



Insomnia

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MedNet21
Center for Continuing Medical Education

 **THE OHIO STATE UNIVERSITY**
WEXNER MEDICAL CENTER

Learning Objectives

- Define Insomnia Disorder
- Review Behavior Interventions
- Discuss Pharmacological Options

Insomnia Disorder

- Difficulty initiating sleep
- Difficulty maintaining sleep
- Waking up earlier than desired
- Resistance to going to bed on appropriate schedule
- Difficulty sleeping without parent or caregiver intervention

Insomnia Disorder

- Fatigue/malaise
- Attention, concentration or memory impairment
- Impaired social, family, occupational, or academic performance
- Mood disturbance/irritability
- Daytime Sleepiness

Insomnia Disorder

- Behavioral Problems
- Reduced motivation energy/initiative
- Proneness for error/accidents
- Concerns about or dissatisfaction with sleep

Insomnia Disorder

Cannot be explained by inadequate opportunity or inadequate circumstances

Insomnia Disorder

Symptoms occur at least three times a week

Chronic - at least 3 months

Short-term - less than 3 months

Insomnia Disorder

Common

Prevalence 30-50%

Risk factors – older age, previous episodes, family history

Associated – Psychiatric disorders, Medical conditions

Insomnia Disorder

Associated

Psychiatric disorders – Depression, Anxiety, PTSD,
Substance use

Medical conditions – Pulmonary, Hypertension,
Diabetes, Cancer, Chronic Pain, Heart Failure,
Neurological disorders

Insomnia Disorder

Substances

Stimulants – caffeine, ADHD medications, appetite suppressants

Antidepressants – SSRI, SNRI

Beta blockers

Steroids

Alcohol, tobacco

Insomnia Disorder

Sleep Disorders

Sleep Apnea

Restless legs syndrome/periodic limb movements of sleep

Circadian rhythm sleep-wake disorders

Insomnia Disorder

Assessment

History

Sleep Diary/Actigraphy

Questionnaires

Sleep Studies

Insomnia Disorder

Treatment

Behavioral Therapies – First line

Pharmacologic Treatments



Behavioral Interventions for Insomnia Case Example

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Associate Professor

Department of Psychiatry and Behavioral Health

The Ohio State University Wexner Medical Center

Goal

Using a clinical case example to illustrate:

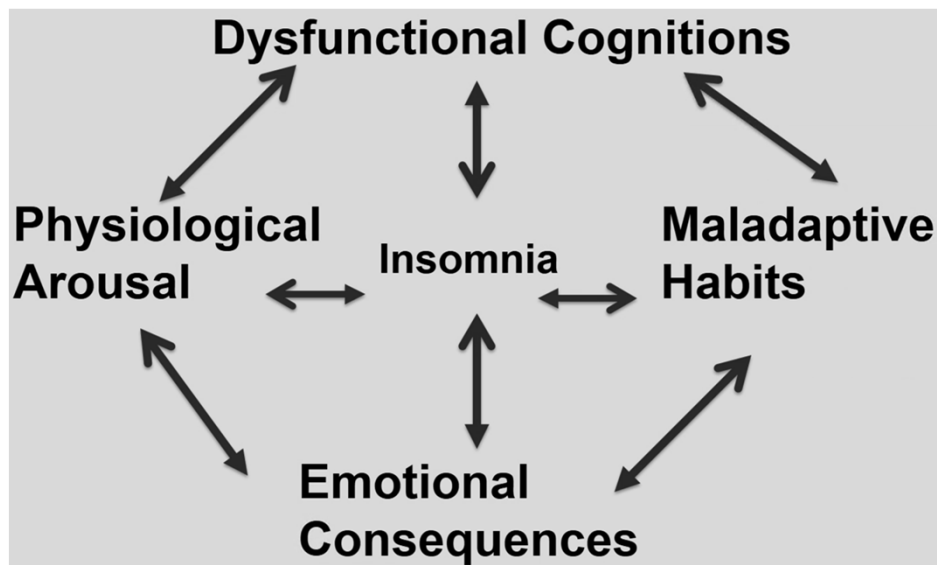
- **Basic steps of CBT-I and BBT-I**
- **That One Size Does Not Fit All**

No conflicts of interests to disclose.

Mrs. Luna Soleil

- **70 plus years old, petite, Caucasian, widowed, retired, cisgender female.**
- **Never a “great sleeper” but last 2 years she “can’t sleep at all.”**
- **No RLS, no OSA, no thyroid problems, post menopausal.**
- **No Hx of Bi-Polar Disorder or ADHD.**

Cognitive Behavioral Model Of Insomnia



Morin et al. (1993)

Luna's Sleep Narrative: Physiological Arousal and Emotional Consequences

With the tears in her eyes she tells you a story of a life revolving around the pursuit of sleep.

She assures you with pride that despite being exhausted she “never, ever takes naps”, also almost never drinks caffeine.

Her brother is very upset and her friends are upset that she is no longer participating in social gatherings.

Luna's Sleep Narrative: Habits and Maladaptive Beliefs

She stops watching TV around 9pm. In the evenings she is careful not to get too scared or agitated, she listens to music, sometimes goes for a walk, has a light supper, occasionally has a small glass of wine.

She goes to bed religiously at 10pm and "tries to fall asleep". Takes her 30 to 60 min to fall asleep. She wakes up 3-4 times a night, tosses and turns for long time, eventually falls asleep (or not). She gets out of bed for the day around 7 or 8 am.

Her room is dark and cool.

CBT-I and BBT-I One Size Does Not Fit All!

1. **Education:** Mechanisms of Sleep, TST, WASO, Sleep Latency, Phases of Sleep.
2. **Sleep Restriction:** Sleep Efficiency >80%, challenge to the life style.
3. **Stimulus Control:** Challenge to self-control.

Circadian Rhythm Counseling

Best time for...	...for what?
6:45am	Rise in blood pressure
7:30am	Drop in Melatonin secretion
8:30 am	Likely bowel movement
9:00am	Rise in testosterone levels
10:00am	Peak in alertness
2:30pm	Peak in body coordination
3:30pm	Fastest reaction times
5:00pm	Best muscle and heart performance
6:30pm	Peak in blood pressure
7:00pm	Peak in body temperature
9:00pm	Melatonin starts flowing
10:30pm	Least likely bowel movement
2:00am	Deepest Sleep
4:30am	Nadir of body temperature

Mrs. Luna Soleil Baseline Sleep Diary - bsln

75 years old

TWO WEEK SLEEP DIARY

INSTRUCTIONS:
 1. Write the date, day of the week, and type of day. Work, School, Day Off, or Vacation.
 2. Put the letter "C" in the box when you have coffee, cola or tea. Put "M" when you take any medicine. Put "A" when you drink alcohol. Put "E" when you exercise.
 3. Put a line (|) to show when you go to bed. Shade in the box that shows when you think you fell asleep.
 4. Shade in all the boxes that show when you are asleep at night or when you take a nap during the day.
 5. Leave boxes unshaded to show when you wake up at night and when you are awake during the day.

SAMPLE ENTRY BELOW: On a Monday when I worked, I jogged on my lunch break at 1 PM, had a glass of wine with dinner at 6 PM, fell asleep watching TV from 7 to 8 PM, went to bed at 10:30 PM, fell asleep around Midnight, woke up and couldn't get back to sleep at about 4 AM, went back to sleep from 5 to 7 AM, and had coffee and medicine at 7:00 in the morning.

Today's Date	Day of the week	Type of Day Work, School, Off, Vacation	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Midnight	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM
sample	Mon.	Work							A																	
	<i>Sat</i>	<i>Ret</i>																								
	<i>Sun</i>	<i>Ret</i>																								
	<i>Mon</i>	<i>Ret</i>																								
	<i>Tues</i>	<i>Ret</i>																								
	<i>Wed</i>	<i>Ret</i>																								
	<i>Thurs</i>	<i>Ret</i>																								
	<i>Friday</i>	<i>Ret</i>																								

Avg. = 4.3
SE = 42 %

Recommended Sleep Time by the Sleep Foundation (2014)

Stage of Life/Age	Maximum	Optimal	Minimum
Newborn 0-3 months	18-19	14-17	11-13
Infant 4-11 months	16-18	12-15	10-11
Toddler 1-2 Years	15-16	11-14	9-10
Preschooler 3-5 Years	14	10-13	8-9
School Age 6-13 Years	12	9-11	7-8
Teen 14-17 Years	11	8-10	7
Young Adult 18-25 yrs	10-11	7-9	6
Adult 26-64 Years	10	7-9	6
Older Adult 65 +	9	7-8	5-6

Mrs. Luna Soleil Baseline Sleep Diary - bsln

75 years old
TWO WEEK SLEEP DIARY

INSTRUCTIONS:

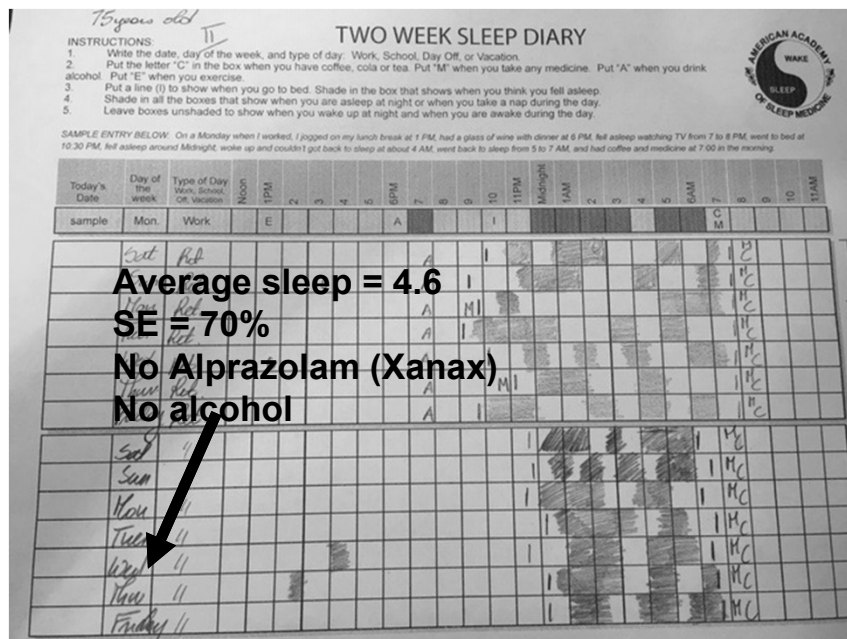
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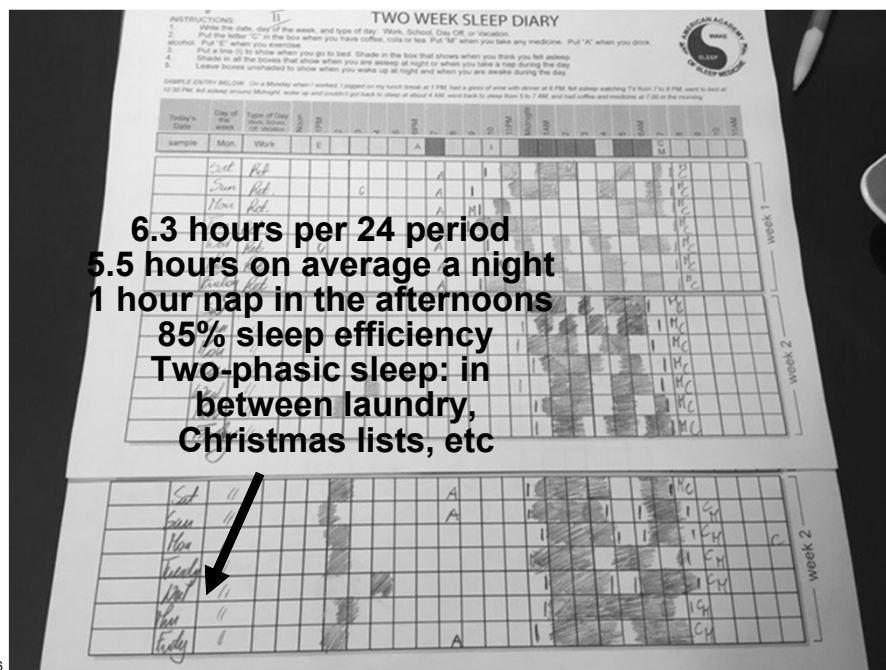
Today's Date	Day of the week	Type of Day (Work, School, Off, Vacation)	Woken	1 PM	2	3	4	5	6 PM	7	8	9	10	11 AM	Midnight	1 AM	2	3	4	5	6 AM	7	8	9	10	11 AM
sample	Mon.	Work	E						A																	
	Ext	Ret.							A																	
	Sun	Ret.				C			A																	
	Mon	Ret.							A																	
	Tue	Ret.							A																	
	Wed	Ret.				C			A																	
	Thur	Ret.							A																	
	Friday	Ret.							A																	

Avg. = 4.3 hours
SE = 42 %

Mrs. Soleil 2nd Sleep Diary



Mrs. Soleil 3rd sleep Diary





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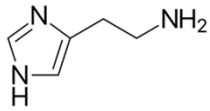
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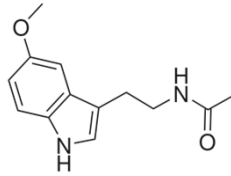
Pharmacologic Treatments

2nd line treatment

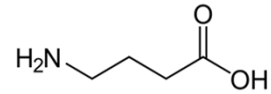
Ideally not the only treatment



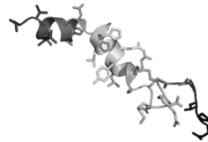
Histamine



Melatonin



GABA



Orexin

Histamine

Doxepin

Tricyclic antidepressant

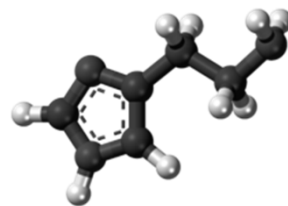
At low dose, selective H1 antagonist

Dosage - 3-6mg

Improved sleep by 25-38 min of total sleep time (TST)

Pro – less abuse potential

Cons – TCA (anticholinergic, QT prolongation)



Melatonin

Ramelteon

Melatonin receptor agonist, 6x more than melatonin supplements

Dosage – 8mg

Improved sleep latency 4.6min, total sleep time 7.3 min

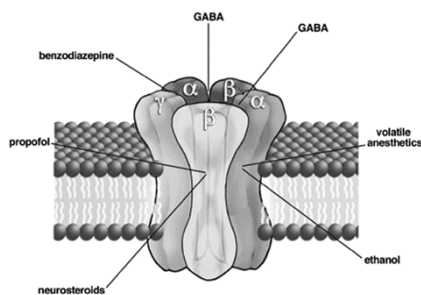
Pro – not controlled

Con – cost, insurance coverage, small effect size

Benzodiazepine Receptor Agonists (BZRA)

Nonbenzodiazepine benzodiazepine receptor agonists

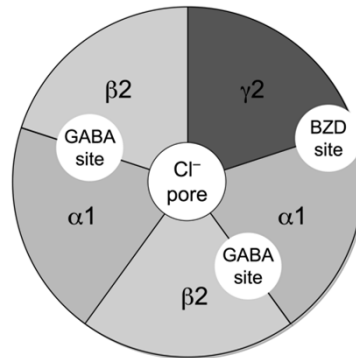
Benzodiazepine



Benzodiazepine Receptor Agonists (BZRA)

Nonbenzodiazepine benzodiazepine receptor agonists

Benzodiazepine



Nonbenzodiazepine BZRA

Zolpidem

Eszopiclone

Zaleplon

Nonbenzodiazepine BZRA

Zolpidem

positive allosteric modulator

intermediate half-life 1.5 to 4.5 hours

Dosage 5-10mg

tablet, controlled release, sublingual, oral spray

Pro- improved TST 29 min

Con – complex sleep behaviors, high risk medication (Beers Criteria), schedule IV

Nonbenzodiazepine BZRA

Eszopiclone

longer half-life 6hrs

Dosage 1-3 mg

Pro- sleep maintenance, recent meta-analysis

Con – complex sleep behaviors, high risk medication (Beers Criteria), schedule IV

Nonbenzodiazepine BZRA

Zaleplon

positive allosteric modulator

shorter half-life 1 hr

Dosage 5-20 mg

Pro- reduced sleep latency 10 min, middle of the night awakenings

Con – complex sleep behaviors, high risk medication (Beers Criteria), schedule IV

BZRA

Estazolam

Flurazepam

Quazepam

Temazepam

Triazolam

BZRA

Positive allosteric modulator

Tend to have longer half lives, up to 160 hours

Pro- Temazepam improved sleep latency 37min TST 99 min

Con - Risk of cumulative effects, risk with opioids, dependence, addiction, withdrawal

Dual Orexin Receptor Antagonists

Suvorexant

Lemborexant

Daridorexant



Dual Orexin Receptor Antagonists

Suvorexant

Antagonist at orexin receptors

Decreases wakefulness

Dosage 10-20mg

Pro – lower abuse potential, different target

Con – contraindicated in narcolepsy, schedule IV, complex sleep behaviors, cost

Dual Orexin Receptor Antagonists

Lemborexant

Dosage 5-10mg

Pro – improved sleep onset and maintenance vs zolpidem older adults (>55yo), less risk of withdrawal or rebound

Con – contraindicated in narcolepsy, schedule IV, complex sleep behaviors, cost

Dual Orexin Receptor Antagonists

Daridorexant

Dosage 25-50mg

Pro – improved sleep older adults (>65yo)

Con – contraindicated in narcolepsy, schedule IV, complex sleep behaviors, cost

Summary

Insomnia Disorder

Common with many associations

Treatment

Behavioral Therapies – First line

Pharmacologic Treatments