

SLEEP, ADOLESCENCE AND SCHOOL

Overview of problems and solutions

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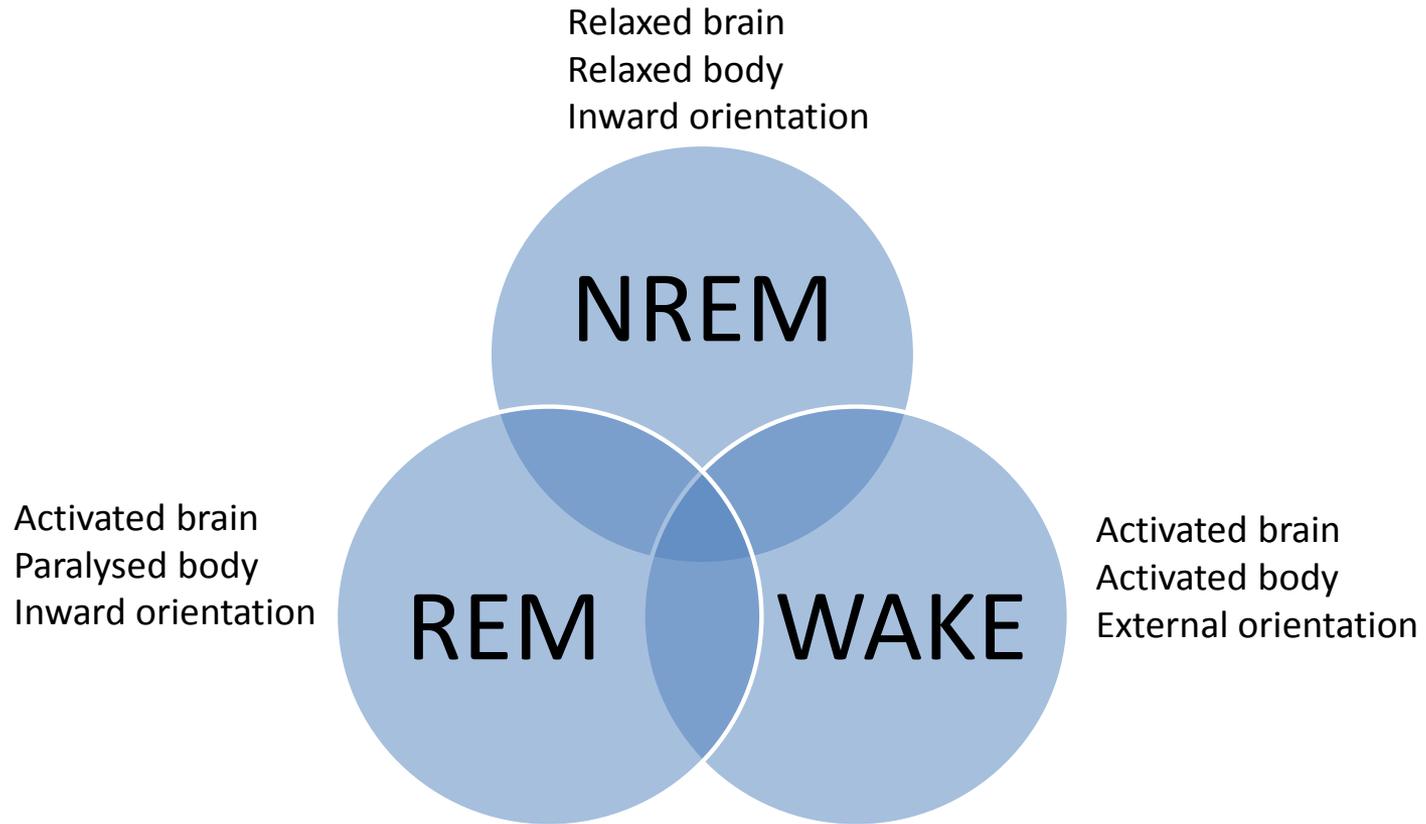


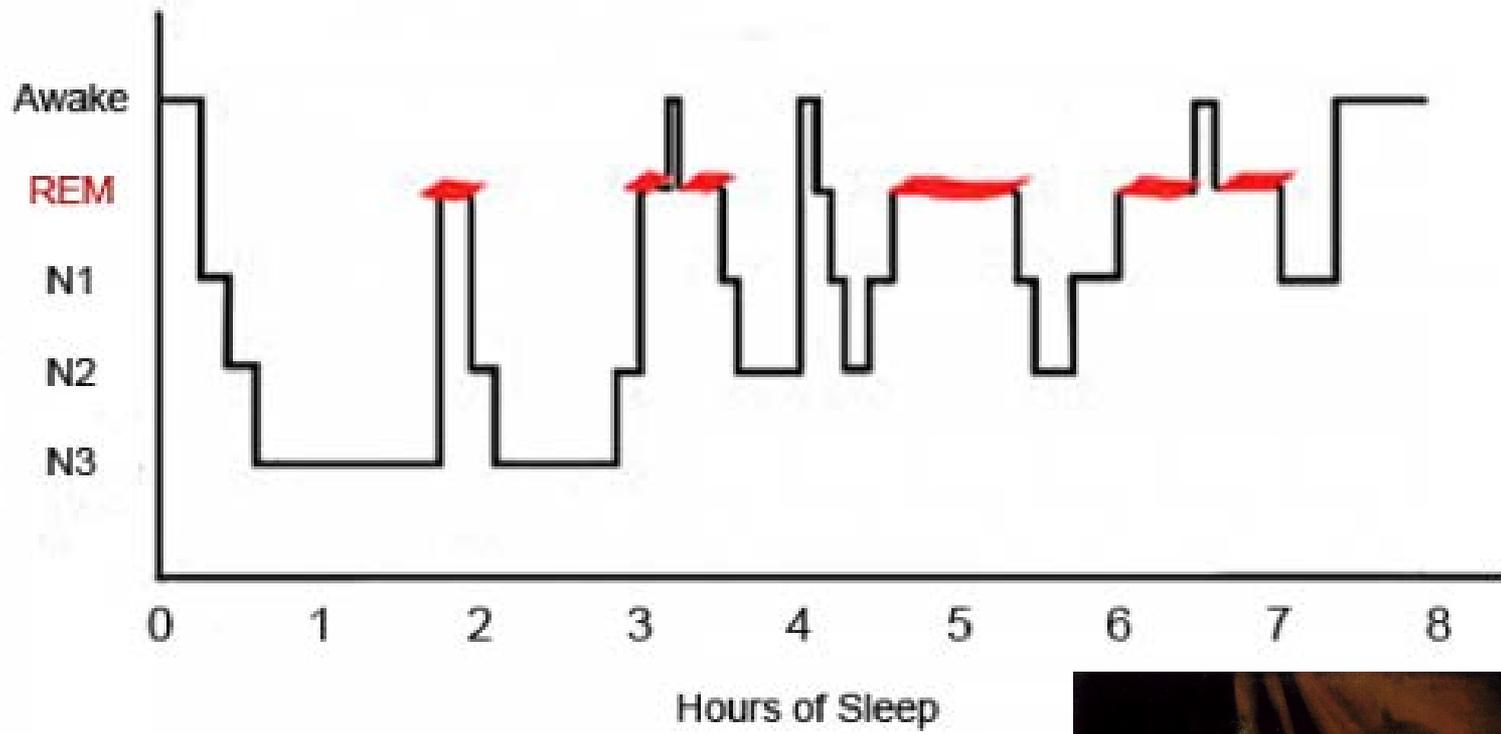
Today's talk

- Why do we sleep?
- What's wrong with adolescent sleep?
- How can adolescents improve their sleep?



Three types of alertness





Physical function of sleep

- Brain does its house-keeping during sleep
 - Washes away toxins generated by mental work in the daytime
 - Brain cells shrink during sleep to open up the gaps between neurons and allow fluid to wash the brain clean (Science, 2013)
- Sleep is as important for general health as diet and exercise
 - Little community awareness
 - School-based education programs emerging



Psychological functions of sleep



Cognition

- Consequences of sleep loss
 - Decreases executive function, attention, concentration
 - After 19 hours without sleep, performance on some tests poorer than 0.05% BAC
 - 2 hours per night over a week: irresistible urge to fall asleep
- Demonstrated benefits of sleep
 - Insight formation
 - Novel language perception
 - Visual discrimination
 - Motor skills
 - i.e. *the building blocks of learning*



Emotion regulation



- Sleep loss
 - Increases negative emotions to goal-thwarting events
 - Decreases positive emotions to rewarding events
- Emotional arousal disturbs sleep and emotion regulation
 - Vicious cycle between sleep disturbance and emotion dysregulation
- Sleep disturbance strongly associated with depression
 - Disturbed sleep primary symptom of depression
 - Disturbed sleep predisposes to depression

What is the problem with adolescent sleep?





Three factors determine when we sleep

- Time since sleep
 - Drive for sleep increases with wakefulness
 - Adenosine is a by-product of energy expenditure, inhibits wakefulness
- Arousal
 - Late night study, social stimulation, anxiety disturb sleep
- The body clock
 - Biological clock in the brain regulates timing of transition into sleep and wake

- **Biological need for sleep decreases only marginally in adolescence**
 - Sleep need = 9 hrs. 15 mins
 - 8 to 10 hours required (National Sleep Foundation, 2015)
- **Marked change in preferred time of sleep**
 - Body clock becomes delayed with puberty
 - Nocturnal rise in melatonin occurs later
 - Sleep/wake phase becomes markedly delayed

Social factors and adolescent sleep

- Decreased parental control of sleep time
- Increased social interests and obligations
- Earlier scheduling of classes and extra-curricular activities
- Weekend oversleeps generate 'social jetlag'



Impact of school on adolescent sleep

	Holiday	School Term
Weekday	09:12	07:55
Weekend	08:55	08:51
Weekday Bedtime	23:58	22:45
Weekend Bedtime	00:40	00:24
Weekday Waketime	09:36	07:04
Weekend Waketime	09:56	09:22





Consequences of adolescent sleep habits

- Epidemic of sleep deprivation in adolescents (American Academy of Pediatrics, 2014)
- School nights: 77 mins less than prescribed amount, and 77 mins less than vacation sleep
- Insufficient sleep:
 - Lower mood, mood swings, attention deficits, poor daytime functioning and lower grades (Wolfson & Carskadon, 1998; Warner et al, 2007; Baum et al, 2013)
 - Accidents
 - Physical health problems (particularly cardiovascular)
 - Weight gain and obesity

Improving adolescent sleep

- Sleep phase delay is fundamentally biological, but problem can be magnified or minimised by behavioural choices
- Sleep on any given night is not critical for health, but good sleep habits are



- Value sleep as you value diet and exercise
- Aim for 8½ – 9 ¼ hours sleep per night
- Choose a bed time that works for you, go to bed around this time each day, including weekends
 - Weekend sleep-ins are OK, but don't awaken more than 1 -2 hours later than your usual wake time
- Develop a soothing pre-sleep routine to train the body into a relaxed state for bed
 - Hot bath, quiet read, chamomile tea, relaxation strategies (e.g., Smiling Mind) in the hour before bed



- Create a good sleeping space that is dark, comfortable, cool, quiet and uncontactable
- Avoid bright light in the evening
 - Screens, especially computer screens at close range tell the body clock that it is not yet dark
- Avoid stimulation in the evening
 - Social network as a source of stimulation
- If you have any worries or concerns at bedtime, write them down for consideration in the morning
- If you're not asleep 20 minutes after lights out, get up and do something quiet until you feel tired

Better wake = better sleep

- Get outside during the day, preferably early in the morning
- Get some exercise each day (finish your exercise at least 3 hours before bedtime)
- Avoid napping
- Avoid caffeine after noon



Conclusions

- Sleep is fundamental to physical and emotional wellbeing
- Sleep deprivation partly explains common problems of secondary students
- Simple strategies can improve sleep to ensure adolescents get the sleep they need

