Sleep Matters When Someone has Dementia

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This integrated KTE webinar event is brought to you by brainXchange in partnership with the Alzheimer Society of Canada and the Canadian Consortium of Neurodegeneration in Aging (CCNA).

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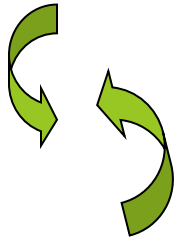
Objectives

- Understanding sleep and its effect on function
- Why dementia is a risk for poor sleep and poor sleep is a risk for dementia
- What does the evidence tell us?
- Practical, non-drug-based interventions



Why should we care?

- How many activities can you list that are NOT influenced by sleep?

What sleep influences

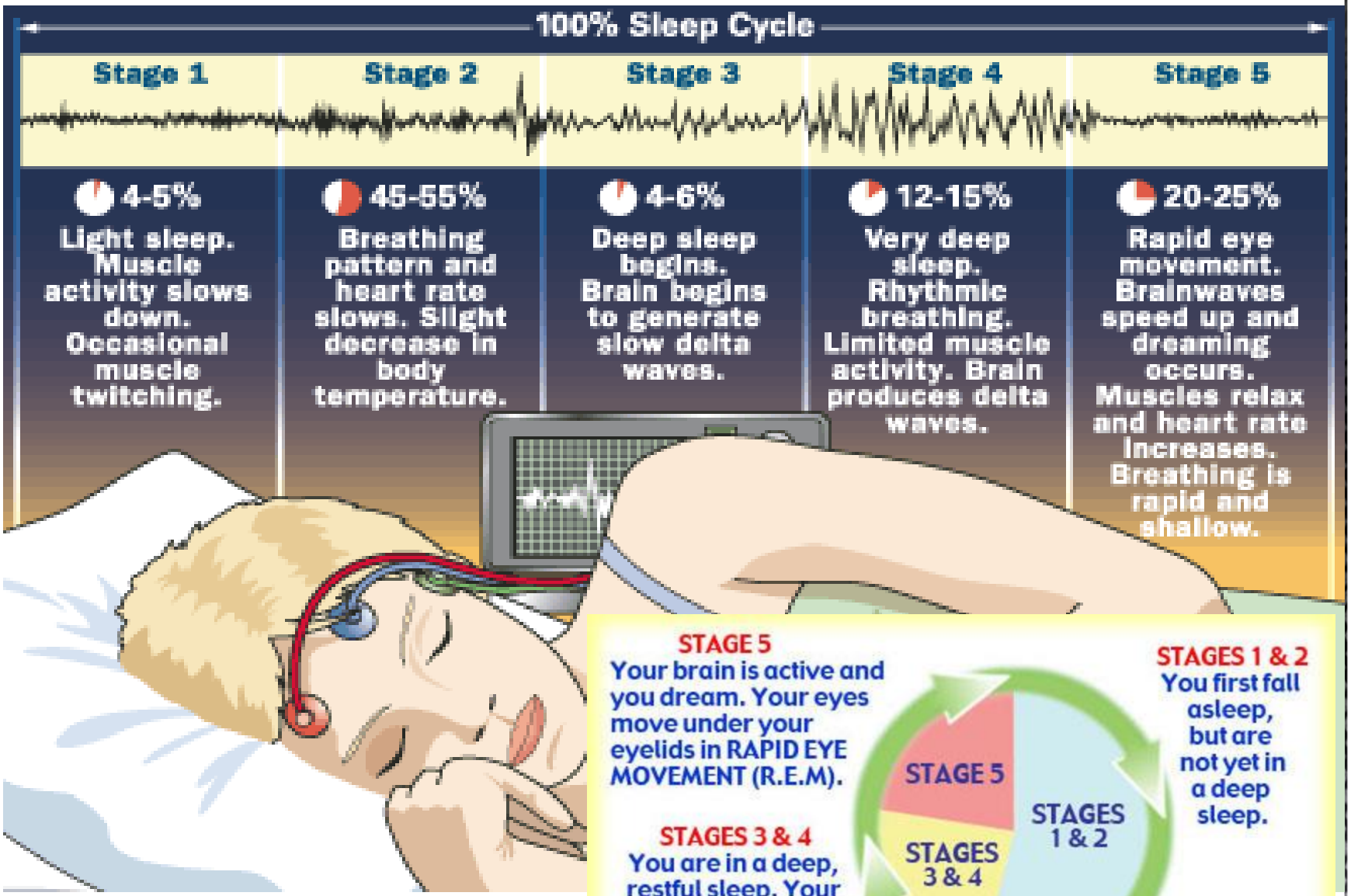
- Physical:
  - Healing
  - Digestion
  - Hormonal/neurochemical activity
    - leptin, adenosine, cortisol, melatonin
  - Central nervous system function
  - Sensation (eg pain)
  - Balance

- Cognition and Emotion:
  - Feelings of well-being
  - Concentration
  - Learning and memory
  - Problem-solving
  - Emotions
  - Paranoia
  - Anxiety
  - Aggression

What are sleep disorders?

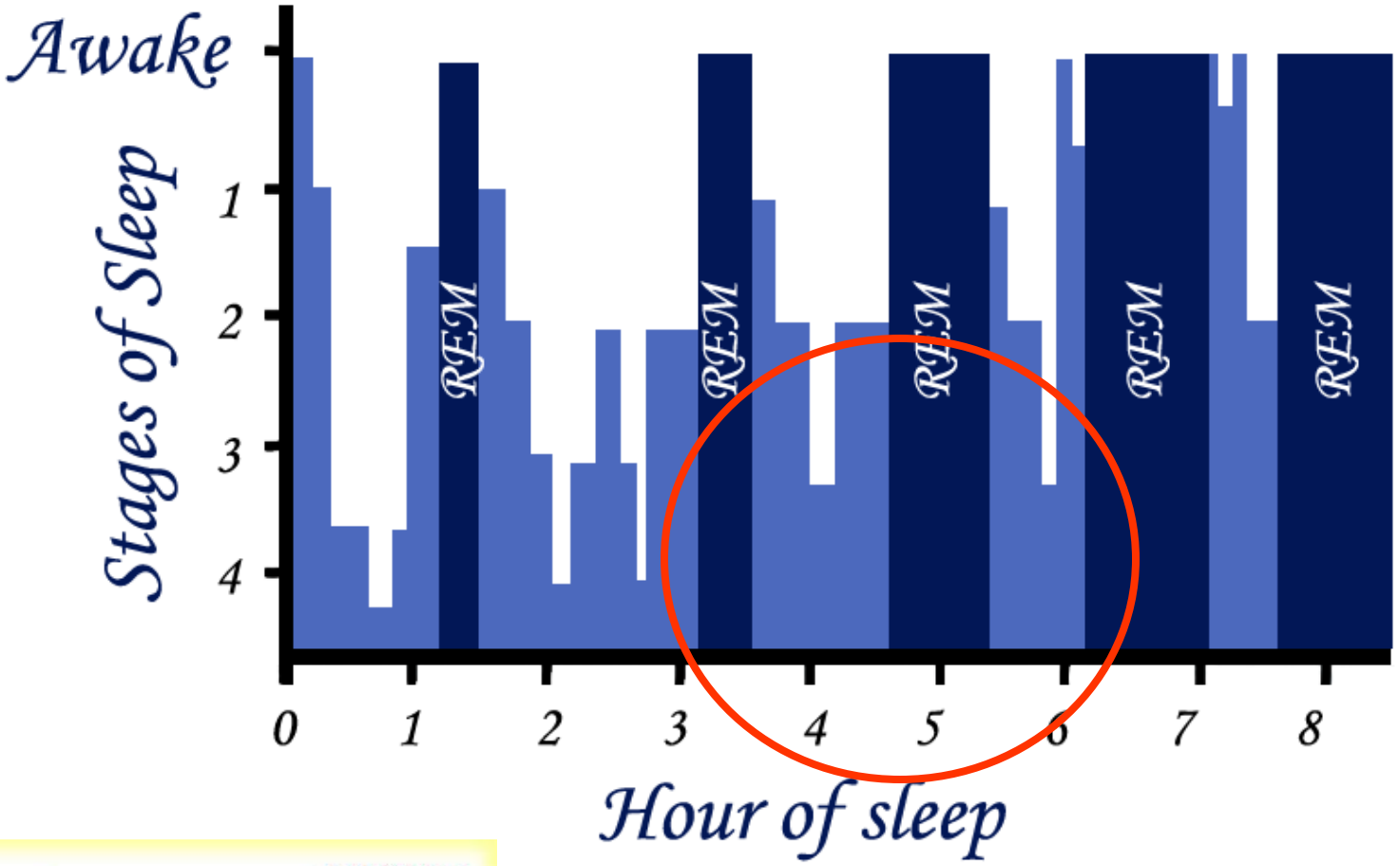
- Parasomnia
  - Abnormal behaviours or physiological events (eg sleep walking)
- Hypersomnia
  - Excessive sleepiness

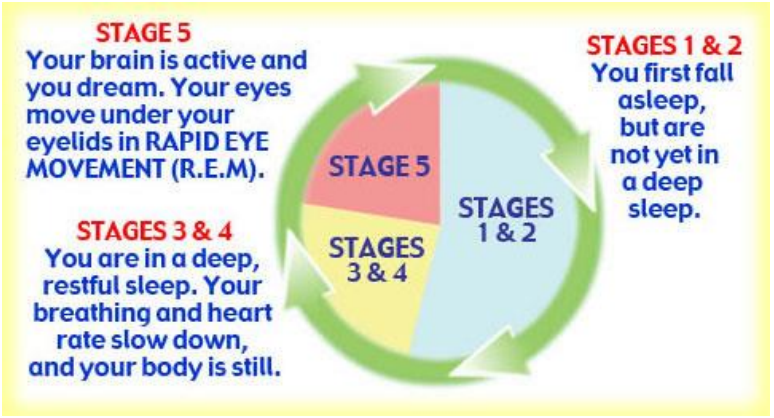
- Insomnia
  - Most common problem
  - Often linked to depression
  - Insufficient, disturbed or non-restorative sleep
  - Insufficient daytime activity and bright light exposure
- Circadian (body clock) Disturbances
  - Alterations of the sleep-wake cycle
  - Day and night get reversed



1 Cycle = aprox. 90 minutes

https://www.psychologytoday.com/blog/between-you-and-me/201307/your-sleep-cycle-revealed





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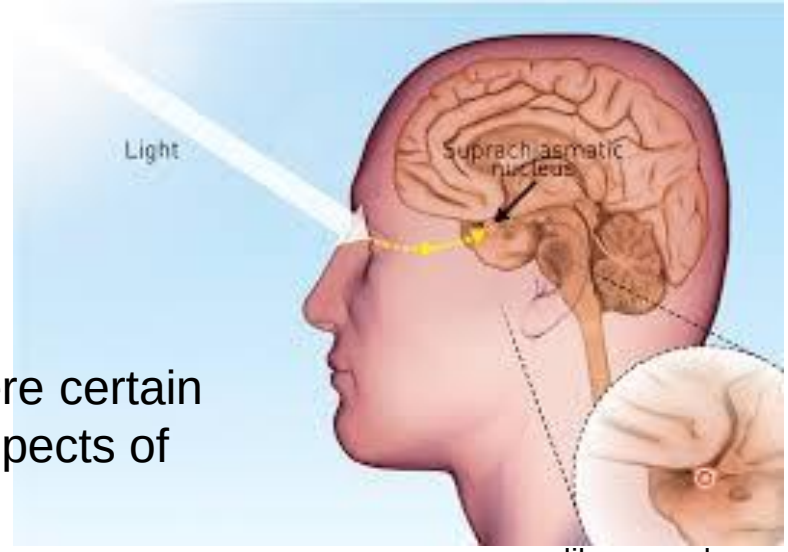
What happens in the brain?



open.lib.umn.edu

- Sleep is largely regulated in the brain where certain neurochemicals, responsible for different aspects of alert/asleep are produced.

- For example
  - Your body produces **Adenosine** in response to daylight – regulates your body clock
  - Your body also needs to produce **Melatonin** to help you go to sleep ands stay asleep.

- Producing neurochemicals is tied to **natural daylight (particularly the blue light spectrum**), temperature and activity. Our eyes carry light messages to the **hypothalamus** in the brain– this internal biological clock regulates our circadian rhythm.

If your hypothalamus gets mixed messages then you have an unhealthy tug-of-war in your body

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How do we get mixed messages?

- Mostly through light and temperature
  - Artificial light at night
  - TV, alarm clock, hallway lights, street lights
  - Not enough light in the daytime
  - Bedrooms that keep our body temperature too warm

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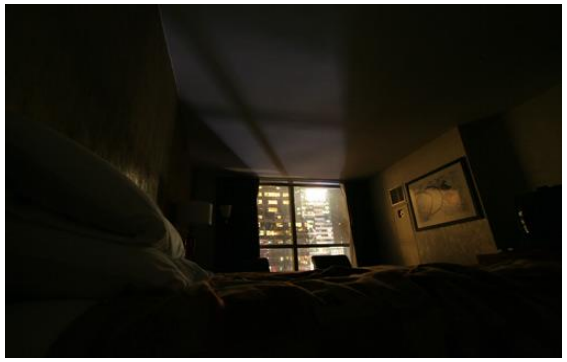
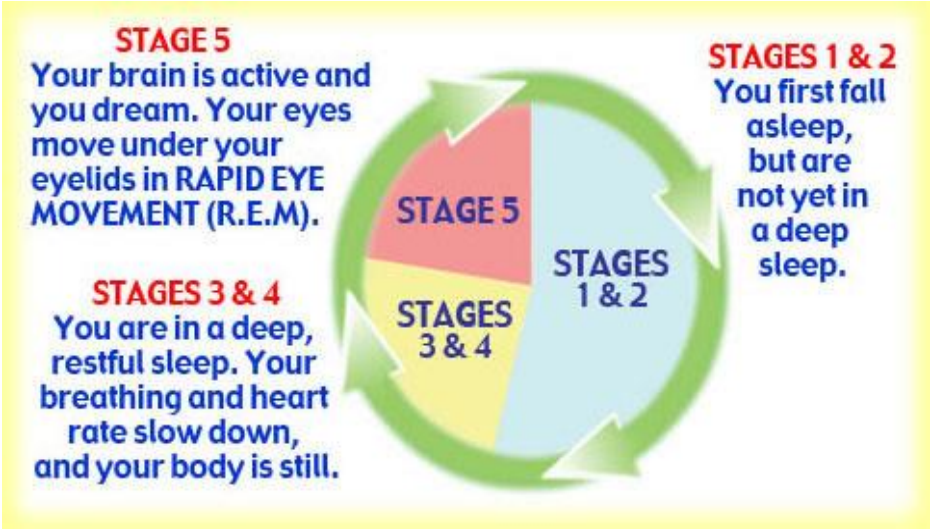


Sleep Disorders in Older Adults
(Cooke & Ancoli-Israel 2006)

- Not inevitable but increased likelihood (co-morbidity increases)
- More time in bed, less sleep achieved, more awakening and delayed onset.
- Stage 1 & 2 increase
- REM decreases
- (associated with memory)
- Stage 3 & 4 decreases
- (Associated with healing)



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Sleep changes as we age

- Our need to sleep remains the same but our ability changes (approx. decline of 30 min/decade after 50 years of age).
- Consequences of insufficient sleep
  - Falls
  - Quality of life
  - Balance & ambulation
  - Cognitive function
  - Reaction time
  - Wound healing

Most prevalent problem is insomnia

- Only 7% not related to other existing health problem
  - Depression
  - Arthritis
  - Chronic pain
  - COPD
  - Life events, loss, stress
  - Medication (beta-blockers, decongestants, cardiac drugs)
- Dementia does not cure insomnia!

Sleep disorder breathing

- Snoring and sleep apnea (insufficient oxygen) = fragmented sleep, disturbed cycles
  - Research shows sleep disordered breathing is often under diagnosed and untreated.
  - SDB is a high risk with:
    - progressive dementias and other cognitive impairment (for example after a stroke)
    - use of sedative medication
    - insomnia
    - cardiovascular diseases
  - Other associated factors are medications, alcohol, smoking, and weight

Sleep disturbance in persons with dementia (PWD)

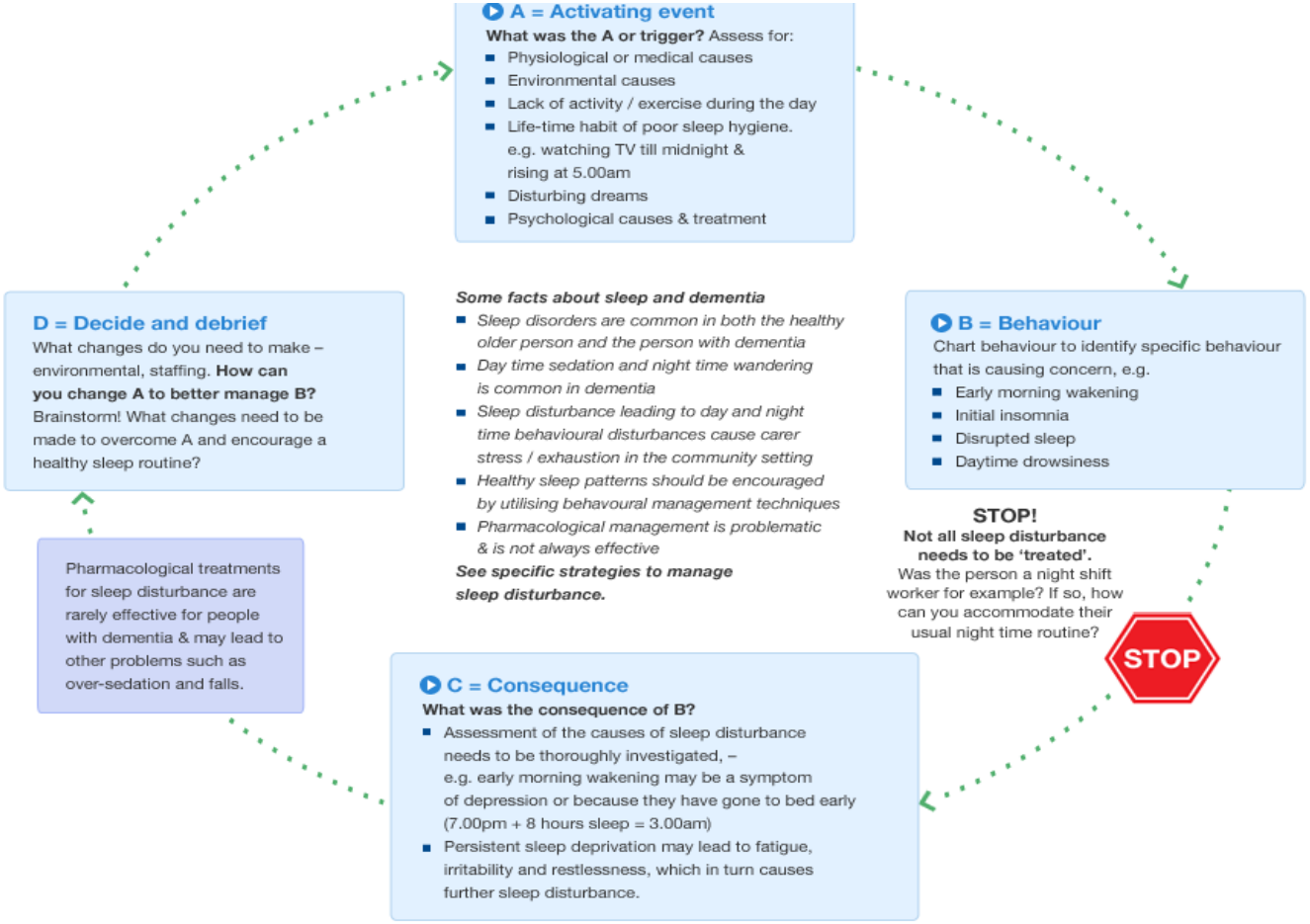
- 19 to 44% of community dwelling PWD has sleep problems
- PWD living in institutions have even higher rates of sleep problems
- One study found PWD living in long-term care facilities had no single hour of complete awake or asleep (Ancoli-Israel 1989)

consequences when someone with dementia has sleep problems?

- Increased chance of institutionalization (Lee & Thomas 2011)
- Reset body clock for daytime sleep and night-time wakening
- Decreased physical function (eg. balance, falls, fractures, appetite, digestion, self-care, strength, wound healing, diabetes etc).
- Irritability and aggression
- Anxiety, depression, and decreased cognition
- Impact on family caregiver's sleep, health and well-being

What to do?

- Assess- sleep diary by caregiver & actigraphy
- Assess the environment and living situation- what might be the problem and some simple solutions
  - Bendigo Health Dementia Management Strategy for an example of problem solving steps where the whole family can be involved
  - Educate caregivers – they are critical to intervention and they need to understand www.sleep-dementia-resources.ualberta.ca



Sleep disturbance is a common complaint in older people. The major factors contributing to sleep disorders in both normal ageing and dementia may be one or a combination of:

- 'Normal' physiological changes associated with ageing;
- Physical or mental health disorders;
- Unhealthy sleep hygiene

Attempt to follow the person's previously established 'preparing to sleep' routine, e.g. did they always have a glass of warm milk before bed?

Identify the A (activating) factor by assessing whether the sleep disturbance is related to the following:

References and recommended reading

Alzheimer's Association Australia (2000). Help Sheets for people with dementia and their families and carers. Alzheimer's Association Australia. [available online] http://www.alzheimers.org.au.

Lees, C. Hecht, H. & Hall, K. (1998). Behaviour & Dementia: A practical guide for health workers & families who care for people with behavioural disturbances in the setting of dementia. The Caulfield Behaviour Support Team. An Initiative of the Australian Commonwealth Psychogeriatric Unit

Evidence based intervention

- Sleep medication is recommended as a short-term strategy only. This is because of its side effects, complications with other medication, and interference with all stages of sleep- particularly REM sleep.

- Non-drug strategies with research support
  - Sleep hygiene- environmental modification
  - Bright light exposure
  - Increased daytime activity
  - Passive body warming

Brown CA, et al (2011) A critique of the evidence-base for non-pharmacological sleep interventions for persons with dementia. Dementia: The International Journal of Social Research and Practice. Published online before print November 7, 2011, doi: 10.1177/1471301211426909

Table 1: Clinically relevant evidence for non-pharmacological sleep interventions with dementia

Conclusive Evidence	Inconclusive Evidence	Insufficient Evidence
Bright-Light Based Interventions		
▪ Multi-dimensional intervention including bright-light exposure (Alessi et al., 2005)	▪ Morning bright-light exposure (Ancoli-Israel et al., 2002; Dowling et al., 2005; Fetveit et al., 2003; Lyketsos et al., 1999; Skjerve et al., 2004; Yamadera et al., 2000) ▪ Bright light and melatonin (Haffmans et al., 2001; Riemersma-van der Lek et al., 2008) ▪ High intensity ambient lighting ((Haffmans et al., 2001; Riemersma-van der Lek et al., 2008; Sloane et al., 2007)	▪ Social interaction in combination with bright-light exposure (Mishima et al., 1998) ▪ Lunchtime bright-light exposure (Fukuda et al., 2001) ▪ Dawn-dusk simulation (Fontana Gasio et al., 2003) ▪ Prolonged exposure to ambient blue high-intensity light (van Hoof et al., 2009)
Non-Light Based Interventions		
▪ Individualized (social) activities (Richards et al., 2005; Richards et al., 2001) ▪ Respite care--negative outcome for person with dementia and positive outcome for caregiver (Lee et al., 2007)	▪ Sleep hygiene and education (McCurry et al., 2005; McCurry et al., 2004; Ouslander et al., 2006) ▪ Passive body heating (Mishima et al., 2005)	▪ Music (Lindenmuth et al., 1992) ▪ Exercise program (Namazi et al., 1995) ▪ Transcutaneous electrical nerve stimulation (TENS) (Van Someren et al., 1998) ▪ Therapeutic biking (Buettner & Fitzsimmons, 2002) ▪ Outdoor activity program (Connell et al., 2007) ▪ Indoor gardening (Lee & Kim, 2008) ▪ Environmental modification (Yamakawa et al., 2008)

References in handout. For full report www.sleep-dementia-resources.ualberta.ca

1. Sleep hygiene

- Keep the bedroom for sleep
- Encourage exercise in the daytime
- Get lots of natural **daylight** (suppresses melatonin)
- Avoid napping
- In the evening -eliminate **light** from TV, alarm clock, street light etc-(promotes melatonin)
- Reduce **noise** and run a fan to block background noise
- Keep the bedroom **cool**
- Establish a routine
- Light snack before bed (no sugar or caffeine)
- Avoid stimulation (like TV and exercise) later in the evening

Pragmatic strategies for families- Motion activated night lights, red bulb in night lights, fan to reduce noises, TV on a timer, 'wheat bags' for passive body warming

More information about Sleep Hygiene

- Canadian Sleep Society (sleep and aging)
- Alzheimer Association (Treatment for sleep changes)
- Alzheimer Association Australia (Sleep changes)

2. Bright light exposure

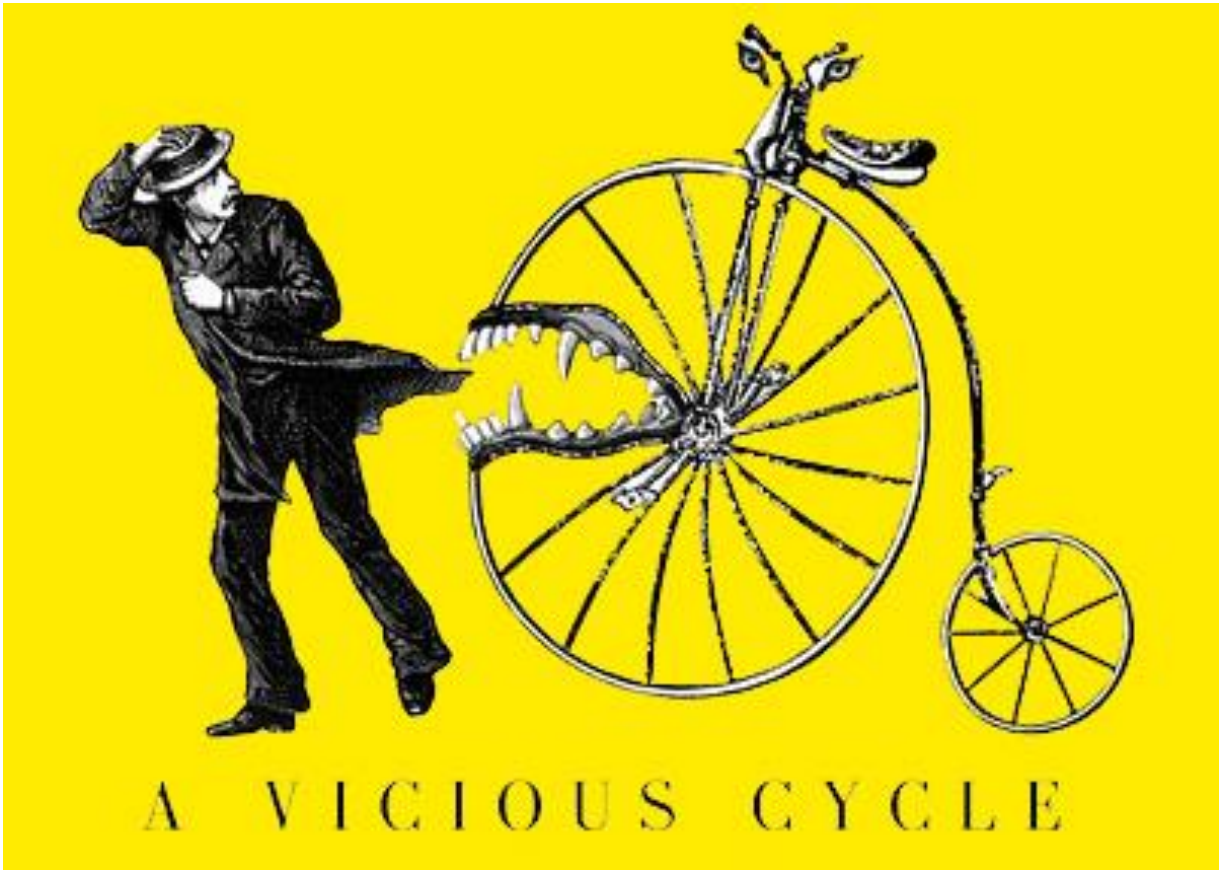
- Indoor room light= 300-500 lux
- Melatonin suppression occurs at 50-100 lux
- A laptop or tablet can emit 50-150 lux of blue spectrum light

- The amount of bright **blue spectrum light** we are exposed to determines the message the brain receives **to produce or stop producing** melatonin.
- In other words, **Blue spectrum light in the daytime is good** because it sends the brain a message to stay alert and turn off the melatonin production. However, **blue spectrum light at night is bad** because it sends the same message to stay awake.
- Blue spectrum light at bedtime can delay melatonin onset and shorten duration by as much as 90 minutes (Gooley et al 2011). Blue spectrum light during sleep can also suppress melatonin and therefore decrease sleep duration.
- Researchers have found that exposure to daytime bright light can help improve sleep for many people with dementia.

How to get daytime blue spectrum light exposure

- The best source of blue spectrum light is natural daylight- walking outside, sitting (awake!) by the window, going for car rides- all help people get more bright light exposure.
- blue spectrum lights at breakfast and lunch time.
- Decrease blue light exposure after 5 pm.
- Instead of TV screens stream TV to Laptop or computer and use F.Lux filter software http://justgetflux.com/.
- Two hours **before desired bedtime** the room lights should be dimmer so the brain receives the message to produce more melatonin and start to get ready for sleep.
- Avoid bright lights at night-time in the bedroom. This includes televisions, LED alarm clocks and light coming from streetlights outside.
- If safety is a concern it might work to place the room lights on a motion detector so they only come on as needed.

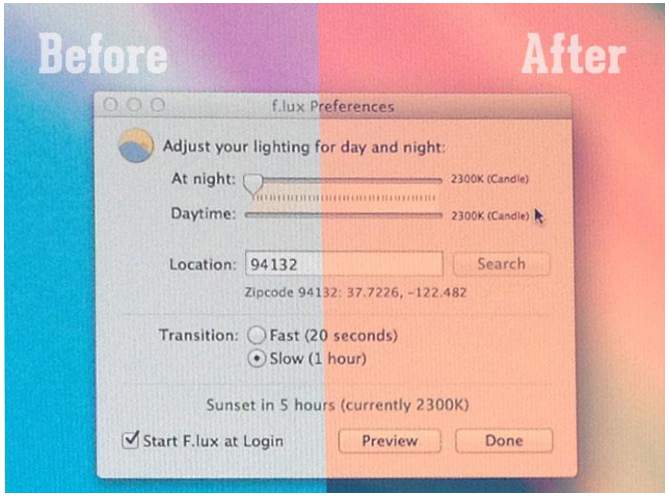
Remember- if people go to bed at 7 PM they will be awake by 2 or 3 AM!



F.Lux
http://justgetflux.com/

Lowbluelights.com

blueblockglasses.com

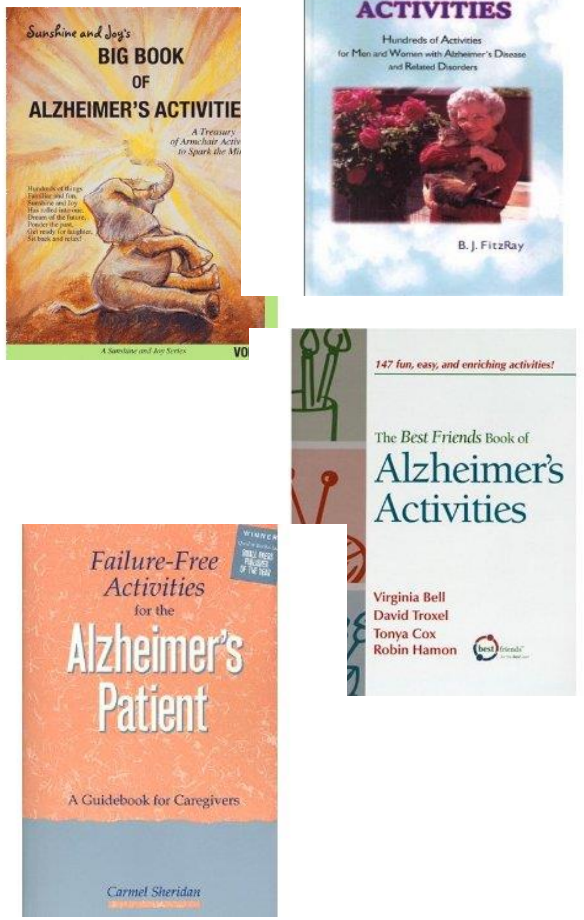


3. Increased daytime activity

- Daytime extended napping contributes to night-time behavior problems and risks
- Daytime activity promotes sleep and encourages light exposure.
  - Activity increases oxygen, circulation, and digestion. These all help promote better sleep
- Car rides, walks and other activities
- Naps should only be for 30-40 minutes and not encouraged all day.
- Beware phase advance….turning night to day.

Where to get more information on daytime activity

- National Institute on Aging (US)
- Alzheimer Society Canada
- Alzheimer Society UK
- Talk to your occupational therapist, contact the local YMCA and Seniors' centre to see if they have special programs
- Books



4. Passive body warming

- **A warm bath or holding a warm ‘wheat bag’ for ½ hour before going to bed can help raise core body temperature.**

- ***How does it work?*** **When we sleep our body temperature drops slightly. Being too warm keeps us from going to sleep. If you raise your body temperature slightly for a short period of time while awake, as you cool off you will feel more sleepy. That’s why a warm bath before bed helps us sleep- the bath raises our body temperature for a short period and as we cool off after the bath we feel sleepy.**

When should passive body warming be used?

- **Warm baths or warm blankets within an hour of bedtime.**
- **If the individual does not like to take a bath at night- try using a warm electric blanket around his shoulders/across the lap or a hot water bottle, or wheat bag in his lap for about 20 minutes before bed instead. Remember the warmth should be comfortable, not hot and unpleasant.**
- **More research information? (Mishima et al., Am J Geriatr Psychiatry. 2005 May;13(5):369-76).**

Empowering family caregivers to gather information to discuss with healthcare providers

Don’t assume shared understanding- lots of myths exist

- Sleep diaries

  http://www.sleepeducation.org/docs/default-document-library/sleep-diary.pdf

Other resources - **Sleep and Dementia** website www.sleep-dementia-resources.ualberta.ca also contains 2013 cross-Canada survey of healthcare provider sleep awareness, assessment practice and interventions.

Parting thoughts- little steps matter

CARRIER, LAFORTUNE, & DRAPEAU (2012) Canadian Sleep Society- Insomnia Rounds: Sleep in the Elderly – When to Reassure, When to Intervene
http://www.canadiansleepsociety.ca

Thank you

- Sleep, Dementia and Parkinson' Disease (PD)- emerging literature (Nomura et al 2013)

In people who have Parkinsons- high prevalence of insomnia, excessive daytime sleeping, & REM sleep behavior disorder (RBD = talking, yelling, punching, kicking, sitting, jumping from bed, arm flailing, and grabbing)

REM sleep behavior disorder is a risk factor for developing dementia in PD (only 3% non-RBD PD developed dementia, but **32%** PD patients with RBD developed dementia in 21 months).

Promising literature- Bright Light therapy (BLT) positive effect on sleep, mood and motor function in PD (Rutten et al 2012, review article)