



# Obstructive Sleep Apnea Awareness

## Case Vignette: OSA and Nocturia

### Presenting Complaints

A 52-year-old Caucasian man presented to his primary care clinic complained of 4-6 awakenings a night to urinate. This has been ongoing for a couple of months now and he was extremely bothered by this symptom. He worked as a conductor on Amtrak and has been feeling fatigued and sleepy at work more than usual. He felt his sleep would be much better at night if he did not have to wake up so frequently to void. Other than nocturia he did not have any urinary complaints. His wife added said he “snores like a train” but did not know if he stopped breathing at night.

### Past History

The patient had a history of hypercholesterolemia and took simvastatin 20 mg once a day. He did not take any other prescription or non-prescription medications. He smoked 1 pack of cigarettes a day for 20 years until he quit 12 years previously. He was recently evaluated by a urologist and was told that there was no problem with his bladder or prostate. He denied any history of alcohol, caffeinated drinks, drug abuse, or excessive fluid intake in the evening.

### Physical Exam

- Blood pressure: 118/80 mm Hg
- BMI: 35 kg/m<sup>2</sup>
- Neck circumference: 46 cm
- Systemic and urological examination: Normal

### Testing

Blood tests suggested normal renal, thyroid, calcium, and blood sugar profiles as well as normal renal function and prostate specific antigen levels.

Mid-stream urine did not show any evidence of urinary tract infection.

His history of snoring for the past 2 years and obesity (body mass index 35 kg/m<sup>2</sup>) raised concerns about potential sleep apnea and warranted further investigation. His PCP then asked the patient to complete the STOP BANG questionnaire.

*[The STOP-Bang questionnaire is a quick and easy screening tool with eight dichotomous (yes/no) items to assist in triaging patients with suspected OSA. It consists of 4 self-reportable (STOP: snoring, tiredness, observed apnea, and high blood pressure) and 4 demographic (Bang:*



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body mass index [BMI; calculated as weight in kilograms divided by height in meters squared], age, neck circumference, and gender) items.]

Do you snore loudly? Louder than talking or loud enough to be heard through closed doors	No 0	Yes +1
Do you often feel tired, fatigued, or sleepy during the daytime?	No 0	Yes +1
Has anyone observed you stop breathing during sleep?	No 0	Yes +1
Do you have (or are you being treated for) high blood pressure?	No 0	Yes +1
Objective measures:		
BMI	$\leq 35 \text{ kg/m}^2$ 0	$> 35 \text{ kg/m}^2$ +1
Age	$\leq 50$ years 0	$> 50$ years +1
Neck circumference	$\leq 40$ cm 0	$> 40$ cm +1
Gender	Female 0	Male +1
<b>4 points</b> STOP-BANG	<b>Intermediate</b> Risk for moderate to severe OSA	

Figure 1. STOP-Bang Results

The patient's STOP BANG score of 4 (Figure 1) suggested an intermediate risk for moderate to severe OSA.

His PCP decided to do an additional evaluation for his sleepiness using the Epworth Sleepiness Scale (ESS) tool.



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The ESS subjectively assesses excessive daytime sleepiness by asking patients to rate their chance of dozing off from 0 (would never doze) to 3 (high chance of dozing) for 8 commonly encountered scenarios, with a total maximal score of 24.

Would never doze	Slight chance of dozing	Moderate chance of dozing	High chance of dozing	
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Sitting and reading
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Watching TV
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Sitting inactive in a public place (e.g. cinema or in a meeting)
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Being in a car for an hour as a passenger (without a break)
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Lying down to rest in the afternoon (when possible)
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Sitting and chatting to someone
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Sitting quietly after lunch (not having had alcohol)
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	In a car when you stop in traffic for a few minutes
<input type="button" value="Calculate Score"/>				
Your Score				
13				

**Figure 2. Results of Epworth Sleepiness Scale (ESS)**

### Test results:

The ESS score generated was 13/24 (Figure 2). ESS scores of 13-15 represents a “Moderate Excessive Daytime Sleepiness” [[About the ESS](#)]



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The patient agreed to go for a split night polysomnography with CPAP titration. The baseline diagnostic portion of the study revealed severe OSA, with an apnea-hypopnea index (AHI) of 42/hour as well as episodes of hypoxemia with oxygen desaturations to as low as 50% during obstructive events. During the CPAP titration portion, he was titrated to an optimal CPAP of 16 cm H<sub>2</sub>O.

The PCP explained to the patient that the result revealed that he experiences, on average, 42 episodes of either complete cessation of breathing (apnea) or significant reduction in airflow (hypopnea) per hour during sleep. This degree of severity typically requires prompt medical attention and intervention, often involving therapies such as continuous positive airway pressure or other treatments aimed at improving breathing during sleep and reducing associated health risks. He wrote a referral for a sleep physician and asked the patient to get an appointment as soon as possible.

## Discussion of Treatment Plan

A week later, at the sleep physician's consult, the patient was initiated on CPAP. He was also advised on weight loss measures.

## Outcome of Case

The patient was seen in the clinic 2 months later. At this visit, the patient was markedly more alert, and he was elated about the improvement in symptoms he noticed on CPAP. With CPAP, he felt rested upon waking, and remained alert throughout the day. His ability to function during the day was dramatically improved and the nocturic frequency post CPAP treatment had halved compared to pre-treatment value.

## Teaching Points

Nocturia is defined as waking at night to empty the bladder, irrespective of the number of times. Research has shown that it has a multifactorial etiology and the need to wake up to urinate is probably because of an overproduction of urine or a reduced ability to store urine. The inevitability of nightly bathroom trips is often assumed so much part and parcel of nighttime behavior that they are often ignored or certainly minimized as a clinical problem. Yet there are many reasons that nocturia is not necessarily a trivial matter.

OSA can increase urine production at night by causing extreme negative thoracic pressures, which, in turn, causes the heart to produce a protein based hormone, the atrial natriuretic



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peptide (ANP). This acts as a vasorelaxant, diuretic, and aldosterone inhibitor, which causes an increase in urine production by the kidneys with the diuresis of water and sodium. CPAP treatment eliminates negative intrathoracic pressure, relieving the obstruction of the airways.

**This report illustrates that although nocturnal voiding is frequently attributed to urologic disorders, nocturia and enuresis are also important symptoms of sleep-disordered breathing.**

If there is high risk for OSA, a sleep study is warranted with reflexive specialist referral for positive tests or confusing sleep disturbance symptoms. Despite nocturia is a well-known symptom that may help us to rule out the presence of sleep apnea, most professionals often forget to deepen their assessment of this condition. It is important to recognize the causal relationship since these troublesome symptoms are easily treated by treating sleep apnea.

Adapted from: Budhiraja P. [Distressing nocturia](#). *J Clin Sleep Med*. 2008 Dec 15;4(6):605-6. PMID: 19110893; PMCID: PMC2603541.

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## Additional Reading

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