# **Sleep, Learning and Mental Health in Teens**

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## Tonight's Storyline:

- Basics of sleep and circadian physiology
- How are students really sleeping?
- How sleeps impact your student's day in terms of both learning and health
- Finish up with creating an individual sleep plan for your teen

## Sleep Physiology:

#### REM sleep –

- Brainwaves most similar to waking, body paralyzed
- Important for memory consolidation and emotional control

#### NonREM sleep –

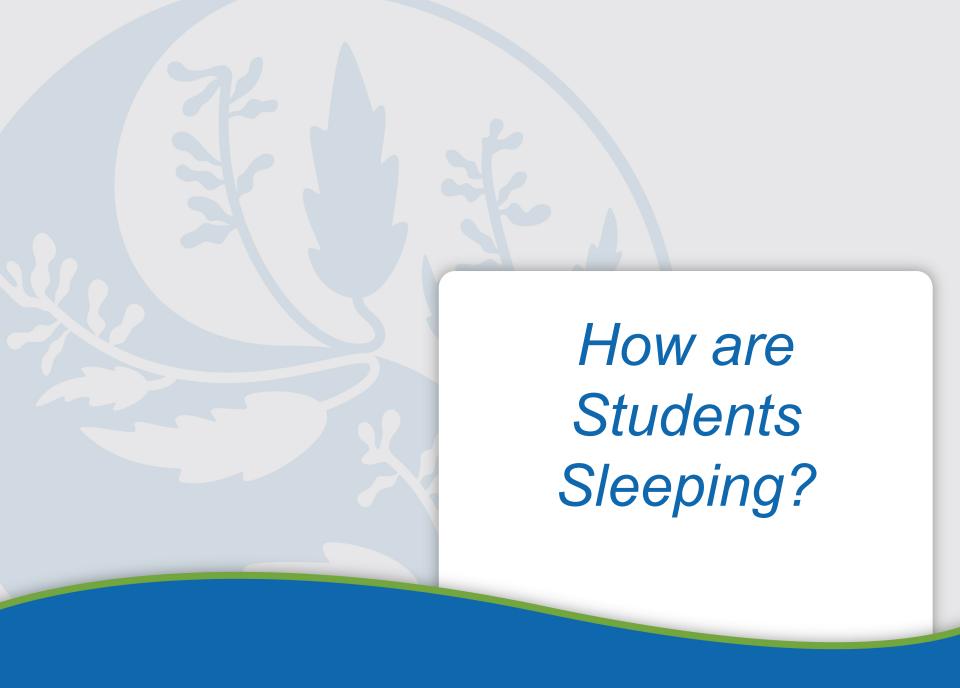
- Slow brainwaves, growth hormone secreted
- Important for physical repair and learning

#### Cycles –

Every 90 to 120 minutes

# Circadian Rhythms:

- 24 hour variation in physiology
- Temperature, cortisol, melatonin
- Controlled by the SCN deep in the brain
- Entrained primarily by first daily light exposure
- Light in pm shifts rhythm later



# 71% of parents think their child "gets sufficient steep eep is a

Yet only 13% of bigh school students Mic"
41% of middle school students get the recommended 8.5-9.5 hours nightly

(NSF, 2006)

- Centers for Disease Control

# Can a person actually sleep more than he/she needs to?

No.





#### Academic Performance:

- 1 hour sleep deprivation in 6<sup>th</sup> grader causes 4<sup>th</sup> grade performance on cognitive tests (Sadeh, 2003)
- Grades strongly correlate with sleep in high school students (Wahlstrom, 2014)
  - A students 15 mins more sleep than those with B's
  - B students 11 mins more than those with C's
- Chicago high school study of 1<sup>st</sup> period vs. afternoon (Cortes, 2010)
  - absences more common in 1st period
  - lower grades and test scores in 1st period
- end of year standardized tests correlated with period that subject was studied

# Weekend "Catch up" Hurts Academic Performance:

- Shifts body clock later, creating a jetlag effect by Monday morning. Negatively impacts academics. (Bergin & Bergin, 2009)
- Students who sleep >2 hours later on weekends get lower grades (Wolfson & Carskadon, 1998)
- Class rank in college freshmen decreases as the variability in their nightly sleep increases (Payne, 2013 Teen Sleep Conference)

### Sports & Extracurriculars:

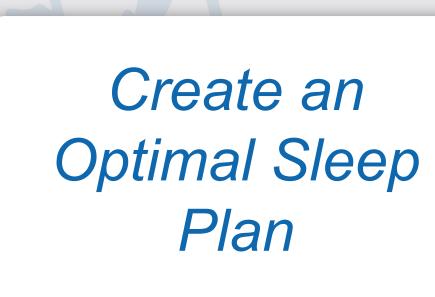
- Sports injuries decreased 68% among those who slept >8
  hours vs. sleep deprived students (Milewski 2012 AAP conference)
- 19 yo Stanford basketball players, sleep extension of additional 110 mins improved (Cheri, 2011)
  - Timed sprint
  - shooting accuracy, with free throw by 9%
  - Ratings of physical & mental well-being during play
- Teen pedestrian actions are more risky when acutely sleep deprived (4 hours) than when well rested (8.5 hours). (Davis, 2013)

### Mental Health:

- Emotional intelligence is impacted by sleep
- Sleep deprived teens (<8 hours) increase high risk behaviors by 50% (O'Brien 2005), including:
  - tobacco
  - alcohol
  - marijuana
  - sexual activity
- Teens with ADHD have higher rates of sleep apnea and restless legs syndrome

### Mental Health:

- Increase in serious suicidal thoughts with insufficient sleep (Lee, 2012)
- Insomnia symptoms associated with self-injury (Bandel, 2018)
- ❖ 11% decrease in suicide plans for every 1 hr increase in sleep duration (Chiu 2018)
- 95% of LGBTQ youth report difficulty sleeping
- At schools with LGBTQ alliances sleep is better



## Optimal Sleep Plan

- 1. Get 8-10 hours of sleep every night
- 2. School night: scheduled bed and wake time
- 3. Days off: bed and wake time within same hour
- 4. Dark in evening
- 5. Wind down time
- 6. Make your bedroom ideal for sleep

Would you be willing to do the *Optimal Sleep Plan* for 10 days, to see how it would help your student?

#### Resources:

- Children's Hospital Sleep Disorders Center
- Pediatric Sleep Specialist at Swedish Sleep Center
- Behavioralsleep.org for a specialist

### **Questions and Discussion**

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