



# Diagnosis and management of sleep disorders

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Sleep disorders are a common range of conditions that frequently present to primary care. Primary care observational studies have revealed that up to 25% of consulting patients may be suffering with a sleep disorder, including insomnia, obstructive sleep apnoea, restless leg syndrome, narcolepsy or parasomnias. Up to 80% are not immediately noticeable, and can take years to diagnose and treat.

A number of screening tools can be used to assess for effects of poor sleep quality and risk of sleep disordered breathing. Two commonly used validated tools include the STOP-BANG and Epworth questionnaires. Patients can be probability scored for risk of having sleep disordered breathing, and excess fatigue. Once a sleep disorder or unexplained fatigue is considered, early referral for sleep diagnostics and therapies can have a significant impact on cardiovascular, metabolic and quality of life measures.

## Obstructive sleep apnoea

The most common sleep disorder is obstructive sleep apnoea hypopnoea syndrome (OSA). It is characterised by repetitive closure of the upper airway, resulting in oxygen desaturations and sleep fragmentation, caused by frequent awakening to correct the hypoxia. The prevalence of adult OSA is increasing due to the global rise in obesity, and the phenomena of the ageing population. Up to 10% of adults will suffer from sleep apnoea at some point in their lives.

OSA presents with a variety of symptoms. The most common symptom is snoring, although it is important to note that with snoring prevalence of 50%, not all snorers suffer with OSA. Other commonly reported sleep symptoms are waking frequently during the night, including nocturia; feeling little or no refreshment after sleep; daytime somnolence; experiencing a dry mouth,

choking sensations or nightmares during the night; and partners reporting that the patient appears to stop breathing or hold their breath whilst asleep.

There is strong evidence that consultations with primary care are increased up to 2 fold in the year prior to a diagnosis of OSA, often with secondary complications including cardiovascular disease, psychosocial symptoms including low mood, reduced libido, poor concentration, or chronic fatigue.

Evidence points to significantly increased risks of cardiovascular events, and mortality in patients who experience severe OSA and go untreated, meaning that early diagnosis of symptomatic patients is essential. There are diverse pathways leading to increased cardiovascular events, including sympathetic nervous system over-activity, selective activation of inflammatory molecular pathways, endothelial dysfunction, abnormal coagulation and metabolic dysregulation, the latter particularly involving insulin resistance and disordered lipid metabolism.

There is a strong association with insulin resistance, as sleep apnoea is an independent risk factor for glucose intolerance and metabolic syndrome.

Interventional studies have demonstrated an up to 4 fold reduction in the risk of cardiovascular events, and a 24 hour mean blood pressure reduction of 4 mmHg with treatment intervention of sleep apnoea.

**STOP BANG Questionnaire**

Height \_\_\_\_\_ inches/cm Weight \_\_\_\_\_ lb/kg  
 Age \_\_\_\_\_  
 Male/Female  
 BMI \_\_\_\_\_  
 Collar size of shirt: S, M, L, XL, or \_\_\_\_\_ inches/cm  
 Neck circumference\* \_\_\_\_\_ cm

1. Snoring  
 Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?  
 Yes No

2. Tired  
 Do you often feel tired, fatigued, or sleepy during daytime?  
 Yes No

3. Observed  
 Has anyone observed you stop breathing during your sleep?  
 Yes No

4. Blood pressure  
 Do you have or are you being treated for high blood pressure?  
 Yes No

5. BMI  
 BMI more than 35 kg/m<sup>2</sup>?  
 Yes No

6. Age  
 Age over 50 yr old?  
 Yes No

7. Neck circumference  
 Neck circumference greater than 40 cm?  
 Yes No

8. Gender  
 Gender male?  
 Yes No

\* Neck circumference is measured by staff

High risk of OSA: answering yes to three or more items  
 Low risk of OSA: answering yes to less than three items

Adapted from:  
**STOP Questionnaire**  
 A Tool to Screen Patients for Obstructive Sleep Apnea  
 Frances Chung, F.R.C.P.C., Saba Vignesswaran, M.B.B.S., Pui Liao, M.D., Sharif A. Chung, Ph.D.,  
 Francis Chung, F.R.C.P.C., Saba Vignesswaran, M.B.B.S., Pui Liao, M.D., Sharif A. Chung, Ph.D.,  
 Sanyal Vignesswaran, M.B.B.S., Sazzadul Islam, M.Sc., Ali Khajehdehi, M.D., Colin M. Shapiro, F.R.C.P.C. #  
 Respiration 2008; 108:812-21 Copyright © 2008, the American Society of Human Genetics, Inc., Lippincott Williams & Wilkins, Inc.

**Snoring and Sleep Apnoea QUESTIONNAIRE · EPWORTH SLEEPINESS SCALE**

Question	Yes	No	Yes	No
1. Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you often feel tired, fatigued, or sleepy during daytime?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has anyone observed you stop breathing during your sleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you have or are you being treated for high blood pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. BMI more than 35 kg/m <sup>2</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Age over 50 yr old?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Neck circumference greater than 40 cm?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Gender male?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Symptoms**

Symptom	Yes	No
1. Waking up with a sore throat or dry mouth	<input type="checkbox"/>	<input type="checkbox"/>
2. Waking up with a headache	<input type="checkbox"/>	<input type="checkbox"/>
3. Waking up with a dry mouth	<input type="checkbox"/>	<input type="checkbox"/>
4. Waking up with a sore throat	<input type="checkbox"/>	<input type="checkbox"/>
5. Waking up with a dry mouth	<input type="checkbox"/>	<input type="checkbox"/>
6. Waking up with a sore throat	<input type="checkbox"/>	<input type="checkbox"/>
7. Waking up with a dry mouth	<input type="checkbox"/>	<input type="checkbox"/>
8. Waking up with a sore throat	<input type="checkbox"/>	<input type="checkbox"/>
9. Waking up with a dry mouth	<input type="checkbox"/>	<input type="checkbox"/>
10. Waking up with a sore throat	<input type="checkbox"/>	<input type="checkbox"/>

**RISK**

Risk Level	What your risk level indicates
1-5	You are at low risk of getting enough sleep. However, it is possible for a risk change to occur during the course of your life.
6-10	You may be suffering from excessive daytime sleepiness. This could affect your safety, productivity, and quality of life.
11-15	You are at high risk of getting enough sleep. This could affect your safety, productivity, and quality of life.



Figure 1 : MAS

airway patency, eliminating the secondary effects of sleep apnoea, hence reducing the cardiovascular risk, as well as the metabolic complications, psychosocial and chronic fatigue effects. A multi-disciplinary clinic including a respiratory sleep specialist, ENT surgeon, with dietetic specialists is the optimum set-up to reduce disease severity.

The Parkside Sleep Clinic provides a seamless diagnostic and therapy service for patients suspected of suffering with sleep disordered breathing, including multi-disciplinary working, a holistic and patient centred approach to diagnosis and management of these common under-recognised conditions.

**Key learning points:**

1. Sleep apnoea is a common cause of chronic fatigue which can manifest with secondary symptoms such as depression, loss of libido, memory impairment or difficulty at work
2. Untreated obstructive sleep apnoea hypopnoea syndrome (OSAHS) is associated with a quadrupling of the risk of cardiac arrhythmias, increased cardiovascular mortality, poorly controlled hypertension and metabolic syndrome
3. The best treatment for moderate to severe obstructive sleep apnoea hypopnoea syndrome is nocturnal CPAP.



Figure 2 : CPAP device

**Diagnosis**

Following a detailed sleep history and focused examination, patients would undergo a diagnostic multi-channel sleep study, often in the home environment with a portable overnight recorder. (Image 1)

The diagnosis is made by demonstrating desaturation events associated with flow, and respiratory effort disturbance as a result of obstruction of the airway. Severity is classified according to the frequency of events, ranging from normal (<5 per hour), to severe (>30 per hour).

Table: severity classification of OSAHS

**Treatment**

Following a positive sleep study, patients are defined as suffering with OSAHS if they score an Epworth score >9, suggesting the syndrome of sleep apnoea and daytime somnolence. Whilst some therapies such as prosthodontic mandibular advancement splints can help with mild sleep apnoea or snoring, the gold standard treatment for moderate to severe OSAHS is Continuous Positive Airways Pressure (CPAP), which is recommended by NICE.

The therapy provides a pneumatic splint to maintain

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