

Sleep Disorders in Older Adults

ECHO Care of the Elderly

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Mitigating Potential Bias

The information presented in this CME program is based on recent information that is explicitly “evidence-based”.

This CME Program and its material is peer reviewed and all the recommendations involving clinical medicine are based on evidence that is accepted within the profession; and all scientific research referred to, reported, or used in the CME/CPD activity in support or justification of patient care recommendations conforms to the generally accepted standards



Objectives

- ◉ Review normal and abnormal sleep in older adults
- ◉ Develop an approach to treating insomnia



Sleep regulation

1. Homeostasis (“sleep drive”)

-sleep deficit → sleepiness

2. Circadian (daily) rhythm

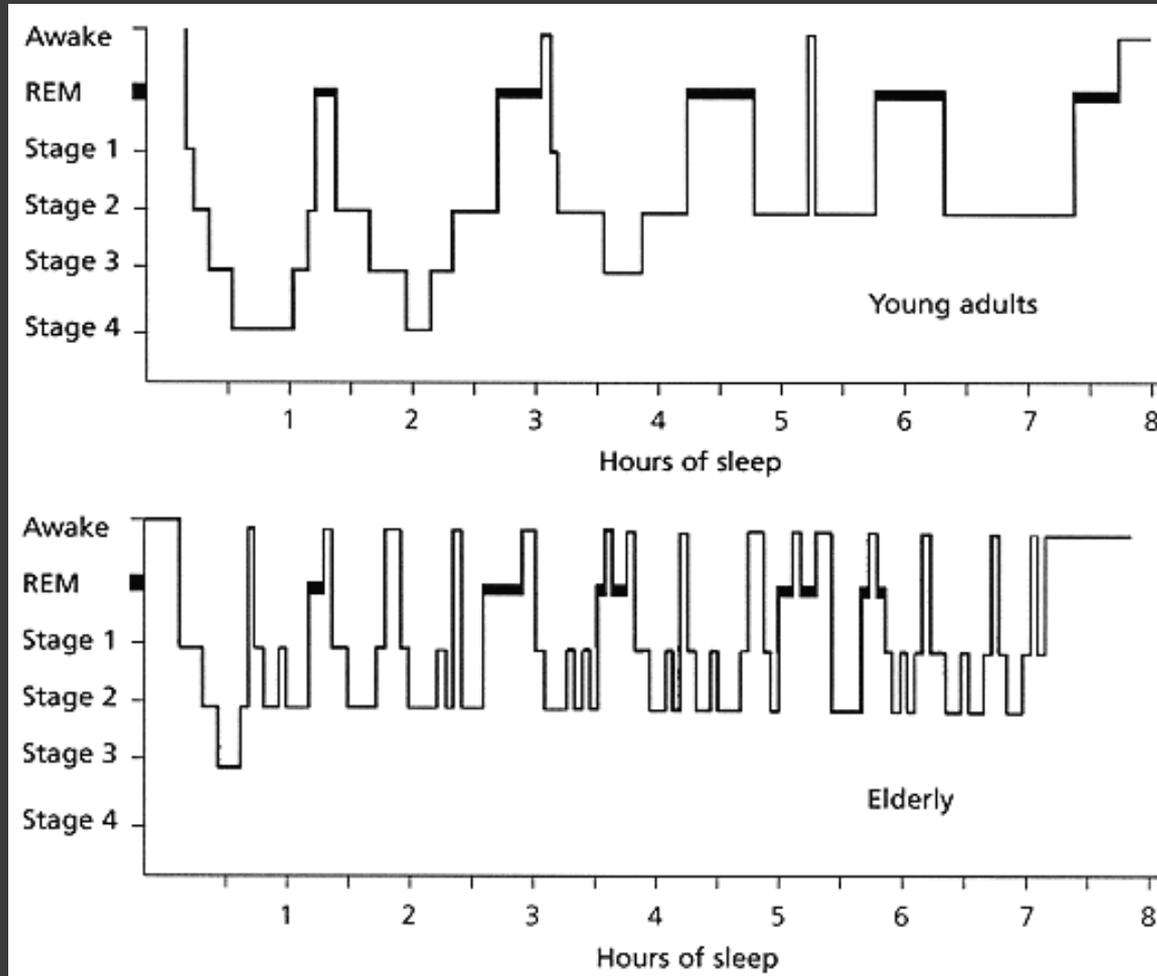
-“biological clock” in hypothalamus (zeitgebers)

3. Neurotransmitters (various)

Principles and Practice of Sleep Medicine, 4th Ed., Philadelphia, PA, Elsevier Saunders, 2005. Chapter 10(REM Sleep) – pg 120-135 & Chapter 11 (Basic Mechanisms of Sleep-Wake States) – Pg 136-153



Hypnogram - younger vs. older adults



American Academy of
Family Physicians



Sleep Problems in Older Adults

- 1/2 in community
- 2/3 in long-term care
- insomnia in older adults (Stats Can 2017): **M = 40%, F = 59%**
- consequences
 - quality of life
 - psychiatric / cognitive / medical (falls)
 - caregiver stress / institutionalization
 - mortality

Chaput JP, Wong SL, Michaud I. Duration and quality of sleep among Canadians aged 18 to 79. Health Rep. 2017 Sep 20;28(9):28-33.

Patel D. Insomnia in the Elderly: A Review. J Clin Sleep Med. 2018 Jun 15;14(6):1017-1024.

Porter VR. Sleep, Cognition and Dementia. Curr Psychiatry Rep. 2015 Dec;17(12):97.

Rodriguez JC. Sleep problems in the elderly. Med Clin North Am 2015;99(2):131-9.



Sleep Problems in Dementia

- common
 - dyssomnias (eg. insomnia, CRSD, sleep apnea)
 - parasomnias (eg. RBD)
 - due to environment (eg. LTC)
 - due to treatment (eg. AChEI)
- multiple theories
 - cause
 - prodrome
 - symptom
 - prognostic marker

Cipriani G, Lucetti C, Danti S, Nuti A. Sleep disturbances and dementia. *Psychogeriatrics*. 2015 Mar;15(1):65-74.

Porter VR, Buxton WG, Avidan AY. Sleep, Cognition and Dementia. *Curr Psychiatry Rep*. 2015 Dec;17(

Kang JE, Lim MM, Bateman RJ. Amyloid-beta dynamics are regulated by orexin and the sleep-wake cycle. *Science*. 2009 326(5955):1005-7.12):97.



Assessing Sleep Problems

- ⦿ satisfaction / consequences (eg. ISI, PSQI)
- ⦿ causes
 - environmental / circadian
 - substances / meds
 - medical (eg. nocturia, pain, cardiac, GERD)
 - psychiatric
 - primary sleep disorders
- ⦿ sleep diary / D.O.S.
- ⦿ +/- polysomnogram



Primary causes of sleep disturbance

DSM-5 Sleep-Wake Disorders

dyssomnias = problems initiating/maintaining sleep

parasomnias = abnormal events during sleep



DSM-5 Sleep-Wake Disorders

Dyssomnias

- ⦿ Insomnia Disorder
- ⦿ Circadian Rhythm Sleep Disorders
- ⦿ Narcolepsy
- ⦿ Obstructive Sleep Apnea
- ⦿ Sleep-related hypoventilation
- ⦿ Hypersomnolence disorder



DSM-5 Sleep-Wake Disorders

Parasomnias

- ◉ REM Sleep Behaviour Disorder
- ◉ Restless Leg Syndrome
- ◉ NREM Sleep Arousal Disorders (sleepwalking/terrors)
- ◉ Nightmare Disorder



Treatment of insomnia

- address secondary/environmental causes
- non-pharmacologic first (CBTi)
- +/- adjunctive short-term hypnotic
- *hypnotics are not necessarily more efficacious
 - CBTi > zopiclone (sleep efficiency and SWS)
 - CBTi > temazepam (sleep efficiency, satisfaction)

Morin CM, Belanger L, LeBlanc M, et al. Behavioural and pharmacological therapies for late-life insomnia: a randomized controlled trial. JAMA. 1999;281(11):991-9.

Sivertsen B, Omvik S, Pallesen S, et al. Cognitive behavioral therapy vs zopiclone for treatment of chronic primary insomnia in older adults. JAMA. 2006; 295:2851–2858.



What is CBT for Insomnia (CBTi)?

- ⦿ sleep hygiene
- ⦿ stimulus control
- ⦿ sleep restriction
- ⦿ cognitive therapy

Alessi C, Vitiello MV. Insomnia (primary) in older people. *BMJ Clin Evid.* 2011 Oct 11;2011.

Wennberg AM, Canham SL, Smith MT, Spira AP. Optimizing sleep in older adults: treating insomnia. *Maturitas.* 2013 Nov;76(3):247-52.

Buysse DJ, Germain A, Moul DE. Efficacy of brief behavioral treatment for chronic insomnia in older adults. *Arch Intern Med.* 2011 May 23;171(10):887-95.



Sleep Hygiene



| Intervention | Rationale |
|--------------------------------------|---------------------------------|
| Set the environment | light, noise, temperature, bath |
| Keep sleep schedule / reduce naps | strengthen circadian synchrony |
| Reduce stimulants, alcohol, cannabis | disrupt sleep |
| Daytime exercise / light | multiple theories |
| Eat a light bedtime snack | hypoglycemia-> awakening/hunger |
| Reduce fluid intake in evening | nocturia |
| No TV/devices in bed | screens -> suppress melatonin |
| Remove clock from bedroom | clock watching -> worries |



CBTi

Stimulus control: associate bed with sleep

- ⦿ go to bed when sleepy
- ⦿ leave bed if not sleeping (“15 min rule”)
- ⦿ bed for sleep only

Sleep restriction: restrict time in bed -> increase “efficiency”

- ⦿ limit time in bed to total sleep time
- ⦿ titrate until sleep efficiency >85%

Cognitive therapy: distortions -> worry -> insomnia



CBTi Evidence - Older Adults

Positive RCTs

- Epstein DR, Sidani S, Bootzin RR, Belyea MJ. Dismantling multicomponent behavioral treatment for insomnia in older adults: a randomized controlled trial. *Sleep*. 2012 Jun 1;35(6):797-805
- Alessi C, Martin J, Fiorentino L. Cognitive Behavioral Therapy for Insomnia in Older Veterans Using Nonclinician Sleep Coaches: Randomized Controlled Trial. *J Am Geriatr Soc*. 2016 Sep;64(9):1830-8
- Lovato N, Lack L. Comparing and contrasting therapeutic effects of cognitive-behavior therapy for older adults suffering from insomnia with short and long objective sleep duration. *Sleep Med*. 2016 Jun;22:4-12.
- Morgan K, Gregory P, Tomeny M. Self-help treatment for insomnia symptoms associated with chronic conditions in older adults: a randomized controlled trial. *J Am Geriatr Soc*. 2012 Oct;60(10):1803-10.

Positive Reviews

- Alessi C, Vitiello MV. Insomnia (primary) in older people. *BMJ Clin Evid*. 2011 Oct 11;2011.
- Wennberg AM, Canham SL, Smith MT, Spira AP. Optimizing sleep in older adults: treating insomnia. *Maturitas*. 2013 Nov;76(3):247-52.



CBTi Evidence – Dementia

NITE-AD study

RCT (N=36), community, patient-caregiver dyads, AD, age 63-93

Intervention: 6 weeks sleep hygiene, 30 min walking, light box
(control = sleep education and hygiene)

Results: NITE-AD greater reductions in awakenings, time awake, and depression (up to 6 months)

McCurry SM, Gibbons LE, Logsdon RG. Nighttime insomnia treatment and education for Alzheimer's disease: a randomized, controlled trial. *J Am Geriatr Soc.* 2005 May;53(5):793-802.



Other non-pharmacologic treatments



Go to www.menti.com and use the code **97 59 23**

 Mentimeter

What is your preferred hypnotic for older adults?



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North East Specialized Geriatric Centre
Centre gériatrique spécialisé du Nord-Est



“Rational” Prescribing of Hypnotics

Indication: **short-term** for transient insomnia (<4 wks)

Principles:

- lowest effective dose
- PRN
- avoid long T_{1/2} agents (accumulation)
- avoid concurrent alcohol/sedatives



Hypnotics

- BZD receptor agonists
- sedating antidepressants
- melatonin-related
- others:
 - antipsychotics
 - antihistamines
 - Orexin-antagonist
 - magnesium

Abad VC, Guilleminault C. Insomnia in Elderly Patients: Recommendations for Pharmacological Management. *Drugs Aging*. 2018 Sep;35(9):791-817.



BZD receptor agonists

benzodiazepines

- ⦿ short-term efficacy
- ⦿ absent evidence of long-term efficacy
- ⦿ side effects

Z-drugs (GABA-a1)

- ⦿ short-term efficacy
- ⦿ less disruption of sleep architecture
- ⦿ motor/cognitive side effects similar to BZDs

Abad VC, Guilleminault C. Insomnia in Elderly Patients: Recommendations for Pharmacological Management. *Drugs Aging*. 2018 Sep;35(9):791-817.

Dolder C, Nelson M, McKinsey J. Use of non-benzodiazepine hypnotics in the elderly: are all agents the same? *CNS Drugs* 2007;21(5):389–405.



Sedating antidepressants

trazodone

- some evidence in older adults (poor quality), SEs

mirtazapine

- improves sleep in depressed older patients only

tricyclic antidepressants

- doxepin recommended by AASM (<6mg)
- cardiac/anticholinergic

James SP, Mendelson WB. The use of trazodone as a hypnotic: a critical review. *J Clin Psychiatry* 2004;65(6):752–5.

Winokur A, Sateia MJ, Hayes JB, et al. Acute effects of mirtazapine on sleep continuity and sleep architecture in depressed patients: a pilot study. *Biol Psychiatry* 2000;48:75–8



Melatonin-related

melatonin

- some evidence in older adults, well tolerated
- CRSD, RBD, sundowning, ?delirium prevention

ramelteon (melatonin agonist)

- positive meta-analysis in older adults, well tolerated
- FDA approved (not yet in Canada)

Lemoine P, Zisapel N. Prolonged-release formulation of melatonin (Circadin) for the treatment of insomnia. *Expert Opin Pharmacother.* 2012 Apr;13(6):895-905.

De Jonghe A. Effectiveness of melatonin treatment on circadian rhythm disturbances in dementia. Are there implications for delirium? A systematic review. *Int J Geriatr Psychiatry* 2010;25(12): 1201–8

Kuriyama A, Honda M, Hayashino Y. Ramelteon for the treatment of insomnia in adults: a systematic review and meta-analysis. *Sleep Med.* 2014;15:385–92.



Other hypnotics

antipsychotics

- should not be used primarily as a hypnotic due to SEs

antihistamines

- anticholinergics -> delirium -> worsened sleep

suvorexant (Orexin-antagonist) – not yet approved in Canada

- 2 positive RCTs in older adults, well tolerated

magnesium

- 1/2 positive RCTs in older adults, well tolerated

Herring WJ, Connor KM, Ivgy-May N, et al. Suvorexant in patients with insomnia: results from two 3-month randomized clinical trials. *Biol Psychiatry*.2016;79(2):136–148.

Michelson D, Snyder D, Paradis E et al. Safety and efficacy of suvorexant during 1-year treatment of insomnia with subsequent abrupt treatment discontinuation: a phase 3 randomised, doubleblind, placebo-controlled trial. *Lancet Neurol* 2014;13:461-71.

Abbasi B, Kimiagar M, Sadeghniaat K, Shirazi MM, Hedayati M, Rashidkhani B. The effect of magnesium supplementation on primary insomnia in elderly: A double-blind placebo-controlled clinical trial. *J Res Med Sci*. 2012 Dec;17(12):1161-9.

Nielsen FH, Johnson LK, Zeng H. Magnesium supplementation improves indicators of low magnesium status and inflammatory stress in adults older than 51 years with poor quality sleep. *Magnes Res*. 2010 Dec;23(4):158-68.



Resources

- Canadian Sleep Society: css-scs.ca (clinicians and patients)
- The Well, Centre for Effective Practice: thewellhealth.ca
-Management of Chronic Insomnia tool (for clinicians)
- Canadian Deprescribing Network: deprescribingnetwork.ca
- Sleepwell: mysleepwell.ca
- Others: Cognitive Behaviour Treatment of Insomnia (clinician)
The Insomnia Workbook (patient)
e-CBTi (\$): Sleepio, CBT-i Coach app (free)

