



# CBTi



## WEEK 3

Welcome Back !



# MINDFULNESS

EMPOWERMENT • PRESENCE • WELLBEING • HEALTH



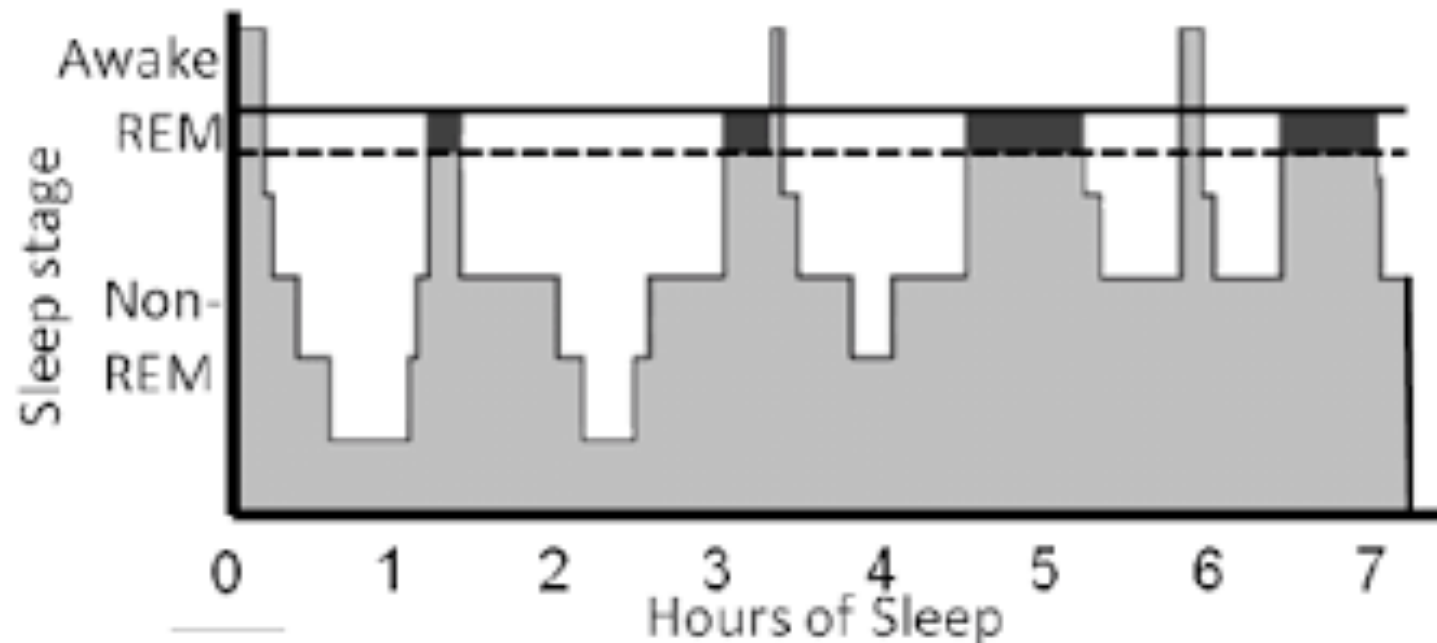


# AGENDA

1. Sleep architecture
2. Sleep changes with age
3. Sleep scheduling – calculations
4. Review of Stimulus control

# SLEEP ARCHITYPE

- 2 types of sleep- Non rapid eye movement (NREM) and Rapid eye movement (REM) sleep
- NREM Sleep makes up a total of 75% to 80% of sleep
- REM makes up about 20 % to 25 % of sleep



# The 4 Stages of Sleep



## NREM Stage 1

- transition period between wakefulness and sleep
- lasts around 5 to 10 minutes



## NREM Stage 3

- muscles relax
- blood pressure and breathing rate drop
- deepest sleep occurs



## NREM Stage 2

- body temperature drops and heart rate begins to slow
- brain begins to produce sleep spindles
- lasts approximately 20 minutes



## REM Sleep

- brain becomes more active
- body becomes relaxed and immobilized
- dreams occur
- eyes move rapidly

During sleep a person usually progresses through all 3 stages of Non-REM sleep before entering REM. This takes about 1 to 2 hours after falling asleep and the cycle is usually repeated about 4- 6 times each night

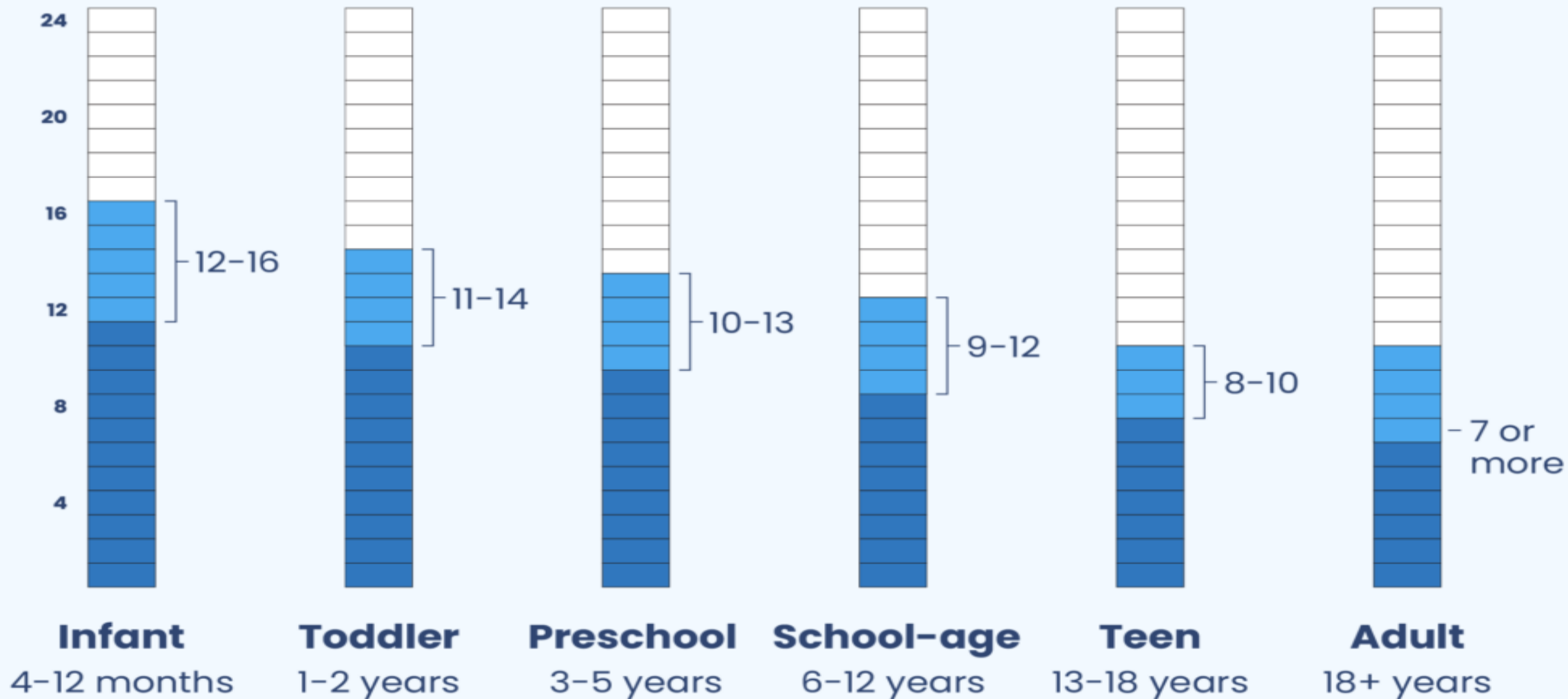
# SLEEP CHANGES WITH AGE

**Ageing impacts everyone differently, in different ways- including sleep**

Some common sleep disturbances in older adults are :

- Shifting sleep schedule (Advance phase)
- Waking up at night
- Longer recovery from changes in sleep schedule (jet leg, day lights saving, etc.)
- More day time napping

# Recommended Hours of Sleep



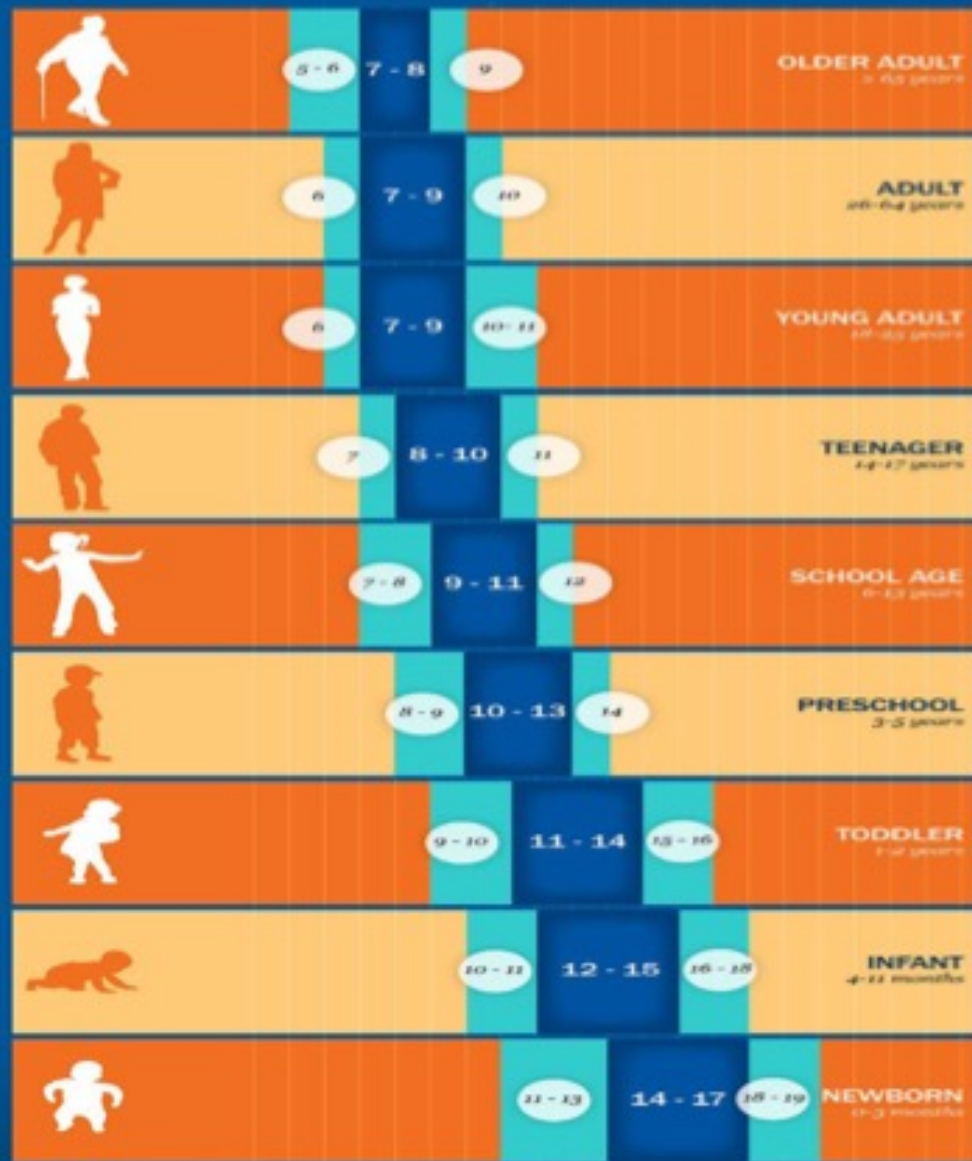
Source: American Academy of Sleep Medicine



NATIONAL SLEEP FOUNDATION

# RECOMMENDED SLEEP

HOURS OF SLEEP



Recommended Range



May be Appropriate



Not Recommended



# SLEEP SCHEDULING

- Take out your sleep diaries! This is where all your hard work comes in handy. We will use a sample diary for practice to show how to do the calculations
- Be kind to yourself- this involves a lot of math which will be easy for some- and more challenging for others. We will walk through it step by step
- There is additional time in the next groups to help with calculations

# CALCULATIONS

- What we are looking to figure out is how much are you actually sleeping, and how much are you in bed awake?

(We will calculate in minutes but convert into hours after )

$$\text{Time in Bed (TIB)} = \text{Average sleep time (ATST)} + 30$$

# SLEEP CALCULATIONS

- First step is to calculate The **Total time you were in bed**. This is the difference between the time you got into bed and the time you got out. (the difference between 1 and 7)
- Eg. Monday – Got into bed at 10 pm and woke up at 6:30 am = 8.5 hours
- Tuesday – In bed at 11pm up at 8:15 am = 9.25
- Wednesday – Bed at 1030pm up at 7:30 am = 9 hours
- Thursday – Bed at 10:15 up at 5:30 = 7.25 hours
- Friday – Bed at 1 am up at 9 am = 8 hours
- Sat – Bed at 12 am up at 10 am – 10 hours
- Sunday - Bed at 10 pm up at 6 am = 8 hours

# SLEEP CALCULATIONS

- Take all the data, add it together and then divide by the number of days you are calculating
- $8.5 + 9.25 + 9 + 7.25 + 8 + 10 + 8 = 60.25$
- 60.25 divided by **7 (number of days we are calculating for)**  
= 8.6
- So therefore you are spending approximately 8.6 hours in bed a night.

# SLEEP CALCULATIONS

2. Second step we are calculating Time spend awake during the night. We're going to break it down into steps.

2. a) This involves adding the time you were awake in bed, the time it took you to fall asleep + time awake during the night, and the time you were awake before you got out of bed

- *Monday – Got into bed at 10pm, didn't try to sleep until 10:30= 30 mins awake*
- *20 minutes to fall asleep after trying to sleep = 20 mins*
- *Was then up for 60 mins in the middle of the night = 60 mins awake*
- *Woke up at 6:15 am and got out of bed at 6:30= 15 minutes in bed awake*
- *Now total them:  $30+20 + 60+15= 125$  minutes*
- 
- *Therefore, on Monday I was up for 125 mins in bed.*

# SLEEP CALCULATIONS

**Do this for everyday**

- **Monday-  $30 + 20 + 60 + 15 = 125$**
- Tuesday-  $0 + 15 + 15 + 15 = 45$
- Wed-  $35 + 135 + 60 = 230$
- Thursday –  $45 + 30 + 15 = 90$
- Friday-  $0 + 10 + 45 + 60 = 115$
- Saturday –  $0 + 10 + 75 + 30 = 115$
- Sunday –  $30 + 5 + 10 + 15 = 60$



Add all of them together and divide by 7 (number of days)

$$125 + 45 + 230 + 90 + 115 + 115 + 60$$
$$= 780 \text{ mins} / 7 = 111 \text{ minutes}$$

Then divide by 60 mins/hr to get results in hours  
= 1.85 hours in bed

Can round this to the nearest hour if like = 2 hours

***Therefore time spent awake during the night = 2 hours***

# SLEEP CALCULATIONS

So lets recap .....

According to the example we are using :

- You are spending approximately **8.6 hours in bed a night**
- You are spending approximately **2 hours in bed AWAKE**

**So out of the 8.6 hours you are in bed, you are spending 2 hours of those awake**



# SLEEP CALCULATIONS

Now lets calculation how long you are sleeping

Total sleep time = time in bed – time awake in bed  
= 8.6 hours – 2 hours  
= 6.6 hours

Total Sleep time (TST) = 6.6 hours

***Therefore you spend about 6.6 hours a night sleeping***

# SLEEP CALCULATIONS

## Now lets calculation the average sleep time...

- *Average sleep time = Total Sleep time + 30 mins*
- Therefor TST= 6.6 + 30 mins (0.5 hours)
- = 7.1 hours Can round to 7 hours of sleep

***Therefore Average sleep time is 7 hours***

# RISING TIME

- A **reasonable morning rising time** is necessary to accomplish daily activities and will often be close to one's normal weekday rising time.
- What time do you want to wake up in the morning?? This will determine our bedtime!

\*\*\* This is a time you want to consistently get up at during the week AND weekends\*\*\*



# LAST CALCULATION... BED TIME

## **Bedtime calculation-**

- Rise time I chose was **7 a.m.**
- Take the rise time and subtract the average sleep time  
or
- Simply take the rise time and count back the number of hours

For example:

- 7:00 am – 7 hours = 12 am

**NEW BEDTIME WOULD BE 12 AM**

# BEDTIME

Few things to remember :

- **This is temporary**... we are asking you to restrict your time in bed so that you are only in bed when sleeping
- Once you are sleeping through the night, the ultimate goal of sleep scheduling is to expand your sleep window to the amount you need. We will start this next week.
- You have already had \_\_\_\_\_ days of terrible sleep. This is asking you to commit to 7 days.

\*\*\*Remember, we aren't actually reducing your sleep- that is the total number of hours you are sleeping without being awake.\*\*\*

# QUICK REVIEW OF STIMULUS CONTROL

The Rules:

- Sleepy-tired rule
- Quarter of an hour rule
- No napping rule
- Sleep and sex rule

## Stimulus Control Training for Insomnia



Get up at the same  
time every morning



Lie down in bed  
only when sleepy



Use the bed only  
for sleep + sex



Don't take  
naps



# HOMework

- Start your new bedtime and rise time (if you can do the calculations on your own)
  - Follow the stimulus control rules
  - Continue on with sleep diaries!!!!

**See you next week!**

