner? List these activities, their time, and their duration. (Remember that these evening activities are not problematic for all children. However, if your child has more trouble falling asleep after these stimulating evening activities, this should be noted here.)

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**9. Sunlight:** Does your child get exposure to sunlight in the morning? List at what time and if the time is consistent 7 days per week.

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**10. Naps:** Since the time that your child outgrew the habit of napping, has this practice resumed as an older child or teenager? List when this started and note the timing and duration of the naps.

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**11. Nicotine, alcohol, and other substances:** Does your teenager smoke cigarettes (nicotine), drink alcohol, or use recreational drugs? This may be difficult to determine, but take the time to talk with your son or daughter.

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Before Bedtime Activities	
Good Evening Activities	Problematic Evening Activities
Relaxing activities, such as reading or listening to a story	Doing activities that cause excitement, stress, or anxiety, such as watching violence in a movie or computer game
Listening to music	Roughhousing with a family member
Playing a quiet game	Playing a competitive game or exercising vigorously 3 hours before bedtime
Taking a warm bath	Working on complicated homework or computer games within 1 hour of going to sleep
Talking in a calm way about the day	Discussing stressful situations or problems with your child just before it is time to fall asleep

## Good Sleep Habits

Refer to your notes in the Better Sleep Hygiene Worksheet as we work through this corresponding list of good sleep habits.

### ***Activities before Bedtime***

Some activities help your child to sleep and some make it harder to fall asleep.

### ***Bedroom Environment***

Wherever your child sleeps, whether in his own room, in a shared room with a sibling, or in your room, he should have a space to sleep at night that is his own. This may be part of a shared bed or his own bed. Your child does not need to have his own room. In fact, many children prefer to sleep with a sibling. The important thing is that the bed (or the part of the bed, if he shares it with a sibling) has an adequate amount of space for sleeping.

### **Quiet**

The bedroom must be quiet when your child is falling asleep. If you live in a noisy city, then you may need to use heavy blinds or curtains to create a quiet room. Your child should not fall asleep in a room with the television turned on or music playing. If your child shares a room with an older sibling, this may mean that the sibling has to do her homework outside of the bedroom at night. There should not be a lot of noise in the house from other parts of the home, from older siblings, or from television or music in other rooms.

### **Dark at Night**

Light and darkness are major cues to tell our body when to be awake and when to fall asleep. Darkness triggers the production of a hormone called melatonin, which promotes sleep. For this reason, it is much healthier to fall asleep in a dark room. You may need to install blackout curtains to darken the room at night, though the bedroom does not have to be entirely dark. A night-light set at a low light will not affect sleep/wake rhythms. Full light triggers wakefulness, so it is equally important to have exposure to natural sunlight in the morning to help set the biological clock to 'wake up'.

### **Comfortable**

Your child should have a comfortable mattress and feel safe in his bedroom. If your child has allergies, the room and pillows should be nonallergenic.

#### **Bedroom Qualities**

- Quiet
- Dark at night  
(a night-light is fine)
- Comfortable
- Cool



## Cool

The bedroom should be at a comfortably cool temperature at night to promote sleep onset and maintain sleep. The temperature should be adjusted so that a lightly clothed adult would be comfortable. For younger infants and toddlers, you can ensure they have appropriate warm sleepers to stay comfortable if the covers are dislodged at night.

## *Bedroom Use*

The bedroom should only be used for sleeping, especially if your child has difficulty falling asleep. Remove computers, telephones, radios, and televisions from your children's bedroom so that at bedtime, they can only use their bedroom to go to sleep. Some older children and teenagers who are anxious about falling asleep can also turn the clocks in the room toward the wall to prevent them from being overly focused on the time and their anxiety about falling asleep.

## *Bedtime Routine*

Try to establish a bedtime routine that is short, predictable, and consistent. The routine can change as the child grows, but even infants at a few months of age can benefit from a routine.

It is important for you and your partner to take turns with the bedtime routine. This doesn't have to be on any rigid schedule. Bedtime should be a happy, bonding time, and each parent should have the opportunity for this special activity. Your child should learn to allow either parent to share this bedtime routine. When your child allows each parent to participate in this activity, it becomes easier to transfer the routine to another family member or caregiver when parents are not available at bedtime.

## Short

The bedtime routine should last for 15 to 30 minutes, and your child should learn that the end of the routine signifies time to go to sleep. The routine should be in the child's bedroom where it is quiet.

## Predictable

The routine will change as your child grows, but it should remain predictable. When things are done in the exact same order (some children even like the exact same story and song for some time), this lets the child know that it is time to go to sleep and is comforted by its predictability each night.

### **Bedtime Routine Qualities**

- Short
- Predictable
- Interchangeable

## Interchangeable

The routine should be able to be carried out by either parent or a caregiver. Your child should not be able to demand, for example, that Mommy always puts him to bed.

## Bedtime and Wake Time

As much as possible (given the demands of daily life with its changing schedule), your child should have a bedtime and wake time that is the same 7 days a week. Bedtime will become later as your child grows up, but it should always be set to allow adequate sleep duration.

In older children and teenagers, who often have later bedtimes on the weekends, it is even more important to keep the wake time consistent.

## Mealtimes

The timing of meals is important for keeping the 'biological clock' adjusted each day and maintaining a regular sleep-wake cycle. Food, like light, is a zeitgeber that helps us to set the internal clock and keep us on a 24-hour cycle. For this reason, your child should eat at the correct time of the day and avoid eating at the wrong time. This includes eating breakfast every morning at around the same time. Your child should avoid heavy meals late at night, which will disrupt sleep onset. A light carbohydrate snack, such as fruit or cheese and crackers, before bedtime, however, may help to induce sleep onset.

## Sunlight

Your child should be exposed to natural light (sunlight) in the morning upon waking. Open the curtain in his bedroom in the morning to let in natural light. Sunlight and other sources of intense light are one of the strongest cues to tell us that it is time to wake up.

## Caffeine

Caffeine is a stimulant that causes an alerting effect and can keep your child awake at night. If your child has caffeinated products in the afternoon or evening, the effect of the caffeine stays in the body for 3 to 5 hours, but it can have a longer-lasting effect, up to 12 hours. Be sure your child avoids caffeinated foods and beverages 6 hours before bedtime. Some soda drinks may have caffeine, so you need to check the caffeine content of food and drinks if you are not sure.



## Did You Know?

### Sunday Morning Wake-up

Some teenagers have difficulty getting up for school on Monday morning, especially if they are sleeping past noon on Sunday. To minimize disruption to their routine, they should wake up, especially on Sunday morning, no later than 1 hour after the time they wake up during the week.

## Caffeine Content of Common Foods and Drinks

Product	Amount	Caffeine
Cola drinks (Coca-Cola or Pepsi)	8 oz	23–25 mg
Sweetened ice tea	8 oz	8–35 mg
Sunkist orange soda	8 oz	28 mg
Mountain Dew	8 oz	37 mg
Coffee	7 oz	80–135 mg
Decaffeinated coffee	7 oz	2–4 mg
Hot chocolate	7 oz	5 mg
Chocolate milk	8 oz	7–8 mg
Chocolate bar	45 g	30 mg
Energy drink	8 oz	80 mg

### Did You Know?



#### Napping Benefits

Unfortunately, we do not have any studies on the benefits of napping in children who have outgrown the need for a nap. However, there have been studies on the benefits of napping in adults, which show that the effect of a daytime nap depends on the person's recent sleep pattern. If adults have a normal duration of sleep at night and have a nap of more than 30 minutes, the following day, they will have an improvement in alertness and performance following the nap.

### Exercise

Regular exercise is not only important for your child's general health, but also for sleeping better at night. People who exercise find it easier to fall asleep at night and have deeper sleep. However, your child should not exercise vigorously at least 3 hours before bedtime. Exercising too close to bedtime may cause trouble in falling asleep because of excitement of the sport and increased body temperature. Body temperature typically begins to drop in the evening, which is associated with the timing of sleep onset.

### Naps

While children generally outgrow their nap by the age of 5, everyone at every age finds that occasional napping is restful. It can be refreshing to have a regular, short nap in the early afternoon. The nap length should be more than 20 minutes or less than 90 minutes for maximum benefit. However, if your child has difficulty sleeping through the night or falling asleep, daytime sleep should be discouraged.

## DAILY SLEEP HABITS GUIDE

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Here are the principles of developing good sleep hygiene for a typical day in the life of your child. Consistency and regularity are the foundation of ongoing good sleep habits.

### Morning

- Establish a consistent wake time: 7 days a week, including weekends and holidays.
- Eat breakfast at the same time every morning.
- Expose your child to direct sunlight in the morning, when possible.

### Daytime

- Plan regular exercise for your child, such as biking, roller-blading, or hiking.
- Plan regular meals and snacks during the day.
- Limit your child's intake of caffeinated food or beverages (cola, chocolate, tea, coffee) and allow none of these for about 6 hours before bedtime. This is applicable to nicotine if your teenager smokes.
- If your child is napping, establish a regular nap schedule and wake him up from his afternoon nap by 4 p.m.

### Early Evening

- Reserve this time for winding down, calm activities, and discussions.
- Discuss stressful situations and experiences during the day or now, not just before bedtime.
- Avoid vigorous exercise and sports from now until bedtime.
- Avoid your child's exposure to stimulating or violent television shows, computer programs, or video games.
- Don't allow your child to eat heavy meals.

### Bedtime

- Your child can eat a light bedtime snack, if desired. Avoid excessive fluids.
- Do not allow your child to watch television in bed or have a television in his bedroom.
- If not already done, turn off your child's computer and cell phone.
- Consider giving your child a warm bath 60 to 90 minutes before sleep time. This may be helpful to some children and stimulating to others, so you need to determine if this is helpful.
- Provide a dark, quiet, comfortably cool room for your child.
- Let your child fall asleep on his own in his bedroom.

### ***Nicotine and Alcohol***

Teenagers generally know that smoking is bad for their health, but they may not be aware of the effects of nicotine on sleeping. Nicotine (in cigarettes and other tobacco products) acts as a stimulant and can make it more difficult to fall asleep at bedtime. Some teenagers think that alcohol helps them fall asleep, but it actually disrupts sleep, in addition to the other health dangers it can cause.

## **Sleep Hygiene through the Ages**

### **Newborn (0–6 Months)**

When your child is an infant, you will be caring for all his needs, including his sleep routine. While you can expect to be tired and sleep deprived during this time, there's no need for your baby to be. Although his sleep pattern may wear you out, when your newborn has grown into a teenager who is independent and wants to sleep until noon, you may reflect longingly on those early days when he was a baby and waking you through the night.

### **NEWBORN SLEEP ROUTINE**

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To establish and maintain good sleep habits for your baby:

- Provide a safe sleep environment.
- Put your baby to sleep on her back.
- Some babies can fall asleep on their own. Others need to be nurtured and helped to fall asleep by feeding, rocking, and cuddling.
- Look for the signs that your baby is getting sleepy (usually within 2 hours after the last feeding) and help him fall asleep when you see these signs.
- Help your baby to learn the difference between day and night by waking him in the morning, playing with him during the day more than in the evening, and putting him to bed at night. Some babies get their days and nights mixed up.
- Provide a dark room at night and natural light during the day. Have your supplies close at hand to change diapers and use a night-light to decrease stimulation at night. During the day, let natural light into the room when your baby is napping.
- Get as much sleep for yourself as possible.

After several months of following a routine, you will notice the changes in your baby's sleep behavior. Your child will begin to sleep for longer periods, more so at night. Your baby will be more wakeful during the day. Some babies will naturally start to sleep through the night, but if your baby does not do this, there are techniques to encourage longer sleep periods. These techniques, called behavior management, have been shown in research studies to be effective.

**Q.****How often should my baby wake at night?****A.**

Frequent waking at night in babies is one of the most frequent sleep concerns of parents. When your infant is a newborn, you can expect to be woken frequently at night (from two to five times) to feed and change him. This is part of the normal newborn sleep pattern.

**Q.****What can I do to teach my baby to sleep longer periods at night?****A.**

Although some babies can settle on their own, even as newborns, other need to be nurtured to sleep. For the first few months of life, you should help your infant to fall asleep by rocking, cuddling, nursing, and bottle-feeding, or any other soothing, nurturing technique. You cannot 'spoil' your baby by providing this comfort, despite what your well-intentioned relatives or friends may tell you. Your baby needs this contact while falling asleep. Babies cannot always soothe themselves independently.

As your child develops more mature sleep patterns by 3 to 4 months of age, you can start to put your baby to bed drowsy but awake. You can still stay with him while he is falling asleep, feeding, rocking, or patting him in his crib, but you can start to decrease the soothing activities that he needed for the first few months of life. As long as your baby is thriving, by the time he is 6 months of age, you can start to decrease his nighttime feeding if you want to encourage longer sleep periods at night, and he will gradually eat more during the day to make up for the changes.

**Q.**

**My baby has her days and nights mixed up. How do I reverse her schedule?**

**A.**

A newborn up to 3 months of age has not developed a circadian rhythm and wakes and sleeps according to her need to drink or her need for comfort, rather than to a day/night schedule. Even with a young baby, you can decrease the stimulation that you provide when she wakes at night and increase your play with her during the day. When your baby wakes at night, you should take care of her needs, but do this calmly and quietly. You should feed and change her, but do this in a dimly lit room, without turning on music or talking to her loudly. This lack of stimulation will encourage her to return to sleep. However, during the day, you can be more playful when your baby wakes to eat, turning on the lights, singing to her, and talking to her. These activities will encourage her to stay awake longer between feedings than during the night. Using these methods, she will gradually reverse her schedule and sleep longer at night and stay awake longer during the day. You should expect this change to take place by 6 months of age.

## Younger Infant (4 to 6 Months)

After 4 to 6 months of your sleep being disrupted, you may become mildly to severely sleep deprived. This can affect your ability to cope. The amount of sleep deprivation you experience will depend on many factors relating to your baby's sleep, your own need for sleep, your general medical health, and your support at home. You may be able to obtain some sleep during the day when your baby sleeps. But the most important thing you can do to improve your sleep is to establish a sleep routine for your child to give both of you more rest.

**Q.**

**What does 'sleeping through the night' mean?**

**A.**

Prominent pediatric sleep researchers studying infant wake and sleep patterns extensively define 'sleeping through the night' as sleeping from midnight until 5:00 a.m. They have found that, although parents may report that their infant sleeps through the night, when you videotape infants sleeping, you see the brief arousals that are a normal part of sleep. These infants are able to soothe themselves easily back to sleep without 'signaling' the need for parental intervention. In considering whether you need to improve your infant's sleep routine, it would be a good goal for a 6-month-old infant to be sleeping without signaling you upon his brief nocturnal arousals for 6 or more hours, although research studies have shown that 30% of babies at this age do not sleep for at least 6 hours at night. As your infant gets older, your expectation for longer sleep periods at night would also lengthen.

## YOUNGER INFANT (4 TO 6 MONTHS) SLEEP ROUTINE

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To establish and maintain good sleep habits for your young infant:

- Establish a routine, even if it is very short (5 minutes to start), that will help teach your baby that something special happens just before bedtime. This could be as simple as singing the same lullaby or reading the same simple story at bedtime.
- Keep the routine consistent, putting your baby to bed in the same room. For an infant, consistency would mean that, whenever possible, your baby is in his own crib at home or daycare for naps and bedtime. Depending on your family life, work, and household responsibilities, you may find yourself letting your baby sleep in the car or the stroller frequently. This is not a problem for all babies. However, when possible, you should allow your baby to start her nap at similar times during the day, have a similar bedtime, and sleep in her own crib.
- Stop feeding your baby when he is drowsy but full. Instead of nursing or feeding him until he is fast asleep, put him in the crib (on his back) drowsy and let him learn to fall asleep without drinking at the same time. If he is bottle-feeding, don't give him his bottle when you place him in the crib as he falls asleep.
- Try using a transitional object, such as a blanket or stuffed animal, that lets your child know it is bedtime. For a young infant, this can be sleeping with the same blanket in the crib. For a toddler or older child, this may be a soft stuffed animal or blanket.
- Give your child cues or signs that lets him know there is a difference between night and day. You want to help your baby to learn that night is for sleeping and day is for being awake. Although he doesn't know this intuitively, he will learn by recognizing that you interact with him differently at night than during the day. Babies enjoy all the positive attention and cuddling that you provide. If you start to decrease (not stop) this positive interaction at night when your baby wakes up, he will slowly adjust to waking for shorter times at night and anticipate being awake in the daytime for your concentrated attention.
- Slowly decrease the amount of stimulation (light, noise, cuddling) you give your baby when he wakes during the night and increase the playful times you have with him during the day.
- When you are feeding your infant or changing his diapers during night wakings, keep the room light dim (just enough light to care safely for your baby) and speak quietly.



**Q.**

**How can I get my baby to sleep through the night? Should I just let him 'cry it out'?**

**A.**

You may have been advised to just let your baby 'cry it out' and not respond to him at night. This method of improving your baby's sleep is not recommended. There is a concern about potential harm caused by being nonresponsive to your infant. Infants signal their needs by crying – this is your baby's way of communicating with you. If you do not respond at all when she cries, you won't know the cause of the crying, and your baby may receive the message that her caregiver cannot be relied on for meeting her needs. You will learn methods to teach your baby to sleep through the night in the following chapters.

## Older Infant (6 to 12 months)

At this age, your baby will go for longer periods between feedings. A healthy 6-month-old, full-term baby can learn to sleep for longer periods at night. By 9 months of age, 70% to 80% of babies will sleep through the night (at least 6 hours at a time).

This is a good time to establish healthy sleep habits by helping your child learn to sleep for longer periods at night without needing to nurse or bottle-feed, or to require parental intervention to return to sleep at times of brief nocturnal arousals.

**Q.**

**Why do some infants wake frequently at night?**

**A.**

At this age, the most common sleep problem is frequent waking at night. In some families, this is not a problem if the mother or caregiver is willing to wake up frequently with the baby and feed him through the night. If you prefer to do this, and your baby is thriving, go ahead. This pattern can resolve on its own in some babies who learn naturally to sleep through the night. In other babies, where the mother or caregiver wants to increase nighttime sleep, some sleep training is needed.

Your baby may awake and cry out because he is hungry and thirsty. Most babies who wake frequently at night fall asleep easily after being breast-fed or bottle-fed. However once asleep, they may wake up many times at night and will only go back to sleep once they are fed again. This becomes a hard problem to solve because the more they eat, the thirstier and hungrier they are at night. Frequent feeding becomes a habit. In addition, frequent fluids may cause your baby to urinate often and so he may waken due to a wet diaper.

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## OLDER INFANT (6–12 MONTHS) SLEEP ROUTINE

To establish and maintain good sleep habits for your older infant:

- Provide a safe sleep environment. Continue to have your baby sleep in his crib for the first year of life. Toward the end of the first year, when your baby may be standing in the crib, you should remove the side bumpers (if you have been using them) and make sure the crib mattress is at the lowest setting. It is recommended not to use bumper pads even with infants, but if you have them in the bed, you should remove them at this stage.
- Continue with the regular bedtime routine at naps and nighttime. Change the routine as your baby develops, adding a story at bedtime, for example.
- Put your baby in bed awake and leave the room, allowing her to fall asleep on her own.
- Look for the signs your baby is sleepy and put her to bed at these times. Avoid putting her in bed when she is not sleepy as this will increase the time she is unhappy and unable to fall asleep.
- Allow your baby to decrease his naps from three to four a day in infancy to two naps (one in the morning and the other in early afternoon) by the end of the first year.
- Promote longer sleep periods by avoiding naps in the late afternoon. During the days, naps should be at regular times for a consistent duration.

# A

*(...continued)*

If you want to lengthen your baby's sleep at night, you can change this pattern of frequent feeding. A healthy 6-month-old baby can learn to sleep long periods at night without food. But if you suddenly stop feeding your baby and expect her to learn to sleep through the night, she will still wake up because she is both thirsty and hungry. She is used to having a certain amount of calories and fluid during the night, and needs to change this habit gradually. Watering down your baby's milk or replacing milk with water (if he is being bottle-fed) is likewise not effective.

Research studies support the value of using behavioral techniques to improve sleep in infants. Your baby can learn to sleep through the habit of frequent feeding if you decrease the nighttime feedings slowly so that her hunger will be satisfied during the day, instead of during the night. Over time, she will consume the same amount of calories and fluid in a 24-hour period, but can learn to do this during daytime hours, from 6:00 a.m. to 10:00 p.m. or midnight.

**Q.**

**My baby is teething and this is disrupting her sleep. What should I do?**

**A.**

Babies will begin to have teeth erupt between 5 and 8 months of life. Although your baby may have some pain from this, you will know when the pain is at its worst because just before a tooth erupts, the gums will be red and slightly swollen. On these days, her sleep may be disrupted. However, teething will not be a cause of ongoing sleep problems.

## Toddlers and Preschool Children

The toddler years are full of fun during the day, but can be challenging at night. When your child moves from his crib to a bed and gains new independence in his motor skills, this can provide new ways to resist staying in bed and falling asleep at night. This is also the time, if your child has been sleeping in his crib in your room, to move him to his own or shared bedroom with a sibling. This may also be the time when the bedtime routine becomes sporadic because you are working outside of the home and conflicted between your desire to get your child to bed or to spend more time together at night.

## TODDLER AND PRESCHOOL CHILD SLEEP ROUTINE

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To establish and maintain good sleep habits for your toddler:

- Provide a safe, comfortable quiet, dimly lit, slightly cool bedroom environment. Try to have your child nap and sleep in his bed in this room.
- Maintain a consistent schedule for naps and bedtime with a predictable, short naptime and bedtime routine.
- Leave your child in his bed in the room while he is awake and let him learn to fall asleep alone.
- Try to keep this routine as much as possible 7 days a week, with a predictable time for sleep and waking.
- Encourage the use of a transitional object if your child is having trouble being alone or separating himself from you.
- Put your child to bed when he is showing signs of sleepiness.
- Help him to transition from a crib to a bed, when he is able to get out of the crib independently.

**Q.**

**My child is not sleepy enough to need two naps, but if I let him have his morning nap and miss the afternoon one, he is cranky in the afternoon and falls asleep too early at night. How do I get him to have enough sleep with one nap in the day?**

**A.**

You can help your child transition from two naps to one nap. Instead of letting him miss his afternoon nap, let him miss the morning nap. Keep the afternoon nap, but move it earlier in the day. Initially, you can move his whole schedule earlier, letting him have an earlier lunch, start his nap before noon, and have an earlier bedtime. Over time, you can gradually move his schedule a little later – for example, you can delay his lunch, his nap time, and his bedtime by 15 minutes each week for 3 to 6 weeks until he is able to stay awake for the whole morning and have one nap in the afternoon.

## School-Age Children (6 to 12 Years)

Parents of children between the ages of 6 and 12 often have concerns about their child's sleep. Up to one-quarter of children at this age will continue to have difficulty falling asleep at night. In addition, approximately 30% of children in this age group have problems with bed-wetting, sleepwalking, sleep talking, or nighttime fears. These problems are described in the following chapters. Whether your school-age child has sleep problems or not, the following routines are helpful to establish good sleep hygiene at this age.

### SCHOOL-AGE CHILD SLEEP ROUTINE

To establish and maintain good sleep habits for your school-age child:

- Provide an appropriate sleep environment with a transitional object, if accepted. Remove television, computer, telephone, and music from the bedroom if they are interfering with sleep onset or continuity.
- Maintain a consistent, regular bedtime 7 days a week (if possible). The time should be appropriate for your child's age.
- Maintain a consistent wake time 7 days a week.
- Establish a quiet time before bedtime. Avoid vigorous activity or stimulating games for 1 to 2 hours before bedtime.
- Avoid caffeinated foods and beverages from mid-afternoon onward.
- Monitor exposure to violent or inappropriate media.
- Allow your child to fall asleep alone, without either parent present.

## Adolescents

In the teenage years, sleep and wake issues can be challenging for you and for your teen. As in other areas of your teenager's life, you may not have the same authority or control as in previous years. The advice your teenager gets from his friends, teachers, or even the Internet may be of greater importance than information parents offer.

However, you can assure your teenager that there have been scientific studies done on sleep during the teenage years that you can share with him. If your teenager is experiencing problems due to inadequate or irregular sleep, share this book with him and discuss together how you can work to resolve his sleeping difficulties.

### ADOLESCENT SLEEP ROUTINE

To establish and maintain good sleep habits for your adolescent:

- Curtail participation in stimulating activities close to bedtime – playing active sports, watching stimulating television and videos.
- Encourage using the bed for sleeping, not for watching television, playing on a portable computer, talking on the phone.
- Discourage use of caffeine, nicotine, and other drugs (prescription or otherwise) to stay awake in the afternoon and evening.
- Monitor the bedroom environment to ensure it is not too light, too hot, too cold, or too noisy so that it does not interfere with sleep onset.
- Help your teenager to maintain a consistent bedtime and wake time, 7 days a week (if possible).

Q.

**Can my teenager's problem falling asleep be something more serious than poor sleep hygiene?**

A.

You need to understand what is the problem preventing your child from falling asleep and causing sleep onset insomnia. If the problem goes beyond poor sleep hygiene as the cause of inadequate sleep, it may be delayed sleep phase syndrome, a problem that can often be successfully treated by following the steps in this book. If you suspect that the problem is related to a medical condition, mood disorder, or other serious problem, your child may need to see his health-care provider. Another cause of insomnia, which can be first noticed in the teenage years, is primary insomnia. This is a problem that can start even in childhood and cause chronically poor sleep. If your teenager has adequate sleep hygiene and does not have a delayed sleep phase, signs of depression, or other medical or psychiatric problems, he may have primary insomnia. This type of insomnia can also be treated successfully.

## Chapter 4

# Sleep Safety

**I**F YOU ARE A new parent or parent-to-be, you are probably making many plans for your baby, including where your child will sleep. Will your baby sleep on her own in her own room and in her own crib? Will she sleep with a sibling in the same room, or will she sleep in your room? If she sleeps in your room, will she sleep with you in bed or in her own bassinet or crib? Your decisions will be influenced by your cultural background and experience, as well as discussions with your physician, family, and friends.

There are many different sleeping arrangements that are acceptable. In many cultures, children sleep with their parents or siblings, either in the same bed or in the same room. Pediatric associations in the United States and Canada recommend that the best place for your baby to sleep is definitely in the same room as you during the first 6 months, but in his own crib. In addition, it is recommended that your baby sleep in his own crib for the first year of life.

Despite this recommendation, controversy arises among some sleep and breast-feeding experts whether you should co-sleep with your baby (bed-sharing). Bed-sharing has been shown to increase slightly the risk of sudden infant death syndrome (SIDS). A similar concern has recently been raised by some experts over the recommendation of the American Academy of Pediatrics to use pacifiers in infants in an attempt to decrease the risk of SIDS. There is also some controversy about co-sleeping or bed-sharing with a toddler or child. While common in many cultures, this practice may affect your child's sleep pattern adversely, especially if the bed-sharing is reactive in the attempt to soothe a chronically sleepless child.

Although there is no single correct sleeping arrangement, you should be aware of the benefits and risks of these various arrangements so that you can make an informed decision for your family, along with knowledge about risk factors for SIDS.

## What is SIDS?

Sudden infant death syndrome (SIDS) describes the sudden and unexpected death of an apparently healthy baby under 1 year of age. The baby's death is assumed to be from SIDS if, despite a



### Did You Know?

#### Room-Sharing Safety

It is recommended that your baby sleep in your bedroom until the age of 6 months. Research studies show that when a committed caregiver sleeps in the same room, but not in the same bed with an infant, the chance of the infant dying from SIDS is reduced by 50%. In these studies, the committed caregiver is usually the mother, but can be the father.

thorough investigation, which includes a complete autopsy, examination of the death scene, and review of the clinical history, there is no explanation for the child's death. There are several theories about the cause of SIDS, including the possibility that the baby who dies from SIDS has a deficiency in his ability to arouse from deep sleep.

## SIDS FACTS

- Although SIDS can occur up to 1 year of age, it is most likely to happen between the ages of 2 and 4 months.
- The rate of SIDS has decreased by more than 50% in both Canada and the United States between 1990 and 2002. In Canada, the rate has fallen from 0.8 per 1000 live babies born in 1990 to 0.3 per 1000 live babies born in 2002. The rate of SIDS in the United States has fallen from 1.3 to 0.6 per 1000 live babies born from 1990 to 2002.
- The decrease in SIDS is due to increased public awareness that babies should sleep on their backs. When the American public received education about this in the Back to Sleep campaign between 1992 and 2002, surveys showed that the number of babies who slept on their tummies fell from 70% to 11.3% and the incidence of SIDS fell by 50% from 1.2 babies for every 1000 live births in 1992 to 0.57 babies for each 1000 live births in 2002.

### Did You Know?



#### Tummy vs. Back Sleep

Putting your baby to sleep on his tummy is associated with an increased risk of SIDS, whether you are co-sleeping or not, but may be recommended by your doctor in special circumstances. When babies sleep on their backs, they cry more often and arouse more often because they do not sleep as deeply. However, a lighter sleep may be protective against SIDS.

## Pre-Natal SIDS Prevention

Even before your baby is born, you can reduce the risk of SIDS by:

- Getting regular prenatal care to help reduce the risk of having a premature baby, which is a risk factor for SIDS.
- Not smoking or using illicit drugs during your pregnancy, which is a risk factor for SIDS.
- Spacing your pregnancies. If you wait at least 1 year between the birth of your baby and your next pregnancy, this will reduce the risk of SIDS.

## Co-Sleeping with an Infant

Co-sleeping can include several different arrangements, each with their own merits. Discuss the benefits and risks of your chosen sleeping arrangement with your baby's doctor. If you decide to bed-share, then you need to do so in the safest way possible. Weigh the benefits and risks carefully.

## case study: **Lauren and Kyle**

Lauren and Kyle are expecting their first child. Lauren is in her third trimester. They came to our clinic to discuss issues about caring for their newborn, including breast-feeding and co-sleeping. Lauren is hoping to breast-feed her baby. She has researched the pros and cons of breast-feeding and bottle-feeding, and feels that breast-feeding is the healthiest option. However, Lauren and Kyle are confused about whether it is safe or not to co-sleep with the baby in their bed. They want to know what the risks and benefits are of this arrangement.

We reinforced Lauren's decision to breast-feed as the best way to feed her baby. Breast-feeding has many benefits, both for mothers and babies. We also presented Lauren and Kyle with some of the key information about keeping their baby safe while sleeping, especially what the American and Canadian pediatric societies recommend, based on the evidence about SIDS. We advised them to sleep in the same room as their baby, with the baby in a separate sleeping space but close-by, in a crib or bassinet.

## **Room-Sharing with Parents**

In this type of co-sleeping arrangement, your baby sleeps in his own crib or bassinet in the same room with you. The American Academy of Pediatrics and the Canadian Paediatric Society both recommend this sleeping arrangement, for several reasons.

### ***Room-Sharing Benefits***

- If your baby sleeps in your bedroom in his own crib close to your bed, you will be able to easily respond to his needs during the night.
- This sleeping arrangement is one factor associated with a decreased risk of SIDS.

## **Bed-sharing with Parents**

You and your baby, with or without your partner, share an adult bed and sleep together on the same sleeping surface. Bed-sharing with parents is the most common sleeping arrangement worldwide and families may choose to bed-share because of cultural, parenting, or family beliefs. Some experts advocate bed-sharing if done in a 'safe way' for several reasons. Bed-sharing will encourage ease of breast-feeding, which has important benefits not only for your baby, but also for you. But there are also risks to be considered, including overheating and overlying.



## Did You Know?



### Benefits and Risks

Some families will choose a bed-sharing sleeping arrangement even though they are aware of the recommendations against it because of the benefits, recognizing the actual increased risk of SIDS, although real, is small.

## ***Bed-Sharing Benefits***

- Bed-sharing may improve breast-feeding due to the convenience of sleeping next to your baby.
- Babies who breast-feed and bed-share have more arousals, as do their mothers. When your child wakes, you will be more likely to wake also and able to respond easily to his needs.
- If you are breast-feeding your baby in bed and fall asleep, this is a safer place for your baby than if you fall asleep while feeding him in a chair or sofa.

## ***Bed-Sharing Risks***

- Infants who bed-share are at increased risk of SIDS, due to several factors. Although the exact mechanism of SIDS is not known, these factors may put the child at risk of overlying, overheating, or lack of arousal.
- If more than one parent is in the bed.
- If the infant is sleeping on an adult bed, in an armchair, or on a sofa.
- If a mother is obese.
- If a parent is on sedating medication, under the influence of alcohol or drugs, or extremely fatigued.
- The baby may become overheated because of a warm room or too many bedclothes.
- If a bed has soft bedding, pillows, and comforters, which may cover your baby's head and face.
- An unsafe bed. There are safety standards applied to the construction of cribs, crib mattresses, and bassinets for babies, but there are no safety standards for adult beds in which babies are sleeping.
- If a parent smokes in the room or in bed. Exposure to environmental tobacco smoke at any time is a risk factor for SIDS, not only if the mother smokes during pregnancy, but also if your baby once born is exposed to smoke from anyone in the home. This tobacco smoke-related risk increases if you bed-share.

## **Co-Sleeping without Bed-Sharing**

In this case, you and your baby sleep beside each other at the same level, but not on the same sleeping surface. The benefit and risks of this arrangement are not well understood; this sleeping arrangement is less common in most developed countries.

## Bed-Sharing with Others, Not Parents

Your baby shares a bed or a room with someone other than you or your partner. Experts agree that if your baby is sharing a bed, it should not be with anyone other than his parent or usual caregiver. This arrangement does not have any benefit to the safety of your baby. This arrangement does not decrease the risk of SIDS because a person who is not the parent or usual caregiver of your baby will be much less likely to rouse easily or be responsive to your baby's needs during sleep.

### PEDIATRIC ASSOCIATION GUIDELINES

The Canadian Paediatric Society (2004) and the American Academy of Pediatrics (2005) have published similar guidelines for creating a safe sleeping environment for your baby and decreasing the risk of SIDS:

- For the first year of your baby's life, the safest place to sleep is in his own crib, on his back. This should be the way you place your baby in the crib to sleep for naps and at bedtime.
- The crib, bassinet, or cradle must meet the safety standards of the country in which you live.
- For the first 6 months, your baby should sleep in the parents' bedroom in his own crib, but close to you.
- When your baby can turn over on his own, there's no need to force your baby into the back sleep position. Foam wedges or towel rolls to keep babies on their side should not be used.
- Your baby should sleep on a firm surface, such as a firm crib mattress, covered by a sheet. Infants should never sleep on pillows, air mattresses, waterbeds, cushions, soft materials, or loose bedding. Keep soft objects, such as stuffed toys, away from the infant's sleeping environment. Plastics, including the manufacturer's mattress wrapping, should be removed from the mattress.
- The sleeping environment for infants should be free of quilts, comforters, bumper pads, pillows, and pillow-like items.
- Even when you are traveling, your baby must have a safe place to sleep. Car seats and infant carriers are not to be used to replace the crib for your baby's sleeptime.
- A baby should sleep in a room that is quiet, dark, and slightly cool. The room temperature should be comfortable for a lightly clothed adult. If the room temperature is comfortable for you, it should be right for your baby too.

- Keep your baby away from cigarette smoke. Babies whose mothers smoked during pregnancy and babies who continue to be exposed to smoke after birth are at an increased risk of SIDS.
- Never nap or sleep with your baby or let your baby sleep alone on a couch, sofa, or armchair.
- Consider dressing your baby in sleepers so that you don't need a blanket to cover her.
- If using a blanket, put your baby with his feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as the baby's chest.
- Make sure your baby's head remains uncovered during sleep.
- Make sure everyone who cares for your baby knows the recommendations for safe sleeping.
- Your baby should not share a bed with other siblings or family members.
- It is acceptable to bring your baby into the bed to be breast-fed, and then he should be placed back into his crib or bassinet before you fall back asleep.
- In order to prevent your baby from having a flattened back of head (called positional plagiocephaly) from sleeping on his back, allow him time during the day when he is awake to play on his tummy.
- Because babies tend to turn their head toward the bedroom door to see who is coming and going, periodically alternate the direction your child is sleeping so that she will spend time looking both ways.

## Room-Sharing with Others, Not Parent

Your baby may share a room with siblings or another family member. This may be your choice or due to the space available in your home. Sharing a room with others who are not the parents or usual caregiver has not been associated with a decreased risk of SIDS. This means that you wouldn't expect a family member, sibling, or grandparent to be as aware of your infant during sleep as you would be. There is no particular benefit with regards to decreasing the risk of SIDS to this sleeping arrangement for your baby; however, it may be the chosen arrangement in your family for other reasons.

## Pacifiers and SIDS

The use of pacifiers has been associated with a reduced risk of SIDS. While pacifiers are often used to soothe a child to sleep, they can also disrupt his sleep — your baby gets used to falling asleep with one and you have to keep replacing it at night when he awakens to help him fall back to sleep. There are several theories as to how a pacifier may be associated with a reduced risk of SIDS; however, the exact reason for this is not known.

Based on the evidence from some studies, the American Academy of Pediatrics (AAP) in 2005 has issued a policy statement recommending the use of pacifiers to reduce the risk of SIDS in infants. In breast-fed babies, it is recommended to delay the introduction of the pacifier until 1 month of age after nursing is well established.

### AMERICAN ACADEMY OF PEDIATRICS RECOMMENDATION ON PACIFIERS

The exact wording of the recommendation of the American Academy of Pediatrics (AAP) from their policy statement published in the journal *Pediatrics* in November 2005 is as follows:

“Consider offering a pacifier at naptime and bedtime. Although the mechanism is not known, the reduced risk of SIDS associated with pacifier use during sleep is compelling, and, on the other hand, the evidence that pacifier use inhibits breast-feeding or causes later dental complications is not. Until evidence dictates otherwise, the task force [of experts who reviewed this new research] recommends the use of a pacifier throughout the first year of life according to the following procedures:

- The pacifier should be used when placing the infant down for sleep and should not be reinserted once the infant falls asleep. If the infant refuses the pacifier, he should not be forced to take it.
- Pacifiers should not be coated in any sweet solution.
- Pacifiers should be cleaned often and replaced regularly.
- For breast-fed infants, delay pacifier introduction until 1 month of age to ensure that breast-feeding is firmly established.”

In the same way that a baby who sleeps on his back will rouse more easily, a baby with a pacifier may also sleep less deeply. There are other reasons postulated for this association between pacifiers and a reduced risk of SIDS. If your baby uses a pacifier, he is more likely to sleep on his back. In the research examining this association, mothers who gave their babies pacifiers were less likely to smoke, so it may have been the lack of smoke in the environment, rather than the use of the pacifier, that decreased the incidence of SIDS.

## Pacifier Controversy

There are other experts who argue that the evidence for recommending pacifier use to decrease the risk of SIDS is flawed, and that pacifiers have other potential adverse consequences for your baby's sleep.

- The research only shows that there is an association between pacifier use and a decrease in SIDS, not that using a pacifier will prevent a baby from dying from SIDS.
- The experts have made recommendations regarding pacifier use based on studies that look backward and rely on parent's memory about the past use of pacifiers.
- One of the theories about preventing SIDS by using a pacifier is that your baby will not sleep as deeply. Therefore, it is possible (but not yet studied) that the risk of SIDS will be decreased, but there may be consequences to growth and development that we do not know at this time from this effect.
- Pacifier use may interfere with breast-feeding. It is known that there is an association between pacifier use and breast-feeding duration, but not that pacifier use causes mothers to stop breast-feeding. The studies used to make the recommendation to use a pacifier did not differentiate between babies who were breast-fed and those who were not, so it is not known what is the role of pacifier use in a breast-fed baby for preventing SIDS.
- Pacifiers can be a source of germs if not properly cleansed. This problem can be dealt with by ensuring that your baby's pacifier is properly cleansed.
- Using a pacifier may cause sleep onset association problems, which can lead to more arousals at night and disruptive sleep. This may lead to more long-lasting sleep problems.

### Did You Know?



#### Deep to Lighter Sleep

Pacifiers, like having a baby sleep on his back, will cause a baby to sleep less deeply. We do not know at this time if changing deep to lighter sleep will be detrimental for your baby since we all, especially as babies, need deep sleep for its restorative benefits.

## Recommendations

Because research on the use of pacifiers is ongoing and controversial, we recommend that you discuss this issue with your doctor to ensure that you are making a decision based on the most current studies.

## Co-Sleeping with a Toddler or Older Child

After the first year of life, the risk of SIDS is no longer a reason for your toddler to sleep solitary in his own bed. If you want to co-sleep with your toddler, it is now safe, though you may prefer for your baby to continue sleeping solitary and not share the 'family bed'. Once again, you need to weigh the benefits and risks of these different sleeping arrangements.

### Benefits and Risks

Co-sleeping with your toddler or older child is the norm for families in many cultures around the world. However, there are no studies yet comparing the benefits or risks for children when they sleep in the parental bed as a custom or when they are brought into the parents' bed because they have a sleep problem.



### Did You Know?

#### Potential Conflicts

Co-sleeping to resolve problems can cause potential conflicts both during the day and at bedtime between parents, between parent and child, and between the identified problem sleeper in the family and other siblings, which will affect the success of this method of sleeping.

### case study: Jenny

Jenny is 4 years old. Both her parents work out of the home, but Jenny goes happily to nursery school in the morning and day care in the afternoon. Since the age of 2, when she began to climb out of her crib, she has slept with her parents in their bed. She sleeps quietly and her parents do not have any problems with this sleeping arrangement. In fact, due to their busy work schedule, they enjoy the family time together at bedtime and even during the night.

This may sound like a happy arrangement, but the 'family bed' can become problematic when the family grows. Jenny's mother is expecting a baby soon, and she is worried that the bed will not be big enough for the entire family. Now that Jenny has had 4 years of time alone with her parents, including sleeping with them for 2 years, her parents are worried about how she will adjust to having a new sibling in the bed and to the disruption to her time alone at night with her parents. In Jenny's case, her parents may choose to continue to sleep as a family or to move Jenny into her own room and bed gradually.

## Reactive Co-Sleeping

In a family that co-sleeps in a reactive way, the parents prefer the child to sleep independently, either separately in her own room or with a sibling. Due to a sleep disturbance (for example, difficulty falling asleep or sleeping through the night), the parent brings the child into the parental bed to try to resolve the sleep problem.

### case study: **Maxine**

Maxine's parents, Maria and Joe, came to our clinic because they were having difficulty getting Maxine to sleep at night. Maxine is 5 years old, healthy and energetic, but demanding. For the past 6 months, Maria and Joe have been trying different ways to get Maxine to sleep in her own room. These have included a sticker chart to reward her for cooperating, explaining to her why she must go to sleep at night, and disciplining her for not cooperating. After a few days of each method, Maria and Joe are so tired at night that they just give in, and, eventually, they fall back to the same routine of having Maxine in bed with them.

They have a double bed, but because Maxine is so restless at night, the three of them cannot fit into it comfortably. Joe ends up every night in Maxine's room, and Maxine and Maria sleep together. Maria is also tired of having to lie down with Maxine to fall asleep. Maria would really like to have some time in the evening with her husband and be able to sleep with him in their bed.

After we explored this problem with Maria and Joe, they realized that Maxine had to learn to fall asleep alone in her own room so that she would be able to do this during the night when she naturally woke. Learning to fall asleep in her own room at bedtime would enable her to fall back to sleep in her own room during the night. We provided Maria and Joe with several techniques for achieving this goal, explaining that they needed to be consistent and persistent. After all, Maxine had developed her sleep difficulties over 5 years, and it would take more than a few days to change them. Within 1 month, Maxine's sleep was much improved. She was able to fall asleep and stay asleep in her own room, and for the first time in 5 years, Maria and Joe had time alone at night together.

## REASONS FOR CO-SLEEPING WITH YOUR TODDLER AND CHILD

### Reasons to choose co-sleeping:

- Your cultural beliefs are that a child should not be alone at night.
- Your child or family has undergone a recent stressful event, move, illness, or burglary, for example, and this is a temporary family choice.
- You do not have adequate rooms or beds in your home for everyone to have a separate space at night.

### Reasons to avoid co-sleeping:

- You are too tired at night to try any other method of sleeping arrangement to get your child to sleep independently, although this would not be your desired choice.
- This the only way that you can get your child to fall asleep and sleep through the night.
- You or your partner are working late and you just want more time in the presence of your child, regardless of whether you are awake or asleep.
- You fall asleep at night in your child's bed or with him in your bed, and then you are too tired to move or move him.
- This is the only way that you and the rest of your family get some sleep at night.
- You or your partner prefers the company of your child in bed to avoid marital communication and intimacy.

## Changing Co-Sleeping Behavior

Co-sleeping with your toddler or child can be part of your family's chosen routine or it can be problematic. If everyone is happy with this arrangement, there can be benefits to your child and to the family. However, when you would prefer not to co-sleep and are only doing this because there is no other way to get your child to sleep at night, then you should try to resolve the problem. You can do this by following the advice in Part 3 (Step-by-Step Guide to Better Sleep) of this book about how to change the problematic pattern and help your children learn to sleep through the night either with a sibling or on their own.





**PART 2**



# Sleep Disorders

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## Chapter 1

# Signs and Symptoms of Sleep Disorders

A SLEEP DISTURBANCE CAN refer to many problems that interfere with adequate sleep (in quality or quantity) or with normal waking behavior. Most, but not all, sleep disturbances cause problems during the day, including daytime fatigue, difficult behavior, poor attention, memory problems, or learning difficulties for your child. Some sleep disorders, such as night terrors or sleepwalking, are classified as a sleep disturbance, but if your child is not wakened from the event, he will fall back asleep and not remember the episode in the morning. Although your child's nighttime sleep appears to be disrupted, he may not be affected during the day. However, your sleep may be disturbed because you will be wakened by your child's arousal.

## Sleep Disorder Classifications

There are three types of common sleep disorders in children. The disorders discussed in this book are either type 1 or type 2.

1. Disorders that cause insomnias or excessive sleepiness. Doctors call these problems dyssomnias. Insomnia includes disorders that cause difficulty falling asleep, staying asleep, or waking too early in the morning, as well as problems with the timing of sleep. In addition to experiencing difficulty falling and staying asleep at night, there will be other effects of this sleep disturbance, which may include your child experiencing excessive sleepiness during the day or feeling some effect of the insomnia in his daytime functioning — for example, in school performance, behavior, mood, memory, or learning.
2. Disorders that lead to unusual behaviors or experiences or feelings (such as sleepwalking or nightmares) while sleeping. Doctors call these problems parasomnias.
3. Disorders of sleep that are part of other medical or psychiatric problems. There are many health problems that can include sleep disturbances. For example, if your child has bad eczema, she may not be able to sleep because of her dry, itchy skin.

### Did You Know?



#### Type 3 Sleep Problem

If you think your child has a type 3 sleep problem associated with a medical or psychiatric problem, you should consult with your doctor.

## SLEEP DISORDER CHARACTERISTICS

The signs and symptoms of sleep disorders are not always easy to detect or delineate because there are many different varieties of sleep disturbance. However, the characteristics of sleep disorders tend to fall into 'either/or' categories.

### Sleep disturbances can be:

- **Either** easily recognized **or** difficult to recognize. An easily recognized problem is a child who resists bedtime, falls asleep too late, and gets inadequate sleep. A problem that may not be recognized is the child who snores loudly and persistently and displays daytime fatigue from sleep apnea.
- **Either** temporary (only lasting nights to weeks, such as sleep disruption at the time of stress) **or** chronic (lasting months to years).
- **Either** problematic for the child only **or** problematic for parents or the whole family.
- **Either** acquired (which means the child was not born with the problem but developed it with time) **or** inherited (which means passed through the genes from parent to child).
- **Either** related to both NREM and REM sleep states (bruxism or teeth grinding occurs in both sleep states, for example) **or** occur in particular states (nightmares occur in REM dreaming sleep, for example).
- **Either** easily treated (by using behavioral techniques, for example) **or** difficult to treat (requiring surgery or medication, for example).
- **Either** have one preferred solution (removing your child's tonsils and adenoids to treat sleep apnea, for example) **or** several solutions (teaching your child to sleep through the night, for example).

## Family Context

Textbook definitions of sleep disorders are complicated by the family context. Depending on the family's expectations, a child with the same sleep habits may be seen in one family as a problem sleeper and in another as a normal sleeper. For example, if you and your partner tend to be 'night owls' and prefer a late bedtime and rise time, you can imagine the problem if your child is a 'morning lark' who prefers the opposite schedule. Your child's sleep patterns would not fit with your schedule and needs.

However, the same child with the identical sleep patterns would not be considered a problem sleeper if he lived in another family where both his parents also preferred a 'lark' schedule with early bedtimes and rise times. What is a sleep disorder for one family may not be seen as a problem for another family.

Examples of Childhood Sleep Disorder by Types		
Type 1	Type 2	Type 3
Dyssomnias that cause insomnia, difficulty falling asleep, staying asleep, waking too early in the morning, or causing excessive daytime sleepiness:	Parasomnias that lead to unusual behaviors or experiences or feelings while sleeping:	Disorders that are part of other medical or psychiatric problems:
Inadequate sleep hygiene	Confusional arousals Night terrors Sleepwalking	Associated with psychiatric disorders, such as mood or anxiety disorders — e.g. difficulty falling asleep in children with anxiety disorder
Limit-setting sleep disorder	Sleep talking	Associated with neurologic disorders, such as sleep-related epilepsy (seizures)
Sleep-onset association disorder	Rhythmic movement disorder	Associated with other medical disorders, such as sleep-related asthma
Nocturnal eating (drinking) syndrome	Nightmares	
Circadian rhythm sleep disorders (delayed or advanced sleep phase syndrome)	Bruxism (teeth grinding)	
Obstructive sleep apnea syndrome	Enuresis (bed-wetting)	
Narcolepsy		
Restless legs syndrome		

## Did You Know?



### Shared Concerns

Sleep studies show that in many different countries, one out of four children are identified by their parents as having a sleep problem. Across cultures, the most commonly reported problems relating to behavioral sleep disturbances are difficulty getting children to bed at night and problems with children who wake up frequently throughout the night.

## Cultural Context

We have little knowledge about different cultural issues and their impact on children's sleep, except in the areas of co-sleeping and bedtime rituals. We do know that some cultures have well-established expectations for bedtime routines and others have unstructured and flexible bedtimes. We also know that there are more children in the world who co-sleep in the same bed as their parents or in the same room than who sleep in a separate bedroom. Even industrialized societies, such as Japan, and not just less industrialized societies, promote co-sleeping. Because of the increasing migration of families throughout the world and the inter-marriage between cultural groups, parents are often faced with a question of which sleep culture to follow — old country or new country, mother's culture or father's culture.

If you and your partner have different cultural backgrounds, you will need to discuss your expectations for sleep behavior in your child and choose a consistent practice of parenting around sleep issues.

## case history: **Sammy**

Sammy and his parents, Anna and Tom, came to our office to discuss Sammy's problem with sleeping. Their concern was that Sammy resisted going to sleep at the bedtime they chose, at 8:00 p.m., with the apparent result that he had trouble getting up early enough in the morning to get to day care on time. He would fight, cry, and generally become difficult when it came to bedtime and would not fall asleep in his room by himself.

Each evening, Anna and Tom would give in after 1 to 2 hours of struggling, and let Sammy join them in the living room. When Sammy was allowed to stay up with his parents watching television, he would eventually fall asleep around 10:00 p.m. without any fuss. Despite trying various strategies they had read about in magazine articles, Anna and Tom were not successful in changing this pattern. They felt that Sammy was not getting enough sleep because of this bedtime resistance and, consequently, was tired during the day.

We explained that according to the International Classification of Sleep Disorders (which is how sleep experts define different types of sleep disturbance), Sammy would fit into the first category of disorders, with a disorder that causes difficulty falling asleep. His disorder would be called a limit-setting sleep disorder because Anna and Tom are unable to take charge in the evening and consistently get Sammy into bed and asleep at the time that they expect. Sammy is displaying problems from his sleep disorder because he is fatigued during the day.

We also explained that Sammy's problem was, in part, relative. If Sammy had parents who believed that it is more important to have children participate in socializing at night, for example, who prefer that their children not fall asleep in their own room, and who do not take their children to day care in the morning, then they might let him fall asleep in the living room at 10:00 p.m. and sleep later in the morning. If Sammy were raised in this family, he would not be viewed as having a sleep disorder. Sammy might present problems with limits during the day, but he would still not have a sleep disorder. In fact, in this family, Sammy might be able to fall asleep at an earlier bedtime without 2 hours of fussing, either in the living room or in bed with a sibling or parent.

This does not imply that it is wrong for Anna and Tom to want Sammy to learn to fall asleep alone at a regular time according to their schedule. To achieve this desired behavior, Anna and Tom have to learn how to set a bedtime routine and teach Sammy to fall asleep alone. This will allow Sammy to get adequate sleep and to be well-rested during the day.

## SLEEP DISORDER CONSEQUENCES

- If children or adults do not get enough sleep, some of the consequences can include difficulty with memory, learning, emotions, behavior, and relationships with friends.
- When children are sleep deprived, they may not look tired during the day, but may be irritable and inattentive.
- Children who do not sleep well are more likely to become adults who do not sleep well.
- Mothers of children who do not sleep well are more likely to be depressed.

## Sleep Disorders through the Ages

### Infants (Age 6 to 12 months)

Settling at night and frequent waking are the most common problems of sleep in infants. These same problems can continue into toddler and childhood ages.

**Q.**

**When should I take my infant to the doctor with a sleep problem?**

**A.**

See your doctor if your child shows the following signs and symptoms:

- If, in addition to problems sleeping, you notice any other health problems, such as frequent or forceful vomiting, breathing difficulties, blue spells, or difficulty feeding
- If the sleep pattern is not improving (including more sleep at night and longer sleep periods) after the age of 3 months
- If your baby does not seem to have periods when he is well rested, playful, and alert
- If your child continues to have his days and nights mixed up after the first few months of life
- If you are unable to cope with your own sleep deprivation, depression, or exhaustion
- If your child has a medical problem (for example, eczema) that is interfering with his sleep

<b>Common Sleep Problems in Infants (Age 6 to 12 months)</b>	
<b>Problem</b>	<b>Characteristics</b>
Nocturnal eating (drinking) syndrome	Your baby may be so accustomed to eating through the night (either from breast-feeding or bottle-feeding) that he cannot sleep through the night because of this pattern. This common problem is called a nocturnal eating (drinking) syndrome. Remember that this is a relative problem – an acceptable pattern for a child in some families and one that parents want to change in others.
Sleep-onset association disorder	Your baby has not yet learned to fall back asleep on his own when he wakes up naturally at night. Some babies learn this naturally, and some need your help. Sleep experts call this a sleep-onset association disorder.
Delayed or advanced sleep phase syndrome	Your baby may have trouble sleeping if his sleep/wake schedule is chronically delayed (for example, if he has late afternoon naps, he will have trouble falling asleep at bedtime) or advanced.
Rhythmic movement disorder	Your child may develop rhythmic movements (such as head-banging or body-rocking) as he transitions from wake to sleep. This movement may disturb you, but does not disturb your child's sleep.
Pain at night (teething, ear infection, heartburn)	Sleep may be delayed or disrupted in your baby when he starts teething at 5 to 8 months, although this should be only for the few days when his teeth are erupting. Other causes of pain at night, such as an ear infection or heartburn in babies with acid reflux, can disrupt sleep.
Separation anxiety	Your baby may have difficulty settling at night due to the development of separation anxiety, which is usually seen after the age of 9 months.
Poor hygiene (sleep environment)	Your baby may have difficulty sleeping if the bedroom environment is too noisy, light, cold, or warm.

## **Toddlers and Preschoolers (Age 1 to 5 Years)**

The most common behavioral sleep disturbances in the toddler and preschool years are behavioral in origin. Bedtime struggles and frequent night waking are a common complaint of parents with children in this age group. These problems lead to insufficient nighttime sleep and daytime fatigue in your child.



## Common Sleep Problems in Toddlers and Preschoolers (Age 1 to 5)

Problem	Characteristics
Poor schedule and hygiene	By this age, your child may have developed difficulties settling at night due to an irregular schedule and poor sleep hygiene.
Settling and waking disorders	Your toddler or preschooler may have the same difficulties as infants in settling at night and waking frequently, which can lead to insufficient sleep. These problems may be also due to nocturnal eating (drinking) syndrome, sleep onset association disorder, or a sleep phase disturbance (sleeping and waking at a delayed or advanced time), as described in the younger child.
Rhythmic movement disorder	Your toddler or preschooler may continue to have rhythmic movements although these usually resolve by 4 years of age.
Nighttime fears, anxiety, and nightmares	Your child may delay sleep due to bedtime fears and anxiety. At this age, he may experience more nightmares.
Limit-setting disorder	Now that your child can get out of bed, difficulty settling at night may be related to limit-setting problems if your child makes bedtime demands, such as asking for one more story or one more drink before settling in. If these requests are not satisfied, he may refuse to stay in bed.

**Q.**

**When should I take my toddler or preschooler to the doctor with a sleep problem?**

**A.**

See your doctor for evaluation if your toddler or preschooler shows the following signs and symptoms:

- If you are concerned about any of the medical problems or pain that may be interfering with your child's sleep
- If your child has persistent and loud snoring or experiences pauses or any difficulty with breathing during sleep
- If your child appears to be getting enough sleep at night, but seems cranky, irritable, hyperactive, inattentive, or sleepy during the day
- If your child displays excessive anxiety about separating from you both during the day and at night
- If your child was previously a good sleeper but now has recently developed a problem with sleep
- If your child is not able to transition from two naps to one nap a day
- If night terrors, sleepwalking, or nightmares are occurring frequently

## Common Sleep Problems in Toddlers and Preschoolers (Age 1 to 5) *(continued...)*

Problem	Characteristics
Night terrors and sleepwalking	Your child may develop night terrors and sleepwalking episodes that may appear to disturb his sleep, but may not cause him any daytime symptoms of fatigue.
Sleep apnea	Your child may develop at this age other sleep disturbances, such as central or obstructive sleep apnea, that do cause daytime symptoms of fatigue.

## School-Age Children (Age 5 to 12)

Children between the ages of 5 and 12 can be good sleepers. They should go to sleep easily, sleep continuously through the night, and wake up spontaneously in the morning without much difficulty. During the day, at this age, children should be alert and energetic without the need for a daytime nap. Despite this natural ability for good sleep, many children continue to have sleep problems at this age.

There are two types of sleep problems seen in the school years. One type includes the children who had sleep disturbance at an earlier age, whether it was behavioral in origin, such as a limit-setting disorder, or acquired but not yet recognized, such as obstructive sleep apnea syndrome. The other type is children who develop new sleep disturbances that were not present or present but not problematic before the school-age years, such as enuresis.

**Q.**

**When should I take my school-age child to the doctor with a sleep problem?**

**A.**

See your doctor for evaluation if your child was previously a good sleeper without any evidence of daytime fatigue and develops the following symptoms:

- If your child's teacher complains of daytime fatigue in your child despite your impression that he is getting adequate sleep
- If there is a new onset of an arousal disorder (night terrors, sleepwalking) that your child did not develop before the age of 6 to 7 years
- If your child develops the need for a regular daytime nap
- If your child demonstrates evidence of a sleep disorder with loud snoring, pauses in his breathing, or extreme restlessness at night

<b>Common Sleep Problems in School-Age Children (Age 5 to 12)</b>	
<b>Problem</b>	<b>Characteristics</b>
<i>Sleep problems present at earlier ages</i>	
Poor schedule and hygiene	Your child may have ongoing difficulties settling at night if he has never developed a regular sleep/wake schedule and continues to have poor sleep hygiene.
Settling and waking problems	Your school-age child may have the same difficulties as younger children in settling at night and waking frequently, which can lead to insufficient sleep. These problems may also be due to sleep-onset association disorder or a sleep phase disturbance (sleeping and waking at a delayed or advanced time). It is much less common at this age to have ongoing problems with eating or drinking at night.
Nighttime fears, anxieties, and nightmares	Your child may continue to delay sleep due to nighttime fears and anxiety. Nightmares may continue to be a problem.
Limit-setting disorder	Your child may continue to have a limit-setting disorder, making frequent demands at night and refusing to stay in bed.
Night terrors and sleepwalking	By school age, if he had an arousal disorder of night terrors or sleepwalking, this should have resolved. In some children, it can continue into the school-age years, but should be less frequent. This problem is of more concern if it starts at this age.
Obstructive sleep apnea syndrome	Earlier symptoms of obstructive sleep apnea may not have been recognized or may appear in school-age children for the first time.
<i>Sleep problems present for the first time in the school-age years</i>	
Bed-wetting (enuresis)	Your child may have bed-wetting episodes which would have been a part of normal development at younger ages.
Restless legs syndrome	Your child will have unusual sensations in his legs at night, which delay sleep onset, and he may have involuntary leg kicking during sleep.

## **Adolescents (Age 12 to 18)**

The most common sleep disorders among adolescents are an irregular schedule and lack of adequate sleep at night. The most common reason for fatigue in adolescents is insufficient sleep. The amount of sleep needed changes as children grow, but adolescents still need more sleep than adults. These sleep problems in adolescence can be resolved with changes to sleep hygiene by establishing a sleep schedule and increasing the time for sleep. However, this is a challenge at this age because of the demands on teenagers to accommodate school, work, and social activities, and difficulties parents have in setting limits and controls.

<b>Causes of Adolescent Sleep Problems (Age 12 to 18 years)</b>	
<b>Problem</b>	<b>Characteristics</b>
Insufficient sleep	Your teenager experiences problems caused by insufficient sleep, most commonly inadequate time in bed. Another common problem resulting in insufficient sleep at this age is the development of a preference for a delayed sleep schedule, falling asleep and waking at a later than desired schedule. Other causes for insufficient sleep include an irregular sleep/wake schedule and poor sleep hygiene. Finally, your teenager may be having difficulty sleeping due to depression or anxiety, or he may have developed an adult-type insomnia called primary insomnia, which is a diagnosis made when all the above problems are not the cause of the insomnia.
Fragmented sleep	Your teenager may have fragmented sleep and many arousals from sleep at night caused by sleep disorders, medical or psychiatric disorders, or the effect of substances, such as nicotine, alcohol, and drugs, or the effect of drug withdrawal. Restless legs syndrome can cause sleep-onset insomnia and disturbed sleep, but is considered rare in children and adolescents.
Increased need for sleep	Your adolescent has an increased need for sleep associated with temporary illness, depression, or the use of illicit drugs.
Narcolepsy	Narcolepsy, a rare sleep disorder, can start in adolescence, with excessive daytime sleepiness, and not be recognized until later in adult life.

**Q.**

**When should I take my teenager to the doctor with a sleep problem?**

**A.**

In the teenage years, it is important to identify who is concerned about sleep or daytime alertness. There may be times when you are very worried about your teenager, but she does not seem to recognize the problem. At other times, your teenager will initiate the need to seek help. See your doctor if your teenager shows the following signs and symptoms:

- If your teenager is excessively sleepy during the day
- If your teenager's school performance decreases
- If you suspect your teenager may have mood disturbance (which can be both caused by or causing the sleep problems)
- If your teenager has a motor vehicle accident or other problems caused by daytime sleepiness
- If you or your teenager have any other concerns about his sleep or daytime performance

## Chapter 2

# Treatment of Sleep Disorders

**T**HERE ARE MANY DIFFERENT types of sleep disturbances, problems, syndromes, and disorders. Not surprisingly, there are many different treatment strategies depending on the child's specific disturbance.

## Education

Learning as much as you can about healthy sleep habits and sleep disorders from reading books and discussing issues with your health-care provider is the best first treatment. Involve your child in this education process, especially your older child or teenager, so she can take control of her own sleep health. Let other caregivers and teachers know about any sleep problems your child may be experiencing, and give them the information they need to support treatment. This will create a consistent approach in dealing with the sleep issues.

Educating yourself about sleep should include learning about the basics of sleep biology, the prevention of sleep problems, the promotion of good sleep hygiene, and the problems and solutions to sleep problems. With this education, you will be successful at resolving many childhood sleep problems.

## Behavioral Intervention

In this treatment option, parents learn new ways to manage their children's behavior around sleep. Behavioral intervention is the most frequent treatment used for children because most sleep disturbances in children are the result of a behavioral cause.

Because there is not one type of behavioral treatment that is the most effective in all cases, knowing the various options is important. Regardless of which option you choose, you need to carry it out on a consistent basis. If it doesn't work, it is most likely that you have not been consistent, rather than it being the 'wrong' treatment.

### Did You Know?



#### Treatment Options

The treatment of sleep problems depends on the specific disorder. In children, the treatment is often based on two basic approaches — parent education and behavioral intervention. For some sleep disorders, other treatment options are used, including surgery, dental or breathing appliances for airway obstruction, or, less commonly, medication.

## Behavioral Treatment Options

Two primary behavioral modification options are extinction and positive routines/faded bedtime. Here's how these treatments would apply to the problems of settling down at bedtime and frequent waking in an infant. These treatment strategies will be described in more detail in the following chapters as they relate to particular sleep problems.

### **Extinction**

Extinction is also called the 'cold turkey' method. Using this method, you would, for example, simply decide that you are not going to respond to your child's frequent requests at bedtime and during the night, buy some good earplugs, and let your child 'cry it out' until he learns to sleep through the night on his own. There are other variations to the method of extinction, which are more acceptable to families and more effective in dealing with sleep issues.

### **Graduated Extinction**

To achieve the goal of settling in and sleeping through the night, a more gradual approach can be used. Gradual extinction is the approach recommended in this book and by many sleep experts for progressively teaching your child how to sleep through the night in a supportive, yet firm manner. You do this by ignoring your child's inappropriate behavior for increasing lengths of time, while continuing to check on him.

### **Extinction with Parental Presence**

While few of the behavioral intervention methods for dealing with sleep problems have been studied extensively in a scientific way, extinction with parental presence has been studied even less than the others. In this method, the parent sleeps in the child's room and ignores the child's inappropriate behavior. The parent does this for 1 week and then resumes sleeping away from the child. This may be a useful method for an anxious child to decrease temporarily his tension around bedtime and his sleep disturbance.

### **Positive Routines/Faded Bedtime**

Similar to the behavioral treatment of adults with insomnia, this strategy is used when children have difficulty settling at bedtime. It involves teaching good bedtime routines and delaying bedtime so that your child learns to fall asleep quickly. Once your child has learned to fall asleep quickly at a later bedtime, you gradually move the bedtime earlier until you arrive at the desired time.



### **Did You Know?**

#### **Cold Turkey**

Although the cold turkey method will work in some cases, many families do not prefer the extinction treatment because it may cause their child to become very distressed, making it difficult to carry through in a consistent manner. The parent will naturally feel compelled to give in. This method is especially not suggested for the infant or toddler who is breast-feeding or bottle-feeding through the night.



### **Did You Know?**

#### **Positive, Not Punitive**

The methods recommended in this book for resolving behavioral-based sleep problems use positive reinforcement of consequences but are not punitive. You may be concerned about upsetting your child by enforcing rules about sleep, setting limits at bedtime, and gently teaching your child that he can fall asleep alone at night. However, it is known that children need and indeed like to have these types of limits and parental controls. Rather than causing problems, it increases their feelings of security.

## SLEEP DIARY

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Part of educating yourself about sleep includes understanding your own child's sleep patterns. A sleep diary can be helpful for this purpose.

There are several reasons to document your child's current sleep/wake cycle over several weeks:

- Sometimes simply putting this into writing and then reviewing the diary will allow you to see what the problem is and how to start to correct it – for example, if your child has a very irregular sleep/wake schedule.
- A sleep diary can help your health-care provider understand what is happening at home when you meet with her to discuss your child's sleep problems.
- A sleep diary is helpful for gauging the progress of a behavioral sleep program. This is similar to the feedback you would get from keeping track of your weight if you were on a diet program. You would be motivated to continue the program when you could compare your baseline weight to the weight loss after sticking to a diet regime. In the same way, you may be motivated to continue your sleep program with your child when you can see in the diaries that things are improving. Alternatively, if your child's sleep is not improving, you can show the before and after diaries to your health-care provider for further assistance.

### Instructions

A sleep diary is very simple to compile. Follow these instructions as you complete the diary on the next page.

1. Complete it for at least two continuous weeks to see your child's sleep pattern over time.
2. Each day, write down the time your child went to bed, how often he woke up and for how long, the time he woke in the morning, and when he slept during the day, if applicable.
3. Don't bother to fill it in during the night when you are tired. Each morning, you can complete the diary based on how many times your child woke and for how long.
4. Note when your child is in bed, using an arrow pointing downwards (↓)
5. Note when your child is out of bed, using an arrow pointing upwards (↑)
6. Fill in the squares when your child is sleeping.
7. Use the comments section to write down information about your child's sleep during the night – for example, nightmares, sleepwalking episodes, any difficulty settling, snacks or drinks at bedtime or during the night. Also note positive changes that you want to remember.
8. Make extra copies of this form for compiling sleep diaries in subsequent weeks.

<b>Sleep Diary</b>		Name: _____														Date: _____									
Date	Day	6 p.m.	7	8	9	10	11	12	1 a.m.	2	3	4	5	6	7	8	9	10	11	12	1 p.m.	2	3	4	5
e.g.					↓						↑	↓				↑									
	1																								
	2																								
	3																								
	4																								
	5																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13																								
	14																								

Date	Day	Comment
e.g.		Nightmare at 3:30 a.m.
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	



## Did You Know?



### Little Evidence

The few, small studies that have been done evaluating the use of sleep medications in healthy children have shown that sleep is improved in the short term, but there is no evidence of a lasting benefit. We do not have enough scientific evidence to know when to use medications for children with difficulty settling or sleeping through the night, how long to use the medicine, or even what medication to use.

## Medications

It may be tempting at night, when you have had too many sleepless nights because of your sleepless child, to pull out some medicine with sleepiness as a side effect and solve your child's problem with drugs. If these are your thoughts, you are not alone. We know from parent surveys that it is not uncommon for parents to use over-the-counter medication to improve their child's sleep with and without the knowledge of their child's doctor. In addition, parents also receive prescriptions from their child's doctor to improve sleep.

However, neither of these practices is supported by scientific research. Although medications can be used to allow you and your child to get a few nights of sleep, the medication's effect will not last and has potential harmful side effects.

In healthy, typically developing children, it is unlikely that medication should be used at all. These sleep problems can be addressed by better understanding the reason for the disturbance, improving sleep hygiene, and using the behavioral techniques described in this book and other sleep literature.

### case history: John

Patsy and Brian came to our clinic with concerns about their son's sleep. John is 5 years old, the youngest of four siblings. Patsy and Brian did not have trouble getting their older three children to sleep, but it seems like a never-ending battle with John at bedtime. He wants to stay up as late as his 10-, 12-, and 14-year-old brothers.

In an effort to understand this problem, Patsy and Brian read many sleep articles in parenting magazines and surfed the Net for relevant information, but still have had no luck settling John at bedtime. They became so upset that they have decided to try some over-the-counter medication recommended to them by a colleague at work. When John was given just a small dose of Gravol (dimenhydrinate) he fell asleep quickly and there were no bedtime battles. But after 2 weeks, this medication no longer seemed to have the same effect. They came to our clinic to discuss if it is safe to increase the dose and how long can they give it to John without causing any problems.

We counseled them that this type of sleep treatment is not recommended. As soon as John stops taking the medicine, he will revert back to the same pattern of having difficulty settling at night. He can also develop a tolerance to this type of medicine, and eventually he will need larger doses (which can have side effects, such as causing morning drowsiness) to have the same effect. The real problem – his parents' failure to set limits for John and have him fall asleep while his older siblings are still awake – has not been addressed.

## PARENTAL ADVICE ON MEDICATIONS FOR SLEEP PROBLEMS FROM THE AMERICAN ACADEMY OF SLEEP MEDICINE

A recent task force published in the medical literature in 2005 and supported by the American Academy of Sleep Medicine made the following recommendations about the use of drugs in the treatment of childhood insomnia:

1. Your doctor must evaluate your child's sleep problem carefully to determine the exact cause before suggesting medication.
2. If you have an infant or young child who is healthy and developing normally, it is very rare to need sleep medication.
3. Your doctor should discuss other strategies for improving your child's sleep. Even if you and your doctor are considering sleep medications, they will not work to solve the problem if not used in combination with other strategies, such as behavioral intervention, educating yourself about normal sleep patterns, and sleep hygiene.
4. You must make sure to correct all the possible sleep hygiene problems with your child before considering medication.
5. You must have a clear goal as to your expectations from the medication and discuss with your doctor how long your child will be on medication.
6. You should only use sleep medication for a short term.
7. If you are considering giving medication to your teenager, ensure that he is not also using any alcohol or drugs, and if it is your daughter, do not give any medications if there is a chance that she is pregnant. Some of the medications would have harmful side effects to fetal development.
8. You must tell your doctor about any herbal products or over-the-counter products that you are giving to your child for sleep or other problems.
9. You need to know about the possible side effects of the medication so you know what to watch for.

### Drug Treatment Conditions

Even though there is not enough scientific research on medicating children with sleep difficulties, it does not imply that there is no role for medication in all children. There are specific conditions that respond well to drug treatments, often prescribed in conjunction with behavioral treatments.

#### Common Prescription Sleep Medications for Children

- Chloral hydrate
- Clonidine
- Benzodiazepine
- Antidepressants

**Common Over-the-Counter Sleep Products for Children**

- Antihistamines (diphenhydramine hydrochloride, such as Benadryl)
- Antinausea (dimenhydrinate, Gravol)
- Herbal preparations
- Melatonin

### ***Restless Legs Syndrome***

For example, the treatment of restless legs syndrome, a sleep disturbance caused by involuntary leg movements at night leading to daytime fatigue, may involve medications, in addition to optimizing sleep hygiene and obtaining adequate sleep. Drugs can act on the neurotransmitters (chemicals in the brain) responsible for this sleep disorder.

### ***Delayed Sleep Phase Syndrome***

Another condition where medication may be used is for adolescents with delayed sleep phase syndrome. Your doctor may prescribe medication or suggest melatonin in addition to other interventions.

### ***Acute Stress***

Short-term use of sleep medications may also be prescribed when there is an acute stress — for example, if your child is not sleeping because he is hospitalized, has a medical problem, or feels acutely stressed due to a family crisis.

### ***Special Needs***

Sleep medications may be prescribed for a short term in combination with behavioral interventions to children with special needs, such as developmental delay, attention deficit/hyperactivity disorder, autism, or other medical, psychiatric, or developmental disabilities.

### **Did You Know?**



#### **Sleep Prescriptions**

Many doctors recommend the use of prescription and over-the-counter sleep aid products frequently. A survey in the United States revealed that more than 75% of pediatricians had recommended a nonprescription medication for sleep and more than 50% had prescribed a sleep medication at least once in the 6 months before the survey.

### ***Side Effects***

If you are considering using medications to help your child sleep, you should be aware of several potential problems. Some medications have significant potential side effects, such as causing excessive daytime sleepiness. In addition, your child may get used to the sedating effects of the drug, and it will become ineffective. When the drug is withdrawn from your child, his sleep problems may recur or may even worsen.

### **Melatonin**

We naturally produce the hormone melatonin in darkness. It is excreted by the pineal gland in the brain. Melatonin has an important role in the regulation of our circadian rhythm (our internal biological clock) that keeps us adjusted to a 24-hour day-night cycle.

## RECOMMENDATIONS FOR MEDICATION TREATMENTS

- Before giving any over-the-counter sleep medication to your child, discuss this with your doctor.
- Before using medications to treat your child's sleep problem, remember that there are no definitive studies to guide your doctor about drug effectiveness, safety, or even choice if your child is healthy and developing normally, but has problems going to sleep and sleeping through the night.
- Before using over-the-counter or prescription medications, try improving sleep hygiene and make behavioral changes to improve your child's sleep.
- For some children with specific sleep disorders (such as restless legs syndrome) who do not respond to non-pharmacological treatment, medications may be indicated. For children with special needs, who do not respond to behavioral changes alone, the addition of sleep medications for short periods of time may be useful. You should talk to your doctor if you have these concerns about your child.

### ***For Use in Adults***

Melatonin promotes the onset of sleep and can be used to induce sleep when given in much larger doses than our bodies would naturally produce. Melatonin is known to be useful in the treatment of adults with sleep disturbance, such as delayed sleep phase syndrome, jet lag syndrome, and desynchronized sleep (not adjusted to a schedule) due to shift work.

### ***For Use in Children***

When children are given melatonin, it will have the effect (in most cases) of making them sleepy. However, the effect of melatonin will only last a short time. That is, melatonin will help children to fall asleep, but not to stay asleep through the night.

In the treatment of children who are having trouble initiating sleep because of a problem with the timing of sleep (delayed sleep phase syndrome), melatonin may be effective, but in children it has not been rigorously studied for this use. We do not know what the possible effects on children in the future may be who are given an extra large dose of a natural hormone that is only produced in humans in small quantities. Despite the limitations in the research studies, doctors do use melatonin for children, especially for children with special needs to help them fall asleep and for blind children.



### **Did You Know?**

#### **Melatonin Dose**

If you give your child melatonin, you are giving him a 'natural' product in an 'unnatural' dosage. Your child will receive a much larger amount than he would naturally produce. While the long-term safety is not scientifically known, the large amount of hormone may cause problems with the onset of puberty, for example, or other problems that we don't currently know.

Although melatonin is available over the counter in the United States and Canada, due to the lack of research in healthy children with sleep problems and the possible side effects, you should discuss its use with your doctor and learn about the latest research before giving it to your child.

## Other Treatment Options

### Bright-Light Therapy

Bright-light therapy involves exposing your child to artificial intense light in the morning to help reset the body's rhythms. A more natural way of doing this, which is often recommended by sleep doctors for problems with the timing of sleep, is to ensure exposure to natural sunlight in the morning. This recommendation may be given for children with a delayed sleep phase. Although bright-light therapy has been studied in adults, currently there is no evidence of the safety and efficacy of this treatment in children.

### Alarm Systems for Bed-wetting

Children who wet the bed may sleep with an alarm that wakens them with the first episode of dampness to decrease bed-wetting.

### Surgery

Surgery to the airways, especially to remove the tonsils and adenoids, which can block the airway and lead to obstruction during sleep, is the most common treatment for obstructive sleep apnea syndrome in childhood.

### Breathing or Dental Appliances

Children who have difficulty breathing during sleep, called obstructive sleep apnea, sometimes need to sleep with a machine that produces a constant flow and pressure of air to the airway to keep air passages open during sleep. This is very common for adults, but can also be used as a treatment for children with sleep-related breathing problems.

A dental appliance, which is worn over the teeth to keep the upper airway open during sleep, is commonly used in adults, but not commonly in children, with obstructive sleep apnea syndrome.