



***South Carolina Initiative to Improve Dementia Care
and Eliminate Off-Label Antipsychotics***

Coordinated by LeadingAge South Carolina

www.leadingagesc.org

QUICK TIPS

Protecting Uninterrupted Sleep

As human beings we do not need research to inform us of the importance of sleep. All we have to do is remember the last time we were facing a busy day after a sleepless night. But in the provision of care in nursing homes across the country we seem to have lost sight of the essential nature of getting a good night of uninterrupted sleep. Nursing homes have built into their systems of care routine ways that sleep is interrupted. Many of the noisy night-time tasks that at one time seemed like a good idea, are now being questioned. As we understand more about the health benefits of uninterrupted sleep, we question common practices such as two-hour check and changes, refilling water pitchers at night, early morning med passes, and routine floor care with heavy machinery that produces a noise level that would awaken the dead.

Sue Ann Gildermann, RN, who has studied sleep in nursing homes for many years says that it is not sleep deprivation that nursing home residents suffer from, but rather it is sleep fragmentation, frequent sleep interruptions that prevent residents from getting the deep sleep needed for healing and well-being. Applying what we know about the science of sleep, and what we know about good individualized care, Gildermann makes a powerful case for protecting sleep for nursing home residents. Her work at Empira pioneered the re-examination of practices affecting sleep in nursing homes and her results have changed the way night time care in nursing homes is now viewed. For more information, go to: <http://empira.org>

She started studying sleep as she was looking at falls in nursing homes with a quality improvement lens, asking why is this person falling. The answer quite often was a lack of deep uninterrupted sleep.

We know that fragmented sleep affects our mood, patience, ability to concentrate, and ability to express ourselves. It makes all of us more distressed when something isn't working for us. Many behavioral symptoms of distress in residents with dementia are compounded by their lack of uninterrupted deep sleep.

Sleep is essential to human life. So it is important to understand the science of sleep.

How do we sleep and wake?

Humans are diurnal, meaning we sleep at night and are awake during the day. Our waking and sleeping begins with light or darkness. The light or darkness enters the eye through the retina and travels from the retina to the optic nerve. It is sent into the center of the brain just above and behind the eye sockets where the brain has the equivalent of an internal human clock. A nerve message is transmitted to the pineal gland. Darkness causes the pineal gland to secrete melatonin. Melatonin is also released in the presence of red or amber light. The release of melatonin signals the body that it is time to relax and fall sleep. The darker it is the more melatonin is produced.



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As it becomes light less melatonin is produced. As soon as our brain triggers the presence of sunlight and blue spectrum light it stops producing melatonin and shortly after begins secreting serotonin. Light starts to trigger impulses causing the pineal gland to secrete serotonin, which wakes us up. Sunlight or blue spectrum lighting stimulates serotonin production, which gives us energy. Serotonin regulates moods, happiness, wakefulness and cognitive functions of memory and learning.

Think of lights being turned on during rounding. They also generate serotonin that wakes a resident up.

Sleep Stages:

Ideally as humans we should average 7-8 hour of sleep each night. During that time, our bodies should go through 4-5 sleep cycles. Each cycle should last 90-120 minutes, with each cycle having 4 stages of sleep. Each stage provides distinct physiological and emotional benefits for the body. What is key to note is that if we get awakened at any time during the cycle we stop where we are in the cycle and start back at stage one to fall back into sleep

The first stage, stage one, lasts about 5-15 minutes. Stage one is the transition stage of the brain from fast active brain waves (as in the awake state) to slower brain waves. In this stage our muscles begin to relax and lose tonicity. Sometimes sudden twitches and jerking occur. Our eyes move more slowly, the heart begins to slow down, and our breathing becomes deeper and slower. The person is still easily awakened and easily reacts to environmental noise. In fact, if woken during this stage the person will not likely be aware that they were sleeping.

During stage two sleep muscular activity decreases even more. Eye activity stops, the heart rate significantly slows, and conscious awareness of the external environment disappears. Brain waves continue to slow down. The person is not as easily aroused from this level of sleep and usually only reacts to loud or selected noises in the environment. This stage has brief image dreams and the brain works like a computer to figure out which images from the day to save, file, or trash.

Stage three sleep is deep sleep and is also called slow-wave sleep. During this stage of sleep the brain is completely at rest. All eye movement and muscle activity ceases. It is in this stage of sleep that the greatest amount of skin, deep tissue and overall healing and regeneration of the human body occurs. It is also when the greatest amount of healing occurs due to the greatest formation of white blood cells, T4 cells, red blood cell re-oxygenation and cellular repair and regeneration. It is very difficult to wake someone from this deep sleep stage.

The fourth stage of sleep is referred to as Rapid Eye Movement sleep (REM). During this stage respiration becomes very rapid, irregular and shallow. The heart rate increases and the blood pressure rises. This sleep stage includes rapid eye movements as well as rapid brain wave activity that is similar to being awake. This stage is associated with healing the emotional and psychological health of the body. Episodic dreams with long stories relieve stress, process



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emotions, and detox our feelings of fear, anger, and sadness. It also cements our memories. During this stage our brain protects us with muscular paralysis. Some dreams are so vivid that we might make sudden moves and harm ourselves otherwise.

Activity:

The human body is like a rechargeable battery. Manufacturers of rechargeable batteries contain wording that recommends that “To extend the life of the battery, first fully exhaust or run down the battery prior to recharging.” When we sleep we recharge our cells, but we get better, deeper sleep at night, when we are physically exhausted from the day’s activities.

Tracking tools:

Light sets the human clock. We need 30 minutes of direct, full sunlight each day to set our circadian rhythm, or 60 minutes of indirect sunlight or 120 minutes of filtered/overcast sunlight. The sunlight (direct, indirect or filtered) needs to hit the retina of the eye. Therapeutic artificial light to replace or enhance the lack of sunlight has had mixed success for setting the circadian rhythms.

As you get started in ensuring your residents get uninterrupted sleep you may want to spend some time first tracking how much time is spent at sleep during the night and how much exposure to sunlight residents get during the day. Track to find out what are the top sleep disturbers at night and how do you create the environment for deep sleep to occur.

Attached are two sample tools. One is tracks sleep and awake time over 24 hours for one resident. The other tracks the amount of sunshine for several residents each day. Feel free to adapt them to track the particular areas you are most interested in. You can track level of activity during the day in a similar way.



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6 Day Sleep Tracker

S – Sleeping **A** – Awake

1 – sleeping soundly 2 – sleeping lightly

3 – in bed 4 – in chair

5 – Sunshine

6 – Content 7 – Distressed behavior 8 – Engaged

Day 1	12:00 am S1	1 am S2	2 am A7-3	3 am A7-4	4 am A6-4	5 am A6-4	6 am S 2 - 4	7 am S 2 - 4
	8 am A4-7	9 am A4	10 am A 4-6	11 am S 2 - 4	12 pm A 4-7	1 pm A 4-6	2 pm S 2 - 4	3 pm S 2 - 4
	4 pm A 4 - 6	5 pm A 4 - 7	6 pm A 4 - 7	7 pm A 4 - 6	8 pm A 4 - 6	9 pm S 2 - 3	10 pm S 2 - 3	11 pm S 2 - 3
Day 2	12:00 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Day 3	12:00 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Day 4	12:00 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Day 5	12:00 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Day 6	12:00 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm

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Sun Tracker

Only initial if resident has had 30 minutes of direct sunlight or 60 minutes of indirect sunlight

Sun Tracker

Rm #	Resident	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar
A Side																																
B Side																																