Obstructive Sleep Apnea

Carol Barger, RRT/RPSGT
Brenda Rotert, CRT/RPSGT

Sleep Navigators with the
Avera McKennan Sleep Diagnostic Center

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What is Obstructive Sleep Apnea (OSA) and who does it effect?

- OSA is a common and frequently unrecognized disorder caused by recurrent partial or complete obstruction of the airway during sleep.
- As a result, ventilation may be decreased (hypopnea) or absent (apnea) for several seconds until upper airway muscle tone increases, allowing the resumption of normal ventilation.
- Hypopneas and apneas may also result in oxygen desaturation of variable degree.
- It is often found in patients with obesity, diabetes, and cardiovascular disease.
- In the general population, OSA is estimated to occur in 9% of middle-aged women and 24% of middle-aged men.

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Who is at risk of Sleep Apnea?

- Sleep Apnea increases with age
- Men and women → plateaus in the 60-70's
- Higher in women after menopause

- OSA is a very common disease
- Men ~ 2:1 greater likelihood of OSA syndrome than women
- ~ 5-25% of men have OSA
- ~ 2-9% of middle-aged women have OSA

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OSA

- One recent study estimated that 93% of women and 82% of men with moderate to severe OSA remain undiagnosed.
- Sleep deprivation in the industrialized world is rapidly rising to epidemic proportions. With the pressures of work, family life and recreational pursuits, there is little time left for sleep. And this is dangerous.
- Sleep is as important to a person's health as food or water. OSA is caused by recurrent partial or complete obstruction of the airway during sleep.

Severity of OSA

- Normal Apnea-Hyponea Index (AHI)
  - < 5 events/hour
- Mild OSA
  - 5-15 events/hour
- Moderate
  - 15-30 events/hour
- Severe
  - > 30 events/hour

Consequences of /diseases associated with OSA

- Diabetes
- High Blood Pressure
- Heart Attack
- Depression
- ADHD
- COPD
- Irregular Heart Beats
- Cardiac Death
- Auto Accidents
- Memory Deficits
- Impaired Concentration
- Pulmonary Hypertension
- Heart Failure/Enlarged Heart

Sleep Apnea-OSA-Diabetes

- Researchers suggest that people with diabetes who have symptoms of sleep apnea should be screened and treated. A common tool used for screening suspected OSA is a Home Sleep Test.

- It is estimated that 8% of Americans adults have diabetes

- Clear evidence shows that diabetes patients with sleep apnea can achieve better control of their glucose level if the sleep apnea is treated.

- CPAP is the most common treatment for sleep apnea and involves wearing a mask and a machine that applies pressure through the nose to prevent airway collapse.

Shared Risk Factors of Diabetes & OSA

- One explanation for the reason that both Diabetes and Obstructive Sleep Apnea often coexist is because they both have one similar risk factor –**OBESITY**

- Just because you have Diabetes does not mean that you are obese.

- Just because you are obese does not mean you have Diabetes

- But if you are obese and have OSA you have a greater chance of developing diabetes.

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OSA and Cardiovascular Disease

- Of people with hypertension, about 30% have obstructive sleep apnea. If you have obstructive sleep apnea, there is a 50% chance you also have hypertension
- Patients with severe obstructive sleep apnea are four times more likely to have atrial fibrillation compared to those without
- If you have severe obstructive sleep apnea that is untreated, you are twice as likely to develop heart attacks in the future as those without the problem. In addition, up to 70% of patients admitted to the hospital because of coronary artery disease were found to have sleep apnea.

Am J Respir Crit Care Med Vol 188, P1-P2, 2013 ,ATS Patient Education Series © 2013 American Thoracic Society

Coronary Heart Disease And OSA

- Men 40-70 with AHI ≥30 (severe OSA)
  - 68% more likely to develop CHD
  - 58% more likely to develop CHF
    - Compared to an normal AHI less than 5

Gottlieb et al. Circulation 2010. 122: 352-360

OSA and Stroke

- OSA causes other conditions, like high blood pressure and low oxygen levels, which increase one's risk for stroke. However, OSA is also well known as an independent risk factor for stroke.
- people with moderate to severe obstructive sleep apnea were four times more likely to have a stroke even when results were adjusted for factors like obesity, cholesterol levels, hypertension, and smoking.
- those who have stroke damage to their brainstem have a much higher prevalence of sleep apnea than those with stroke damage in other parts of the brain.
- most patients who have strokes develop sleep apnea even if they didn't have it prior to the stroke. If you have OSA following a stroke, you should be concerned, as this is associated with less complete recovery, worsening of stroke symptoms, and a higher chance of death

InBoundMed, May 22, 2019. Sleepsolutions.com

Chronic Obstructive Pulmonary Disease (COPD) & OSA: Overlap Syndrome

According to the COPD Foundation, OSA occurs in 10 to 15% of COPD patients.

Patients with overlap syndrome (COPD + OSA) not treated with CPAP had a higher mortality rate and were more likely to suffer a severe COPD exacerbation leading to hospitalization.

American Journal of Respiratory and Critical Care Medicine, 182 (3), 325-331, 2010

OSA and Drowsy driving

- According to NHTSA, drowsy driving causes **more than 8,000 deaths** on American roads each year, and these fatal accidents are associated with an estimated $109 billion in societal harm. The AAA Foundation for Traffic Safety estimates that **21 percent of fatal car crashes** involve a drowsy driver
- A recent CDC analysis found that the jobs with the highest rates of short sleep duration were communications equipment operators (58.2%), other transportation workers (54.0%) and rail transportation workers (52.7%).

American Academy of Sleep Medicine, March 2018

Sleepiness in the workplace

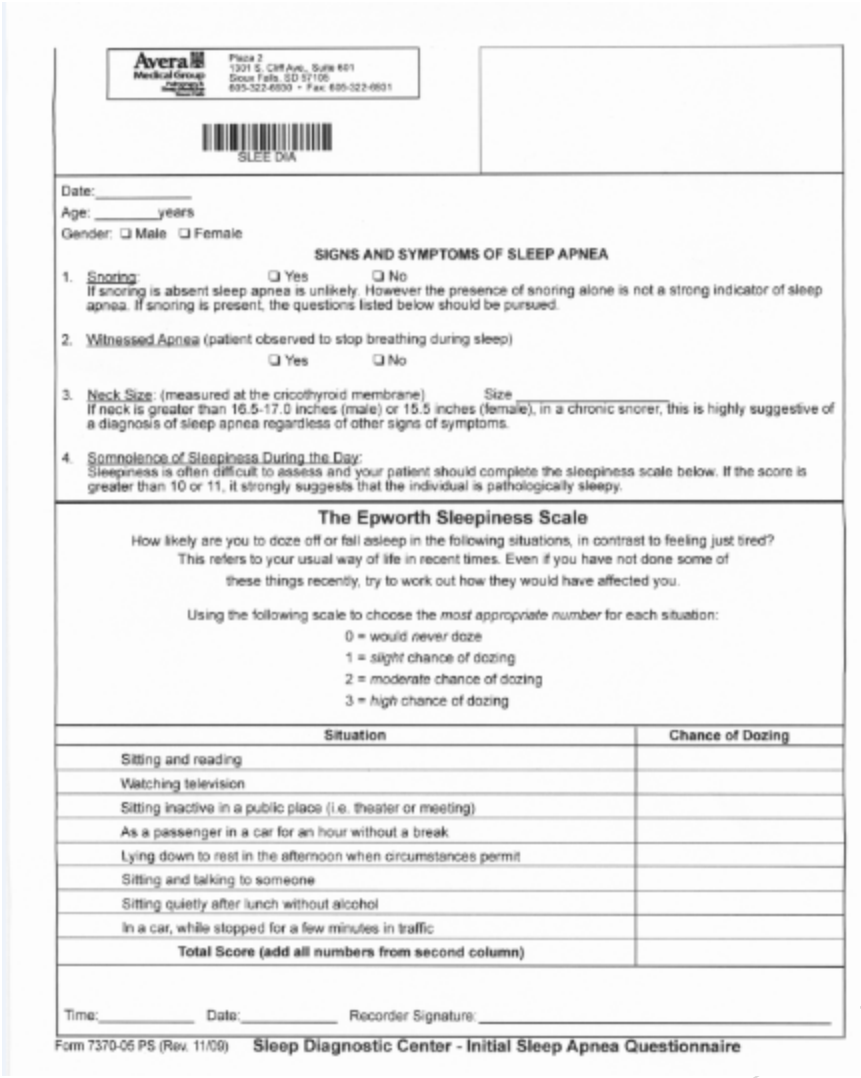
- According to the National Safety Council, fatigued workers cost employers about $1,200 to $3,100 per employee in declining job performance each year, while sleepy workers are estimated to cost employers $136 billion a year in health-related lost productivity.
- Sleepiness causes decreased performance capacity, and tired workers become slower, more error prone and less productive. In fact, about 13% of work injuries are attributable to sleep deprivation
- Chronic sleep deprivation is associated with an increased risk of depression, obesity, cardiovascular disease and other illnesses that negatively impact a worker's well-being and long-term health.

America Academy of Sleep Medicine, March 2018

Common Signs and Symptoms of OSA

- Witnessed apnea
- Cresendo-decresendo snoring
- Gasping
- Coughing
- Choking
- Awakening short of breath
- Erectile dysfunction
- Frequent dreaming
- Restless sleep
- Loud snoring
- Frequent awakenings
- Excessive Daytime Sleepiness
- Morning headaches
- Difficulty concentrating
- Frequency of urination/Nocturia
- Insomnia

Epworth Sleepiness Scale



Avera Medical Group
Plaza 2
1301 S. Cliff Ave., Suite 601
Sioux Falls, SD 57105
605-322-6930 • Fax: 605-322-6931

SLEE DIA

Date:_____
Age: _____years
Gender: ❑ Male ❑ Female

SIGNS AND SYMPTOMS OF SLEEP APNEA

1. Snoring: ❑ Yes ❑ No
   If snoring is absent sleep apnea is unlikely. However the presence of snoring alone is not a strong indicator of sleep apnea. If snoring is present, the questions listed below should be pursued.

2. Witnessed Apnea (patient observed to stop breathing during sleep)
   ❑ Yes ❑ No

3. Neck Size: (measured at the cricothyroid membrane) Size _____
   If neck is greater than 16.5-17.0 inches (male) or 15.5 inches (female), in a chronic snorer, this is highly suggestive of a diagnosis of sleep apnea regardless of other signs of symptoms.

4. Somnolence of Sleepiness During the Day:
   Sleepiness is often difficult to assess and your patient should complete the sleepiness scale below. If the score is greater than 10 or 11, it strongly suggests that the individual is pathologically sleepy.

The Epworth Sleepiness Scale

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently, try to work out how they would have affected you.

Using the following scale to choose the *most appropriate number* for each situation:

0 = would *never* doze
1 = *slight* chance of dozing
2 = *moderate* chance of dozing
3 = *high* chance of dozing

Situation	Chance of Dozing
Sitting and reading	
Watching television	
Sitting inactive in a public place (i.e. theater or meeting)	
As a passenger in a car for an hour without a break	
Lying down to rest in the afternoon when circumstances permit	
Sitting and talking to someone	
Sitting quietly after lunch without alcohol	
In a car, while stopped for a few minutes in traffic	
Total Score (add all numbers from second column)	

Time:_____ Date:_____ Recorder Signature:_____

Form 7370-05 PS (Rev. 11/09) **Sleep Diagnostic Center - Initial Sleep Apnea Questionnaire**

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Other factors that could indicate OSA

- Epworth Sleepiness Score > 10
- Body Mass Index (BMI) >25
- Neck Circumfrance

  Men > 16.5”

  Women > 15”

OSA Diagnosis

- Home Sleep Testing is an at home screening tool being required by some insurance companies. It consists of 4 channels (SaO2, respiratory effort, flow monitoring and EKG) Avera McKennan offers this service through the Sleep Diagnostic Center and many outlying Avera Facilities
- The gold standard for OSA diagnosis is overnight polysomongraphy. This is an in lab study which uses 23 different sensors to monitor many more factors of sleep (SaO2, sleep staging, respiratory effort, flow monitoring, muscle tone). Avera McKennan has a fully accredited Sleep Lab and approximately 7 accredited outreach sites.

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Treatment for OSA

- Behavioral Modification
  - Weight Loss
  - Improved sleep deprivation
  - Avoid alcohol ,hypnotics before bedtime.
- Pharmacotherapy has a limited role.
- CPAP via Mask
  - Most patients with OSA require treatment with CPAP

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Questions?

Contact information:

- Carol.Barger@Aver.org
- Brenda.Rotert@Avera.org
- Avera McKennan Sleep Diagnostic Center
  (605) 322-7378

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