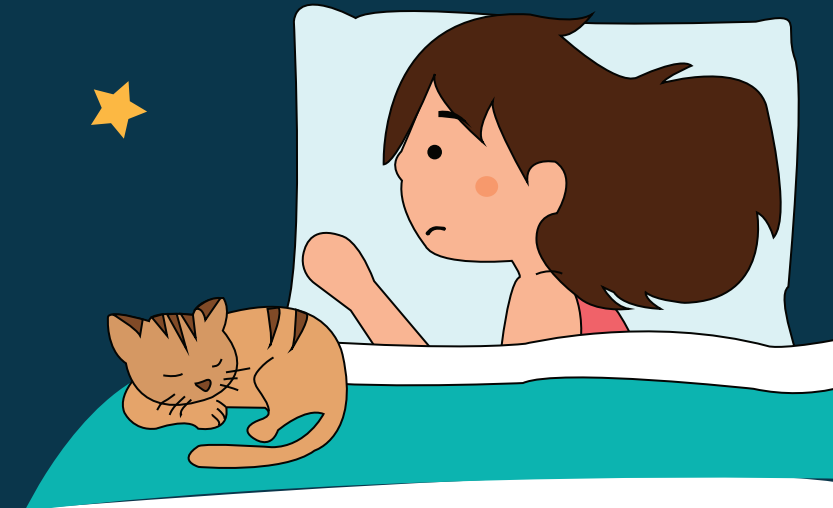


## Sleep Challenges in Children with Neurodevelopmental Differences (NDDs)



### You're not Alone!

Children with neurodevelopmental differences (NDDs) are at increased risk of sleep problems. A provincial survey reveals that **78% of children with NDDs have sleep difficulties** compared to 25-40% in children who are neurotypical. Sleep problems are one of the most **burdensome challenges for children with NDDs** and their families. Sleep issues also affect emotional regulation and can create challenging daytime behaviours like aggression and self-injury.

Sleep difficulties in children with NDDs can have many causes, some of the more common ones are **genetics, environmental** causes, abnormal **mela- tonin** production, **seizures, ADHD, medications** and **sleep hygiene**.

**57%**  
OF CHILDREN  
WAKE UP MULTIPLE  
TIMES

**52%**  
OF CHILDREN  
HAVE PROBLEMS  
FALLING  
ASLEEP

**45%**  
OF CHILDREN  
WAKE UP VERY  
EARLY

**40-80%**  
OF CHILDREN  
WITH NDDs HAVE  
SLEEP PROBLEMS

### 1 | UNDERSTANDING SLEEP DISORDERS

#### INSOMNIA

Can include bedtime resistance, difficulty falling asleep, difficulty staying asleep, frequent night awakenings, waking up too early and not being able to get back to sleep.

#### PARASOMNIA

Unwanted physical experiences during sleep or sleep arousal, including night terrors (screams, sweats, confusion), sleepwalking, sleep talking, bedwetting and frequent nightmares.

#### CIRCADIAN RHYTHM SLEEP DISORDER

The child's sleep-wake cycle is not properly aligned and the desire to fall asleep does not match typical nighttime sleeping. Difficulty in starting sleep but once fallen asleep the sleep architecture is normal.

#### SLEEP RELATED BREATHING DISORDERS

Abnormal respiration during sleep which disrupts sleep patterns. These disorders are grouped into apnea, central sleep apnea and obstructive sleep apnea.

#### SLEEP RELATED MOVEMENT DISORDERS

Repetitive, rhythmic movements occurring during sleep. Can include periodic limb movement disorder, repeated limb jerking, restless leg syndrome and myoclonic jerks.

### 2 | IDENTIFYING SLEEP PROBLEMS



#### Understanding the BEARS method

The **BEARS method** is a sleep screening tool used by specialists to help identify specific sleep issues. Using this tool can be **useful to understand sleep problems** and can lead to sleep investigations and plans. The screening questions are divided into five major sleep domains:

- 1 **B**edtime problems
- 2 **E**xcessive daytime sleepiness
- 3 **A**wakenings during the night
- 4 **R**egularity and duration of sleep
- 5 **S**noring

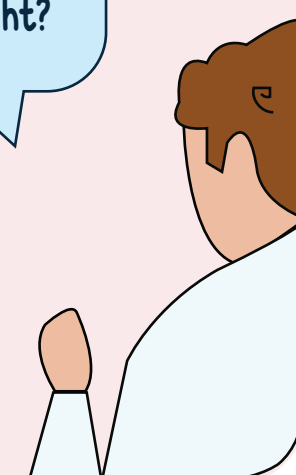
Other questions during the screening process can include details about your child's pre-sleep activities, bedtime routine, physical activity, parental response to nighttime awakenings, movements during sleep and medical

How long does he take to get back to sleep?

What do you do when he wakes up?

How many times does she wake up during the night?

**\*Note:** answering all these questions can be a bit overwhelming for caregivers but they are important to identify problems and create a consistent plan.





### Blood test

One of the main reasons to do a blood test is to investigate iron levels. Iron plays an important role in sleep quantity, quality, and timing. Iron deficiency could cause restless leg syndrome and periodic limb movement disorder.



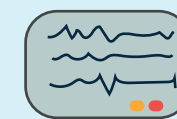
### Sleep diary

A sleep diary is a tool to collect important sleep related information over time. Although not all sleep diaries are identical, they commonly include details about pre-sleep activities, sleep time, awakenings and more.



### Actigraphy

A device that measures the amount and frequency of limb movement and records motion. The data is recorded over multiple nights and is used to estimate sleep and wake patterns. It can be worn while sleeping at home.



### Polysomnography

A sleep study to investigate multiple sleep disorders including sleep-related breathing disorders parasomnias, sleep-related seizure disorders and restless leg syndrome. It measures sleep stages, breathing functions and more.

### Sleep Doctor

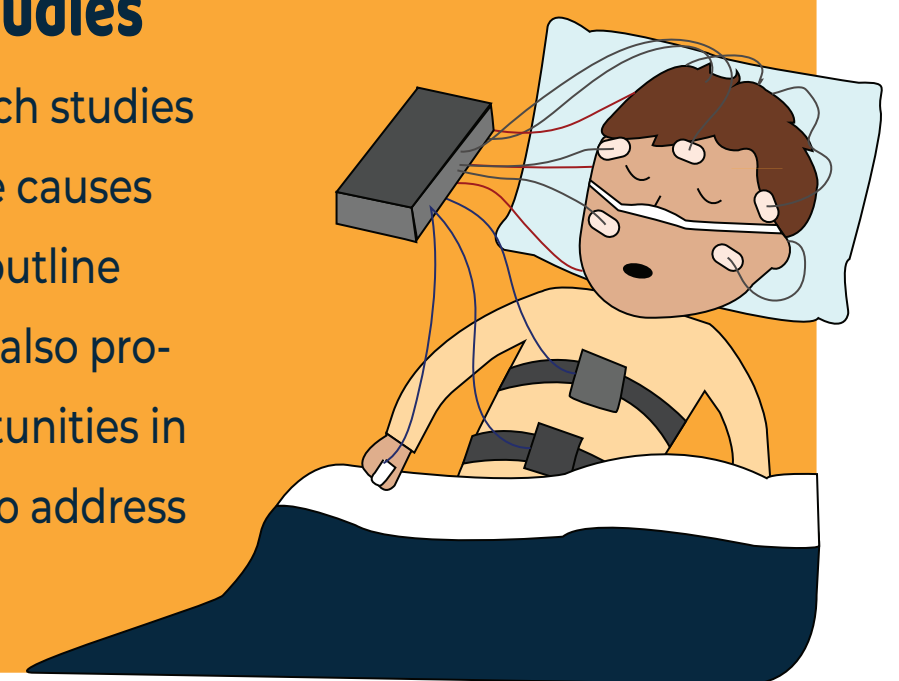
A doctor specialized in sleep, sleep disorders, and sleep health. A sleep doctor can have background in different medical specialties (ie. pediatrics, neurology, respirology) giving **different approaches and ideas**.

Dr. Ipsiroglu  
BC Children's



### Sleep Clinic and Studies

Sleep clinics and research studies can help investigate the causes of sleep problems and outline interventions. They can also provide educational opportunities in behavioural strategies to address sleep problems.

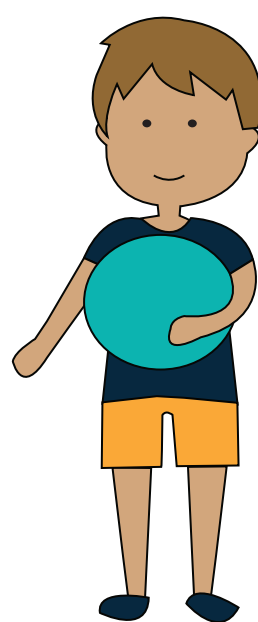


Although causes and types of sleep problems in children with NDDs vary greatly, evidence shows that behavioural strategies to address sleep problems **can be very beneficial to children with NDDs** and usually result in improved total sleep time, a faster sleep onset and better sleep efficiency.



#### During the day

- Natural light is important for setting up our body's internal clock. Exercise and physical activity can **improve sleep efficiency** and can lead to faster sleep onset and longer sleep duration.



#### Before Bed

- Engaging in activities your child finds **relaxing 30-60 minutes before bed** can improve sleep. These activities can involve movement, touch, sound, vision, smell or taste and could include:
  - ✓ Rocking and swinging
  - ✓ Calming scents
  - ✓ Massaging
  - ✓ Eating a light snack
  - ✓ Sorting objects
  - ✓ Wearing a weighted vest
  - ✓ Unraveling rope
  - ✓ Listening to music
  - ✓ Chewing gum, vinyl tubing or crunchy/chewy foods

### Sleep Hygiene:

A collection of habits and behaviors that promote good sleep.



#### Sleep hygiene education

A recent study found that any type of sleep hygiene education whether it's through cognitive behavioural therapy (CBT), self-education or a health care professional providing education, can help improve sleep in children with NDDs.



#### Bedroom environment

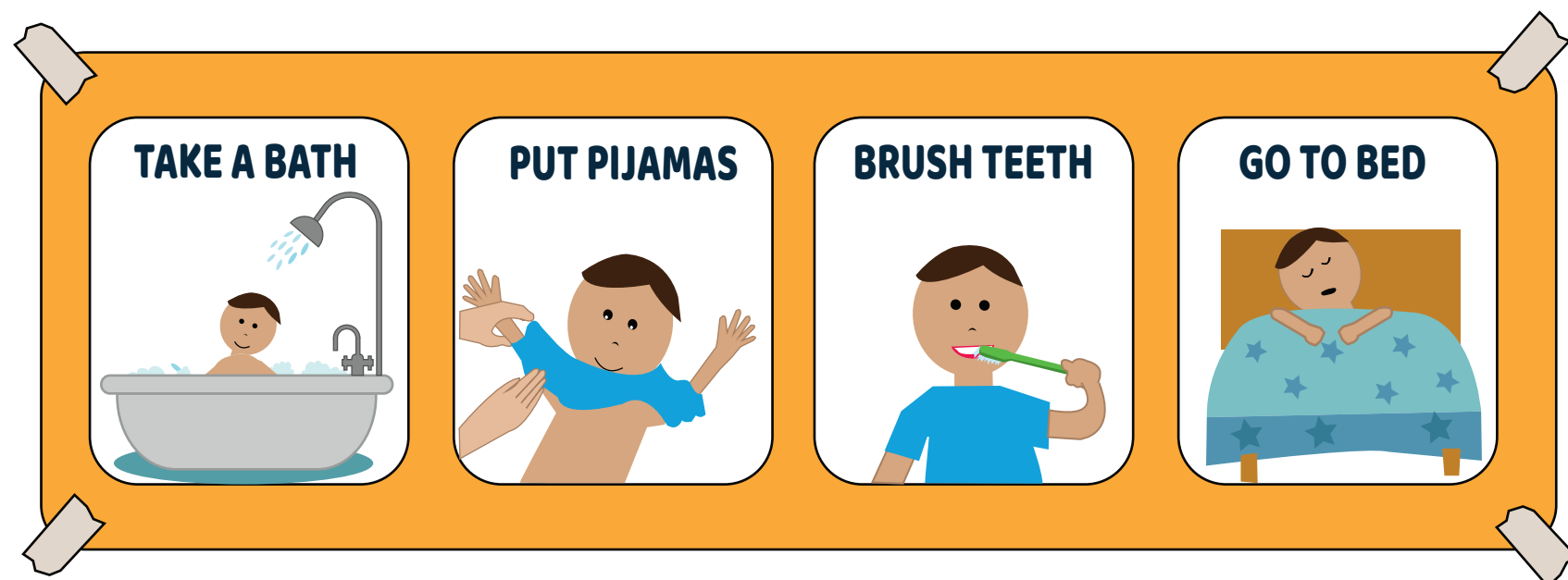
- Making the bedroom **environment comfortable** can also be beneficial and help your child relax. Here are some ideas:
  - ✓ Use comfortable bedtime clothing and fabrics your child likes
  - ✓ Arrange the blankets to provide the right amount of pressure
  - ✓ Use white noise such as a fan or noise blocking curtains
  - ✓ Keep the temperature consistent, 18.3 C (65F) is ideal
  - ✓ Avoid screens at night if possible (screens may also be calming for some children so a nightshift setting can be used)





## Bedtime routine

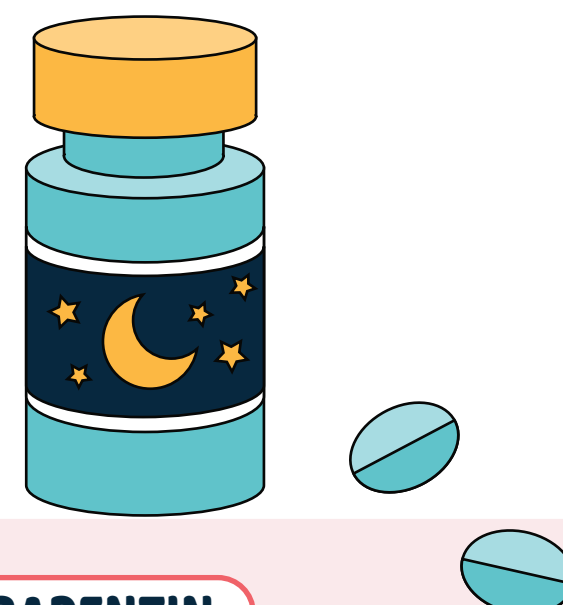
- Creating a bedtime routine is one of the **most important behavioural strategies**. This routine does not have to be a traditional bed routine and can be anything that is calming, consistent and bedtime-specific.
- The goal is to make the transition to bedtime more seamless. **Make it visual** with pictures or schedule boards can be very helpful.



## 5

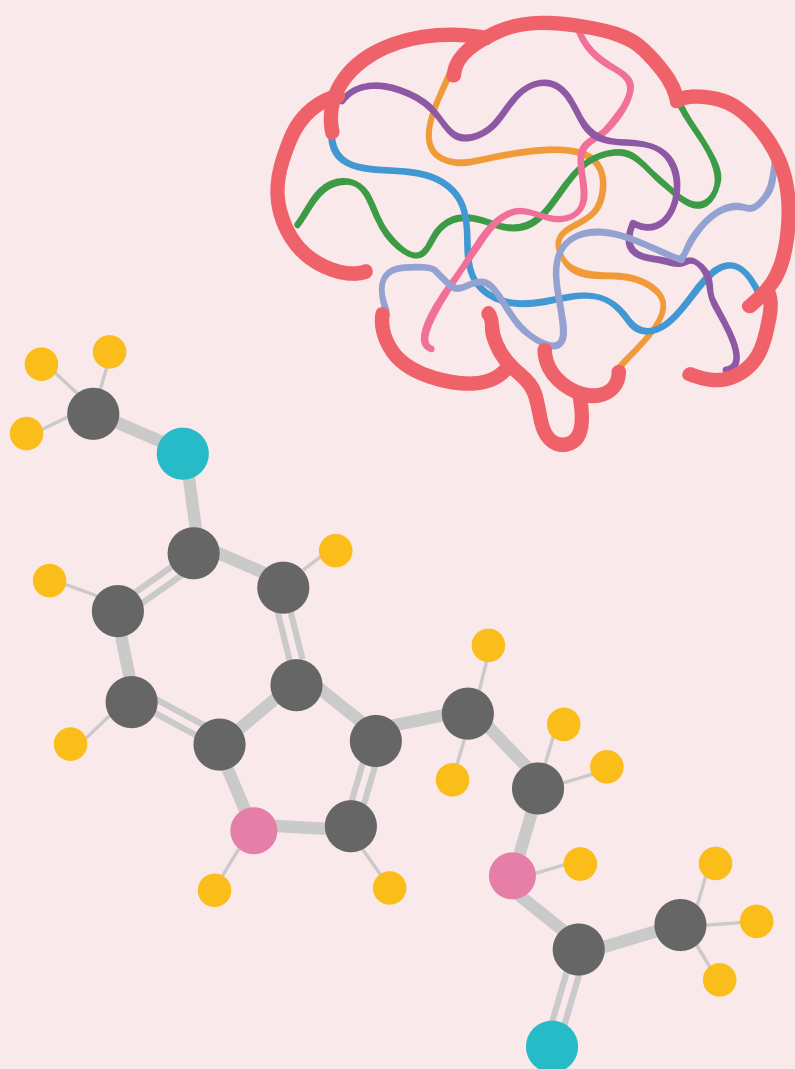
### MEDICATIONS FOR TREATING SLEEP PROBLEMS

There are **different types of medications** used to treat sleep problems. Some are prescription medications and others are over-the-counter drugs and dietary supplements. Before trying any sleep medication please **consult with your doctor**. Some common medications to treat sleep problems in children with NDDs are:



#### MELATONIN

Melatonin is a hormone found naturally in the body. Melatonin's main job in the body is to regulate sleep-wake cycles. Melatonin can help improve sleep efficiency, decrease awakening at night, resettling and less early awake time.



#### IRON

Iron is essential for many biological functions. Low levels of iron in the brain results in a decreased production of dopamine (an important neurotransmitter). Iron deficiency could cause restless leg syndrome and periodic limb movement disorder.

#### CLONIDINE

Clonidine is used to treat insomnia and behavioural challenges for children with NDDs. It can be effective in reducing onset time to sleep and decreasing night awakenings and could also improve mood instability and aggression.

#### GABAPENTIN

Gabapentin is a medication to treat insomnia, restless leg syndrome and prolonged sleep onset in children who have sleeping difficulties. It can be very effective for increasing sleep efficacy and decreasing the amount of spontaneous arousal.

#### TRAZODONE

Trazodone increases natural neurotransmitters in the central nervous system. Although trazodone was designed to treat depression and anxiety disorders, the medication is now prescribed as a nighttime sleep aid.



Every **child is unique and can react differently to medications**. Ask your physician to discuss doses, potential side effects as well as drug interactions and potential withdrawal symptoms associated with these medications.

