

Sheila Cox Sullivan, PhD, RN

Associate Director, Associate Health Education and Evaluation
 CAVHS/VISN 16 Geriatric Research Education and Clinical Center
 North Little Rock, AR

“GETTING THE REST YOU DESERVE”



PURPOSE: The purpose of this activity is to enable the learner to understand the importance of adequate sleep, the recommended allowance for sleep, and basic sleep hygiene.

OBJECTIVES: Upon completion of this CNE activity, the learner will:

- A. Describe the stages of sleep
- B. Discuss 3 things that promote or prevent adequate sleep

Contact Hours: 1.0 contact hours will be awarded for successful completion of this CNE activity.

Registration Fee: ARNA Members: \$10.00; Non-members: \$15.00

DIRECTIONS:

1. Please read the article “Getting the Rest you deserve.”
2. Complete the Continuing Education Registration Form which includes the post-test and evaluation.
3. When you have completed all of the requirements, return the registration form and correct fee to the Arkansas Nurses Association; 1123 So. University, Suite 1015; Little Rock, AR 72204; (501)-244-2363.

Restorative sleep is essential for good health.¹ Unfortunately, there is a national epidemic of inadequate rest for all age groups in the United States. One-fourth of the US population experiences a sleep deficit on occasion, and one in 10 suffer from chronic insomnia.^{2,3} Nurses need to be aware of the impact of inadequate sleep on non-sleep behaviors and health, for their patients and for themselves. The purpose of this article is to provide an explanation of why adequate sleep is important, a brief primer on sleep and evidence-based actions nurses may use to improve their personal sleep.

Background

Sleep is defined behaviorally as a reversible state of perceptual disengagement from

and unresponsiveness to the environment.⁴ Sleep is as fundamental a human need as air, water, and food. The amount of sleep time required by each individual changes through the life span, but most experts recommend between 7 and 9 hours for adults under 65. These recommendations understand that individual needs differ and allow for some variation. (Please see Figure 1 for a summary of sleep recommendations)

However, many adults do not get the amount of sleep recommended by experts. A study released in December of 2014⁵ stated 45% of Americans report decreased daytime function related to insufficient sleep in the previous seven days. Fortunately, sleep health in the US is improving with the average respondent sleeping 7.5 hours and 65% reporting sleep as “good,” “very good,” or “excellent.” People over the age of 50 reported poor sleep quality more often, and there was no gender gap in self-reported sleep quality. African-Americans reported poor sleep quality more frequently than any other group, but there was not a significant difference in Hispanic /Latinos and Caucasians. Persons with poor health also reported poorer sleep quality at a statistically significant rate.⁵

Insufficient sleep results in excessive daytime sleepiness, and this fatigue impairs the daytime (or waking time) performance of the individual.⁶ This should greatly concern healthcare providers and policy makers since there is considerable evidence to suggest impairment of psychomotor and cognitive function when one is sleep deprived.^{7,9} This impairment has implications for patient safety and the safety of staff as they travel home.¹⁰ There are also long-term health consequences of sleep deprivation that include cardiovascular disease, metabolic disease, and obesity.⁹

Women experience more midlife changes in sleep architecture than men, largely

SUCCESSFUL COMPLETION: The post-test will be reviewed and if a score of 70% or better is achieved, a certificate of successful completion will be issued. If a score of 70% is not achieved, a letter of notification of the final score and a second post-test will be sent. It is recommended that the article be reviewed prior to taking the second post-test. If a score of 70% or above is achieved on the second post-test, a certificate will be issued.

This CNE activity has no commercial support and the author(s) have declared no vested interest, conflict of interest or off-label use.

The South Central Accreditation Program (SCAP) is accredited as a provider of continuing nursing education by the American Nurses Credential Center's Commission on Accreditation.

attributed to menopause and associated hormonal changes.¹¹ The Women's Health Study⁷ indicates exposure to any insomnia results in increased risk of a wide variety of illnesses, including depression, hypertension, and diabetes.¹² Since over 90% of Arkansas nurses are women,¹³ this is of concern to our nursing workforce.

Shift workers also experience sleep issues more commonly than those who have a regular "daytime" schedule. Those working non-traditional hours or "shift work" are increasingly common and current estimates suggest nearly one fifth of the population works either a night or rotating shift.¹⁴ A recent meta analysis suggested, although not conclusively, night shift workers experience higher prevalence of cancer, cardiovascular disease, metabolic syndrome, and diabetes.¹⁵ Again, this should be a point of concern for nurses and all healthcare workers as well as policy makers. Interventions to maintain health in our increasingly 24-hour society are urgent.

A Sleep Primer

Researchers have identified two clear phases of sleep based on polysomnography findings. These are Rapid Eye Movement (REM) sleep and non-REM sleep. Non-REM sleep is divided further into three phases. (Earlier publications may split Stage 3 into Stage 3 – deep sleep and Stage 4 – delta sleep). Refer to Table 1 for a description of these phases and stages. It takes a normal sleeper approximately about 70-100 minutes to complete a full sleep cycle, and subsequent cycles last a bit longer, between 90 – 120 minutes. The average adult completes 4 – 5 cycles nightly, and of this total sleep time, approximately one fourth is in REM sleep

During non-REM sleep, the parasympathetic nervous system is dominant, resulting in decreased energy expenditure. However, hormonal secretion is very active, with 80% of growth stimulating hormone being secreted during slow-wave sleep. Other hormones released during this type of sleep include prolactin, testosterone, melatonin, and cortisol. Conversely, thyroid stimulating hormone is suppressed during non-REM sleep. Protein synthesis and repair of body tissues also occurs in non-REM sleep, leading some to propose that Non-REM sleep is a restorative period designed to moderate the stress of the wakeful state



REM sleep, on the other hand, is the phase of sleep during which dreaming most commonly occurs. The sympathetic nervous system is the controlling system during this phase of sleep, and this SNS control results in increases in vital signs and oxygen consumption. Ironically, skeletal muscles are experiencing a functional paralysis during this time, which is why some experts refer to REM sleep as "paradoxical" sleep. REM sleep can also be associated with an increase in irregular heartbeats due to respiratory pauses.

Sleep promoters

Researchers have found several things to be instrumental in regulating or promoting sleep. Put together, they are known as "sleep hygiene," and may act as a "bundle" for nurses to use on themselves. Things nurses (or anyone) can do to improve their sleep at night:¹⁷⁻²⁰

- Avoid napping during the day
- Ensure bright light exposure daily
- Have a regular bedtime and arising time, even on weekends.
- Don't go to bed unless you are sleepy.
- Plan for at least seven hours of sleep daily
- Establish and maintain a bedtime ritual to promote sleepiness
- Use your bed only for sleep and sex
- Exercise regularly and eat a healthy diet.
- Keep your bedroom cool and your bed clean and comfortable.
- Practice relaxation techniques before bed

Sleep barriers

Numerous conditions are linked with sleep disruption, including pain of any source, acid reflux, and hormonal variations associated with menopause or menstruation. Mental health disorders, particularly anxiety and depression, are correlated

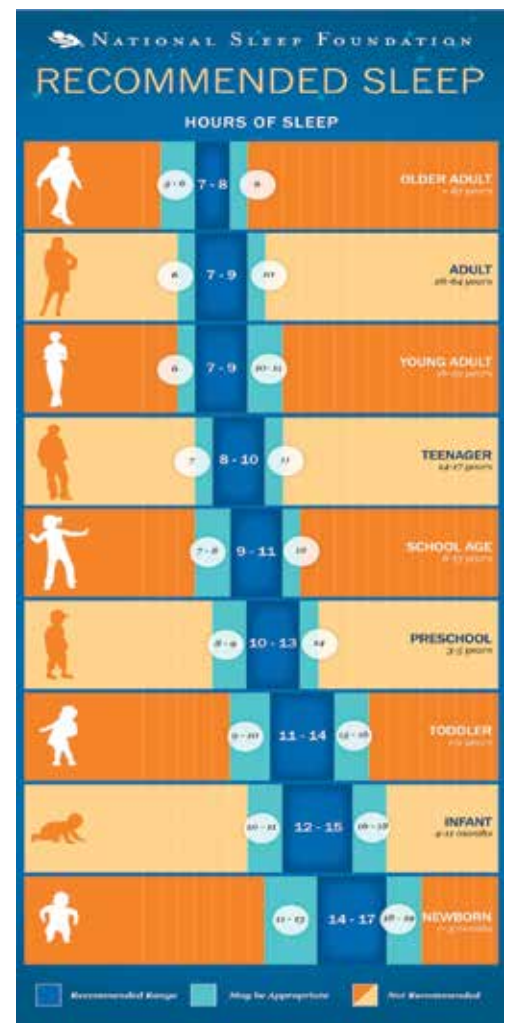


Figure 1
Sleep Recommendations from the National Sleep Foundation retrieved from <http://sleepfoundation.org/how-sleep-works/how-much-sleep-do-we-really-need>

with sleeping difficulties. Treatment of underlying conditions is essential in successful return to normal sleep patterns, and these interventions may require short-term use of sleep promoting medications. However, prescribers must also be aware of medications that can disrupt sleep and remove these before adding another medication.²⁰

People seeking to improve their sleep should avoid alcohol, caffeine, and heavy foods 4 – 6 hours before bedtime. Exercise or other stimulating activities are also best not to occur within 1-2 hours of bedtime as the stimulation may overly arouse the brain.

A newer and increasingly common disruption is use of electronic readers as a pre-bedtime ritual. Reading is a time-honored way of winding down before

rest. However, the screens for electronic readers emit light, which the brain may interpret as a signal to wake up. Researchers further found that these devices disrupt circadian timing and decrease secretion of melatonin²¹ Researchers strongly recommend paper-based reading before bed. In addition, the researchers caution against television and other light emitting electronics, such as tablets and laptops, as a way to pass the time if one awakens in the middle of the night.

What nurses can do for themselves

The Nurses Worklife and Health study²² clearly linked nursing shift work patterns and sleep alterations. After adjusting for the demands of home schedules and individual age, the study revealed that the adversity of the work schedule increased the likelihood of inadequate sleep. Due to this awareness, the American Nurses Association published a position statement²³ in 2014 encouraging nurses to self-monitor for fatigue as a means of preventing patient safety errors and nurse burnout. ANA is also encouraging employers to limit workweeks, eliminate mandatory overtime, and promote healthy behaviors by the nursing staff. One very interesting suggestion from the ANA is allowing staff to take short naps during work to promote alert behaviors.

Specific actions nurses who are shift workers can take to prevent on the job fatigue are:

- Minimize your commuting time and avoid long shifts
- Use your breaks to be active, such as taking a walk
- Use caffeine judiciously to promote wakefulness

Other actions to promote sleep during time away from work:

- Wear dark glasses on your way home to decrease light exposure
- Maintain the same going to sleep and rising time, even on your days off
- Keep your sleeping environment dark, cool, and quiet
- Do not use alcohol as a sleep aide

In summary, practicing any healthcare profession necessitates some practitioners to be awake during non-traditional hours because patients require care during all hours. While there are indications that shift workers may experience adverse

Table 1 REM and non-REM sleep

	Type of sleep	Physiologic activity	Additional Information
Non-REM stage 1	Transitional sleep, easily aroused, sleeper may deny being asleep	Slowing of eye movements and decreased muscle activity	
Non-REM stage 2	Light sleep	No eye movement, Heart rate and body temperature decrease	
Non-REM stage 3	Deep sleep (may see termed as Delta sleep)	Increased blood supply to muscles, tissue growth and repair occurs, restoration of energy and release of hormones	Difficult to rouse and being awakened from this state may cause dis-orientation
REM	Onset after approximately 90 minutes of sleep	Muscle inactivity, Eyes move rapidly behind closed lids, and heart rate and breathing increase. REM Sleep contributes to a healthy immune system and regulates appetite.	Vivid dreams occur during this state.

effects from staying awake all night, there are evidence-based strategies to minimize ill-effects from this increasingly common shift work schedules. Nurses must employ actions to care for themselves and work with their employers to ensure that shift work does not compromise the nurses' ability to provide safe, effective care for patients and themselves.

References

1. Sterniczuk, R., Rusak, B., Rockwood, K. (2014). Sleep disturbance in older ICU patients. *Clin Interv Aging*. 2014; 9: 969–977. Published online 2014 June 23. doi: 10.2147/CIA.S59927
2. National Sleep Foundation 2014 poll. Retrieved from <http://www.sleepfoundation.org/sleep-polls-data/sleep-in-america-poll/2014-sleep-in-the-modern-family> .
3. Centers for Disease Control. (2013). Sleep and sleep disorders. Retrieved from <http://www.cdc.gov/sleep/>.
4. Carskadon, M. A., Dement, W. C. (2000). Normal human sleep: An overview. In Kryger M.H., Roth T., Dement, WC, editors. *Principles and Practice of Sleep Medicine*, (3rd ed). Philadelphia, PA: Saunders.
5. National Sleep Foundation. (2014). 2014 Sleep Health Index report. Retrieved from <http://sleepfoundation.org/sites/default/>

files/2014%20Sleep%20Health%20Index-FINAL_0.PDF

6. Fortier-Brochu, E., Beaulieu-Bonneau, S., Ivers, H., & Morin, C.M. (2012). Insomnia and daytime cognitive performance: A meta-analysis. *Sleep Medicine Reviews*, (61), 83-94.
7. Zaslavsky, O., LaCroix, A. Z., Hale, L, Tindle, H, & Shochat, T. (2014) Longitudinal changes in insomnia status and incidence of physical, emotional, or mixed impairment in postmenopausal women participating in the Women's Health Initiative (WHI) study. *Sleep*, DOI: <http://dx.doi.org/10.1016/j.sleep.2014.11.008>.
8. Thomann, J., Baumann, C. R., Landolt, H., & Werth, E. (2014). Psychomotor vigilance task demonstrates impaired vigilance in disorders with excessive daytime sleepiness.
9. Ford, E. S, Cunningham, T. J., Giles, W. H., & Croft, J. B. (2015). Trends in insomnia and excessive daytime sleepiness among US adults from 2002 to 2012. *Sleep Medicine*, 16, 372-378.
10. Hughes, R. H. & Rogers, A. E. (2004). Are you tired?: Sleep deprivations compromises nurses' health – and jeopardizes patients. *AJN*, 104(3), 36-38.
11. Vetter, C., Fischer, D., Matera, J. L., & Roenneberg, T. (2015). Aligning

- work and circadian time in shift workers improves sleep and reduces circadian disruption. *Current Biology*. pii: S0960-9822(15)00128-1. doi: 10.1016/j.cub.2015.01.064.
12. Anttalainen, U., Saaresranta, T., Vahlberg, T., & Polo, O. (2014). Short-term medroxyprogesterone acetate in postmenopausal women with sleep-disordered breathing: A placebo-controlled, randomized, double-blind, parallel-group study. *Menopause*, 21(4), 361-368.
 13. Arkansas State Board of Nursing. (2011). Annual Report. Retrieved from <http://www.arsbn.arkansas.gov/publications/Documents/Annual%20Report%202011.pdf>.
 14. Kam, K. (n.d.) Sleep and the night shift. Could you have shift work sleep disorder? Retrieved from <http://www.webmd.com/sleep-disorders/excessive-sleepiness-10/night-shift-sleep>.
 15. Wang, X-S, Armstrong, M.E.G., Cairns, B. J., Key, T. J., & Travis, R. C. (2011). Shift work and chronic disease: The epidemiologic evidence. *Occupational Medicine*, 61, 78-89.
 16. Kirkwood, M. (n.,d.) Cardiac arrhythmias during sleep. Retrieved from <http://www.bhrs.com/files/files/Editorials/131220-Final-Editorial%2C%20G%20Kirkwood.pdf>.
 17. Thorpy, M. (n.d.) Sleep hygiene. Retrieved from <http://sleepfoundation.org/ask-the-expert/sleep-hygiene>
 18. University of Maryland Medical Center. (2013). Sleep hygiene. Retrieved from <http://umm.edu/programs/sleep/patients/sleep-hygiene>.
 19. Sleep Education (n.d.) Healthy sleep habits. Retrieved from <http://www.sleepeducation.com/essentials-in-sleep/healthy-sleep-habits>
 20. National Guideline Clearinghouse.(n.d.) Clinical guideline for the treatment of primary insomnia in middle-aged and older adults. Retrieved from <http://www.guideline.gov/content.aspx?id=48218&search=sleep+hygiene>.
 21. Chang, A.M., Aeschbach, D., Duffy, J. F., & Czeisler, C. A. (2014). Evening use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. *Proceedings of the National Academy of Sciences*, 112(*4), 1232-1237.
 22. Geiger-Brown, J., Trinkoff, A., & Rogers, V. E. (2011). The impact of work schedules, home, and work demands on self-reported sleep in registered nurses. *The Journal of Occupation and Environmental Medicine*, 53(3), 303-307.
 23. American Nurses Association. (2014). Addressing nurse fatigue to promote safety and health: Joint responsibilities of registered nurses and employers to reduce risks. Retrieved from <http://www.nursingworld.org/FunctionalMenuCategories/MediaResources/PressReleases/2014-PR/Stronger-Collaboration-to-Reduce-Risks-from-Nurse-Fatigue.html>
 24. National Sleep Foundation. (n.d.) Sleep and shift work. Retrieved from <http://sleepfoundation.org/sleep-topics/shift-work-and-sleep?page=0%2C0>

POST-TEST

"Getting the Rest You Deserve"

PLEASE CIRCLE THE CORRECT ANSWER.

1. Most adults require the same amount of sleep, which is:
 - a. 5-7 hours
 - b. 6—8 hours
 - c. 7-9 hours
 - d. 9 – 11 hours
2. Shift workers have a higher prevalence of
 - a. Pulmonary disorders
 - b. Thyroid disease
 - c. Gout
 - d. Cardiovascular disease
3. People most commonly dream during what phase of sleep?
 - a. NREM Phase 1
 - b. NREM Phase 2
 - c. NREM Phase 3
 - d. REM sleep
4. The average adult completes how many sleep cycles per night?
 - a. 3-4
 - b. 4-5
 - c. 5-6
 - d. More than 6
5. Which of these activities may create a barrier to restful sleep?
 - a. Consumption of caffeine
 - b. Reading on an E-Reader
 - c. Eating a heavy meal within 60 minutes of bedtime
 - d. All of the above
6. People in REM sleep may experience:
 - a. Increased hormonal secretion
 - b. Decreases in vital signs
 - c. Respiratory pauses that cause irregular heartbeats
 - d. Suppression of TSH secretion
7. Napping is a good way to catch up on sleep.
 - a. True
 - b. False
8. People preparing for sleep should do which of the following?
 - a. Watch television
 - b. Work on their laptop or computer
 - c. Follow their sleep time ritual
 - d. Problem solve for an upcoming expense
9. The ANA suggests employers do which of the following to protect nurses from fatigue:
 - a. Use mandatory overtime to prevent people from working doubles
 - b. Consider only a 40 hour work week as full time
 - c. Encourage healthy behaviors through workplace competitions.
 - d. Consider permitting napping within guidelines
10. Regardless of the time of day, the sleeping environment should be:
 - a. Warm
 - b. Bright
 - c. Quiet
 - d. Feel lived in

**Arkansas Nurses Association
South Central Accreditation Program
Registration/Evaluation Form**

Program Title: "Getting the Rest you deserve"

Expiration Date: March, 2017

Registration Fee: ARNA Member: \$10.00 Non-Member: \$15.00

Directions: To earn 1.0 contact hours, complete sections A, B, and C and return with the correct registration fee to:

Arkansas Nurses Association, 1123, S. University, Suite 1015, Little Rock, AR 72204

Phone: 501-244-2363

If paying by credit card, you may fax this form to: 501-244-9903

Visa/Master Card # _____

Expiration Date: _____ (3) digit code _____

Signature: _____

Section A: (please print and complete all information)

Name (first, mi, last) _____

Address _____

City/State/Zip _____

Phone: _____ E-mail _____

State of Licensure: RN LPN Other

Section B: Post-test: mark your answers in the space provided. Each of the 10 questions has only one correct answer.

- | | A | B | C | D | | A | B | C | D |
|----|--------------------------|--------------------------|--------------------------|--------------------------|-----|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section C: Learner Evaluation: please circle the appropriate answer.

- | | | | |
|----|---|---|---|
| 1. | Were all the objectives met? | Y | N |
| 2. | Was the learning method effective? | Y | N |
| 3. | Was the author(s) effective in presenting the material? | Y | N |
| 4. | Do you intend to change your nursing practice as a result of this activity? | Y | N |
| 5. | How long did it take to you to complete the activity & test? _____ | | |

South Central Accreditation Program (SCAP) is accredited as a provider of continuing nursing education by the American Nurses Credential Center's Commission on Accreditation.