Insomnia In the Elderly

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Regional Geriatric Program - Geriatric Refresher Day

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Learning Objectives

- Describe sleep changes in the elderly
- Define insomnia disorder and identify its negative consequences in older adults
- Describe an approach for assessing insomnia disorder in the elderly
- Identify common psychological and pharmacological treatment options for insomnia disorder

Disclosures

- I’m not a sleep specialist – I’m a geriatric psychiatrist with a special interest in sleep medicine
- Many slides are borrowed from Dr. Elliott K Lee (ROH sleep specialist)
- Please see:
  Chun S, Lee EK. Insomnia in the Elderly: Update on Assessment and Management. Canadian Geriatrics Society Journal of Continuing Medical Education. 2016; 6(1) for additional details

Normal Sleep

REM Sleep

- Dreaming (85%)
- Muscle paralysis

Non-REM (NREM) Sleep

Stage N1 and N2

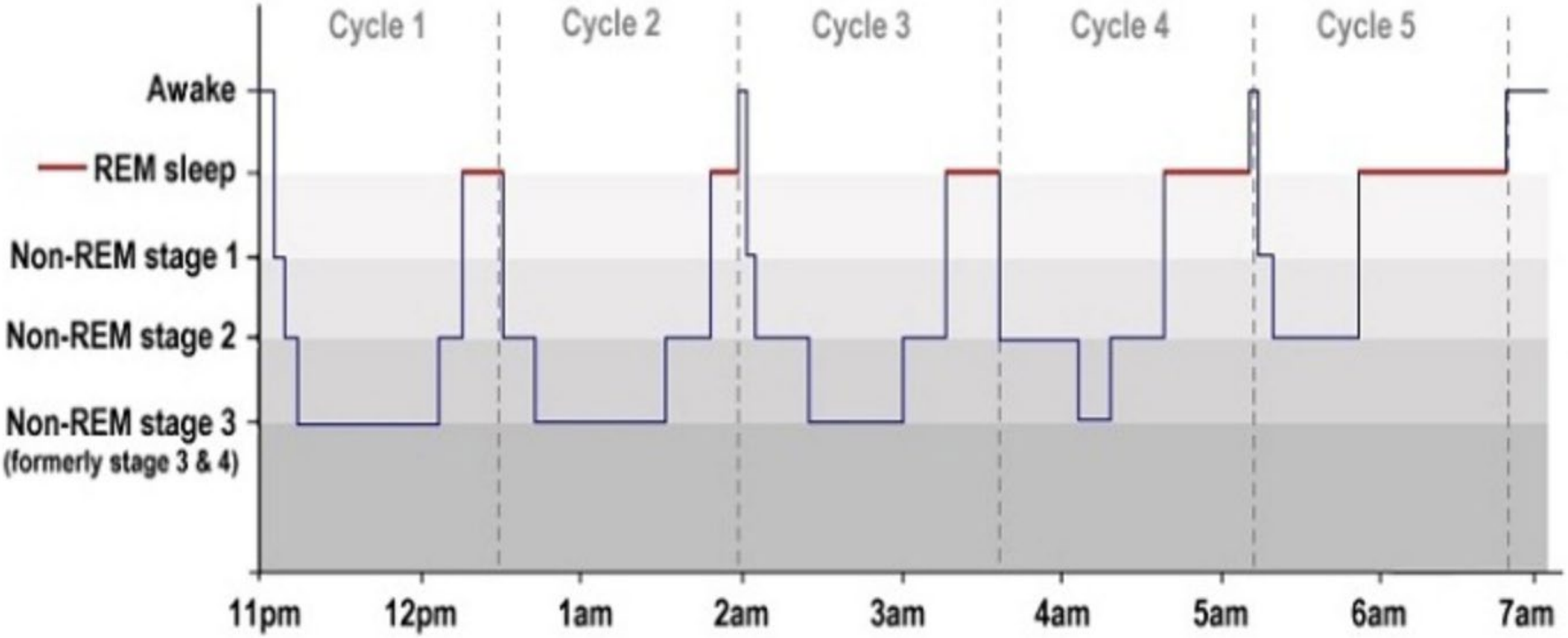
"Light Stages"

Stage N3

"Deep Stages"
"Slow Wave"

- Physical/cerebral restoration
- ↓ 2%/decade

Normal Sleep Cycle (Hypnogram)

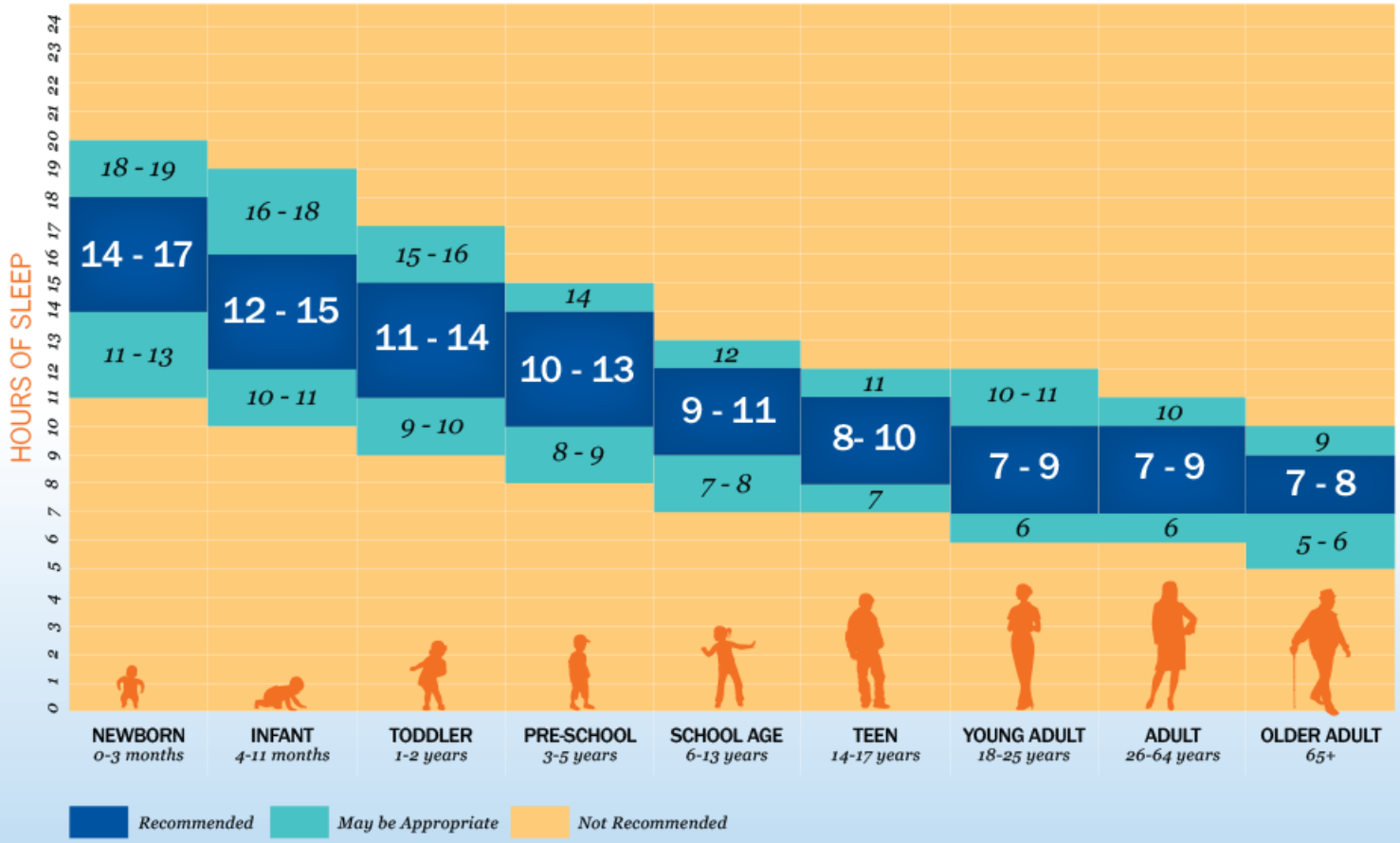


Aging and Sleep

- Frequent nocturnal awakening (sleep fragmentation)
- Longer sleep latency
- Decreased total sleep
- Reduced sleep efficiency
- Advanced sleep phase
- Decreased slow-wave sleep (deep sleep, N3)
- Decreased REM sleep
- Increased N1 and N2 sleep (light stages)

NATIONAL SLEEP FOUNDATION

SLEEP DURATION RECOMMENDATIONS



SLEEPFOUNDATION.ORG | SLEEP.ORG

Hirshkowitz M, The National Sleep Foundation's sleep time duration recommendations: methodology and results summary, Sleep Health (2015), http://dx.doi.org/10.1016/j.sleh.2014.12.010

Consequences of Aging

Our NEED for sleep stays the SAME

BUT

Our ABILTY to sleep DIMINISHES

Circadian Rhythm Changes - Elderly

- Circadian system becomes less robust
  → more prone to advancing
- Two patterns can develop
  A) Try to stay awake longer
  → although they sleep later, they wake earlier due to advanced sleep phase
  B) Feel more fatigued earlier
  →↑naps → ↓ sleep at night, aggravating insomnia

Ancoli-Israel S. et al.. Harv Rev Psychiatry 2008

INSOMNIA

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Insomnia Disorder (DSM-5)

- Dissatisfaction with quality/quantity of sleep, ≥1 of following symptoms:
  - Problems initiating sleep
  - Difficulty maintaining sleep
  - Early morning wakening
- Clinically significant distress
- ≥3 nights/week, ≥3 months
- Not due to substance, medical condition, inadequate sleep time

CASE PRESENTATION
MEET “MARY”

- ID: Mary is a 75-yr-old woman living at home alone
- CC: “I just can’t sleep!”
- PMhx: HTN, hypercholesterolemia, osteoarthritis, obesity
- Psych hx: Depression 2 years ago
- Meds: Citalopram, Norvasc, Statin, Tylenol, Advil PRN

- Sleep hx:
  - Long standing use of benzodiazepine – Lorazepam 1-2mg at night for over 30 years, recently switched to Trazodone 50mg by her concerned new family doctor
  - She goes to bed around 11pm but it takes up to 2 hours to fall asleep. She wakes up twice at night to urinate. It's hard to go back to sleep as "my mind won't shut off!" She gets out of the bed around 10am to watch Dr. Phil.
  - She naps after lunch every day as she's "so tired"
- Cognition hx: short term memory is "not as good as it used to be," often looses things around the house
- Functional inquiry: Independent for ADLs and IADLs

What would you do next to manage her symptoms?

Insomnia in the Elderly

- One of the most common sleep disturbances
- Women > men
- Divorced, separated or widowed> married
- 12-20% of population; but up to 50% in >65 yrs
- Sleep maintenance symptoms are most prevalent (50-70%), followed by sleep initiation problems (35-60%) and non-restorative sleep (20-25%)

Crowley K. Neuropsychol Rev 2011
Patel D et al. J of Clinical Sleep Medicine 2018 14(6)
Buysse DJ. JAMA 2013 Cooke JR, Ancoli-Israel S. Psychiatr Clin N Am 2006 (29).

Insomnia in the Elderly

- Med/Psych conditions – key in geriatric insomnia
  - Especially depression, chronic pain, cancer, COPD, cardiovascular disease, medication use
  - Review by Foley et al. (1999) on 6800 elderly pts with insomnia– only 7% didn't have ≥1 conditions
- Factors associated with aging:
  Retirement, inactivity, or caregiving

Foley DJ, Monjan A, et al. Sleep 1999

Predisposing, Precipitating, Perpetuating Factors to Insomnia

Age

Medical Disorders

Psychiatric Disorders

Acute and Chronic Stressors

Behavioural and Psychological Factors (e.g. excessive time in bed)

Circadian Rhythm and Zeitgebers

Medications and Substances

Primary Sleep Disorders (e.g. Sleep Apnea, Restless Legs Syndrome)

Increased Arousal

INSOMNIA

Contributing Factors to Insomnia - Examples

- Medical disorders: Parkinson's disease, COPD, fibromyalgia, cancer
- Psychiatric disorders: Depression, anxiety (GAD), dementia
- Medications: Cholinesterase inhibitors, analgesics, anti-parkinsonian medications, antihypertensives, bronchodilators, glucocorticoids, beta blockers, NSAIDs, decongestants, antiandrogen
- Substance: Alcohol, cigarettes, caffeinated drinks
- Social history: Use of Ipad/Iphone at bedtime

Consequences of Insomnia

- Strongest level of evidence is for mental illness: depression, anxiety, suicidal ideation
- CV disease: HTN, myocardial infarction, perhaps stroke
- Metabolic syndrome, including diabetes
- Cancer
- Cognitive impairment
- Work disability, sick leave, reduced work performance
- High costs for health care system

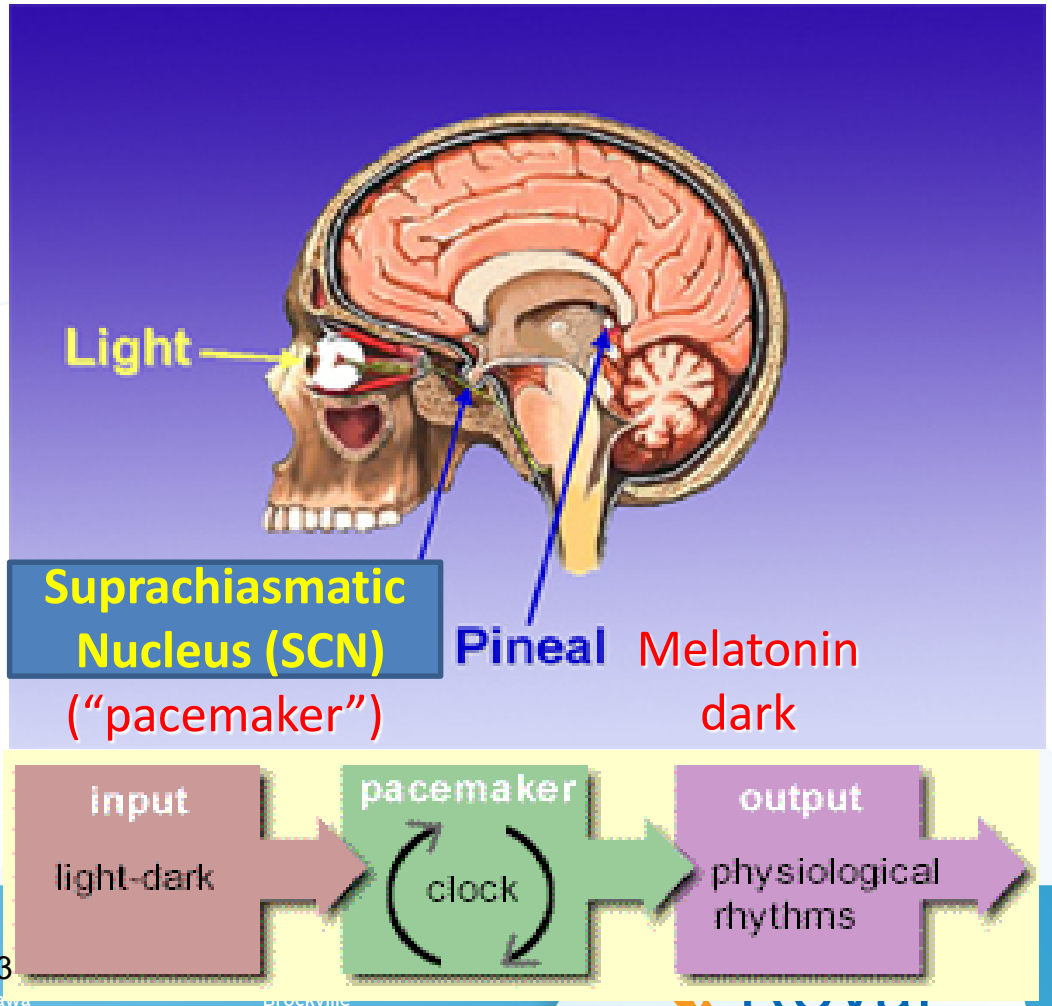
Insomnia and Cognitive Impairment

- Sleep disturbances – 2-4 x more likely to develop cognitive impairment (Other studies - no diff) [1]
- Sleep fragmentation associated with β-amyloid deposn[1]
- U-shaped association[1]- sleep duration + cognitive prob: <7 hrs, >9 hours ⟶ associated with impairment
- Benzodiazepine use ass with onset of Alzheimer's[2, 3]
- Insomnia ass with post mortem cerebral arteriolosclerosis[4]

[1]Yaffe K et al. Lancet Neurol; 2014: 13(10)
[2]Chen PL et al. PLoS 1; 2012: 7(11)
[3]Billoti De Gage et al. BMJ 2014
[4]Lim AS et al. Stroke 2016: 47(2)

Sleep/Insomnia in Dementia

- Factors:
  a) Environment[1]
     - decreased light
     - excess noise
  b) Medications
  c) SCN degeneration[2]
  d) Melatonin[3]
     - ↓80% in elderly



[1]Schnelle JF, Cruise PA et al. Sleep, 1998
[2]Yesavage JA, Friedman L. J Geriatr Psychiatry Neurol 2003
[3]Gehrman PR, Connor DJ. Am J Geriatr Psychiatry 2009

APPROACH TO ASSESSMENT

Brief Insomnia Assessment

- Onset and duration of insomnia
- Any stressors?
- Brief sleep inquiry – time of sleep onset, wake up time, number of awakenings at night
- Screen for sleep disorders
- During day – sleepy? naps? functioning (including driving)?
- Evidence mood disorder? Anx disorder? Cognitive disorder?
- Full Medical/Psychiatric history
- Etiology often multifactorial

Collateral Information

- Make sure you talk to the bed partner!
- Can be dramatically different vs pt report

Sleep Disorders in the Elderly

- Breathing Related Sleep Disorder
  (Sleep disordered breathing; SDB)
  - Obstructive Sleep Apnea (OSA)*
  - Central Sleep Apnea (CSA)
- Restless Legs Syndrome (RLS)*and Periodic Limb Movement Disorder (PLM-D)
- REM behaviour Disorder (RBD)*

Sleep Disorders - Screening Questions

- Obstructive sleep apnea (OSA)
  - Do you snore?
  - Does your partner complain about your sleep?
- Restless Legs Syndrome (RLS)
  - Do your legs bother you before you go to bed?
  - Does it get better when you move around?
- REM behavior Disorder (RBD)
  - Does your partner say you do anything unusual at night?
  - Have you ever fallen out of bed?

BREATHING RELATED SLEEP DISORDER (OBSTRUCTIVE SLEEP APNEA)

Obstructive Sleep Apnea

- OSA - repeated pharyngeal obstructions, with airflow cessation (apnea) or reduction (hypopnea)
- Apnea Hypopnea Index (AHI)
  (frequency of apneas/hypopneas per hr sleep)

  AHI 5 -15 = “mild”

  AHI 15 - 30 = “moderate”

  AHI >30 = “severe”

Common Symptoms of OSA

- Snoring
- Sleepiness/insomnia
- Witnessed apneas
- Morning headaches*
- Nocturia*
- Waking with dry mouth
- Memory complaints*
- Irritability, Depression*

Cooke JR, and Ancoli-Israel S. Psychiatr Clin North Am, 2006
Groth M. Clin Ger Med, 2005

OSA and the Elderly

- OSA prevalence ↑ with age - 37.5-62% for 65-95
- Many are undiagnosed
- Symptoms may be overlooked as “part of aging”
- Etiology:
  a) Multiple medical conditions: renal failure, hypothyroidism, obesity, dementia (brain stem degeneration)
  b) ↓ Pharyngeal dilator activity with aging
  c) Post menopausal

Young T, Shahar E et al. Arch Int Med, 2002
Ancoli-Israel et al. Sleep, 1991

OSA and the Elderly – Obesity?

- 40% of OSA patients ages 40-98 not obese
- Obesity accounts for 1/3 of the variability in OSA
  "A significant proportion of occult [OSA] in the general population would be missed if screening or case finding were based solely on increased body habitus... obesity may be particularly *insensitive* for identifying [OSA] in older people."
- Assn OSA/body habitus decreases with age

Young T, Shahar E et al. Arch Int Med, 2002

Further Screening for OSA

- STOP-BANG: intermediate to high risk if ≥ 3/8 of:
  - S – do you **S**nore
  - T – are you **T**ired in the day
  - O – any **O**bserved apneas?
  - P – do you have high blood **P**ressure?
  - B – **B**MI > 35 kg/m^2
  - A – **A**ge > 50 yrs
  - N – **N**eck > 40 cm? (41 cm ♀ / 43 cm ♂)
  - G – **G**ender? (male)

Chung F. et al. Anaesthesiology; 2008: 108(5); 812-21

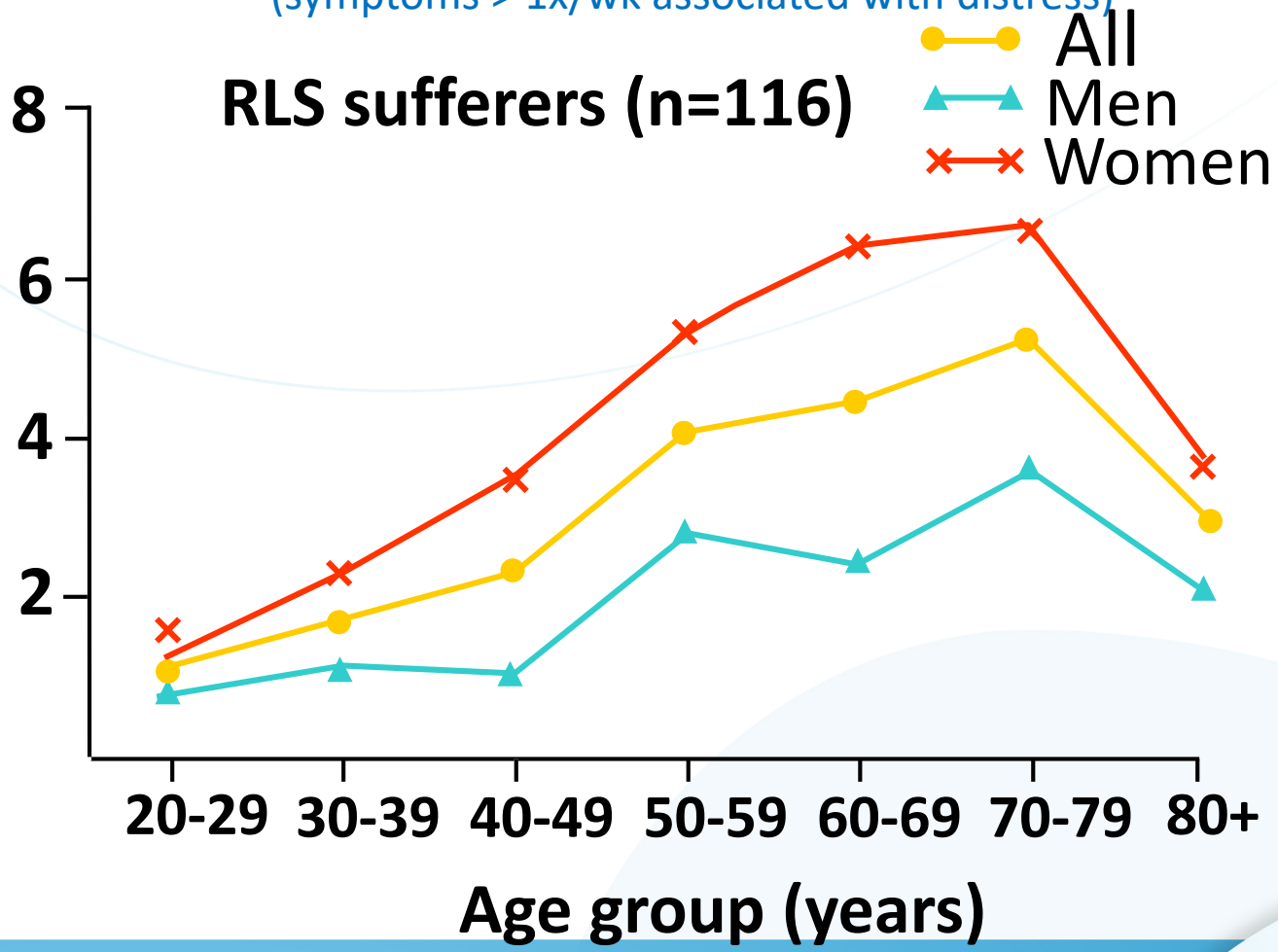
RESTLESS LEGS SYNDROME (RLS)

Restless Legs Syndrome – DSM-5

- "URGE" Unpleasant sensation
- U – urge to move legs
- R – rest – symptoms worsened at rest
- G – gets better with movement
- E – evening – symptoms worse in evening
- ≥ 3x/week, ≥ 3months
- Significant distress
- Not due to medical condition, substance

RLS prevalence by Age and Gender

(symptoms > 1x/wk associated with distress)



Allen RP, Walters AS, Montplaisir J, et al. *Arch Intern Med*. 2005;165:1286-1292. Slide courtesy Dr. Winkelman

Treatment of RLS

- Address exacerbating factors:

- Caffeine
- Tobacco
- Alcohol
- Medications
    1) Antipsychotics
    2) Antidepressants: SSRI, SNRI, TCAs, Mirtazapine

Check Iron (Ferritin)

- Intake – food?
- Absorption
  - Low stomach acid (PPI?)
  - Celiac, Crohn's
- Blood loss?
  - GI bleeding
  - Excess blood donations
- Target Ferritin >75 µg/L

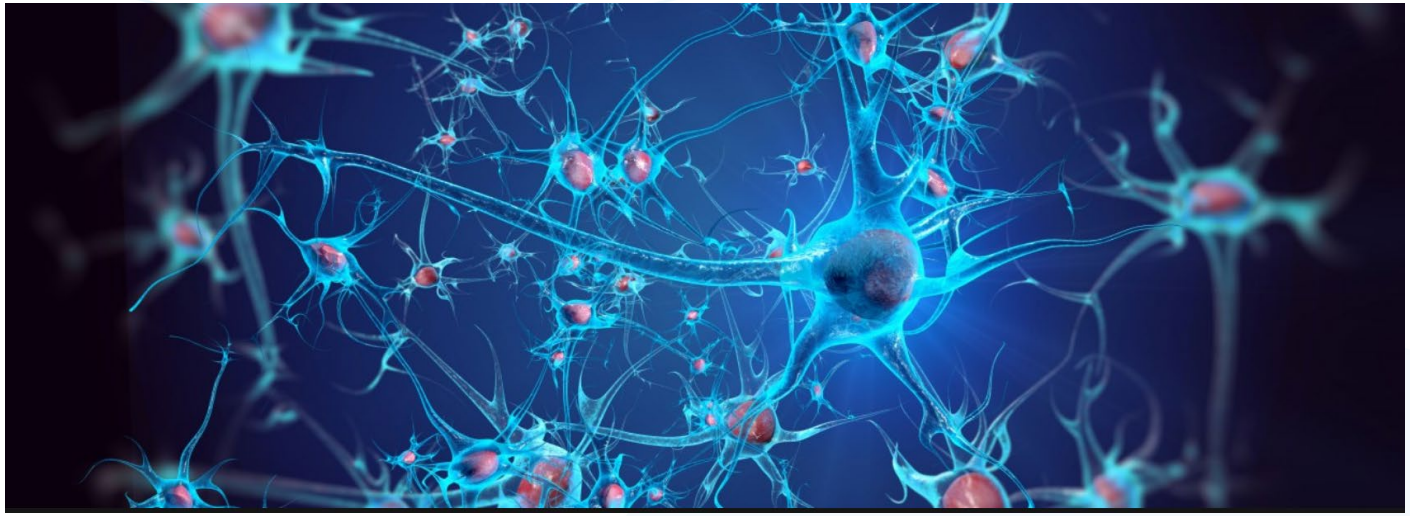
Silber MH et al. Mayo Clin Procs. (2013) 88(9): 977-86
Salas R et al. Curr Opin Neurol. 2010:23; 401-6

Pharmacologic Treatment Options - RLS

- Dopamine agonists
  - e.g. Pramipexole (Mirapex), L-dopa (Sinemet)
- Alpha2 delta anticonvulsants
  - e.g. Gabapentin (Neurontin), Pregabalin (Lyrica)
- Benzodiazepines (sedative hypnotics)
  - e.g. Clonazepam
- Opioids
  -e.g. Codeine

Silber MH et al. Mayo Clin Procs. (2013) 88(9): 977-86

REM BEHAVIOUR DISORDER (RBD)



REM Behaviour Disorder (RBD)

- No muscle atonia during REM sleep
- Ability to act out complex dream behaviour
- Bed partner often the “victim”
- Age of onset: 50 – 60yrs. Males (90%)*
- Usually opposite of waking personality
- Strongly associated with alpha synucleinopathies
  - Parkinson’s disease
  - Lewy Body Dementia
  - Multi System Atrophy

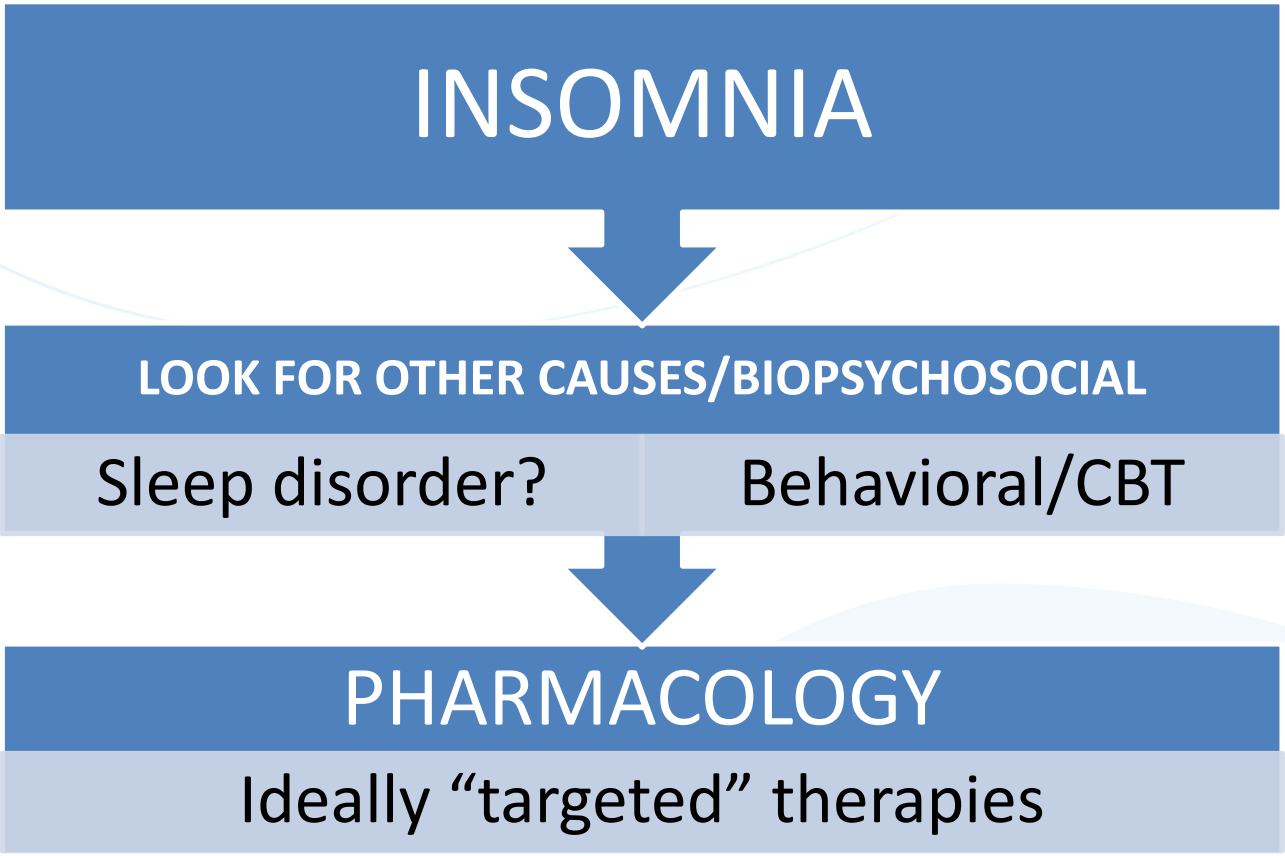
*Olson EJ, Boeve BJ et al., Brain 2000

Treatments for RBD

- CT scan/MRI head – r/o lesions
- Environment (floor mattress, partner sep room)
- Polysomnography (Full EEG):
  a) Confirm REM without atonia (RBD)
  b) Rule out sleep disordered breathing
  (may mimic RBD – "pseudo RBD")
- Rx – Clonazepam – 80-90% respond -0.5-1.0 mg
  * Melatonin 6-15 mg, Pramipexole, Rivastigmine

Aurora RN et al. J Clin Sleep Med. 2010: 15(6):1; 85-95.
McGrane IR et al. Sleep Med. 16 (2015): 19-26.
Howell MJ and Schenck CH. JAMA Neurol. 2015; 72(6): 707-12.

Insomnia Treatment – “Flipped” Approach



Psychological Therapies for Insomnia

- Sleep Hygiene
- Stimulus Control Therapy (SCT)
- Sleep Restriction Therapy (SRT)
- Cognitive Behavioral Therapy for Insomnia (CBT-I)
  - #1 recommended treatment for insomnia without complicating factors

Winkelman JW. New Engl J Med; 2015: 373(15); 1437-44

Sleep Hygiene

- Maintain a regular sleep pattern
- Avoid napping in the day
- Avoid substances that impair sleep (e.g. caffeine, alcohol)
- Establish relaxing bedtime routine

Stimulus-Control Therapy (SCT)

- Incorporates sleep hygiene and builds on associating bed with sleep
- Only go to bed when sleepy
- Establish a standard wake-up time
- Get out of bed when awake for more than 15-20 min
- Avoid reading, watching TV, worrying, eating in bed
- Avoid clock watching
- Maximize daylight exposure
- Avoid day time napping

Sleep Restriction Therapy (SRT)

- Step 1: Sleep log for 2-3 weeks
- Step 2: Calculate the average total sleep time (TST)
- Step 3: Rx initial time-in-bed (TIB) = TST +30 min
- Step 4: Weekly f/u, Increase TIB in 15-20 min increments when sleep efficiency exceeds 85%

  Sleep efficiency = time asleep/TIB
- Note: Wake up time is fixed

Sleep Diary: Morning

National Sleep Foundation

Complete in Morning

Start date: __/__/__ Day of week:	Day 1 ____	Day 2 ____	Day 3 ____	Day 4 ____	Day 5 ____	Day 6 ____	Day 7 ____
I went to bed last night at:	PM / AM	PM / AM	PM / AM	PM / AM	PM / AM	PM / AM	PM / AM
I got out of bed this morning at:	AM / PM	AM / PM	AM / PM	AM / PM	AM / PM	AM / PM	AM / PM
Last night I fell asleep:							
Easily	☐	☐	☐	☐	☐	☐	☐
After some time	☐	☐	☐	☐	☐	☐	☐
With difficulty	☐	☐	☐	☐	☐	☐	☐
I woke up during the night:							
# of times							
# of minutes							
Last night I slept a total of:	Hours	Hours	Hours	Hours	Hours	Hours	Hours
My sleep was disturbed by: List mental or physical factors including noise, lights, pets, allergies, temperature, discomfort, stress, etc.							
When I woke up for the day, I felt:							
Refreshed	☐	☐	☐	☐	☐	☐	☐
Somewhat refreshed	☐	☐	☐	☐	☐	☐	☐
Fatigued	☐	☐	☐	☐	☐	☐	☐
Notes: Record any other factors that may affect your sleep (i.e. hours of work shift, or monthly cycle for women).							

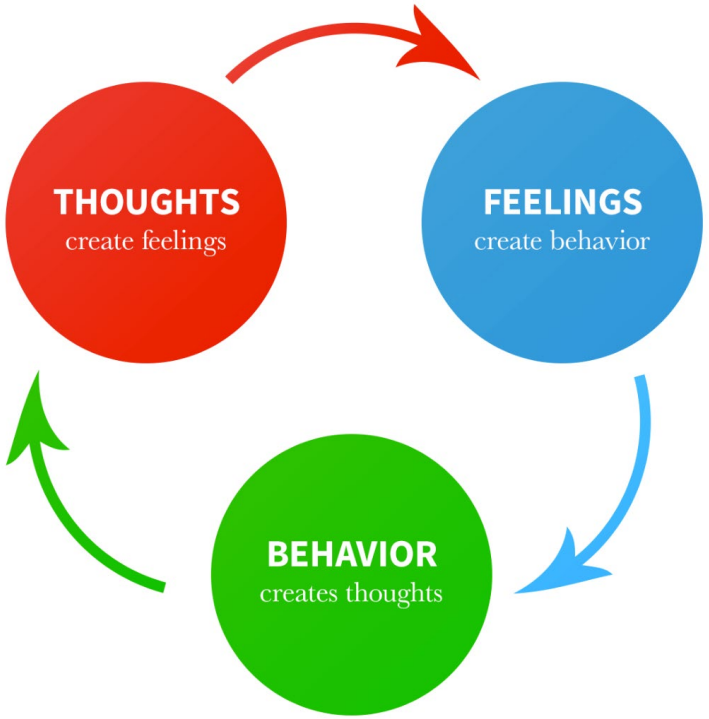
Complete at the End of Day

Day of week: ____	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
I consumed caffeinated drinks in the: (M)orning, (A)fternoon, (E)vening, (N/A)							
M / A / E / NA							
How many?	____	____	____	____	____	____	____
I exercised at least 20 minutes in the: (M)orning, (A)fternoon, (E)vening, (N/A)							
Medications I took today:							
Took a nap? (circle one)	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
If Yes, for how long?							
During the day, how likely was I to doze off while performing daily activities: No chance, Slight chance, Moderate chance, High chance							
Throughout the day, my mood was… Very pleasant, Pleasant, Unpleasant, Very unpleasant							
Approximately 2-3 hours before going to bed, I consumed:							
Alcohol	☐	☐	☐	☐	☐	☐	☐
A heavy meal	☐	☐	☐	☐	☐	☐	☐
Caffeine	☐	☐	☐	☐	☐	☐	☐
Not applicable	☐	☐	☐	☐	☐	☐	☐
In the hour before going to sleep, my bedtime routine included: List activities including reading a book, using electronics, taking a bath, doing relaxation exercises, etc.							

Sleep Diary: End of Day

CBT-Insomnia

- Components: Cognitive therapy, sleep hygiene, relaxation training, SCT and SRT
- Cognitive therapy: Sleep-related maladaptive beliefs (cognitive distortion), Thought record
- https://stanfordhealthcare.org/medical-treatments/c/cognitive-behavioral-therapy-insomnia.html
- Self-help apps: CBT-I Coach, Sleepio, Go!to Sleep



Common Sleep-Related Cognitive Distortions

- I will never fall asleep
- I will not be able to function tomorrow
- My insomnia will cause health problems
- I can’t fall asleep without a sleep pill
- I must get eight hours of sleep
- I will never learn to sleep better

Cognitive Restructuring

- I will not be able to function tomorrow.

"Let's come up with some alternative thoughts"

- Sleep loss doesn't always affect my daytime functioning.
- In most cases, worst thing that can happen is I won't be in my best mood.
- I can handle sleep loss if it's only happening few nights a week.

Medications for Insomnia

- FDA (USA) approved:
  - Non-benzo benzo receptor agonists (e.g. Zopiclone)
  - Benzodiazepines (e.g. Lorazepam)
  - Melatonin receptor agonists (not available in Canada)
  - Hypocretin receptor antagonist (not available in Canada)
- Other agents:
  - Alpha 2 delta drugs (e.g. Pregabalin)
  - Sedating antidepressants (e.g. Trazodone, TCAs, Mirtazapine)
  - Antihistamines
  - Melatonin
  - Atypical antipsychotics

Medications for Insomnia: Z drugs

- Zolpidem (Half life =2.5-3 hrs)
- Zopiclone (Half life = 5-6 hrs)
- Sleep induction within 15-30 min
- Limited evidence in geriatric population
- Health Canada: Max dose of Zopiclone 3.75mg, for less than 10 days
- Beers criteria (2015): Strongly suggests Z drugs to be avoided in elderly patients

Medications for Insomnia: Benzodiazepines

- Sleep induction within 30 min
- Adverse consequences: fall risk, MVAs, daytime sedation, anterograde amnesia, rebound insomnia
- Newer studies implicate BDZ use in the subsequent development of neurocognitive disorders
- Beers criteria (2015): Strongly suggest avoiding chronic BDZ use altogether in the elderly

Medications for Insomnia: Sedating Antidepressants

- Trazodone: Limited data on efficacy in the elderly
- Mirtazapine: Benefits in insomnia in major depressive disorder
- Doxepin: Significant antihistamine action, potential complications of TCA must be considered (including anticholinergic side effects)

Medications for Insomnia: Others

- Antihistaminergic agents (e.g. dimenhydrinate): Not recommended in the elderly population
- Atypical antipsychotics: No efficacy data geriatric pts, some benefits if comorbid psych disorder
- Alpha 2 delta drugs: No data available, some benefits if comorbid anxiety, alcohol withdrawal, neuropathic pain, or RLS
- Melatonin: Some benefit, max 3mg for elderly

Recommendations for case “Mary”

- More history – screen for sleep disorders – OSA? RLS? PLMD? RBD? (Refer to sleep clinic as needed)
- Physical – Airway? Parkinson’s signs? Anemia?
- Cognitive screening (MoCA)
- Assess mood/anxiety symptoms
- Review medications, medical dx
- Sleep restriction – 7 hours in bed
- Trial CBT-I
- Failing this, consider increasing Trazodone dose
- Failing this, consider trial of Pregabalin? (pain, anxiety) - assess for benefits/risks

Summary

- Sleep changes with aging: Sleep need is stable, but sleep efficiency decreases
- Insomnia is common in elderly; etiology is often multifactorial (stress, medication, circadian rhythm change etc.)
- Sleep disorders, particularly OSA, but also RLS and RBD, are more common in the elderly
- Careful assessment, including history from partner, is important in evaluation
- Consider a psychological therapy first before initiating medications for insomnia

Thank You!
Questions?