

***Helping people live the
healthiest lives possible***

Intermountain Healthcare
Mission Statement

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No Disclosures

Helping People Live the Healthiest Lives Possible

Mission of Intermountain Healthcare

**Sleep is essential for
optimal health!**¹

1. Watson, Nathaniel F. et.al. Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society. *SLEEP*. 2015;38(6):843-844.

Effects of Sleep Loss

- **PHYSICAL HEALTH & SAFETY**
 - **Increased obesity risk**
 - **Lower levels of physical activity**
 - **Higher rates & amounts of caffeine or stimulant consumption**
 - **Drowsy driving/motor vehicle crashes**
 - **Decreased physical reaction & coordination**
 - **Increased risk of high blood pressure; stroke; cancer; type II diabetes**

Effects of Sleep Loss

MENTAL HEALTH & BEHAVIOR

- Increased risk or worsening of anxiety, depression & suicidal ideation
- Decreased impulse control & self-regulation
- Increase in risk-taking behaviors
- Decreased motivation
- Decreased coping ability
- Impaired ability to recognize social/emotional cues in self or others

Effects of Sleep Loss

JOB PERFORMANCE

- Increased risk for errors
- Increased odds of suffering an injury
- Higher chance of experiencing a workplace injury
- Decrease in vigilance of care while on the job
- Increased risk of motor vehicle crash while driving.
- Much higher risk of making serious errors

Lockley, SW, Barger LK, Ayas NT et al. Effects of health care provider work hours and sleep deprivation on safety and performance. *Jt Comm J Qual Patient Saf.* 2007;30:7-18

Effects of Sleep Loss

Respiratory Therapist JOB PERFORMANCE

- **Increased risk for treatment errors**
- **Higher chance of experiencing a workplace injury**
- **Decrease in vigilance of care while on the job**
- **Increased risk of motor vehicle crash while driving home from work**
- **Much higher risk of making serious medical errors**

Lockley, SW, Barger LK, Ayas NT et al. Effects of health care provider work hours and sleep deprivation on safety and performance. *Jt Comm J Qual Patient Saf.* 2007;30:7-18

Why do we need sleep?

**VITAL for normal living
– a physical necessity**

***Enhances our
emotional
capabilities***

***Integral in the body's
immune response***



***Improves our
cognitive and
creative capability***

***Restorative
effect on our
bodies***

***Necessary for
optimal physical
performance***

How much sleep
do we need?

American Academy of Sleep Medicine Sleep Research Society

JOINT CONSENSUS STATEMENT

JUNE 2015

- Adults should sleep 7 or more hours per night on a regular basis to promote optimal health.
- Sleeping less than 7 hours per night on a regular basis is associated with adverse health outcomes.

Watson, Nathaniel F. et.al. Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society. *SLEEP*. 2015;38(6):843-844. *Underline in original document*

Sleep: A Health Imperative

An underappreciated public health problem

- **50 to 70 million adult Americans have a chronic sleep disorder**
- **1 in 3 adult Americans sleep less than 7 hours per night**
- **20% of US workforce are working shift work**
- **Percentage of men & women reporting sleeping less than 6 hours per night has increased sharply over the last 20 years.**
- **Estimated annual US cost due to sleep disorders >\$100 billion**

Luyster, Faith S. et al. Sleep: A Health Imperative. *SLEEP*, Vol. 35, No. 6, 2012. 727-734

Restricting sleep below an **individual's optimal time in bed (TIB)** can cause a range of neurobehavioral deficits, including **lapses of attention, slowed working memory, reduced cognitive throughput, depressed mood, and perseveration of thought.** Neurobehavioral deficits accumulate across days of partial sleep loss to levels equivalent to those found after 1 to 3 nights of total sleep loss. Recent experiments reveal that following days of chronic restriction of sleep duration below **7** hours per night, significant daytime cognitive dysfunction accumulates to levels comparable to that found after severe acute total sleep deprivation.

J Clin Sleep Med. 2007 Aug 15; 3(5): 519–528.

Drowsy Driving

- “ Both **alcohol** and a **lack of sleep** limit your ability to react quickly in situations that require rapid responses. . .when people who **lack sleep** are tested on a driving simulator, they **perform as badly** as or worse than those who are drunk.”

Your Guide to Healthy Sleep: NIH Publication No. 11-5271

Originally printed November 2005

Revised August 2011

- **18** hours of sleep debt = **0.05** blood alcohol concentration (BAC), **24** hours = **0.10** BAC (Dawson & Reid, 1997)
- **Four hours** of sleep a night for **six** nights = driving performance **worse than 0.08** BAC, (Powell et. al., 2001)
- Sleepiness reported by workers significantly **under-estimates** their degree of impairment.
- **Moderate sleep apnea** produces performance impairment greater than a BAC of **0.08, greater than legally drunk in Utah** (Powell et. al., 1999).

Economic Impact

Annual estimated economic cost of moderate to severe obstructive sleep apnea: \$65-\$165 billion.

Higher than estimates for asthma, heart failure, stroke, hypertensive disease!
(\$20-\$80 billion)

Harvard Medical School Division of Sleep Medicine. *The Price of Fatigue: The surprising economic costs of unmanaged sleep apnea.* Dec 2010.

OSA Exacerbated Cerebrovascular Abnormalities

Patients with OSA have an increased prevalence of:

- Systemic hypertension
- Heart disease
- Impaired vascular endothelial function
- Accelerated atherogenesis
- Diabetes
- Atrial fibrillation
 - Independently associated with recurrent atrial fibrillation after cardioversion or ablation as well as stroke
- Prothrombotic coagulation shifts
- Increased platelet aggregation
- Proinflammatory states

Somers VK, White DP, Amin R, Abraham WT, Costa F, Culebras A, Daniels S, Floras JS, Hunt CE, Olson LJ, Pickering TG, Russell R, Woo M, Young T, American Heart Association Council for High Blood Pressure Research Professional Education Committee, Council on Clinical Cardiology, American Heart Association Stroke Council, American Heart Association Council on Cardiovascular Nursing, American College of Cardiology Foundation. *Circulation*. 2008;118(10):1080.

Yaranov DM, Smyrlis A, Usatii N, Butler A, Petrini JR, Mendez J, Warshofsky MK. *Am J Cardiol*. 2015 Feb;115(4):461-5. Epub 2014 Nov 29

Ng CY, Liu T, Shehata M, Stevens S, Chugh SS, Wang X. *Am J Cardiol*. 2011 Jul;108(1):47-51. Epub 2011 Apr 29

Timing and Modality of Diagnostic Testing

The timing of diagnostic testing must take into account the stability of the patient and their ability to comply with testing.

- In-laboratory full-night or split-night polysomnography has traditionally been the gold standard diagnostic test for sleep-related breathing disorders.
- HST is an alternative in many patients, which may be preferred by patients and more cost effective than in-laboratory testing.
- Overnight oximetry is not considered an adequate diagnostic test.
- In addition to these modalities, limited data suggest that auto-titrating CPAP has acceptable validity.

Boulos MI, Kamra M, Colelli DR, Kirolos N, Gladstone DJ, Boyle K, Sundaram A, Hopyan JJ, Swartz RH, Mamdani M, Loong D, Isaranuwachai W, Murray BJ, Thorpe KE. Stroke. 2022;53(3):710.

Kepplinger J, Barlinn K, Albright KC, Schrempf W, Boehme AK, Pallesen LP, Schwanebeck U, Graehlert X, Storch A, Reichmann H, Alexandrov AV, Bodechtel U. J Neurol. 2013 May;260(5):1343-50.

Väyrynen K, Kortelainen K, Numminen H, Miettinen K, Keso A, Tenhunen M, Huhtala H, Himanen SL. Sleep Disord. 2014;2014:317615.

Bravata DM, Concato J, Fried T, Ranjbar N, Sadarangani T, McClain V, Struve F, Zygmunt L, Knight HJ, Lo A, Richerson GB, Gorman M, Williams LS, Brass LM, Agostini J, Mohsenin V, Roux F, Yaggi HK. Stroke. 2010 Jul;41(7):1464-70.

AASM Guidelines

Follow these tips to establish healthy sleep habits:

- Keep a consistent sleep schedule. **Get up at the same time every day**, even on weekends or during vacations.
- Set a bedtime that is early enough for you to get at least 7-8 hours of sleep.
- Don't go to bed unless you are sleepy.
- If you don't fall asleep after 20 minutes, get out of bed. Go do a quiet activity without a lot of light exposure. It is especially important to not get on electronics.
- Establish a relaxing bedtime routine.
- Use your bed only for sleep and sex.
- Make your bedroom quiet and relaxing. Keep the room at a comfortable, cool temperature.
- **Limit exposure to bright light in the evenings (mornings for overnight shift).**
- Turn off electronic devices at least 30 minutes before bedtime.
- Don't eat a large meal before bedtime. If you are hungry at night, eat a light, healthy snack.
- Exercise regularly and maintain a healthy diet.
- Avoid consuming caffeine in the afternoon or evening.
- Avoid consuming alcohol before bedtime.
- Reduce your fluid intake before bedtime.

*Reviewed by: Shelley Hershner, MD and Imran Shaikh, MD
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