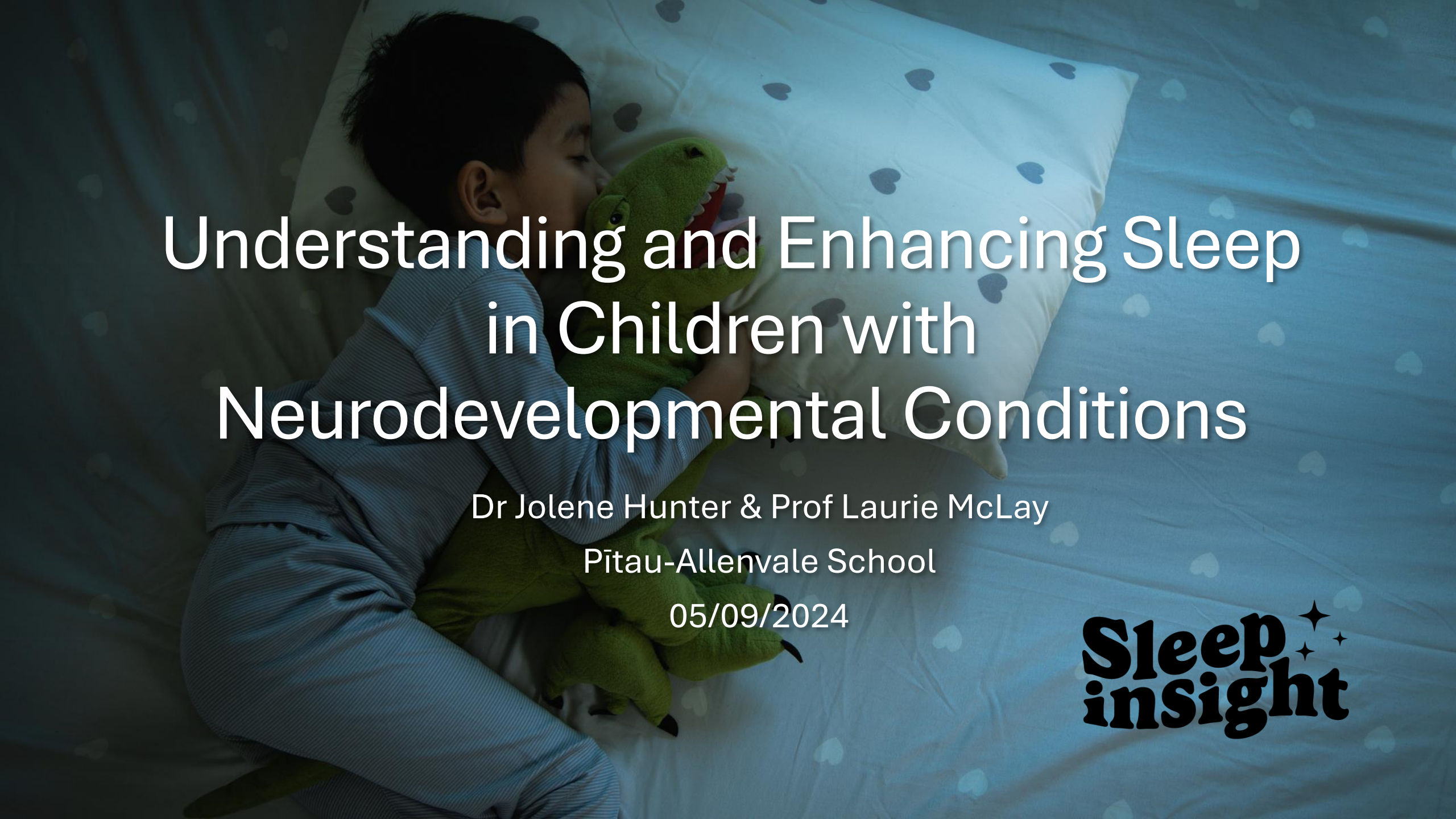




Understanding and Enhancing Sleep in Children with Neurodevelopmental Conditions

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**Sleep
insight**

Overview

- Healthy sleep
- Sleep difficulties
- Factors underpinning sleep difficulties
- Melatonin
- Keys areas
- Tips
- Seeking professional help
- Summary



The Importance of Sleep for Children

- Cognitive function and learning
- Behavioural and emotional regulation
- Physical health
- Social interaction and communication
- Mental health





Understanding Sleep

- **NREM Sleep:**
 - Stage 1: Transition to sleep
 - Stage 2: Light sleep (heart rate slows, temperature drops)
 - Stages 3 & 4: Deep sleep, crucial for physical restoration
- **REM Sleep:**
 - Begins 90 mins after falling asleep
 - Most dreaming occurs
 - Essential for memory consolidation & emotional regulation.

The Sleep Wake Cycle



CIRCADIAN RHYTHM



MELATONIN



SLEEP PRESSURE

Hirshkowitz et al., 2015

Sleep Requirements by Age (National Sleep Foundation)

Age	Recommended sleep duration
0 – 3 months	14 to 17 hours
4 – 11 months	12 to 15 hours
1 – 2 years	11 to 14 hours
3 – 5 years	10 to 13 hours
6 – 13 years	9 to 11 hours
14 – 17 years	8 to 10 hours
18 – 64 years	7 to 9 hours
65+ years	7 to 8 hours



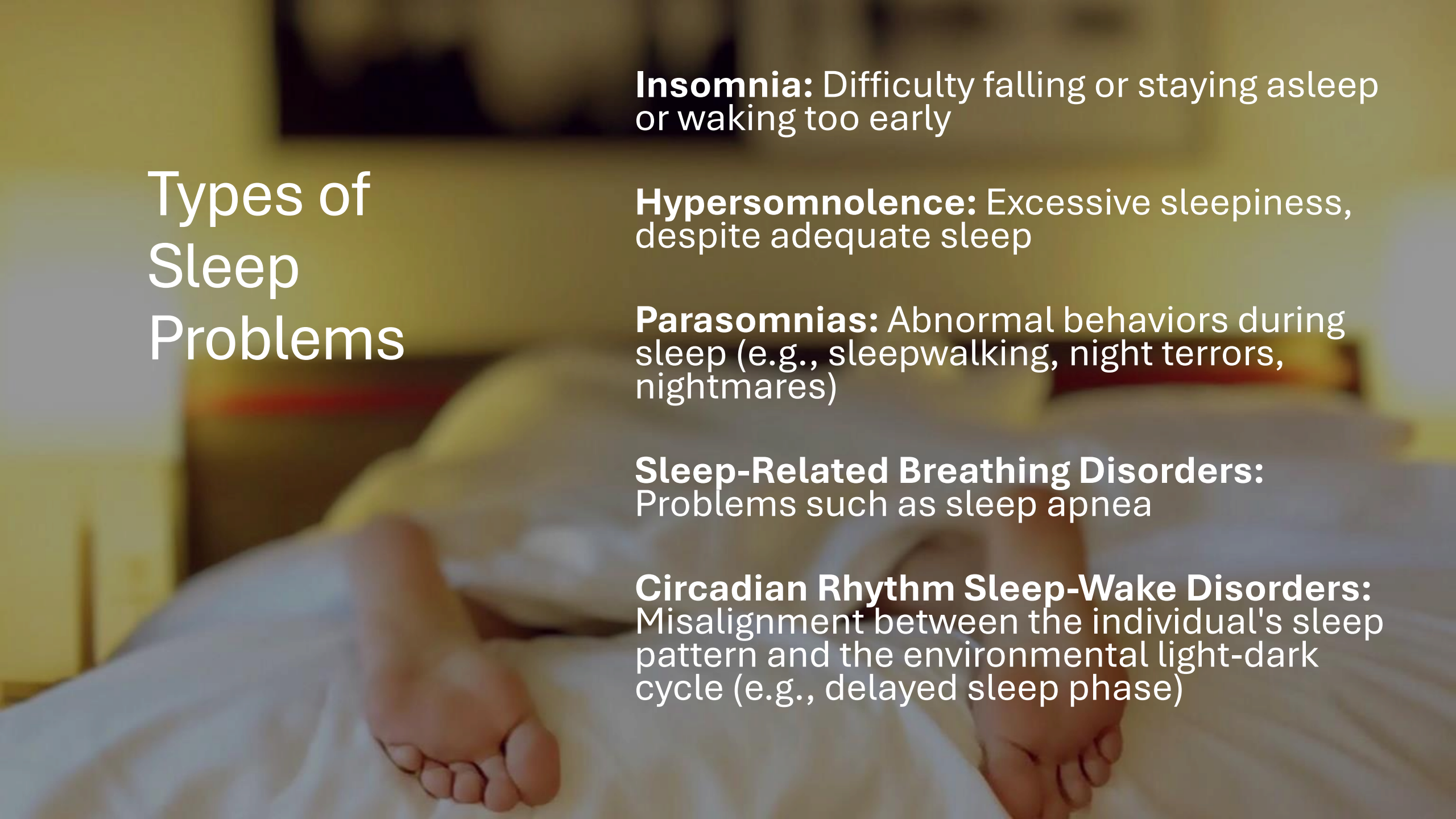
Sleep Difficulties: Prevalence

30-80% of children with neurodevelopmental conditions experience sleep disturbance

The most affected are:

- Autistic children: **50-80%**
- Children with ADHD: **50-70%**

Compared to only 20-30% of neurotypical children



Types of Sleep Problems

Insomnia: Difficulty falling or staying asleep or waking too early

Hypersomnolence: Excessive sleepiness, despite adequate sleep

Parasomnias: Abnormal behaviors during sleep (e.g., sleepwalking, night terrors, nightmares)

Sleep-Related Breathing Disorders: Problems such as sleep apnea

Circadian Rhythm Sleep-Wake Disorders: Misalignment between the individual's sleep pattern and the environmental light-dark cycle (e.g., delayed sleep phase)

Consequences of Poor Sleep

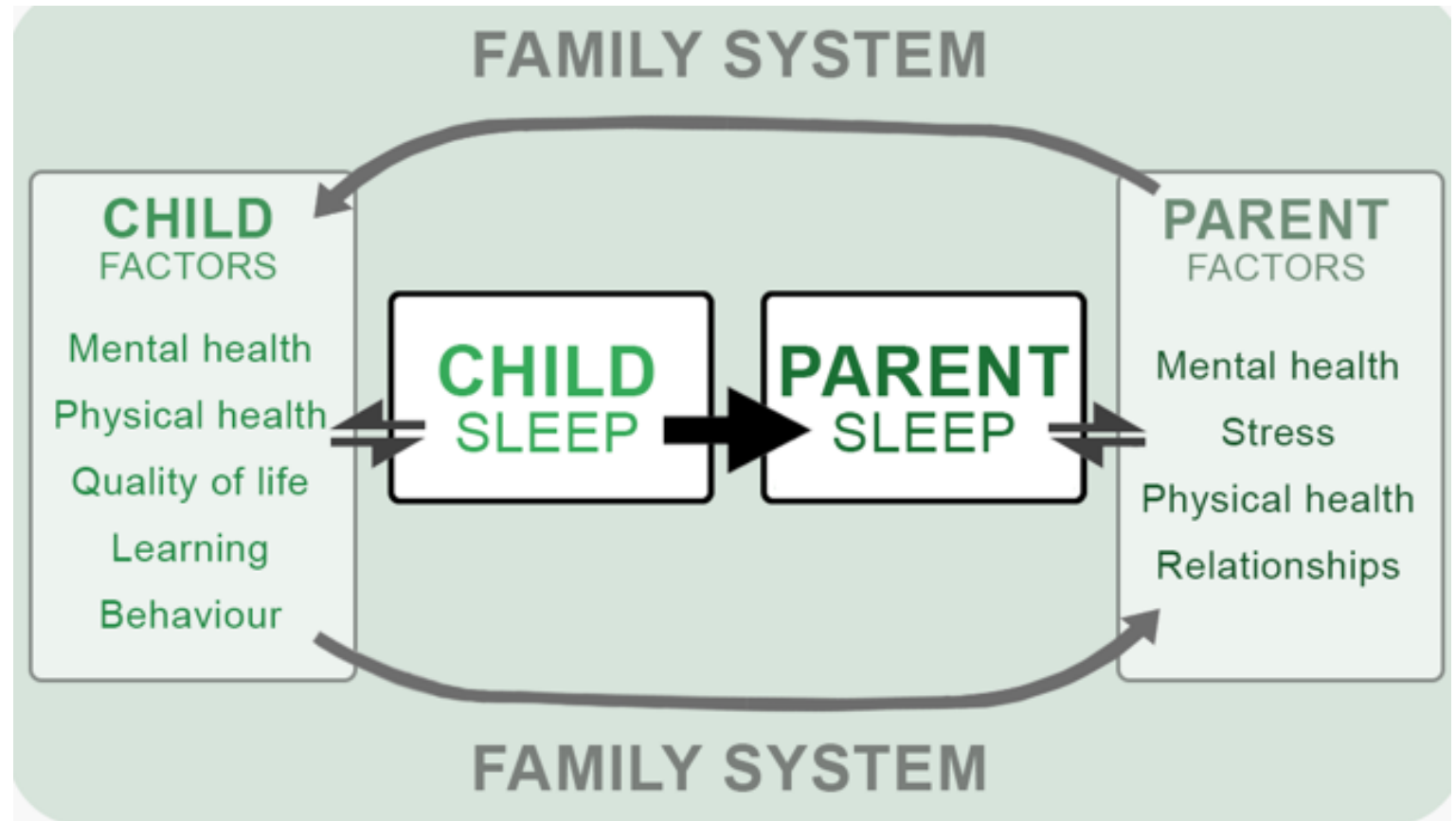
Physical
health

Behavioural
and
emotional
regulation

Cognitive
function
and learning

Family well-
being

Bidirectional Relationship



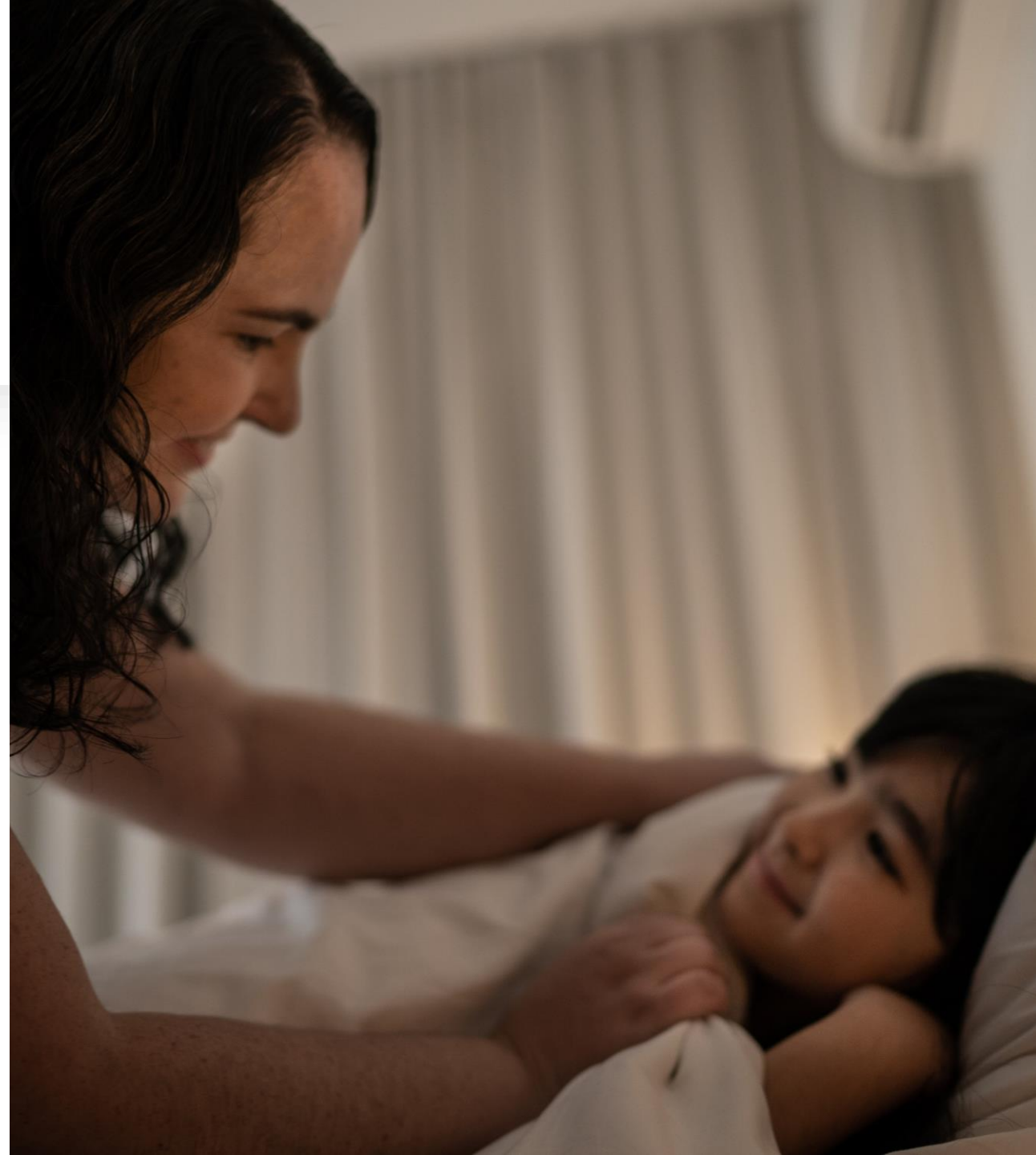
What underpins sleep disturbance?

Sleep is influenced by several factors:

Biological

Psychological

Social



Additional Factors for Children with Neurodevelopmental Conditions

Difficulty with transitions

Communication difficulties

Sensory sensitivities

Need for sameness/predictability

Physical discomfort

Additional challenges



Sleep Challenges can be Overcome

- There is strong evidence that when we target bio-psycho-social factors, sleep improves
- Psychosocial interventions are the gold standard treatment
- Targeted, individualised support is best



Melatonin

- Natural melatonin production can differ in autism (e.g., lower levels, irregular secretion patterns)
- Melatonin is an evidence-based treatment, particularly for sleep onset delay
- At least $\frac{1}{4}$ of autistic children in NZ have been dispensed melatonin



Melatonin

- Not effective for all types of sleep difficulties
- Response can vary widely across children
- Generally considered safe for short-term use
- Long-term efficacy and safety is unknown
- Often most effective when used alongside psychosocial sleep interventions





**Key
Areas:**

Sleep/wake scheduling: Timing, consistency and appropriateness of sleep schedule

Sleep pressure: The physiological drive for sleep that helps us to fall asleep and stay asleep

Sleep hygiene: Day/night-time habits, & features of the sleep environment

Sleep-interfering factors: Thoughts, feelings and/or behaviours that compete with sleep (e.g., worrying, device-use)



Sleep/Wake Scheduling

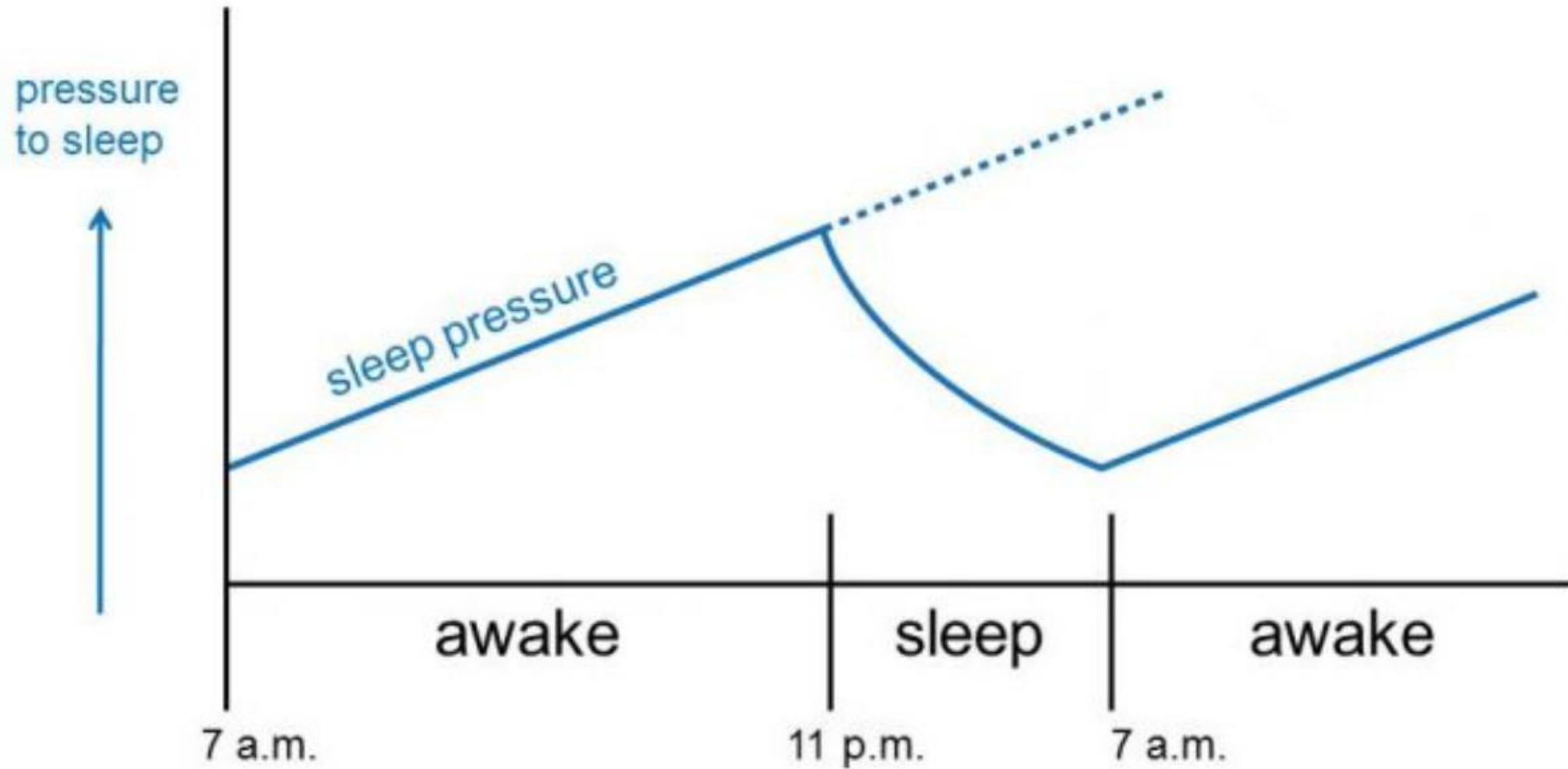
- Inconsistent or inappropriate bed/wake times can confuse our body clock and disrupt sleep



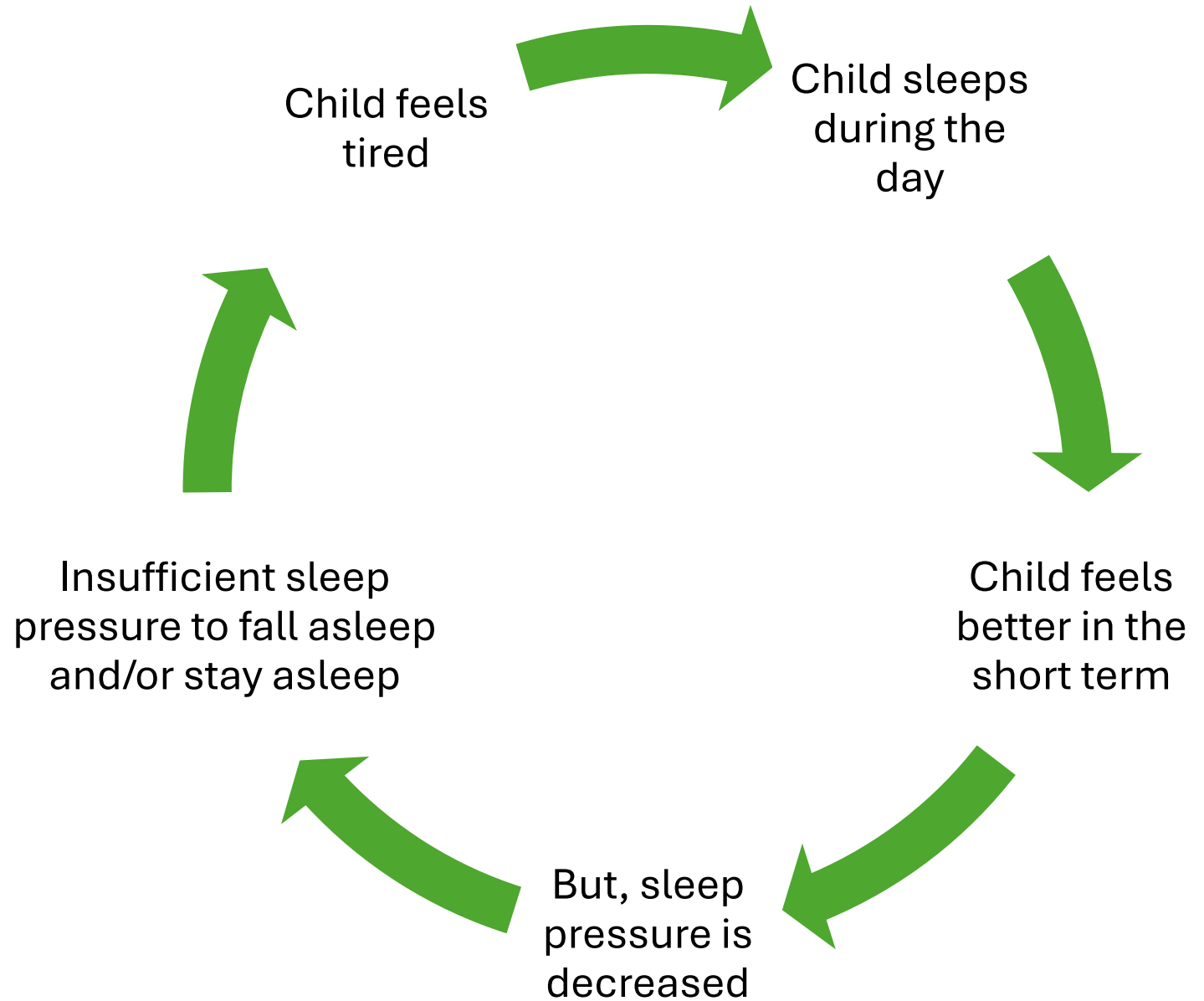
Sleep Pressure

- Sleeping during the day decreases *sleep pressure*
- We need sufficient sleep pressure to fall asleep and stay asleep
- Making up for lost sleep time can inadvertently maintain sleep issues

Sleep pressure builds as we stay awake and drops when we sleep.



Sleep Pressure



Sleep in teens

Sleep changes in teenage years (e.g., difference in melatonin production, sleep pressure builds more slowly)

Teenagers can become 'night owls'

Difficulties with wake times/catch up sleep

Jet lag effect





Sleep Hygiene

- The bedroom environment
- Exposure to daylight
- Diet
- Exercise

Sleep Conditions

- Sleep issues can occur when there is an absence of, or inconsistent, cues before bed and during the night
- Spending a lot of time in bed awake is unhelpful





Screens

Device-use close to bedtime and in bed can interfere with sleep

- Blue light inhibits melatonin production
- Content can be stimulating

Tips: Sleep/Wake Scheduling

- Keep the same bed and wake time, even on weekends and school holidays
- If a change in schedule is necessary, adjustments can be made gradually (e.g., shifting bedtime 15 mins earlier/later each night)
- Ideally, children should fall asleep within 15-30 mins once in bed

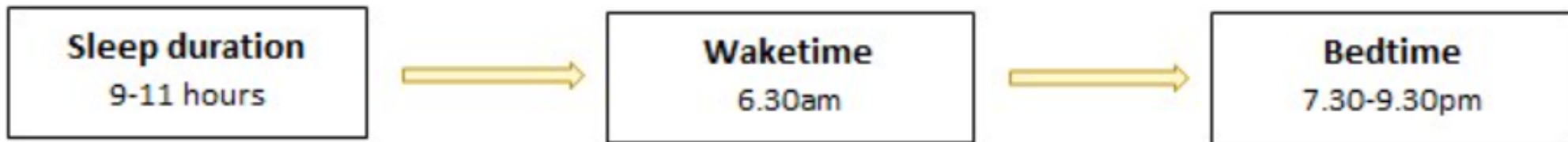


How to select appropriate bed and wake times

- Choose an appropriate wake time
- Find the recommended total sleep duration for the child's age
- Work backwards from the wake time to find the appropriate bedtime
- Prevent sleep outside of these hours

For example:

Calculating a sleep/wake time for a **9 Year Old**



Visual Aids



Tips: Sleep Pressure

Stick to consistent bed and wake times, including on weekends

Prevent daytime sleep

Avoid high-risk scenarios

‘Jet lag’ effect – reduce demands

Consistency is key





Tips: Sleep Hygiene

- Calm, comfortable bedroom environment
- Exposure to daylight
- Diet – full belly, avoid caffeine
- Daytime exercise

Sleep Hygiene at School

- Encourage physical activity
- Well-lit classrooms/natural daylight
- Healthy eating
- Prevent daytime sleep
- Sleep education for students
- Teach relaxation techniques
- Working with parents
- Consistency across settings



Tips: Consistent Sleep Conditions

Consistent and calming bedtime routine

Consistent, sleep-friendly cues

Reserve bed only for sleeping



Visual Schedules

Free Printables

VISUAL MORNING AND BEDTIME ROUTINES FOR CHILDREN

My Bedtime Routine

	Take a bath	☐
	Put on pj's	☐
	Brush teeth	☐
	Read a book	☐
	Go to bed	☐

www.newmommamasurvival.com

X's Sleep Checklist

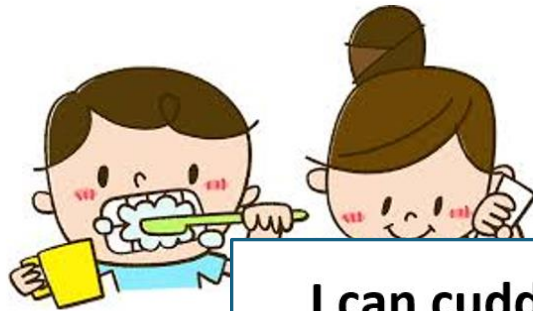
- ☐ 6:15pm Dinner
- ☐ 6.45pm Jobs
- ☐ 7:00pm Maths
- ☐ 7:30pm Shower, PJs, Toilet
- ☐ 8:00pm read by myself
- ☐ 8:15pm read with Mum or Dad
- ☐ 8:30pm Bedtime

- Check the temperature (Enough blankets? Hot water bottle?)
- Put a drink beside bed
- Goodnight to family



Sleep Stories

Before I get into bed I brush my teeth.



I sleep in my bed all night.



If I wake in the night and see stars on my Gro-Clock I stay in my own bed.



I can cuddle my toy or take deep breaths to help me fall back to sleep.



I can get out of bed when there is a sun on my Clock.



Tips: Reducing Device-use

Use as much as they like up to a certain time, or in a certain place (e.g., lounge)

Ideally try to limit 30-60 mins before bed (pack away as part of routine)

If this isn't possible, limit impact

Education (e.g., in Sleep Story)

Teaching something else to do in bed (e.g., relaxation)

Sounds/white noise

Access to device in the morning



Tips: Reducing Device-use

- Gradually reducing the amount of time with a preferred activity
- Gradually reducing its quality
- Gradually reducing the number of items available



Seeking Professional Help

- Parents report needing help
- Issues are persistent and/or complex
- Significant daytime impairment
- Significant impact on parent/family well-being
- Sleep-related breathing disorders (require medical assessment)
- Factors that require professional input – e.g., cognitive-behavioural therapy for anxiety



Summary

- Children with neurodevelopmental conditions have high rates of sleep disturbance
- Sleep is influenced by biological, psychological, social, & other factors. Positive outcomes are achievable
- Key areas include having a consistent sleep/wake scheduling, ensuring sufficient sleep pressure & good sleep hygiene practices
- Professionals can support healthy sleep by optimising daytime factors & providing education and support for children & parents





Thank you
Any questions?

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