Treatment of Insomnia

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Disclosures

- I have no financial interests to disclose.
- The discussion of some medications may be off-label.

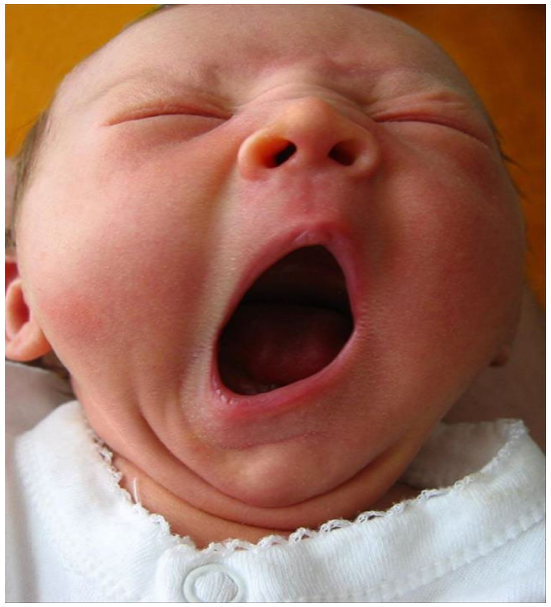
Objectives

- Gain awareness of the Diagnostic Statistical Manual (DSM) diagnostic criteria for insomnia.
- Appreciate the statistics and risk factors for insomnia.
- Revisit the significance of sleep architecture.
- Learn how to perform a more detailed assessment of sleep.
- Compare and contrast pharmacological interventions for the treatment of insomnia.
- Determine appropriate non-pharmacological strategies for promotion of sleep.
- Briefly discuss other sleep disorders.

Definition of Insomnia

- Merriam-Webster (2025):

  “ prolonged and usually abnormal inability to get enough sleep especially due to trouble falling asleep or staying asleep”



Diagnostic Criteria

- Difficulty initiating sleep
- Difficulty maintaining sleep
- Early morning awakening with inability to return to sleep
- Causes clinically significant distress and impairment in functioning
- Occurs at least 3 nights per week
- Present for at least 3 months



Diagnostic Criteria (continued)

- Occurs despite adequate opportunity for sleep
- Not better explained by another sleep-wake disorder
- Not attributable to the effects of a substance
- Coexisting mental disorders and medical conditions do not explain the insomnia.

Statistics

- 30-40% of adults endorse symptoms in a year
- Increase in average total health care costs
- Lost productivity
- 40-50% increase in developing or dying from a cardiovascular disease
- Increased risk of suicidal thoughts, behaviors, and death
- Increase risk of developing depression, anxiety, substance use
- Impairment in executive functioning, working memory, accidents
- Increased inflammatory markers
- Weight gain

Contributing Factors

- Women and older adults at increased risk
- Medical: chronic pain, GERD, nocturia, hyperthyroidism
- Psychiatric: mood disorders, anxiety, substance use, PTSD
- Neurologic: Parkinson’s, dementia, RLS
- Medications: SSRI, beta-blockers, steroids, stimulants
- Lifestyle: shift work, screen time, caffeine, alcohol, caregiving stress

Sleep Architecture

- Full sleep cycle=90 minutes; 4-5 cycles per night
- Non-Rem
  - N1: transition to sleep, brain shifts from alert to slower waves, easy to awaken, 5% of total sleep time
  - N2: deeper form of light sleep, dominates the night, lower BP and HR
  - N3: deep sleep, restorative, refreshed, physical recovery, immune function, 10-20% of total sleep time
- Rem
  - Dreams, brain activity similar to wakefulness, loss of muscle tone, near complete muscle paralysis so do not act out dreams, 20-25% of total sleep time

Assessment

- Comprehensive assessment
  - Patient history
  - Sleep diary
  - Physical exam
  - Clinical testing (sleep study)
  - Medication side effects
  - Substance use
  - Mental health diagnoses
  - Physical conditions/diagnoses



Sleep Diary

- When do you. . .
  - Go to bed
  - Get to sleep
  - Wake up
  - Get out of bed
  - Take naps
  - Exercise
  - Eat
  - Consume alcohol and/or caffeine



Video Summary

- Insomnia Evaluation in Clinical Practice: A 10-Minute Diagnostic Workflow | Vumedi

American Academy of Sleep Medicine

- Sleep maintenance
  - Suvorexant/Belsomra
  - Eszopiclone/Lunesta
  - Zolpidem/Ambien
  - Temazepam/Restoril
  - Doxepin/Silenor
  - CBT-I
- Sleep onset
  - Eszopiclone/Lunesta
  - Zaleplon/Sonata
  - Zolpidem/Ambien
  - Triazolam/Halcion
  - Temazepam/Restoril
  - Ramelteon/Rozeram
  - CBT-I

American Academy of Sleep Medicine

- Lower degree of outcome certainty, but not ineffective
  - Trazodone
  - Diphenhydramine
  - Melatonin
  - Tryptophan
  - Valerian
  - Single component treatment (conditional)

American Academy of Neurology

- CBT-I



American Psychiatric Association

- Regular sleep habits
- Relaxation
- OTC—become less effective over time
- Melatonin—long-term safety not established
- Mindfulness, meditation, yoga, massage, acupuncture—lack evidence
- Herbs/dietary supplements—not shown to be effective, safety concerns with some

Mayo Clinic

- Do not use medications for more than a few weeks at the lowest effective dose, even OTC
- Medications should not be the only treatment
- Side effects—daytime grogginess, fall risk, habit forming, urinary retention, confusion, cognitive dulling
- Same medications recommended for sleep onset and maintenance as those recommended by the American Academy of Sleep Medicine.

American Academy of Complementary Medicine

- CBT-I (first line for chronic insomnia)
- Non-pharmacotherapy better overall value than pharmacotherapy
- Benzodiazepines (abuse and dependence)
- Sleep onset and maintenance: benzodiazepines, doxepin, trazodone, melatonin, valerian, l-tryptophan
- Sleep onset—ramelteon, hydroxyzine

Treatment Pitfalls

- Mismatch of medication for complaint (onset vs. maintenance)
- Wrong pharmacology for etiology
  - Hyperarousal (anxiety, stress, trauma, pain meds, caffeine, stimulants)
  - Circadian rhythm misalignment (melatonin rises late, jet lag, shift work, light exposure at wrong times)
- Tolerance (benzodiazepines)
- Improper timing/dosing
- Next day sedation (leads to treatment non-adherence)
- Inadequate trial duration (Orexin agents)

Benzodiazepines

- Work by enhancing the effects of GABA (slow brain activity, promoting calmness)
  - Temazepam/Restoril
  - Triazolam/Halcion
- Risks: dependence, abuse, falls, confusion, cognitive dulling



Z-Drugs

- Interact with GABA-benzodiazepine receptor complexes
  - Eszopiclone/Lunesta
  - Zolpidem/Ambien
  - Zaleplon/Sonata
- Risks: sleepwalking, sleep activities





Melatonin Receptor Agonist

- Activate melatonin receptors, activating sleep
  - Ramelteon/Rozerem



Orexin Receptor Antagonists

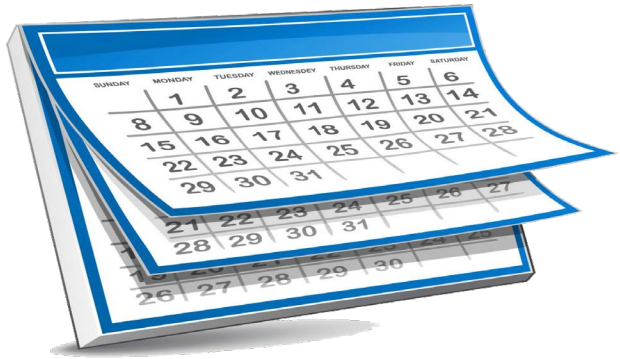
- Blocks orexin receptors that promote wakefulness
  - Dayvigo
  - Quviviq
  - Belsomra



CBT-I

- 5 components
- 4-8 weekly sessions, often requiring a sleep diary, to track progress

1. Sleep restriction therapy: limits the time spent in bed to match actual sleep duration, increases sleep drive, consolidates sleep, gradually extending time in bed as sleep efficiency improves.



CBT-I

2. Stimulus control therapy: strengthens the association between the bed and sleep, using the bed only for sleep.



CBT-I

3. Cognitive therapy: addresses maladaptive thoughts and beliefs about sleep.

4. Sleep hygiene education



CBT-I

5. Relaxation techniques: progressive muscle relaxation, deep breathing, or guided imagery help reduce physical and mental arousal before bedtime.



Sleep Hygiene

- Regular sleep schedule
- Allow time to wind down and calm before bed, away from bright lights and devices
- Avoid naps, especially in the afternoon
- Exercise daily
- Quiet, cool, dark environment in bedroom
- Comfortable & supportive bed and pillows
- Avoid alcohol, caffeine, and heavy meals in the evening

Summary Recommendations

- CBT-I
- No specific drug class emerged as a preferred add-on to CBT-I
- Use lowest effective dose for short duration of time



Sleep Terror Disorder

- No dream or no recall
- Confused, disoriented, partially awake and still asleep
- Substantial autonomic arousal
- Happens earlier in sleep

Nightmare Disorder

- Repeated well-remembered dreams involving efforts to avoid stress/story like
- Rapidly oriented and alert when awake
- Sleep disturbance causes clinically significant stress or impairment.
- Abrupt awakening from REM sleep
- Happens later in sleep.

Nightmares

Statistics

- Prevalence in childhood is 1-5%
- 5.2% in 5-15 years old
- No gender differences

Nightmares

Causes

- Abrupt awakening from REM sleep
- Sleep deprivation
- Fragmented sleep

Nightmares

Treatment

- beside soothing from parents (may prevent nightmares from occurring long-term).

Narcolepsy

- Cause
  - Selective loss of orexin-producing neurons
  - Markedly reduced level of orexin in the brain and CSF
- Symptoms
  - Excessive daytime sleepiness
  - Cataplexy
  - Fragmented nocturnal sleep
  - Sleep paralysis
  - Hallucinations

Narcolepsy

- Types
  - N1
  - N2 (similar symptoms; no orexin deficiency; generally no cataplexy)
- Risk factors
  - Age (develops between 10-30)
  - Family history (20-40 times higher)

Obstructive Sleep Apnea

- Most common sleep-related breathing disorder
- Cause
  - Relaxed muscles in throat
  - Narrowed airway
  - Men
  - Overweight/obesity
  - Smoking
  - Older adults
  - Use of alcohol or sedatives
  - Nasal congestion
  - Family history
  - Medical conditions (polycystic ovary syndrome, hormonal disorders, prior CVA)

Obstructive Sleep Apnea

- Daytime symptoms
  - Loud snoring.
  - Pauses in breathing during sleep, often noticed by a partner.
  - Waking during the night gasping or choking.
  - Needing to urinate often.

Obstructive Sleep Apnea

- Daytime symptoms
  - Excessive daytime sleepiness
  - Dry mouth/sore throat in AM
  - Morning headache
  - Trouble focusing
  - Mood changes (depressed, easily irritable)
  - High blood pressure
  - Decreased interest in sex

Obstructive Sleep Apnea

- Treatment
  - Positive airway pressure (C-pap)
  - Mouth appliances
  - Surgery
    - Removal of uvula tissue
    - Tracheostomy
    - Jaw
    - Nerve stimulation implant

Restless Leg Syndrome

- Strong urge to move the legs
- Caused by aching or discomfort
- Happens at night when sitting or lying down
- Moving the legs eases symptoms for a short time
- Can begin at any age
- Symptoms worsen with age

Restless Leg Syndrome

- Medicine affecting calcium channels
  - Neurontin, Lyrica
- Medicine increasing dopamine
  - Mirapex
- Opioids

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