

# Sleep Management in the Older Adult



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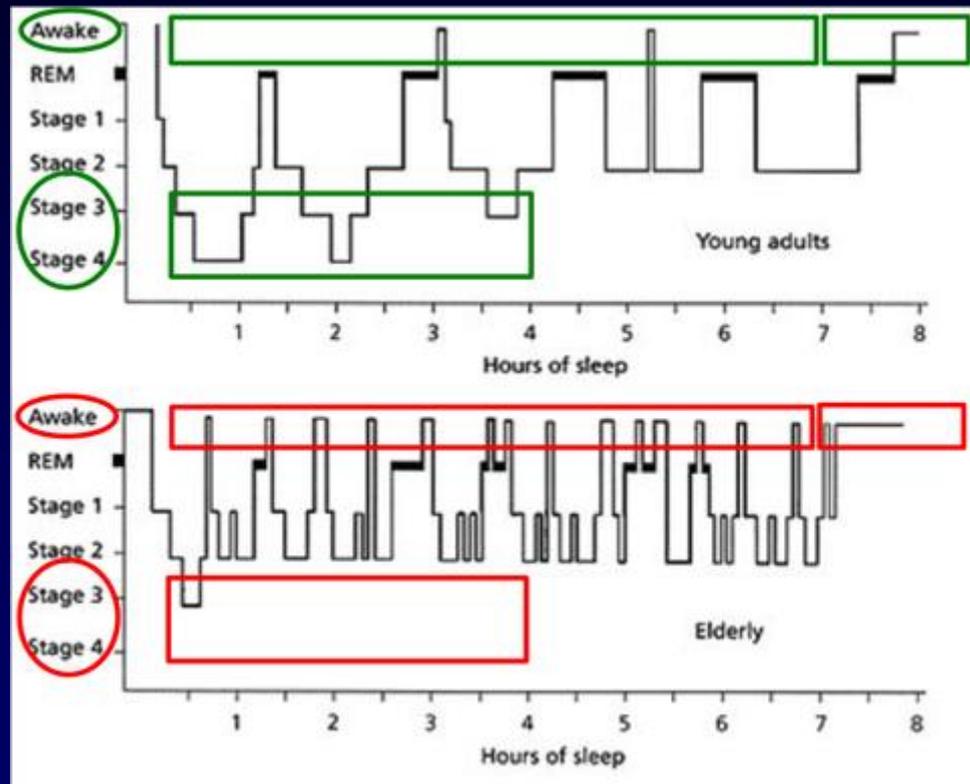
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# Objectives

- Understand sleep architecture in older adults and how cancer or hospitalization disrupts normal sleep
- Understand health outcomes associated with poor sleep quality
- Understand causes and approach to insomnia in elderly
- Learn the risks and benefits of common pharmacologic treatments of insomnia for older adults
- Learn non-pharmacologic strategies that may improve sleep quality

# Sleep Architecture - Hypnogram



# Normal Sleep Architecture

- Healthy adults require 7-9 hours a night
- Sleep is a brain process – not one but several sleep states:
  - Each has unique characteristics including variations in brain wave patterns, eye movements, and muscle tone
  - Each has different neuronal generators and regulatory mechanisms
  - Some involve cortical activation (sleep is an active rather than passive process)

# Function of Sleep

- Function of sleep still needs to be elucidated
- Essential to survival in all animals
- Humans spend 1/3 of their lives asleep
- Hypotheses: energy conservation & restoration, consolidation of learning, discharge of emotions, and synaptic plasticity
- Several endocrine systems are timed by sleep cycle, as is body temperature

# Sleep Deprivation



# Sleep Disorders and Deprivation

- 50-70 million Americans chronically suffer from the disorder sleep and wakefulness (NHLBI 2003)
- 70 sleep disorders
- Most marked by one of these:
  - Excessive daytime sleepiness
  - Difficulty initiating or maintaining sleep
  - Abnormal movements, behaviors or sensations occurring during sleep

# Effects of Sleep Quality on Health Outcomes

- Poor sleep leads to:
  - Daytime fatigue
  - Mental slowing, memory lapses
  - Reduced concentration
  - Poor functioning (especially driving, IADL, and working)
- Places patient at risk for accidental death
- Association between OSA, cardiovascular mortality and cancer of all kinds
- Cognitive and motor impairment progresses with sleep debt
- Irritability/Anxiety/Depression
- Increased length of hospital stay

**Obstructive Sleep Apnea And Cancer Mortality: Results From The Wisconsin Sleep Cohort Study**

F. Javier Nieto, MD, PhD et al American Journal of Respiratory and Critical Care Medicine Vol 185. pp.

A1047, (2012)

Vance, 2011; Becker, 2005, LaReau, 2008

# Effects of Sleep Quality on Health Outcomes, cont.

- Poor sleep quality is correlated with increased pain, depression, and functional impairment (cognitive decline, chronic fatigue)
- Sleep deprivation predisposes to delirium, which is an independent prognosticator of poor outcome
- Hypertension, diabetes, obesity, cardiovascular morbidity (heart attack, stroke)
- Recent study described transcription changes in over 700 genes involved in immunity, stress response and inflammation after just 1 week of poor sleep

*Effects of insufficient sleep on circadian rhythmicity and expression amplitude of the human blood transcriptome*

Carla S. Möller-Levet, Simon N. Archer, Giselda Bucca, Emma E. Laing, Ana Slak, Renata Kabiljo, June C. Y. Lo, Nayantara Santhi, Malcolm von Schantz, Colin P. Smith, and Derk-Jan Dijk

# Insomnia

- Insufficient quality or quantity of sleep resulting in compromised daytime alertness and activity
- In the elderly: difficulty falling and staying asleep, early morning awakening, excessive daytime sleepiness
- Difficulty initiating or maintaining sleep or early awakening
  - Transient (1-6 nights)
  - Acute (< 4 weeks)
  - Chronic (ongoing, > 4 weeks)
- Insomnia prevalence overall 30-48%
- Diagnosis (2-step model):
  - Rapid screening of sleep disturbance
  - Referral for further evaluation
    - ✓ Focused sleep history
    - ✓ 1-2 week sleep diary



# Causes of Chronic Insomnia

- Primary specific sleep disorders (OSAS, RLS, Circadian rhythm disorders)
- Physical illness (pain, CV, pulmonary, GI, urinary)
- Psychiatric (anxiety, depression, dementia, delirium)
- Behavioral (TV/computer, heavy meals, sedentary life style)
- Alcohol, nicotine
- Environmental (noise, temperature, light)
- Medications (stimulants, antidepressants, bronchodilators, antihypertensives, corticosteroids)

# Insomnia in Cancer

- Insomnia incidence 3x higher with chemo (n=823)
- Surgical oncology pts experienced 59% incidence of insomnia at baseline (n=962)
- Higher rates in breast, gynecologic and lung ca
- Sleep disorders of great relevance in cancer patients:
  - Sleep apnea
  - Circadian rhythm disruption
  - Insomnia
- Oncology patients with insomnia also reported more symptoms of depression and fatigue

# Causes of Insomnia in Cancer

- **Predisposing:**

- Older age
- Female gender
- Family or personal history
- Medical comorbidities
- Psychiatric disorder

- **Precipitating:**

- Stress from cancer/treatment
- Cancer symptoms (pain, fatigue, hot flashes)
- Surgery/radiotherapy/chemotherapy/hormonal therapy/corticosteroids
- Cytokine production

- **Perpetuating:**

- Daytime naps/excessive time in bed
- Irregular sleep/wake cycle
- Faulty sleep appraisals
- Unrealistic sleep expectations
- Tendency to worry in bed

# Treatment of Insomnia

## Non-pharmacological

- Stimulus control therapy
- Sleep restriction therapy
- Relaxation therapy
- Sleep hygiene education
- Cognitive therapy (CBT-I)
- Light therapy (not appropriate for people with history of mood disorders)

# CBT-I

- CBT-I (tailored interventions to target psychological and behavioral factors perpetuating insomnia)
- Recommended by the American College of Physicians (2016) as first-line therapy for insomnia
- Improves sleep and daytime functioning in both the general population and older adults with chronic insomnia
- Found to reduce sleep onset latency, wake after sleep onset, fatigue, depression and anxiety in cancer patients
- Non-invasive, less likely to cause harm – “better overall value than pharmacologic treatment”

Management of Chronic Insomnia Disorder in Adults: A Clinical Practice Guideline From the American College of Physicians, 2016

Berger. 2009, Espie 2008

# SLEEP Hygiene

**S – Stimulants** to avoid (caffeine, nicotine, alcohol)

**L – Light** increase during the day, turn off TV/screens at night

**E – Exercise** during the day (walk, yoga, tai chi) not too close to bedtime

**E – Every night** create a routine that you follow (sleep and wake times, pre-bed activities)

**P- Promote** sleep: dark, cool, quiet room, protein snack, relaxation, etc)

# Pharmacological

## 5 basic principles:

1. The lowest effective dose
2. Intermittent dosing (2-4 x a week)
3. Short term medication prescribing (regular use no more than 3-4 weeks)
4. Gradual medication discontinuation to reduce rebound insomnia

# Pharmacological, cont.

- **Benzodiazepines:**
  - temazepam
  - flurazepam
  - alprazolam
  - lorazepam
- Rebound insomnia within 1-2 wks of use (worsening of sleep relative to baseline)
- Alter sleep architecture
- Increased sensitivity in older adults
- Cognitive and psychomotor impairment
- Tolerance develops rapidly
- Addiction, daytime sedation, dizziness, falls, car accidents, delirium
- ***NOT recommended for use in the elderly - American Geriatric Society (BEERS criteria, 2015)***

# Pharmacological, cont.

## Non-benzodiazepines (“Z-drugs”):

zolpidem (Ambien) - most commonly prescribed hypnotic in US and Europe

- Sleep onset insomnia
- Does not alter sleep architecture
- Contraindicated in severe hepatic impairment and acute pulmonary impairment
- Dependence within 4 wks
- Rebound insomnia has been reported
- Complex sleep behaviors (sleep walking, sleep related eating)
- FDA dose recommendation for women – max. 5 mg

zaleplon (Sonata)

- Possibly safer and effective in older adults
- No tolerance, rebound insomnia or withdrawal symptoms reported

eszopiclone (Lunesta)

- Possibly safer and effective in the elderly
- Headache

***\*Adverse events similar to benzodiazepines in older adults (delirium, falls, fractures, car accidents) – American Geriatric Society recommends to **AVOID** in the elderly (BEERS criteria, 2015)***

# Pharmacological, cont.

## Antidepressants:

trazodone - Most common adverse effect was morning sedation, and possible GI side effects and orthostatic hypotension.

amitriptyline, imipramine – significant anticholinergic effects

mirtazapine – may help with appetite and nausea

## MT1/MT2 Receptor Agonist:

ramelteon

- FDA approved for treatment of chronic insomnia in the elderly
- Reduction in sleep latency and increased total sleep time
- No withdrawal effect

# Pharmacological, cont.

## OTC:

Antihistaminics (Benadryl) – cognitive impairment, daytime drowsiness, anticholinergic effects - AVOID in the elderly

Melatonin – large scale efficacy studies are lacking

Herbals – efficacy and safety data for most preparations are lacking or mixed

# Take Home Points

- Insomnia is the most common sleep problem in adults age 60 and older
- Poor sleep profoundly impacts daytime functioning, memory, learning, mood, falls/accidents, physical stamina and dependence on others.
- Chronic insomnia impacts quality of life and is associated with significant morbidity and mortality
- Non-pharmacological interventions (relaxation, sleep hygiene, CBT-I) have been shown to be effective for older adults
- Sleep medications are the most commonly used intervention but their associated with a number of serious side effects and risks, especially when used long term
- Further efforts to screen and treat sleep disorders in cancer effectively are needed