



Insomnia

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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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Goal

Using a clinical case example to illustrate:

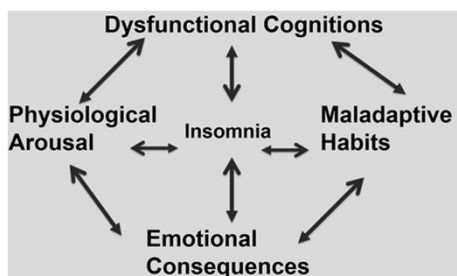
- **Basic steps of CBT-I and BBT-I**
- **That One Size Does Not Fit All**

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.

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

Circadian Rhythm Counseling

Mrs. Luna Soleil Baseline Sleep Diary - bsln

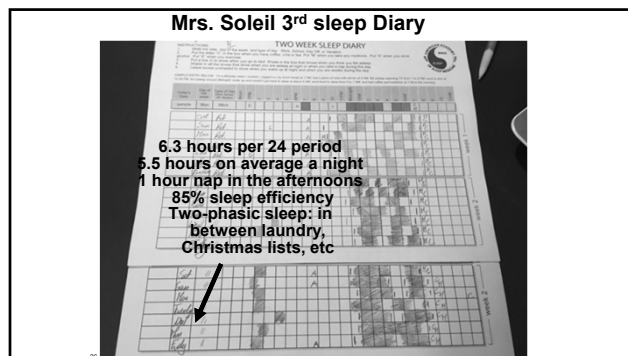
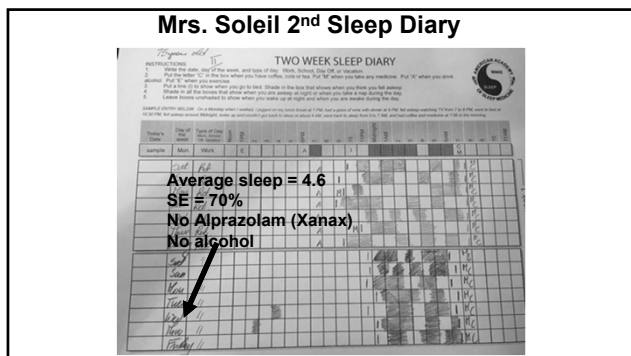
**Avg. = 4.3
SE= 42%**


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

**Avg. = 4.3 hours
SE= 42%**





Insomnia

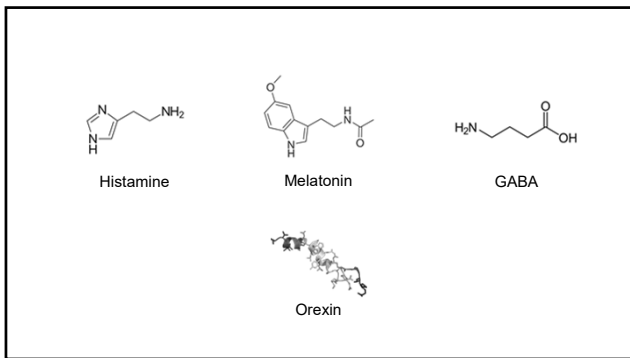
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Pharmacologic Treatments

2nd line treatment
 Ideally not the only treatment



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)

A ball-and-stick model of Doxepin, showing its tricyclic structure with a central nitrogen atom and three fused rings.

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

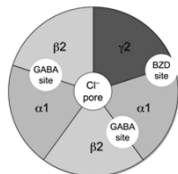
Benzodiazepine Receptor Agonists (BZRA)

Nonbenzodiazepine benzodiazepine receptor agonists
 Benzodiazepine

A diagram of a GABA-gated ion channel embedded in a lipid bilayer. Two GABA molecules are shown binding to the extracellular side of the channel, causing it to open and allow chloride ions to flow through. Labels include GABA, GABA, GABA-gated ion channel, and lipid bilayer.

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

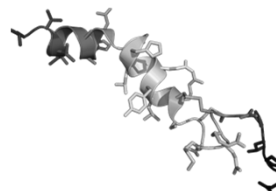
Estazolam
 Flurazepam
 Quazepam
 Temazepam
 Triazolam

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