Sleep: the Elusive

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Seasons Hospice
Objectives

1. Differentiate among different types of sleep disturbances
2. Describe nonpharmacologic treatment of insomnia
3. Design treatment strategy using both pharmacologic and nonpharmacologic methods.
Insomnia

• In general population, up to 30% have several nights of sleep disturbance per month.

Insomnia definition:

• Difficulty falling asleep, staying asleep or nonrestorative sleep
• The difficulty occurs despite adequate opportunity to sleep
• The impairment is associated with daytime impairment or distress

Roth, T Journal of Clinical Sleep Medicine. 2007; 3 (5): S7-S10
International Classification of Sleep Disorders

- Insomnias
- Sleep related breathing disorders (Obstructive Sleep Apnea)
- Hypersomnias of central origin
- Circadian rhythm sleep disorders
- Parasomnias
- Sleep related movement disorders (Restless Legs Syndrome)
How common are sleep problems?

- Two classifications of insomnia, now called “Difficulty in Initiating and Maintaining Sleep” (DIMS)
- Primary insomnia: difficulty sleeping that does not seem to have a separate causative condition
- Secondary insomnia thought to arise from other causes: illness, medications/caffeine/ethanol, pain, depression, anxiety, psychiatric illness

http://www.sleepdex.org/primary.htm#primary
Does the classification matter?

• Now experts state that once underlying causes are addressed and mitigated (if possible), the treatment looks much the same.

• Sometimes difficult to see which “came first”. Does depression cause insomnia or insomnia contributes to depression…….? 
Architecture of Sleep

• Sleep has multiple stages: 1-3 and REM
• Complete cycle 90-110 minutes
• Stage 1 is light sleep—can be awakened easily
• Stage 2 eye movement stops brain waves slow
• Stage 3(4) Slow brain waves—Delta interspersed with smaller waves
• REM Rapid Eye Movement—breathing shallow, eyes jerk, limbs paralyzed, heart rate and bp rise, Dream portion
Architecture of Sleep

- Infants 50% REM
- Adults 20% REM
  - 50% Stage 2
- With age 10% drop in REM time each decade

Sleepdex.org
Circadian Rhythm

- 24 hour clock for sleep/wakefulness
- Brain area that controls/modulates: SupraChiasmatic Nucleus in anterior hypothalamus
- Sleep homeostat—sleep deficit/debt
- Impacted by exposure to light/dark—light resets/entrains the “clock” in the SCN
- Impacted by social and work activity, meals
  - Shiftwork, Ramadan
- Melatonin hormone—“chronobiotic”—can be effective in resetting clock for “non24” patients and others

Reid, J Chang, A Zee, P Med Clin N Amer 2004;88:631-651
Sleep and Aging

• Shorter total sleep time
• More shallow (increased stages 1,2)
• More easily awakened
• Decreased sleep efficiency
• Decreased slow wave sleep
• Decreased REM sleep
• REM is earlier in the sleep cycle

What about naps in elderly?

• Greater number of naps in older adults vs young (20’s)
• Healthy elderly nap about 1 hour per day.
• Siesta associated with 37% lower coronary in Greeks
• Naps steal a little of sleep efficiency but lengthen the total sleep time for the 24 hours (38 minutes!)
• Next day enhanced cognitive and psychomotor performance

Taking a sleep history

- Bedtime habits: what time to bed?
- Timing of sleep and awakening
- Daytime sleepiness?
- Naps?
- Snoring
- Leg kicking during sleep
- Nocturia
- Work history—night shift?

- Mood disorders
- Medical diagnoses
- Psychiatric diagnoses
- Substance use/abuse
- Stressors
- Medications
- Herbal therapies
- Family history

Sleep Hygiene

Optimizing routines and behaviors associated with sleep

- Erratic bedtimes and arising
- Lying in bed awake for prolonged periods of time
- Stressful events near bed-time
- Exposure to TV or computer near bedtime
- Late night meals
- Late evening caffeine, nicotine, or alcohol
- Daytime naps!!!!!!!!!!!!!!!!!!!!!!!!!!

- Schedule bedtime and arising
- Some activity during daytime: walking/stretching
- Reduce stress near bedtime, relaxation
- No TV or computer within 1 hour bedtime
- Small snack rather than meal
- Avoid caffeine, alcohol, nicotine near bedtime
- No naps over one hour and earlier in the day

What medications cause trouble with sleep?

- Alcohol
- Antidepressants
- Beta blockers
- Bronchodilators
- Caffeine
- Clonidine
- Corticosteroids
- Diuretics
- L-dopa
- Methyldopa
- Nicotine
- Opiates
- Phenytoin
- Progesterone
- Quinidine
- Reserpine
- Sedatives
- Anticholinergics meds: bladder meds, antihistamines, decongestants, antisecretory
- Stimulants: Methylphenidate, Provigil
Nonpharmacologic treatments

- Cognitive Behavioral Therapy—sleep restriction, replacing unwanted thoughts with positive ones (chronic pain, breast ca)
- Activity during the day—walking, tai chi
- Exposure to light during the day
- Relaxation/mindfulness/guided imagery
- Aromatherapy
- Address sleep “hygiene”
- White noise/silence
- Relatively dark room (?)delirium?)
Pharmacologic agents--hypnotics

Benzos
- Lorazepam (Ativan)
- Temazepam (Restoril)

Nonbenzos
- Eszopiclone (Lunesta)
- Zaleplon (Sonata)
- Zolpidem (Ambien)

Orexin Receptor Agonist
- Suvorexant (Belsomra)

Hormone and Hormone Receptor Agonists
- Melatonin
- Ramelteon (Rozarex)
- Tasimelteon (Heliotz)

Pharmacologic agents--others

**Antidepressants:**
- Trazodone (Desyrel)
- Doxepin (Sinequan)
- Amitriptyline (Elavil)
- Mirtazapine (Remeron)

**Antipsychotics:**
- Olanzapine (Zyprexa)
- Quetiapine (Seroquel)
- Ziprasidone (Geodon)

**Antihistamines:**
- Diphenhydramine

**Hydroxyzine**

Integrative tx/Herbal agents

- Melatonin—levels are lower in elder women
- Magnesium—relaxes muscle
- Valerian—better for younger patients

Integrative tx

• Aromatherapy
• Massage
• Accupressure
• Accupuncture

# Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Half-life</th>
<th>Receptor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benzos</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lorazepam</td>
<td>0.5-2 mg</td>
<td>12 hours</td>
<td>GABA-BZD</td>
</tr>
<tr>
<td>Temazepam</td>
<td>7.5-30 mg</td>
<td>8-25 hours</td>
<td>GABA-BZD</td>
</tr>
<tr>
<td><strong>Non-Benzos</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zolpidem</td>
<td>5-20 mg</td>
<td>2.5-3 hours</td>
<td>GABA-A</td>
</tr>
<tr>
<td>Zaleplon</td>
<td>5-10 mg</td>
<td>1 hour</td>
<td>GABA-A</td>
</tr>
<tr>
<td>Eszopiclone</td>
<td>1-3 mg</td>
<td>5-7 hours</td>
<td>GABA-A</td>
</tr>
</tbody>
</table>

Tariq, S Pulisetty, S Clin Geri Med 2008; 24-93-105
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<th>Receptor</th>
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<tr>
<td><strong>Orexin Receptor Agonist</strong></td>
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<tr>
<td>Suvorexant</td>
<td>5-20 mg</td>
<td>12 hours</td>
<td>Orexin 1&amp;2</td>
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<tr>
<td><strong>Hormone/Receptor</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Melatonin</td>
<td>0.5-20 mg</td>
<td>1-2 hours</td>
<td>Melatonin</td>
</tr>
<tr>
<td>Ramelteon</td>
<td>8 mg</td>
<td>1.5 hours</td>
<td>Melatonin 1&amp;2</td>
</tr>
<tr>
<td>Tasimelteon</td>
<td>20 mg</td>
<td>1.3-2 hours</td>
<td>Melatonin 1&amp;2</td>
</tr>
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<tbody>
<tr>
<td><strong>Antidepressants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trazodone</td>
<td>50-150 mg</td>
<td>3-9 hours</td>
<td>5-HT2</td>
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<tr>
<td>Doxepine</td>
<td>75-150 mg</td>
<td>17-52 hours</td>
<td>H-1, H2, 5-HT2, muscarinic</td>
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<tr>
<td>Mirtazapine</td>
<td>7.5-30 mg</td>
<td>20-40 hour</td>
<td>H-1, 5-HT2, 5-HT3, NE</td>
</tr>
<tr>
<td><strong>Antipsychotics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olanzapine</td>
<td>2.5-10 mg</td>
<td>30 hours</td>
<td>5-HT3, Dopamine</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>25-50 mg (100 mg)</td>
<td>7-9 hours</td>
<td>H-1, 5-HT1, 5-HT2, DA</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>10 mg **Black Box warning!!!</td>
<td>7-10 hours</td>
<td>D2, 5-HT2, 5-HT1, H-1, alpha-adrenergic receptors, inhibits NE,</td>
</tr>
<tr>
<td><strong>Antihistamines 😴</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Diphenhydramine</td>
<td>25-50 mg</td>
<td>2-9 hours</td>
<td>H-1</td>
</tr>
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Insomnia in Hospice/Palliative Care

• What’s different about us?
• What’s different about our patients?
• What is different about their environments?
Sleep in the nursing home

- Residents require assistance in most ADLs
- Day-time napping “wake fragmentation”
- Nocturnal noise (neighbors, etc)
- Low-level lighting in day—not bright enough for SCN
- Not dark enough at night in room
- Underlying medical conditions: dementia, heart disease, pulmonary disease, pain, Periodic Limb movement
- Limits on psychoactive medications in LTC

Sleep and Dementia

• Loss of pathways to the SCN (Circadian rhythm)

• Loss of cholinergic neurons in nucleus basalis decreases REM sleep and increases sleep fragmentation.

• Night-time awakening and wandering

• Daytime napping
Sleep and Dementia

• Evaluation first
• Address pain
• Streamline medications
• Minimize sleep disruptors (diuretics, bronchodilators, anticholinergics)
• Sleep hygiene: routines, routines, routines are the best!
• Hypnotics and sedatives might increase falls
• Light/photo therapy might help
• Dark sleeping area (nightlights OK). NO TV after bedtime!!!
• Quiet/white noise
• Light snack, no caffeine/chocolates, alcohol, tobacco
• Toileting prior to bed
Sleep and Cardiac Disease

- Review medications: streamline and reduce stimulants/anticholinergics
- Address pain
- Address dyspnea/orthopnea
- Can the patient tolerate a little activity in daytime? Exposure to daylight
- Sleep hygiene
- Cognitive behavioral therapy
- Medications as indicated
Sleep and Pulmonary Disease

- Review medications: streamline and reduce stimulants/anticholinergics—ipatropium may be best neb tx
- Address pain
- Address dyspnea/orthopnea—O₂, BiPap
- Can the patient tolerate a little activity in daytime? Exposure to daylight
- Sleep hygiene
- Cognitive behavioral therapy
- Concern that benzos can be harmful in patients with hypercarbia

Chen Yeh Chao, et al. Sleep 2015; 38(7): 1045-1050
Academic.oup.com/sleep/article-lookup/doi/10.5665/sleep.4808
Cases
So is Sleep Elusive?

- Evaluate the patient + sleep history
- Treat symptoms that would disrupt sleep
- Streamline medications
- Sleep hygiene
- Consider Cognitive Behavioral Treatment
- Look into “total pain”, spiritual suffering, family issues, environment
- Consider Integrative treatments
- Use medications sparingly and for multiple effects
- There are no quick fixes!!!!!
Still Awake?

Questions?

Thank you

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