Managing Insomnia in Clinical Practice

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Disclosures

Neel Doshi, DONo relationships to disclose.

Objectives

01

Learn basics of insomnia (REM vs nREM sleep)

02

Understand unique considerations for athletes

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

International Classification of Sleep Disorders Third Edition 2014

"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)

Sleep Cycles

- N1~10%
- N2 ~ 55%
- N3 ~ 15%
- REM ~ 20%



NREM + REM

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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 poorly 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





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.
- Clinical Pearl: Some Beta Blockers reduce melatonin (propranolol/atenolol do, Carvedilol no effect)

van Maanen A et al. The effects of light therapy on sleep problems: A systematic review and meta-analysis. Sleep Med Rev. 2016:29:52-62

Sleep in Athletes

Athletes get less total sleep than nonathletes

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. CBT-i

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.

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:

- 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





Try to do the relaxation exercise at the same time very day. This will make it

Conversation between app and

participant

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Done

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Home screen with the scheduled exercises for the day

IN BED	OUT OF BED	AWAKE	QUALITY
ndicate wh	en you were aw	/ake	
2:00			23:00
			awake
:00			00:00
sleep	sleep	sleep	sleep
0:00	• — •		01:00
sleep	sleep	sleep	sleep
:00			02:00
awake	awake	sleep	sleep
2:00			03:00
sleep	sleep	sleep	sleep
3:00			04:00
sieep	sieep	skep	sleep
4:00			05:00
			~

Filling in the sleep diary

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Relaxation exercise screen (including voice track)

EFFICIENCY

3 4 5

²² Diary overview

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Average sleep efficiency per week

Week 1, Average sleep efficiency per day

OVERVIEW

60% 40%

20%

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QUALITY

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Done

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CBT-I in Action

Assessment

- Sleep diaries
- Clinical interview

Sleep education

Sleep scheduling/sleep restriction

Additional cognitive/behavioral treatments as appropriate

중 d 09:42 Diary Overview EFFICIENCY QUALITY OVERVIEW Swipe vertical to see more nights Wed 2 - Thu 3 March 203 Thu 3 - Fri 4 March 2016 Fri 4 - Sat 5 March 2018 Sat 5 - Sun 6 March 2016 Sun 6 - Mon 7 March 201 Mon 7 - Tue 8 March 201 Tue 8 - Wed 9 March 201 Wed 9 - Thu 10 March 201 Thu 10 - Fri 11 March 2016 17 18 19 20 21 22 23 00 01 02 03 04 05 06 07 08 0 Hours \odot Done Û

Overview of the sleep diary

Overview of the sleep efficiency

CBT-I Apps

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

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•••••• Verizon LTE 12:4 About CBT-i	6 PM	•···· Verizon LTE 12:47 PM ●	•••••• Verizon LTE 12:46 PM	% 💷) Help
🌮 🔏		Relaxation exercises are opportunities to help your body learn to relax. Try each of the exercises to determine which ones are the most appealing and useful.	Past week's Sleep Diary completion: 7/7	
My Sleep	Tools	Junior Down	Sleep Diary Reminder	ff
2			Add New Entry	
Learn	Reminders	Schedule Worry Time	Jun 21, 2016 6 hours 30 minutes	>
		Change Your Perspective	Jun 20, 2016 6 hours 40 minutes	>
			Jun 19, 2016 7 hours 0 minutes	>
Clean Dra	existion		Jun 18, 2016 6 hours 50 minutes	>
12:00 AM 7:00	AM 88.51%	Breathing Tool	Jun 17, 2016 5 hours 50 minutes	>
Bedtime Wake Last Updated:	June 17, 2016		Jun 16, 2016	>
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Digital Cognitive Behavioral Therapy (dCBT) for Insomnia: a State-of-the-Science Review Annemarie I. Luik; Curr Sleep Med Rep. 2017; 3(2): 48–56.

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

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 \rightarrow Cortisol How to feel when you do have insomnia

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

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





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.

How Much Sleep Do You Need?

Recomended hours of sleep, based on age:





CO2 levels

CO2 levels in the bedroom are most important.

If you can monitor it, keep below 900 ppm Higher levels lead to sympathetic NS activation

This will cause sleep architecture changes, next day fatigue/cognitive dulling

Co-sleeping with pets increases CO2

Solve by opening windows / Cross draft best

Bathroom vent fan



Sleep Tips



Decrease alcohol close to bedtime

Pets sleep off the bed or in another room

Limit food to 2-3 hours before bedtime



Limit Exercise before bedtime



Lower room temp close to 68 degrees; Cotton blanket > down comforter. Wear socks if needed.



Reduce ambient light 90 minutes before bedtime



Sleep and wake at the same time as often as possible.

Treatment

- Supplements Magnesium Glycinate (especially helpful for restless sleep), Melatonin (lower dose can be longer term, higher dose OK for short term)
- PRN medications Atarax (tablet form), Trazodone (priapism warning), Unisom
- Sedating Antidepressants Remeron (helpful, can replace another antidepressant in patient's regimen, watch for increased appetite)
- Benzos short term use, Temazepam a good choice.
- Seroquel, Doxepin (more specific to H1 receptor) – hopefully shorter term use. Can be very helpful in low dosages without many side effects.

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