

# Appropriate Use of Antipsychotics Project

## Responsive Behaviours and Sleep

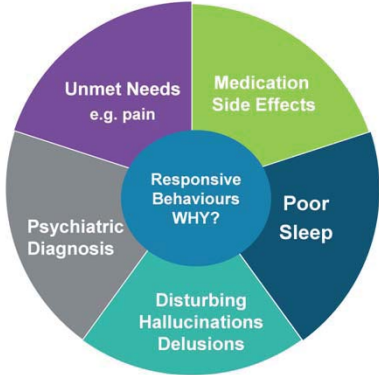


**Seniors Health Strategic Clinical Network (SCN)**

In collaboration with Addiction & Mental Health SCN

## Why Focus on Sleep?

- Responsive behaviours may be caused by poor sleep
- People with dementia often sleep poorly
- Antipsychotics are often prescribed for sleep
- There are better solutions



Alberta Health Services

There is an appropriate use for antipsychotics:

**PSYCHIATRIC DIAGNOSIS** such as schizophrenia, bipolar, delusional disorder, and major depression.

**HALLUCINATIONS, DELUSIONS** that are bothersome or disturbing to the person.

**PHYSICAL AGGRESSION:** They may reduce aggressive behaviours that put the resident or others at risk of injury (thought they may also worsen aggressive behaviours). Over the past year, through the Alberta Appropriate Use of Antipsychotics (AUA) Project, LTC teams have paid attention to side effects in this group of people, and have found sometimes a lower dose is better for symptom control and quality of life.

**UNMET NEEDS:** There are many responsive behaviours such as calling out, restlessness and unsociability that are not improved by antipsychotics – and in fact may be worsened by antipsychotics. Alberta LTC teams looked for the reasons behind the behaviours such as pain, hunger, thirst, overstimulation or the need to find a toilet. Most responsive behaviours respond better to person-centred strategies than to medication. This was the focus of the AUA project over the past year.

**MEDICATION SIDE EFFECTS:** Antipsychotics are sometimes prescribed for responsive behaviours caused by medication side-effects – further resources will be developed to support teams in identifying medications that may be doing more harm than good.

**SLEEP:** Antipsychotics are often also prescribed for sleep – as are other sedatives, despite lack of clinical evidence. Voyer et al 2015 found that many behaviours last between 1 and 2 ½ months. They also found that as needed (PRN ) antipsychotics are most often given for verbal or physical agitation in the evening – likely in hopes that residents would settle and let others sleep – even though antipsychotics are not effective for these behaviours.

### References:

Voyer et al 2015 Behavioral and Psychological Symptoms of Dementia; How Long Does Every Behavior Last, and Are Particular behaviors Associated With PRN Antipsychotic Agent Use? SLACK Incorporated.

## How do you feel when you haven't slept well?

### What does it affect your...

- Mood?
- Outlook on life?
- Ability to deal with stress?
- Health and immunity?



Think about your own experiences

E.G.

- Young parent with newborn baby
- 5 night shifts with construction going on next door so unable to sleep
- Attempting to transition from evenings or nights to days – what are your thoughts when it's 3 am, you haven't fallen asleep yet, and you have to be up at 5:30 am to get to work?
- Up during the night with "bad dreams" or children's illnesses and then off to work in the morning

**How do you feel? What is the impact on your mood, immune system, coping?**

## Poor Sleep can Lead to ...

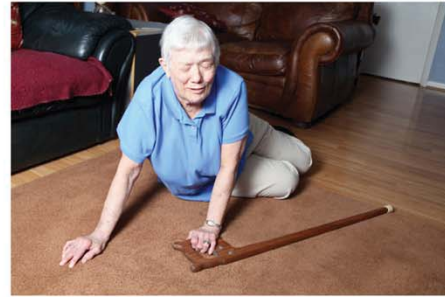
- Personality changes
- Delirium / hallucinations
- Decreased immunity
- High blood pressure
- More medical instability
- Increased heart disease, strokes, problems with circulation to the brain



The elderly are not at their best without sleep either. Sleep is crucial for mental and physical health and well-being. Even blood pressure goes up with lack of sleep! How many medications are prescribed for medical problems, that might be improved by a good night's sleep?

## Poor Sleep can Cause ...

- Irritability, aggression, anxiety, inability to cope with stress (which could lead to **antipsychotic** use)
- Increased depression
- Increased loss of independence
- Confusion, new cognitive difficulties
- Falls (which could lead to increased **restraint** use)
- Pain e.g. headaches
- Delayed wound healing



Poor sleep can cause:

Increased **irritability, anxiety and aggressive behaviour** leading to increased use of antipsychotics and other sedatives, which leads to **loss of independence, depression** and further increases in responsive behaviours

**Increased falls:** from lack of sleep, and from the antipsychotics and other sedatives prescribed to help sleep – which can lead to increased physical and chemical restraint use.

**Delayed wound healing:** lack of sleep leads to increased cortisol, which delays wound healing – wounds are painful, and pain interferes with sleep so it's cyclical. Increased cortisol also leads to decreased serotonin – which is the neurotransmitter responsible for sleep, memory, word-finding, glucose regulation, cognition, mood and many other essential functions.

References:

[Immunol Allergy Clin North Am.](#) 2011 Feb;31(1):81-93. doi: 10.1016/j.iac.2010.09.010.

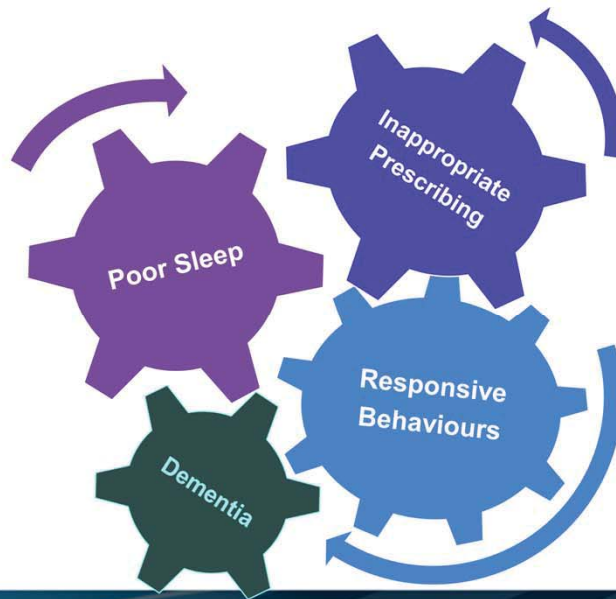
The impact of psychological stress on wound healing: methods and mechanisms.

[Gouin JP<sup>1</sup>](#), [Kiecolt-Glaser JK](#).

<http://www.ncbi.nlm.nih.gov/pubmed/21094925>

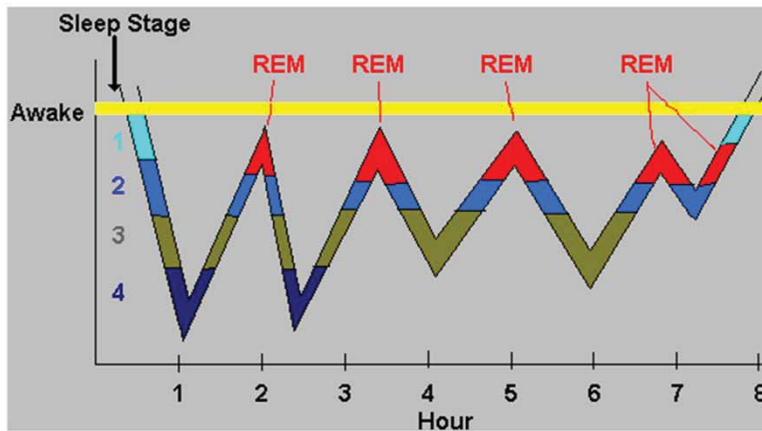
## What can we do?

- Understand the basics (physiology) of sleep
- Support sleep: know what helps, what doesn't



Dementia often results in poor sleep, which results in responsive behaviours, which are treated with antipsychotics and other medications, which further impact sleep and cognitive function. If we can improve sleep, we can make such a difference!

## Stages of Sleep: 90 minute sleep cycles



The Stages of Sleep ©University of Washington

## Sleep and Health

- REM sleep: memory, brain health
- Stage 3 & 4: healing/cell repair

*Sleep acts as the brain's "dishwasher", cleaning the brain so it is ready to return to optimal functioning when the person wakes up.*

Morley, Sleep and the Nursing Home, 2015



To understand how to improve sleep, we have to understand a little about the physiology of sleep.

In a typical 8 hour sleep period, healthy adults have 4 or 5 REM cycles.

Stages 1 and 2 are light sleep

In the stages of deeper sleep (3 and 4) cell repair and healing occurs.

The REM part of the cycle is important for memory, brain health and cognition .

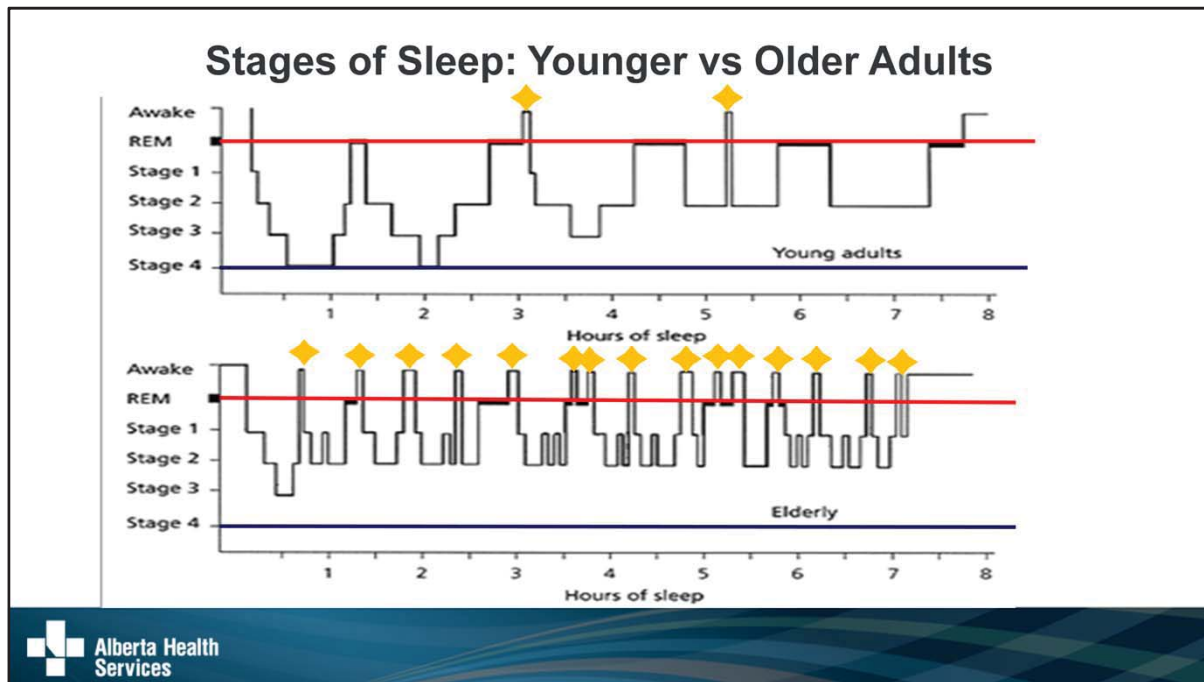
*During sleep, brain cells shrink, allowing cerebrospinal fluid to bathe the cells and wash away toxins, including amyloid-beta protein. This prevents, repairs and reduces damage to the brain (Morley)*

**Point to ponder / for discussion: If sleep occurs in 90 minute cycles, when should we do rounds? How often do you do safety rounds? How might this impact sleep?**

**Should timing be based on the 90 minute cycles?**

### References:

John E. Morley MG, BCh, Sleep and the Nursing Home Editorial, JAMDA 16(2015) 539-543



**Notice the differences with older adults:**

- Number of times they wake at night (yellow diamonds)
- How much time they spend in light sleep. This is when they're easily wakened. What might easily waken them?
- How much less time they spend in REM sleep (Red line)
- When do they get deep sleep (stage 3 to 4 – Navy blue line? What is going on in your unit at that time? Is this sleep ever interrupted?)
- Length of sleep: still average 8 hours per 24 hours

References:

*Less time in REM sleep and deep sleep. Slight increase in stage 1 and 2 sleep. Decrease in total sleep time.* John E. Morley MG, BCh, Sleep and the Nursing Home Editorial, JAMDA 16(2015) 539-543

Graphic source: David N Neubauer, M.D. Johns Hopkins Sleep Disorders Center, Baltimore, Maryland. American Family Physician 1999 May 1;59(9): 2551-2558



## Healthy Sleep, Mood and Brain Chemistry



### Day time:

- **Increased Serotonin** = calm and happy
- **Increased Cortisol** = energetic & motivated (too much cortisol = on edge)
- **Decreased melatonin** = more awake



### Night time:

- **Increased Melatonin** = relaxed and sleepy
- **Increased GABA** = deep sleep and good dreams, sense of well-being, relaxed muscles and nerves
- **Decreased serotonin, cortisol** = better sleep



Our ability to sleep is regulated by brain chemistry, in response to light and darkness.

**Serotonin** is one of two key calming neurotransmitters in the brain. It's responsible for cognition, memory, sleep, temperature regulation, word finding and many other functions. As we're exposed to morning light, melatonin converts to serotonin, so melatonin levels go down and serotonin levels go up. We feel awake, calm and happy!

**Cortisol** is a stimulating neurotransmitter: it peaks first thing in the morning providing an initial boost of energy and motivation. It's also involved in "fight or flight" – it becomes elevated with stress

**Melatonin:** begins to rise in the evening (as the lights dim) and falls in the morning (as we're exposed to light)

**GABA:** Without it, we don't get a deep sleep, we can have restless legs, nightmares. It's the principal neurotransmitter of the circadian system; **is lower in those with insomnia**

**Melatonin decline** associated with **unhealthy** aging. Peaks about 4 hours after lights out

### References:

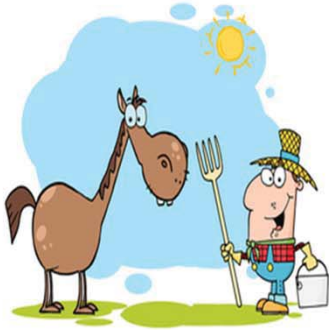
The Rhythmic GABAergic System. Cardinali and Golombek Neurochemical Research, Vol 23, No5, 1009, pp607-614 [Am J Med.](#) 1999 Nov;107(5):432-6.

**Zeitzer, Daniels, Duffy, Klerman, Shanahan, Kijk, Czeisler. Do plasma melatonin concentrations decline with age? (No differences between Healthy Subjects)**

Similar findings in this longitudinal study published in the New York Academy of Sciences: **NG, Kin, Nair, Schwarz, Thavundayil and Annable. Secretion of Melatonin in Healthy Elderly Subjects: A Longitudinal Study.** Article first published online: 12 JAN 2006

**Spreng M. Possible health effects of noise induced cortisol increase.** [Noise Health.](#) 2000;2(7):59-64.

## Sleep and Circadian Rhythm is Regulated by:



- **Light:** Lux 2000 for more than 1 hour (e.g. outside in sun), or 1000 for more than 3 hours (bright full spectrum light bulb)

Melatonin is converted to Serotonin as our eyes are exposed to light (then we feel more awake in the day)

- **Activity:** work and exercise
- **Temperature:** warmer during the day, cooler at night

This fluctuation in brain chemistry is also known as circadian rhythm.

The most important regulator is light.

Being active is another signal we send to our brains that it's time to be awake.

Body temperature also fluctuates with circadian rhythm, and with day time and night time temperatures.

Lux is a measure of how much light is in a certain area.

## Sleep and Circadian Rhythm is also Regulated by:



- **Darkness:** Less than 30-40 Lux  
Serotonin converts to melatonin  
- we feel relaxed and sleepy
- **Quiet:** < 35 Decibels (dB)
- **Temperature:** should be cooler than day time  
Body temperature drops slightly during sleep

Just as light sends a message to the brain about how active and awake we should be, darkness sends a message that it's time to sleep

A good sleep also requires quietness and a cooler temperature, which allows core temperature to drop during the night. One way to feel sleepy is to raise body temperature before bed (e.g. warm bath, warm blanket). As body temperature cools, we feel sleepy.

**If you've worked nights: When is body temperature the lowest? 3AM?**

**What are factors/ implications for the elderly?**

- Decreased body fat
- Slow metabolism
- Warm environment at night

## Sleep in a Care Facility

### Day time

- **Light is too dim** to convert melatonin to serotonin
- **Inactivity:** up to 17 hours per day in bed; 83.5% of time sitting or lying flat
- Day time **napping**
- Early **bedtimes**



"Try to get some rest. I'll be in every few minutes to make sure you don't."

### Night time

- **Light is too bright.**  
Melatonin suppressed with light greater than 30-40 Lux
- **Noise:** Each resident hears 32 noises per night louder than 60 dB. Less than 30 dB is required for sleep
- **Interruptions:** 76% of all incontinence care practices resulted in awakenings
- **Temperature:** too warm



Sleep in a Care Facility interferes with the signals the brain depends on to regulate circadian rhythms. Circadian rhythm disturbances cause residents to fall asleep earlier in the day and wake up early in the night.

In the day time, the lights are too dim, and residents are too inactive. Aging eyes have a reduced ability to admit light. They nap frequently and go to bed early – often right after the evening meal.

In the night time, residents are woken by light, interruptions, and noise. The temperature may be too warm to support a drop in core temperature that allows for a comfortable, restful sleep. Even dim room light of 100 lux can desynchronize rhythms and suppress sleep during the night time

AUA staff story about opening CareWest Signal Pointe: Brought staff in for a “pajama party” before the residents arrived . What they noticed: e.g. flashing red light in the smoke detector, cold air blowing on heads because of vent location, kitchen and hallway noise carried into the bedrooms, bathroom light went on when got up for washroom

Other - Staff locked the doors (felt more secure), mattresses weren't very comfortable, where the bed was in the room – some would have been more comfortable next to a wall

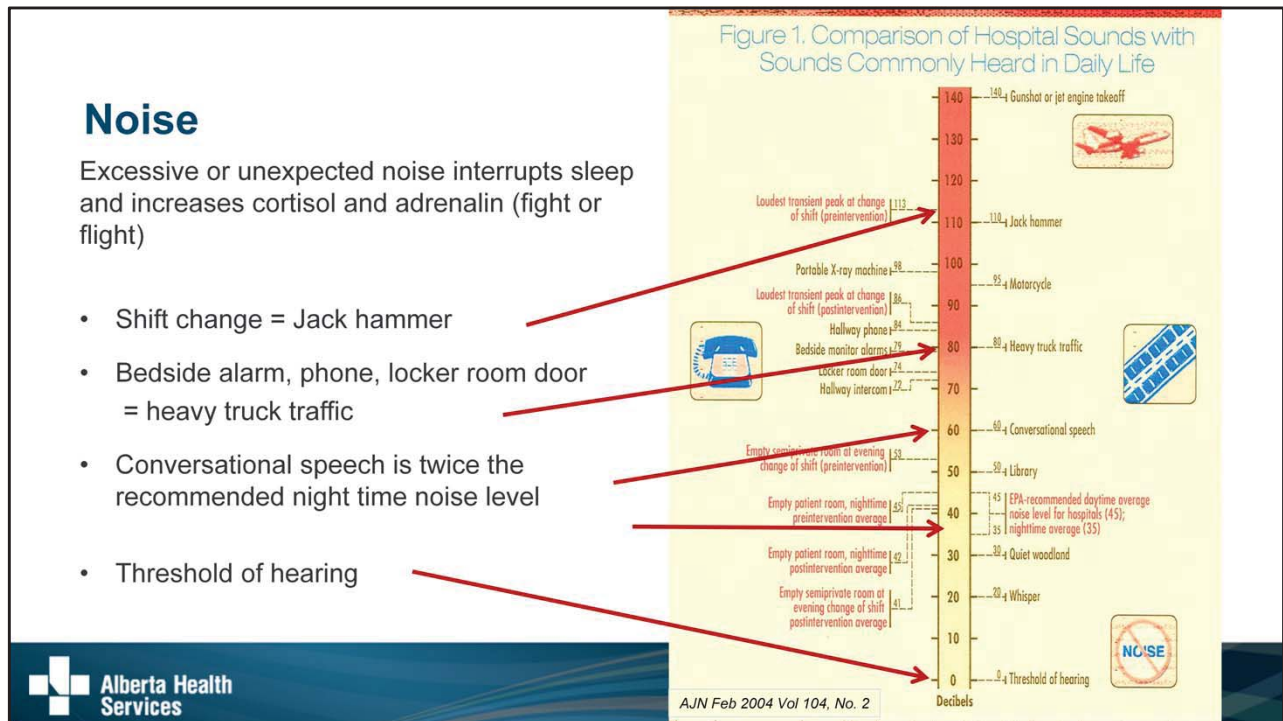
### References:

*83.5% of time spent sitting or lying flat* – Gordon and Gladman. Sleep in care homes. Reviews in Clinical Gerontology 2010 20;3-9-316.

*nursing home residents spent up to 17 hours per day in bed to achieve only 8 hours total sleep time.*

*Awake for at least 14 minutes in every hour of the night* Koch, Haesler, Tiziani and Wilson. Effectiveness of sleep management strategies for residents of aged care facilities: findings of a systematic review.

Journal of Clinical Nursing 15, 1267-1275.



Researchers have measured an average of 32 noises per resident per night at the volume of loud speech (60 decibels) or louder. 22% of waking episodes with noise alone, 10% with light and noise, and 10% with incontinence care routines. 76% of all incontinence care practices resulted in awakenings. (Gordon)

**Sudden or loud noises trigger cortisol elevation:** awake, alert, on edge. This can lead to immunosuppression, insulin resistance, hypertension, arteriosclerosis, osteoporosis, stress ulcers, disturbed hormone balance and reduced serotonin levels.

**References:**

Gordon AL and Gladman JRF, Sleep in care homes, Reviews in Clinical Gerontology 2010 20;309-316 [Noise Health](#). 2000;2(7):59-64.

**Spreng M. Possible health effects of noise induced cortisol increase.**

**The auditory system is permanently open - even during sleep.** Its quick and overshooting excitations caused by noise signals are subcortically connected via the amygdala to the hypothalamic-pituitary-adrenal-axis (HPA-axis). Thus noise causes the release of different stress hormones (e.g. corticotropin releasing hormone: CRH; adrenocorticotrophic hormone: ACTH) especially in sleeping persons during the vagotropic night/early morning phase. These effects occur below the waking threshold of noise and are mainly without mental control... Increased cortisol levels have been found in humans when exposed to aircraft noise or road traffic noise during sleep. The effects of longer-lasting activation of the HPA-axis, especially long term increase of cortisol, are manifold: immuno suppression (e.g. eosinopenia), insulin resistance (e.g. diabetes), cardiovascular diseases (e.g. hypertension and arteriosclerosis), catabolism (e.g. osteoporosis), intestinal problems (e.g. stress ulcer) etc. Even worse may be the widespread extrahypothalamical effects of CRH/and/or ACTH which have the potential to influence nearly all regulatory systems, causing for example stress-dysmenorrhea etc. as signs of disturbed hormonal balance.

## Noise Awareness Activity

What sounds in your facility would affect sleep?

- Pill crusher
- Food cart
- Shift change/Team discussion
- One person talking/calling down hall
- Door closing
- Music playing
- Equipment (floor cleaner, vacuum)
- Ticking clock
- Other?



**Remember:**

- **Threshold of hearing: Zero**
- **Recommended level for sleep: 35 Db or less**
- **Recommended maximum for day time: 35-45 dB**

Consider:

What sounds are too loud for sleep?

Is there too much stimulation for a calm day / evening environment?

**References:**

*Cmiel, CA, Gasser DM, Neveau AJ. Noise Control: A Nursing Team's Approach to Sleep Promotion. AJN Feb 2004 Vol 104, No. 2*

## Sleep and Responsive Behaviours In a Nutshell



- The elderly sleep lightly; those with dementia sleep poorly and are extra sensitive to light and noise at night
- Still only need ~ 8 hours sleep in 24 hours
- Day time light and activity, and night time darkness and quiet are required to regulate circadian rhythms
- Disrupted sleep leads to responsive behaviours/aggression and increased use of antipsychotics/other sedatives



- The elderly already sleep lightly, and those with dementia sleep poorly – we wake them with light, noise and activity
- Still only need ~ 8 hours sleep – if they nap 1-2 hours, and go to bed at 7 – they will wake up at 0100
- They need light and activity to regulate circadian rhythms – and are inactive in hallways and rooms away from windows
- Disrupted sleep leads to responsive behaviours and aggression, and increased use of antipsychotics and other sedatives.

**In the next section, you'll discover why sedatives actually make sleep worse, not better.**

## Why do we call them “Sleeping Pills”?

- Minimal or no improvement in sleep
- Day time grogginess / hangover
- Increased day time napping
- The pills stop helping within weeks
- Many side effects such as falls/confusion
- Interferes with important stages of sleep crucial for cognitive-emotional function (REM)



Sleeping pills, are also known as “hs sedation”, sedatives and hypnotics.

Do sleeping pills help people sleep? **Short term, yes. But long term – the benefits are minimal, and are offset by grogginess, falls and confusion.**

Sleeping pills actually interfere with sleep because people nap throughout the day, and miss out on important sleep stages at night.

**Think of a time when you took gravol for nausea – or to help you sleep, or benadryl for allergies – or sleep.**

How did it impact your sleep?  
How did you feel the next day?

### References:

Koch, Haesler, Tiziani, Wilson

Effectiveness of sleep management strategies for residents of aged care facilities: findings of a systematic review. Older People: 6 July 2005



## Antipsychotics

- Don't improve total sleep time, time to fall asleep, day time alertness or sleep satisfaction
- Increased risk of dizziness, restlessness, nervousness, restless leg syndrome, falls
- Examples: quetiapine (Seroquel), olanzapine (Zyprexa)

*"Widespread use of quetiapine as a sleep aid is occurring in the absence of evidence for effectiveness or safety." Herper 2004*



There have been NO studies with the elderly and antipsychotics for sleep

A study on 14 healthy men showed improvements in sleep, sleep time, sleep efficiency and duration of stage 2 sleep (light, non-REM sleep). Higher dose (100 mg) increased restless leg movements and decreased REM sleep. 2 out of 14 HEALTHY MEN dropped out because of symptomatic orthostatic hypotension.

A study with 25 patients on 25 mg or placebo didn't improve total sleep time, time to fall asleep, daytime alertness or sleep satisfaction.

### References:

<http://www.rxfiles.ca/rxfiles/uploads/documents/Insomnia-Older-Adults-QandA.pdf>

Herper M. Antipsychotic prescribed as sleeping pill. Forbes.com 2004.  
<http://www.ti.ubc.ca/letter79>

Is use of quetiapine for sleep evidence-based?  
Therapeutics Letter Issue 79 / Sep - Dec 2010 <http://www.ti.ubc.ca/letter79>

## Antihistamines

- Risk of confusion, urine retention, delirium, constipation, day time drowsiness (**highly anticholinergic**)
- Increased restless leg syndrome
- Tolerance develops quickly (no further benefit to sleep)
- Shouldn't be taken by older persons but widely used
- Examples include:
  - diphenhydramine (Benadryl), dimenhydrate (Gravol), Tylenol Night, Sleep Eze, ZzzQUIL



### **Gravol should NOT be used for sleep or nausea in the elderly due to its anticholinergic effects**

Story from Central zone mental health outreach nurse: the impossible resident with many behaviours – was on 6 medications with anticholinergic effects. Once these were discontinued, she was fine.

#### **References:**

<http://www.rxfiles.ca/rxfiles/uploads/documents/Psych-BPSD-Newsletter.pdf>

## Antidepressants – Common Side Effects

- Should only be used to treat insomnia associated with clinical depression
- Can *cause* insomnia
- Side effects include:
  - increased day time sleepiness
  - falls
  - blurred vision
  - confusion
- Examples:  
trazodone (Desyrel), mirtazapine (Remeron), amitriptyline (Elavil), nortriptyline (Aventyl HCL)



Examples of antidepressants and their side effects:

**Mirtazapine:** (brand names: Avanza, Axit, Mirtaz, Mirtazon, Remeron, Zispin)

- increased appetite and weight gain, bladder/chest infections, accidental injury,

**Trazodone:** (brand names: Oleptro, Desyrel, Desyrel Dividose)

- dizziness, blurred vision, arrhythmias, painful prolonged erection (keep this side effect in mind when residents are sexually aggressive – is it being caused by medications such as trazodone?)

**Amitriptyline** (Elavil), **nortriptyline** (Pamelor, Aventyl HCl), **doxepin** ((Sinequan):

- confusion, constipation, urine retention, delirium

### References:

Simonson et al, Improving Sleep Management in the Elderly, Supplement to Annals of Long-Term Care: Clinical Care and Aging 2007/15(12;suppl1):1-16.

## Benzodiazepines and “Z-drugs”

- First 2-4 weeks:
  - Fall asleep 10-20 min sooner, sleep ~ 25 min longer
  - Increase in stage 2 (light sleep), decreased REM (deep sleep)
- Occasional use usually leads to constant use/dependence
  - Examples: lorazepam (Ativan) and temazepam (Restoril)
- Another example: zopiclone (Imovane)
  - Less addictive but similar side-effects including: confusion, memory loss, falls, delirium



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Benzodiazepines are useful when used occasionally, short term. But people who use them regularly quickly develop dependence: no longer helps with sleep, may have rebound insomnia without it. *Nurses don't see benzos as a problem; prn doses will almost always lead to chronic dependence (Antheirens)*

**How Benzodiazepines work:** enhance the action of the neurotransmitter GABA, whose function is to slow or calm things down. Over time, as GABA activity increases, the brain's output of noreadrenaline, serotonin, Acetyl choline and dopamine is reduced. These are all necessary for normal alertness, muscle tone, memory, coordination, heart rate, blood pressure and emotional responses.

One care manager has always told staff/families: “We don't give Ativan unless we want people to fall.”

**Benzodiazepine use is associated with an increased risk of Alzheimer's disease.**

**What about alcohol for sleep?** Alcohol falls into the benzodiazepine effect category: alcohol stimulates the GABA receptors, helps fall asleep, but also reduces time in deep sleep.

RAI classification: Ativan /lorazepam: falls under anti-anxiety medications. Temazepam (Restoril) : classified as a hypnotic

### References:

Addis 2007 Sleep-promoting medications should be used with caution in elderly nursing home residents. *Drugs Ther Perspect* 2007 pVol 23, No 4

Cuellar 2007 Assessment and Treatment of Sleep Disorders in the Older Adult. *Geriatric Nursing* Vol 28, No 4.

Antheirens et al Perceptions of nurses in nursing homes on the usage of benzodiazepines, *Journal of Clinical Nursing* 2009; 18, 3098-3106

***Benzodiazepine use and risk of Alzheimer's disease: case-control study BMJ 2014;349:p5205***

## Sleeping Pills: Not a Long Term Solution



### Reminders:

- ✓ use low doses for as short a period of time as possible
- ✓ avoid if possible in the elderly
- ✓ use with caution and monitor for side-effects
- ✓ timing must be considered

Long term use of hs sedation can result in a 'perpetual hangover' - this reduces day time activity and increases day time napping, which further impairs night time sleep.

Older adults using hypnotics [sleeping pills] may experience decreased total sleep time, an increase in early morning awakening, an increase in day time lethargy and report reduced sleep quality. Koch 2006

*We discovered a distinct lack of evidence to help guide drug treatment of sleep problems in AD. In particular, we found no RCTs of many drugs that are widely prescribed for sleep problems in AD, including the benzodiazepine and non-benzodiazepine hypnotics, although there is considerable uncertainty about the balance of benefits and risks associated with these common treatments. (McCleery 2014)*

### References

McCleery J, Cohen DA, Sharpley AL. Pharmacotherapies for sleep disturbances in Alzheimer's disease. Cochrane Database Syst Rev. 2014;3:009178.

## Melatonin Might Help

- At bedtime: may improve sleep, fall asleep faster, increase REM sleep
- In late afternoon: may help with agitation/confusion/sundowning
- May improve cognitive function and mood
- May slow progression of the damage to the brain in Alzheimer's Disease
- Works best when combined with day time light and activity



### Other possible benefits:

- Help taper off benzodiazepines
- Reduce tardive dyskinesia symptoms
- Help reduce agitation in delirium
- Reduce hypertension
- Anti-inflammatory



### **Not currently in LTC formularies.**

Some studies show it's **as effective as frequently used sleep medications but without the grogginess. Improves quality of life.** (Wade 2007)

**Many positive studies – and also conflicting studies. Dose ranges in trials: from 3 to 24 mg – individual variation in response to dose.** Improves sleep quality and cognitive performance in mild cognitive impairment. The analysis of published evidence and patents indicates that melatonin can be a useful ad-on therapeutic tool in the early phases of AD (Cardinali 2011)

**Needs to be combined with non-pharm options (light therapy, physical and social activity etc.** (Zhou 2012)

**May not have an immediate effect.** Improvements in night time awakening frequency, an increase in subjective rating of sleep quality -these improvements did not reach significance until day 19 of the 21-day trial period. (Fainstein et al 1998)

**Sundowning/agitated behaviour improves with melatonin treatment** in patients with dementia – may also help reduce agitation in delirium (de Jonghe 2010)

**Cure for early Alzheimers?** Data from clinical trials indicate that melatonin supplementation improves sleep, ameliorates sundowning and slows down the progression of cognitive impairment in AD patients. Melatonin efficiently protects neuronal cells from Abeta-mediated toxicity via antioxidant and anti-amyloid properties. It not only inhibits Abeta generation, but also arrests the formation of amyloid fibrils by a structure-dependent interaction with Abeta. Our studies have demonstrated that melatonin efficiently attenuates Alzheimer-like tau hyperphosphorylation. (Lin et al)

**Other benefits:** Melatonin also protects against breast and prostate cancer, reduces depression, strengthens immune system, antioxidant, anti-inflammatory, may help lower blood pressure and improve cholesterol profiles. (University of Maryland Medical Centre)

**See next page for reference list**

**Key Message: It is crucial to develop a unit culture that supports the importance of sleep**



#### **References for melatonin:**

Wade AG, Ford I, Crawford G, et al. Efficacy of prolonged release melatonin in insomnia patients aged 55-80 years: Quality of sleep and next-day alertness outcomes. *Curr Med Res Opin.* 2007;23(10):2597-2605. Cardinali DP, Furio AM, Brusco LI. CONCLUSIONS: PR-melatonin results in significant and clinically meaningful improvements in sleep quality, morning alertness, sleep onset latency and quality of life in primary insomnia patients aged 55 years and over.

Cardinali DP, Furio AM, Brusco LI. The use of chronobiotics in the resynchronization of the sleep/wake cycle. therapeutic application in the early phases of Alzheimer's disease. *Recent Pat Endocr Metab Immune Drug Discov.* 2011;5(2):80-90.

de Jonghe A, Korevaar JC, van Munster BC, de Rooij SE. 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):1201-1208.

Lin L, Huang QX, Yang SS, Chu J, Wang JZ, Tian Q. Melatonin in Alzheimer's disease. *Int J Mol Sci.* 2013;14(7):14575-14593.

Zhou QP, Jung L, Richards KC. The management of sleep and circadian disturbance in patients with dementia. *Curr Neurol Neurosci Rep.* 2012;12(2):193-204. Management options include prescribed sleep/wake scheduling, light therapy, melatonin, physical and social activity, and mixed modality. The mixed-modality approach is the most effective method in treating ISWR. Pharmacologic interventions are controversial, with no evidence supporting their effectiveness while associated with multiple side effects

<http://umm.edu/health/medical/altmed/supplement/melatonin>

#### **Reference for Unit Culture**

<http://dem.sagepub.com/content/12/2/210.long>

A critique of the evidence base for non-pharmacological sleep interventions for persons with dementia. *Dementia* March 2013 12:210-237

## Table Discussion

**What interferes with sleep in your facility?**

**What do families/residents notice?**



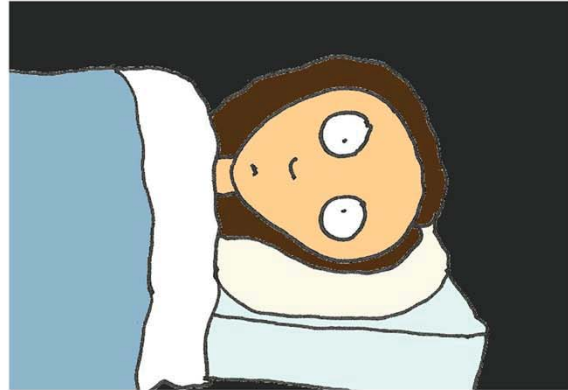
- **Routines:**  
naps, bed times, rounds, continence care/turning?
- **Light:**  
day time, evening, night time?
- **Noise:**  
day time overstimulation, evening and night noise?
- **Understimulation:**  
how active are residents during the day?
- Use of “**sleeping pills**” including **antipsychotics**?

Think about what might be interfering with sleep in your facility.

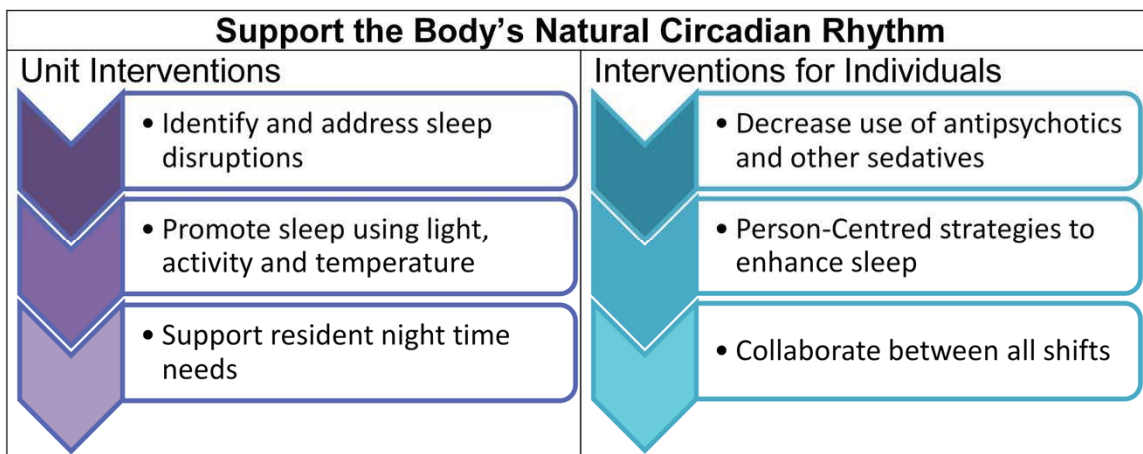


## Report Back

What's one thing that's preventing good sleep in your facility?



## Strategies to Support Sleep

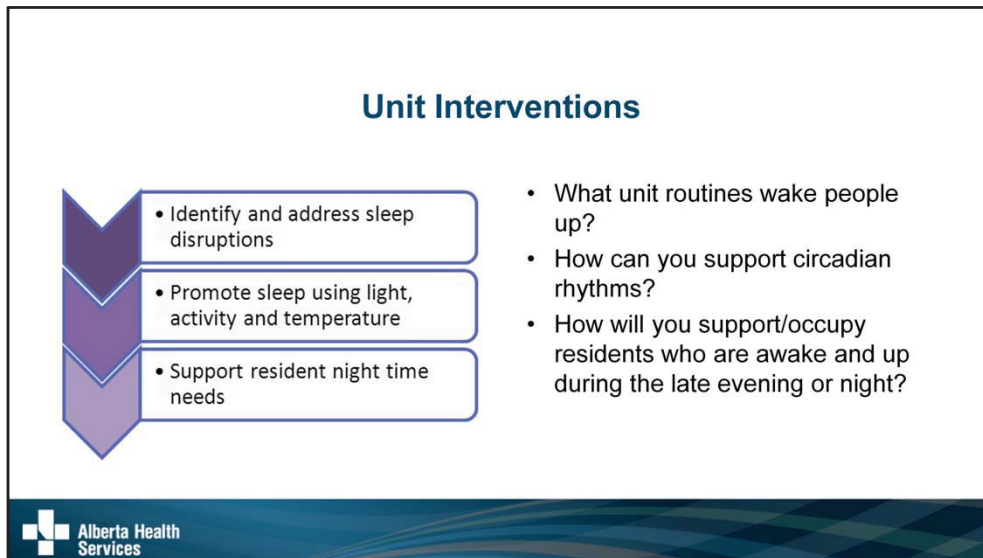


There are many effective, evidence-based ways to enhance sleep in LTC and with individuals who have dementia

What's more important? Person-centred interventions or Unit interventions?

The reality is we need both, and they're very interdependent. If you don't address the needs of individual residents – such as sleeping pills that may be interfering with day time activity and night time sleep, unit level interventions will be less effective.

If you don't address the squeaky laundry carts, loud talking at shift change and use of overhead lights at 2 am, person-centred strategies won't have a chance.



**Refer to handout: Strategies to Support Sleep.**

There are noises and routines that disrupt sleep night after night. But there are also simple ways to support circadian rhythms – and even to re-adjust them.

**Light:** Encourage sitting by a sunny window during the day, increase light levels in the dining room, or use blue lights as centre pieces on the tables

**Activity:** As hs antipsychotics / sedation / sleeping pills are reduced, people will wake up. Keep them active during the day – and if they need an afternoon or late morning rest to get through the day, make sure it’s short enough to not interfere with night sleep – remember, around 8 hours, on average: if people sleep 3 hours in the afternoon, they’ll be awake in the middle of the night. Residents won’t all sleep through the night so strategies and activities need to be available to support them if they are awake and up.

**Temperature:** What’s it like to try to fall asleep with cold feet? But have you ever woken up overheated and thrown off extra blankets? Falling asleep is supported by being comfortably warm – and as the body cools, we feel sleepy, like the way you feel after a hot bath. Our core temperature naturally drops overnight – and most of us sleep better when we turn our thermostats down overnight.

See poster on passive body warming. The point of passive body warming is to induce a **drop** in core body temperature when the heat source is removed - the drop in core temperature is what facilitates sleep, not the warming.

Because of how lightly older adults sleep – and how often they wake on their own at night, they won’t always just turn over and fall back asleep – they may look for the bathroom, or a drink of water, or think it’s time to get up – and when they come out of their rooms and the lights are blazing and you’re all dressed, awake and eating popcorn, it will be difficult to persuade them that it’s 3 am... How can you quietly help residents with their needs and get them back to bed? If they aren’t sleepy, how might you occupy them?

## Unit Level QI

- Replaced 3 AM rounds with individualized care: ~ 10% residents turned
- Incontinence care: resident-specific incontinence briefs applied just before residents went to bed
- Encouraged residents to go to bed later (more evening activities)
- Reduced noise at night, lights dimmed, everyone whispered



## OUTCOMES:

- Residents slept more!!
- HCAs more available to respond to individual resident needs
- Night staff job satisfaction with less busy work, a more relaxed pace, more time for important care work (e.g. individualized palliative care)
- Unit budget savings (less laundry, less incontinence products)

Bethany Care Society,  
1998-2001  
Dr. Susan Slaughter



Pre-intervention experience: night sedation was given with supper; supper began at 16:45 and residents were assisted to bed shortly thereafter; residents were turned and changed routinely at night (e.g. everyone at 3 am) ; caffeinated coffee; noise on all shifts; residents were awake at night

Instead of turning and changing EVERYONE, identified the approx 10% residents who didn't move at all in bed.

Extra-absorbent brief for selected "heavy wetters" (approx 10%) – no one was woken for incontinence care

### **Waking up "soaked" is a sign of a good night's sleep – not a sign of poor care**

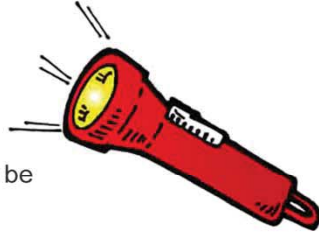
Background: "sleep-wake project" at Bethany Care Society started in late 1998 and was completed sometime in 2001. What is reported on this slide was focused work with *one unit* where the manager **and** the full time night RN were motivated and fully supportive of change. It could not have happened without their commitment and leadership. Susan Slaughter was the facilitator that supported their leadership. This too was an essential ingredient.

Note: This work took place in the context of facility-wide (8 units) with attention to improving sleep. All units participated in focus groups and eventually posted the "Guidelines for a good night sleep". The DOC was the initiator of this effort and constantly promoted the work with the unit managers over a 2 year period.

## What are your Night Routines?

### Repositioning

- What is the purpose of repositioning?
- Who does/doesn't need to be repositioned?
- What is the most effective and least disruptive way to reposition?



### Incontinence Care

- What is the purpose of incontinence care?
- Who needs to be woken for incontinence care?
- What is the most effective and least disruptive way to provide incontinence care?



Research shows that the best prevention for pressure ulcers is muscle contraction. Offloading – e.g. doing a wheelchair push-up every 10 minutes is not as effective as intermittent electrical stimulation of the muscle. (Curtis 2011) So, if you have people who are not paralyzed and are moving even a little in bed, their risk of pressure ulcer development is much lower.

Who needs to be repositioned? History ulcers? Don't move at all?  
Bed mobility scores are already assessed (RAI)

Incontinence care: would you wake your infant to change their diaper at night? Does scheduled incontinence care benefit anyone?

#### References:

Curtis, Chong, Kornelson, Uwiera, Seres and Mushahwar. The Effects of Intermittent Electrical Stimulation on the Prevention of Deep Tissue Injury: Varying Loads and Stimulation Paradigms. Artificial Organs 2011. 35(3):226-236.

## Unit Level QI

- Noise:
  - Change in shift responsibilities: stocking, retrieval of commodes/ wheelchairs
  - Addressograph used in closed room
  - Ice machine turned off at night
  - Garbage man asked to come in quietly
- Safety Rounds:
  - Curtains drawn
  - Doors left ajar on last evening round for visual checks
  - Flashlights instead of overhead lights
- If awake:
  - Assessed for needs  
e.g. bathroom/changed/repositioned



## OUTCOMES:

- Reduction of:
  - 43% in physical aggression
  - 42% in verbal aggression
- Residents were:
  - More rested in the morning
  - More tired/ cooperative by bedtime
  - More alert in the evening
  - More pleasant to visit with

Medicine Hat Hospital  
Dementia Unit,  
Heather Hart RN



Alberta Health  
Services

**Background:** At a staff meeting, the concern over aggression was voiced. It was suggested by a HCA that improving their sleep may impact the levels of physical and verbal aggression. Research information was made available for staff to read. It was decided to get a measure of the patterns of verbal and physical aggression (tool by Hagen and Sayers) and also measure the sleep/wake patterns of residents at night. The sleep wake tool also allowed staff to note if the residents woke on their own, woke because of staff, woke because of medication or care. This was done for 8 days.

Environmental disruptions were also noted. Changes were made - as on slide

The staff then redid the measures.

Results were fabulous. Reduction in both physical and verbal aggression, more cooperative residents in morning

Because of this change - 12 trays for a cold breakfast were delivered daily-for those that slept in. **Quiet time was from 1pm to 2pm. The hallway lights were turned off and residents were encouraged to rest for 1 hour only!**

**Pre-intervention Experience:** Staff identified all the environmental disruptions that might interfere with sleep: going into rooms to remove wheelchairs and commodes for cleaning, restocking of resident's cupboards, the addressograph machine, the garbage man, the ice machine and the opening and closing of the residents' room door.

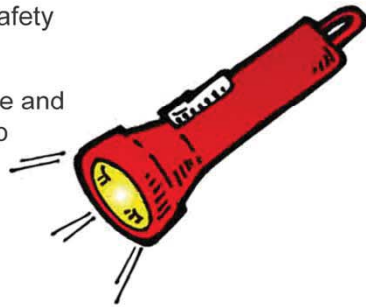
**During the 8 nights before the changes, residents woke 112 times on their own and 148 times were woken by nursing.**

**Incidents of verbal aggression : 78, physical aggression: 125**

## Other Night Routines/Tasks?

### Safety Rounds

- What is the purpose of safety rounds?
- What is the most effective and least disruptive way to do safety rounds?



### Night Activities, Noise

- What night activities (e.g. cleaning, stocking) may be disruptive to resident sleep?
- What are your options?

Safety rounds: make sure people are breathing, not on floor, in bed, Catheter kinked? Falls?

Avoid bright lights and noise!

**If awake take to bathroom and offer some water, assess for pain**

## What are your day time Routines?

What could you do to expose residents to **bright light** during the day?

- Face a sunny window
- A blue light on the table at meals
- Blinds open in the dining room
- Other?

What opportunities do residents have for **activity** and **exercise**?

- Walking
- Sit to stand
- Other?



Discuss daytime routines:

What are they currently doing to expose to bright light / activity and exercise?

What could they do differently?



## What are your Evening Routines?

### Light, Stimulation and Bedtime

- What lights could be dimmed in the evening to signal the brain to produce melatonin?
- What sources of stimulation could be reduced to avoid cortisol production?
- What could you do to help prepare residents for bed/sleep?



**Goals: Allow sleep to occur at night; optimize daytime functioning**



Blue spectrum light at bedtime can delay melatonin onset and shorten sleep duration by as much as 90 minutes (Gooley et al 2011).

A laptop or tablet can emit 50-150 lux of blue spectrum light.

Overhead fluorescent lighting in a resident room: approx 400 lux

A 100 watt incandescent bulb in a resident room: approx 200 lux

**How much light are residents exposed to in the evening? Is this light signaling their brains to stay awake? Are there any lights you could dim in the evening?**

**Stimulation** - Noise and stress: overhead paging, call bells, bed alarms, TV, Exercise

### **Bedtime preparation:**

Pajamas on, light snack (no sugar or caffeine)

Warm blanket ½ hour before bed

Not all being put to bed at 7

On toilet or commode before bed to allow to fully empty bladder

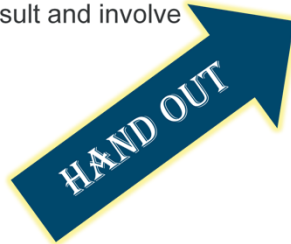
Good mouth care

Comfortable positioning

Personalized care items within reach

## Sleep Guidelines

- Does your facility or organization already have a policy or guideline on sleep?
- What do Continuing Care Standards say?
- Consider the Sleep Guideline handout and discussion questions to consult and involve staff at your facility



### Guidelines for a Good Night's Sleep

We value sleep as a part of quality of life. We recognize that adequate sleep and rest improves coping and functioning. We are committed to facilitating undisturbed sleep for each resident.

1. Exposure to natural light during the day is an asset in setting natural sleep rhythms.
2. Fluid intake will be encouraged during the day but minimized after supper to reduce the need for bathroom trips at night.
3. We encourage midday quiet or a [short] naptime. The bedtime to nap is directly opposite the main sleep time (around 1 p.m.).
4. Decaffeinated beverages will be available to residents. Caffeinated beverages are discouraged after lunch.
5. Opportunities for wind-down time will be offered as needed in the evening.
6. Bedtimes will be individualized as much as possible according to each resident's preference. This preference is recorded in the care plan.
7. A bedtime/midnight snack is available for those who require it or would like it.
8. Noise and light levels between 8 pm and 7 am will be kept to a minimum.
9. Normally residents who are sleeping will be allowed to sleep. Individualized judgments will need to be made regarding the need for waking, changing or turning for pressure relief.

Source: Susan Skyles and Valerie Palmer, in Search of a Good Night's Sleep, Long Term Care, 10: 10, 2, Fall/Winter 2000. Adapted by Ontario Long Term Care Association to be consistent with Long Term Care comments.

Which of these guidelines are already part of your facility culture?

Which of these guidelines would you like to see become facility culture?

Is there anything not on the list that would be important to add?  
e.g. Standards for safety rounds

What examples would you add to make the meaning clear – e.g. examples of evening wind-down activities

If your facility was to adopt or modify sleep guidelines, what would be your next step?

Refer to Sleep Guideline and In Search of a Good Night's Sleep article – in handouts

## Unit Interventions

- Identify and address sleep disruptions
- Promote sleep using light, activity and temperature
- Support resident night time needs

Strategies to Support Sleep	
<b>Unit Interventions:</b> Choose priorities from each category that would most improve sleep in your facility/unit	
<b>Identify and Address Sleep Disruptions</b>	<input type="checkbox"/> Safety Rounds: what would be a less disruptive way to check on the safety of residents? <input type="checkbox"/> Contingency Care: identify those who don't like to be woken / at risk for skin breakdown, who needs a super absorbent or nighttime product? (what time should go on?) <input type="checkbox"/> Repositioning: identify residents who move by themselves, even a little. Turn only those who don't move at all (wedge, don't flip). <input type="checkbox"/> Noise: identify staff-generated noise and strategies to reduce (squeaky carts, night cleaning and stocking routines, staff paperwork and communication). <input type="checkbox"/> Light: identify light sources that may disrupt sleep (TV, street lights, hall or bathroom light, computer). <input type="checkbox"/> Stimulation: identify sources of evening stimulation (light, noise, caffeine) and strategies to reduce. <input type="checkbox"/> Medication routines: identify medication-delivery times that require waking residents in a.m. or p.m. <input type="checkbox"/> Other:
<b>Promote Sleep</b>	<input type="checkbox"/> Increase daytime light exposure e.g. during meals (sunny window, full blue spectrum light) <input type="checkbox"/> Accommodate individual bedtime routines <input type="checkbox"/> Toilet resident(s) before sleep <input type="checkbox"/> Decrease nighttime light exposure (nightlights for safety rounds (led filter), dim hall lighting) <input type="checkbox"/> Increase daytime activity e.g. walking, exercise, outdoor activities <input type="checkbox"/> Minimize daytime naps (no more than 1 hour) <input type="checkbox"/> Warm residents before sleep (bath, warm blanket) <input type="checkbox"/> Reduce overheating during sleep (number of blankets, facility temperature if possible) <input type="checkbox"/> Check residents and personnel according to nighttime care needs (e.g. O20 turning / repositioning) <input type="checkbox"/> Other:
<b>Support Resident Night time Needs</b>	<input type="checkbox"/> Night time cues: e.g. unit is quiet, dimly lit, staff in fuzzy housecoats <input type="checkbox"/> Routines for when residents wake up: toilet, offer drink and/or snack, pain relief if required, warm blanket and back to bed, sit with them for a brief time if that comforts them <input type="checkbox"/> Night snacks available <input type="checkbox"/> Safe place to wander or do quiet activity <input type="checkbox"/> Other:
<b>Comments:</b>	
<small>Seniors Health Strategic Clinical Network August 2023</small>	

Refer to handout: Strategies to Support Sleep. As we discussed before lunch, there are noises and routines that disrupt sleep night after night. You've identified some of your key problems.

What are some strategies that would be helpful in your facility?

## Person-Centred Interventions

- Decrease use of antipsychotics and other sedatives
- Person-Centred strategies to enhance sleep
- Collaborate between all shifts



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Services

**Decrease antipsychotics and other sedatives – there are other medications that also disrupt sleep, which we'll mention shortly**

**Person-centred strategies:** What information can family contribute re lifestyle habits – maybe she always worked night shift. Maybe he was a dairy farmer and always woke up at 4:30 am. Maybe he survived WW2 bombings and thinks the bed alarms are air raid alerts.

What's disrupting sleep? Itchy skin? Restless legs? Hot flashes , nightmares?...

**Parasomnia:** *the state of being not quite asleep and not quite awake.* What residents are in this state during the day? What medications might cause this?

**Family Input** is so valuable. Ask them to share info such as:

- What did the resident do at home to relax?
- Did they listen to music?
- What was their routine?
- Were they up at 4:30 to milk the cows?
- Did they work a night shift?
- What is waking them up?
- What is the best time to go to bed?
- Do they need a nap? How long and at what time?

**Collaborate between shifts:** Sleep patterns can fluctuate greatly – if someone had a terrible night... won't be ready to get up at 7 am. If they had a long mid-morning to mid-afternoon nap because struggling with a virus... might be ready for an earlier bedtime – or not... E.g. What info will nights pass on to days, and how will days and evenings manage that info, to support a better sleep the following night?



## Disorders that can Disrupt Sleep

- Circadian Rhythm Disorder
- Sleep Apnea
- Restless Leg Syndrome
- Periodic Limb Movement Disorder
- REM Behaviour Disorder



**Circadian Rhythm Disorder** – is what most people with dementia have. The circadian rhythm is pushed forward or backward due to changes in brain serotonin/melatonin levels, as well as medications, light exposure, etc.

**Sleep Apnea:** Obstructive, central or mixed

Central Sleep Apnea: a decrease in respiratory drive (may be related to serotonin deficiency). Loud snoring, obesity, heavy or thick neck, day time sleepiness. Affects men more. Sedatives worsen disorder. Associated with hypothyroidism, neurodegenerative disorders and cardiac disorders.

Treatment: CPAP, surgery, oral appliances, weight reduction

### **Restless leg syndrome**

“Crawly” or uncomfortable sensation relieved by movement. Associated with iron deficiency (which is associated with hypothyroidism and acid blockers), may develop in association with renal failure, diabetes and rheumatoid arthritis. May be a side-effect of dopaminergic medications and benzodiazepines

**Periodic Limb Disorder:** kicking of legs (or arms) during sleep, frequent waking, day time sleepiness.

**REM Behaviour Disorder:** RARE – thrashing or seemingly purposeful behaviors during sleep – acting out dreams. May cause injury to others, usually men over 60

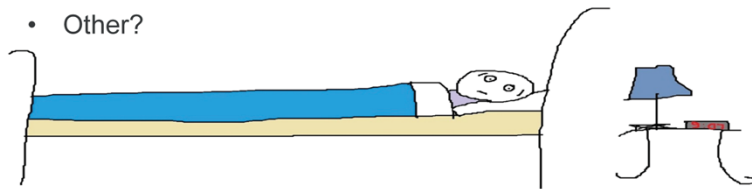
### **Reference**

Birath and Martin, Common Sleep Problems Affecting Older Adults, Annals of Long-Term Care 2007; Vol15 Issue12

<http://www.annalsoflongtermcare.com/article/8100>

## Other Things that Disrupt Sleep

- Itchiness
- Nocturnal cough
- Acid reflux
- Hot flashes
- Nightmares
- Untreated pain
- Too hot or cold
- Caffeine in the evening
- Unexpected noises: call bells, door snapping
- Confusing stimuli: flashing red light, reflections
- Uncomfortable bed
- Congestive heart failure
- Benign prostate hypertrophy
- Other?



More thoughts on why someone may not be sleeping .... You'll need to be a good detective!!

e.g. night time light

(even dim room light 100 lux can desynchronize rhythms/suppress sleep during the night time)

## Medications that May Affect Sleep

- Anticholinesterase inhibitors (memantine): **INSOMNIA, DISTURBING DREAMS**
- Blood pressure (B-Blockers): **altered sleep physiology, nightmares**
- Anticholinergics (hundreds of drugs): **DAY TIME SEDATION**
- Antidepressants / SSRIs: **Insomnia**      Statins: **MUSCLE PAIN**
- Histamine H2 Blockers (Zantac, Tagamet): **confusion, anxiety, hallucinations**      Corticosteroids: **AGITATION**
- Proton Pump Inhibitors (Losec): **Rebound acid reflux**
- Diuretics: **nocturia – avoid late in the day**
- Levodopa, carbadopa: **NIGHTMARES, INSOMNIA**
- Theophylline, decongestants: **STIMULANT EFFECTS**



As you can see, there are many medications that interfere with sleep – and since sleep is so important for mental and physical health, it's very important to **conduct a thorough medication review** to eliminate any medications that aren't absolutely necessary for comfort, health and quality of life.

Some drugs also interfere with sleep by causing melatonin deficiency: Calcium channel blockers, SSRIs – fluoxetine, beta blockers, NSAIDs (Advil, Motrin), caffeine, tobacco, alcohol

Wolkove, N. et al. CMAJ 2007; 176:1299-1305  
Choosing Wisely American Family Physician  
Health Canada Warnings

## Relaxing Bedtime Routines

- Person-centred night routines:  
music, snack, special hand lotion
- Use white noise (e.g. fan)
- Darken room: block hall/street lights
- Slow stroke back massage
- Warm blanket ½ hour before bed



**See resource – “Recommendations for family members to help someone with dementia have a better sleep”**

Some residents find a glass of warm milk helps

Night staff will often say – whether someone sleeps is often dependant on how well the person doing HS care settled the residents

- i.e. night routines are important



## Person-Centred Interventions

- Decrease use of antipsychotics and other sedatives
- Person-Centred strategies to enhance sleep
- Collaborate between all shifts

Alberta Health Services

**Interventions for Individual Residents: choose 1-2 residents per month to focus on**

<b>Decrease Antipsychotics Used for Sleep, as well as Other Sedatives</b>	<input type="checkbox"/> Identify antipsychotics prescribed for sleep - assess gradual dose reduction/discontinuation <input type="checkbox"/> Identify use of other (i.e. sedatives, consult with pharmacist) reduction/discontinuation <input type="checkbox"/> Evaluate need for medications that may interfere with sleep - anticholinergics, anticholinesterase inhibitors, beta-blockers, antidepressants, and tranquilizers, opioids, statins, etc. <input type="checkbox"/> Evaluate need for medications that may reduce melatonin levels such as calcium channel blockers, SSRIs, thiazodiazepines, beta-blockers, H2RAs <input type="checkbox"/> Discuss medication levels and proposed changes with prescriber/family/doctor/nurse
<b>Identify Person-Centred Strategies to Enhance Sleep</b>	<input type="checkbox"/> Discuss with family/caregiver/decision-maker previous sleep patterns (what time they went to bed and got up), what to notice and experience, what helps resident relax (e.g. music) <input type="checkbox"/> Identify what may disrupt resident sleep (for plan, resident high, commode, noise, screaming, alarm, caffeine in the evening, uncomfortable bed, nocturnal cough, hot flashes, nightmares, leg cramps, congestive heart failure, arthritis) <input type="checkbox"/> Modify care plan to maximize sleep: e.g. individualize bedtime and nap requirements, continence care, need for help, and any medications, urine incontinence (e.g. fan, nightlight requirements, e.g. red bulb in nightlight) <input type="checkbox"/> Individualized routine if awake at night: e.g. toilet offer drink and/or snack, pain relief required, warm blanket and back to bed
<b>Collaborate Between All Shifts to Enhance Sleep</b>	<input type="checkbox"/> For fluctuating sleep/wake cycles, discuss at shift change <ul style="list-style-type: none"> <li>o How was the night's sleep - threshold, what might be optimal levels awake for the day on day sleep?</li> <li>o What/ how long might the resident need to nap?</li> <li>o Is the resident struggling with any health issues requiring more rest?</li> <li>o Given how the day went, might the resident be ready to sleep earlier or later than usual?</li> </ul>

Residents who are priorities for person-centred interventions

Comments:

Alberta Health Services, Clinical Network August 2015

- The above handout can be used to discuss ways to improve sleep for individual residents

Which residents have the most trouble sleeping?  
 What strategies might be helpful for them?

## Resources to Support Sleep in LTC Residents



### Change Management Resources

- Strategies to Support Sleep
- Sleep and Responsive Behaviours Action Plan
- Generic Letter
- Guidelines for a Good Night Sleep
- Sleep map

### QI Board Resources

- Posters: light, activity, passive warming, sleep hygiene
- Articles
- PowerPoint slides
- Recommendations for family members

### AUA Toolkit

- Sleep and Responsive Behaviours Section
- Medication Review Section

### Noise/Sound Measurement

- Lux meter
- dB meter

Google “AUA Toolkit”, and check the Project Resources as well as Responsive Behaviours sections for resources to support sleep in LTC residents.