

# Insomnia

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# Objectives

01

Learn basics of  
insomnia (REM vs  
nREM sleep)

02

Understand unique  
challenges for active  
patients

03

Be able to discuss  
psychological  
aspects of sleep

# Acute vs Chronic Insomnia

## Acute Insomnia

- < 1 month, precipitant usually known (psychologic vs physiologic stress)
- Discuss the role of the stressor in causing insomnia— allows for some semblance of control
- Short-term sedative use may be appropriate

## Chronic Insomnia

- CBT-I; effective for most but not always easy to access; apps can help

# Jeopardy

- What duration must insomnia last to be considered chronic?
  - A. 1 month
  - B. 3 months
  - C. No specific time period but (+) impairment in functioning
  - D. Most nights over 6 month period
- *My mind is set on overdrive  
The clock is laughing in my face  
A crooked spine  
My senses dulled  
Past the point of delirium.*

# Chronic Insomnia

“The essential feature of chronic insomnia disorder is a frequent and persistent difficulty initiating or maintaining sleep that results in general sleep dissatisfaction.”

- At least **three months**
- 3 + days a week
- Must have an opportunity to sleep
- Impact on daytime function

# Insomnia / Consequences

Mood disorders (Szklo-Coxe et al. Am J Epidemiol 2010;171:709-720 and Sivertsen et al. J Sleep Res 2014; 23:124-32)

PTSD and Suicidal Ideation Post Deployment (Wang et al. Sleep 2019; 42:1-9)

Falls (Cauley et al. JBMR 2019;34:464-474)

Hypertension (Jarrin et al. Sleep Med Rev 2018;41:3-38)

Myocardial Infarction (Sivertsen et al. J Sleep Res 2014; 23:124-32)

Motor Vehicle Crashes (Leger D et al. Sleep 2006;29:171-8)

Absenteeism (Especially blue collar) (Leger D et al. Sleep 2006; 29:171-8)

# NREM + REM



NREM – Stages 1, 2, 3 “Deep Sleep.” ATP restoration. Memory encoding. Information consolidation. Cardiovascular system cycles down, Immune response improves.

REM – “active” sleep. Dreaming. Information integration. Emotional easing.

# Adenosine & Melatonin

Daylight hours – Adenosine builds, creating sleep pressure.

- Reminder: Caffeine is an Adenosine receptor antagonist.

Nighttime – Melatonin tells our bodies it's time to sleep.

- Absolute concentrations decrease as we age. Dosed and used wrong often by patients.

Mythbusting – I can drink coffee and sleep no problem.

- Sleep initiation may not be affected, sleep maintenance & sleep architecture often are.

# Mythbusting



8 hours of sleep



Don't nap



We sleep less because  
of screens

# Insomnia / Melatonin

- Light and melatonin affect the circadian clock
- Melatonin: Start low, 30 mins before bedtime. Increase by an additional 30 mins before bedtime if not effective. Low doses (0.5-1 mg)
  - Helpful when there's a longer circadian rhythm, i.e. 25 hours
- Light: In the AM for night owls, HS for early birds
  - 10,000 Lux; at least 30 minutes.

# Sleep in Athletes



Athletes get less total sleep than non-athletes

Sleep deprivation effects:  
decreased running performance,  
reduced submaximal strength,  
distance covered, sprint times,  
tennis serve accuracy, soccer  
kicking skills, time to exhaustion.

Cognitive effects: decreased  
psychomotor functions, mood,  
vigor (subjective feeling of energy  
and enthusiasm), increased  
reaction time and confusion.



Even if an athlete cannot  
get an adequate night's  
sleep, a nap the following  
day may be beneficial.



"Banking sleep" (intentional sleep extension prior to a night of sleep deprivation) in a pilot study did improve motor performance.

First line recommended treatment by the American College of Physicians

Meta-analysis of RCTs compared CBT-I to control CBT-I had moderate to large effects on:

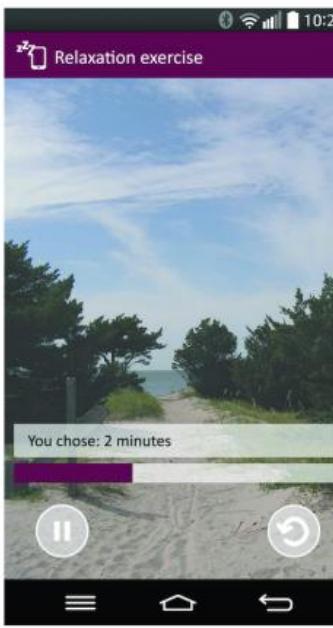
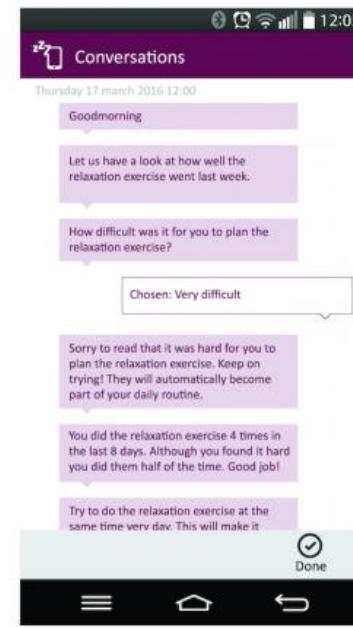
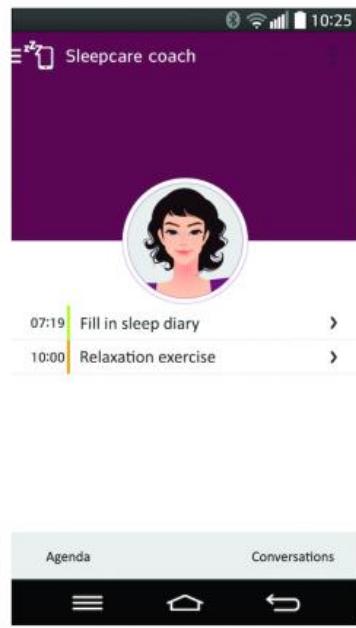
CBT-i

- Time to fall asleep
- Total time awake at night
- Wake time after falling asleep
- Time in bed
- Early morning awakenings
- Proportion of time in bed asleep (sleep efficiency)

Longer lasting effects than medications

Okajima, I. et al. (2011). A meta-analysis on the treatment effectiveness of cognitive behavioral therapy for primary insomnia. *Sleep and Biological Rhythms*, 9(1), 24-34.

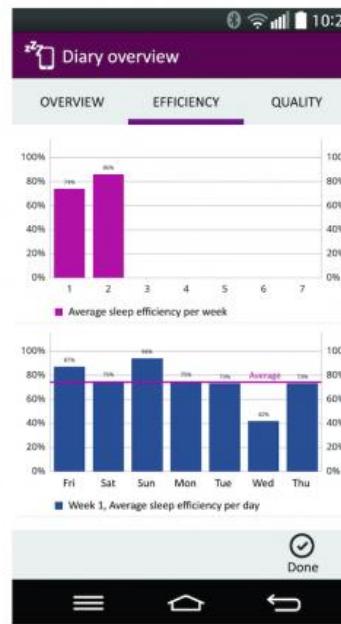
# CBT-I in Action



## Assessment

- Sleep diaries
- Clinical interview

## Sleep education



Filling in the sleep diary

Overview of the sleep diary

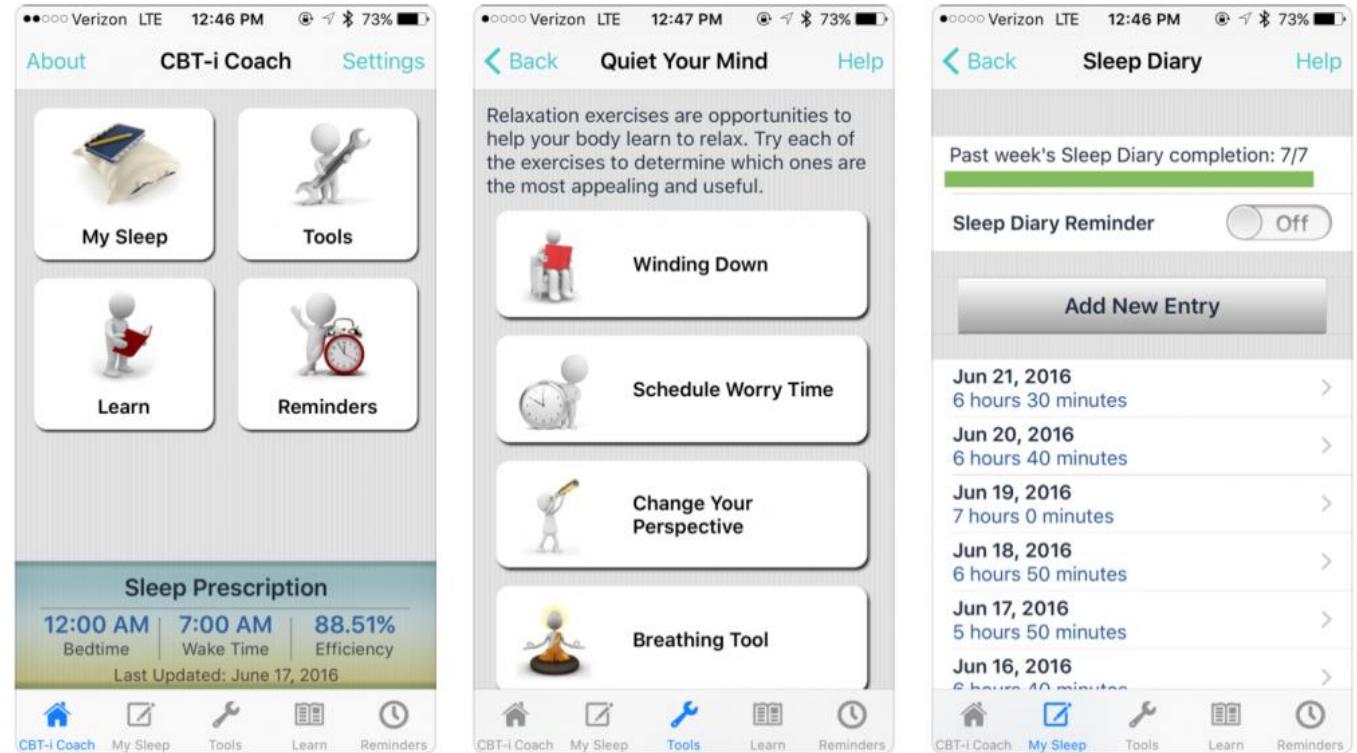
Overview of the sleep efficiency

## Sleep scheduling/sleep restriction

## Additional cognitive/behavioral treatments as appropriate

# CBT-I Apps

- SHUTi (paid)
- Sleepio (paid)
- VA CBT-I Coach App (free to all)



# Sleep for the Athletic Patient

GH release

Naps can be beneficial when done right

College kids – “all nighters”

- Essays > Exams
- Performance decrease
- Injury risk increase
- Poor eating patterns

# NFL + Sleep

## East Coast NFL teams vs West Coast NFL teams

- For afternoon games, no difference in outcome (athletes performed similarly in a 1 p.m. vs. 4 p.m. game regardless of location).
- For evening games, East Coast teams consistently performed poorly on the West Coast (and did not beat the point spread)

## Exercise is a nonphotic stimuli that can cause a “phase shift”

- 1hr of evening exercise elicited a 30 min later phase shift in peak melatonin

The impact of circadian misalignment on athletic performance in professional football players. *Smith RS, Efron B, Mah CD, Malhotra A*  
*Sleep. 2013 Dec 1; 36(12):1999-2001.*

Exercise elicits phase shifts and acute alterations of melatonin that vary with circadian phase. *Buxton OM, Am J Physiol Regul Integr Comp Physiol. 2003 Mar; 284(3):R714-24.*

Tips for  
Parents

Nightlights

Sleep  
routines

# Psychiatric Aspects of Sleep

Positive relationship with Bedtime

- Athletes – Lebron James/CALM app, Tom Brady/TB12

Stress about sleeping → Cortisol

Medications → Short term benefits;  
Medium term for Depression/Anxiety/PTSD;  
Long term no sustained benefits in majority.

# SB 328 – CA Law

Must be implemented by 2022-2023 academic year

- Many school districts making the switch now

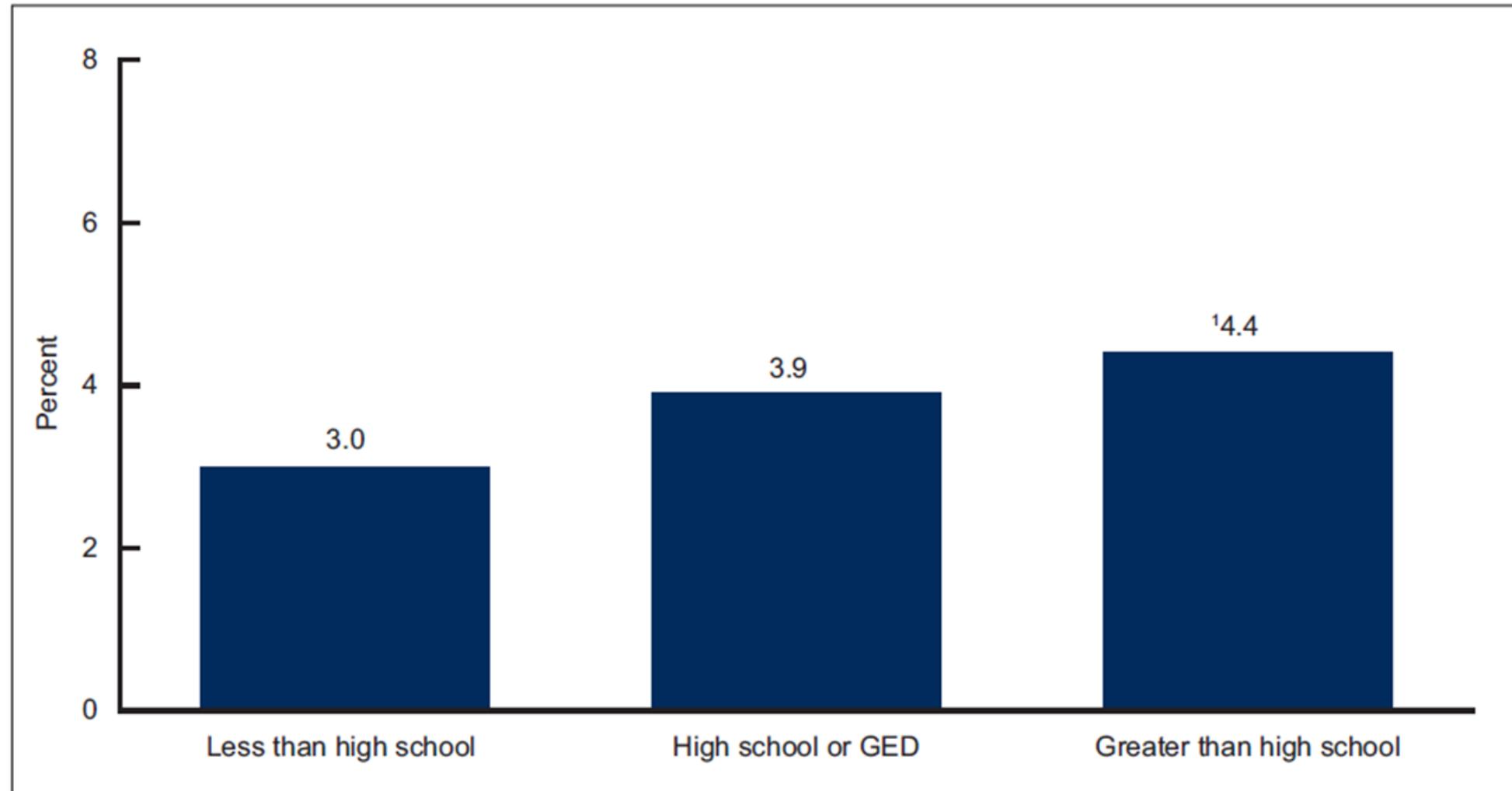
Middle Schools start no earlier than 8am

High Schools start no earlier than 830am

Loopholes – Zero Period / School exemptions

# Insomnia in Higher Education

Figure 3. Age-adjusted percentage of adults aged 20 and over who used prescription sleep aids in the past 30 days, by education: United States, 2005–2010



# How Much Sleep Do You Need?

Recommended hours of sleep, based on age:

\*Including naps



SOURCE: CDC/NIH

GRAPHIC BY ROBERT ROY BRITT