



RESONEA

Obstructive Sleep Apnea: Effective Intervention & Care

MeMD Telehealth Provider Training Modules

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RESONEA

Module V: Case Examples

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Module V: Case Example 1 – George – Assessment

George is a 52 year Caucasian male followed by his primary care provider for hypertension:

- Employed as a dispatcher for trucking firm.
- Weight is 240 lbs. and has been stable for the past 3-4 years (BMI = 35.7).
- Taking Lisinopril 20mg. and Norvasc 10 mg. for blood pressure; pressures usually measure 140-150/90-100 at check-up visits.
- No complaints, but on review of symptoms is positive for occasional daytime sleepiness (falls asleep at desk in the afternoons); has nocturnal GERD; and he snores.

○ Score on STOP/BANG Risk Survey = 6

S Do you **snore** loudly -- louder than talking or can be heard through closed doors? **YES**

T Do you often feel **tired**, fatigued or sleepy during the day? (Driving or talking with someone) **NO**

O Has anyone **observed** you stop breathing during sleep? **NO**

P Do you have or are you being treated for high **blood pressure**? **YES**

B Is your **BMI** (body mass index) > 35? **YES**

A Is your **age** 50 years or more? **YES**

N Is your **neck** size 17 or larger (if male) or 16 or larger (if female)? **YES**

G Is your **gender** male? **YES**

○ Score on Epworth Sleepiness Scale (ESS) = 11

Epworth Sleepiness Scale – Situation	Chance of Dozing: 1 - slight 2 - moderate 3 - high
• Sitting and reading	2
• Watching TV	2
• Sitting inactive in a public place (e.g., a theater or a meeting)	1
• As a passenger in a car for an hour without a break	2
• Lying down to rest in the afternoon when circumstances permit	2
• Sitting and talking to someone	0
• Sitting quietly after a lunch without alcohol	2
• In a car, while stopped for a few minutes in traffic	0



Module V: Case Example 1 – George – Course of Action Options

Options:

- a) Suggest weight reduction and re-check symptoms in 3 months
- b) Refer for PSG (polysomnography)
- c) Refer for HST (home sleep testing)

What would you do?



Module V: Case Example 1 – George – Review of Option A

If you chose recommendation a)...

- a) **Suggest weight reduction and re-check in 3 months**
- b) Refer for PSG (polysomnography)
- c) Refer for HSG (home sleep testing)

This is the course of action that would have most likely been taken in most primary care settings, however in those instances ...

- ✓ The patient would not have been asked about **snoring**.
- ✓ OSA risk factors and daytime sleepiness symptoms would not have been assessed by **STOP/BANG** or the **ESS** scales.
- ✓ Unfortunately, OSA may not have been the primary consideration for this patient.



Module V: Case Example 1 – George – Review of Option B

If you chose recommendation b)...

- a) Suggest weight reduction and re-check in 3 months
- b) Refer for PSG (polysomnography)**
- c) Refer for HSG (home sleep testing)

Referring for PSG is an acceptable option to help establish the diagnosis of OSA, however there is no indication that lab testing may be needed in this case.

This patient is a candidate for HST, which has been shown to be as accurate as PSG at diagnosing OSA, at a much lower cost. Testing in their own home is preferable to most patients, so they are more likely to complete testing and less likely to have false negative results.

- ✓ This patient has a **high pre-test probability of OSA**, based on medical history, STOP/BANG and ESS.
- ✓ He does **not have characteristics** that would make PSG the preferred testing modality:
 - He does not have co-morbid COPD, CHF, or obesity-hypoventilation syndrome;
 - He lacks symptoms such as apoplexy or nocturnal limb movements, which would suggest sleep disorders other than OSA.



Module V: Case Example 1 – George – Review of Option C

If you chose recommendation c)...

- a) Suggest weight reduction and recheck in 3 months
- b) Refer for PSG (polysomnography)
- c) **Refer for HST (home sleep testing)**

George is a good candidate for HST, thus ordering HST is a reasonable and most appropriate course of action:

- ✓ This patient has a **high pre-test probability of OSA**, based on medical history, STOP/BANG and ESS.
- ✓ He does **not** have co-morbidities for which PSG is preferred.
- ✓ He lacks symptoms to suggest sleep disorders **other than OSA**.



Module V: Case Example 2 – Charles – Assessment

Charles is a 42 year old African American male, followed for hypertension:

- Drives for trucking firm and cooks part-time at a restaurant.
 - Weight = 180 lbs. (BMI = 28)
 - Has a history of high blood pressure; taking HCTZ 25 mg. and Norvasc 10 mg; pressures usually measure 130 -140/80 at check-up visits.
 - No complaints, but on review of symptoms, he states that he is “tired – two jobs and two kids at home.”
 - He does not snore.
- **Score on STOP/BANG Survey = 2**
(Affirmative answers were **tiredness** and **hypertension**)
 - **Score on the ESS = 16**

Epworth Sleepiness Scale Situation	Chance of Dozing: 1- slight 2 - moderate 3 - high
• Sitting and reading	3
• Watching TV	2
• Sitting inactive in a public place (e.g. a theater or a meeting)	2
• As a passenger in a car for an hour without a break	2
• Lying down to rest in the afternoon when circumstances permit	3
• Sitting and talking to someone	1
• Sitting quietly after a lunch without alcohol	2
• In a car, while stopped for a few minutes in traffic	1



Module V: Case Example 2 – Charles – Course of Action Options

Options:

- a) Refer for PSG (polysomnography)
- b) Refer for HST (home sleep testing)
- c) Other?

What would you do?



Module V: Case Example 2 – Charles – Additional Factors To Consider

Options:

- a) Refer for PSG (polysomnography)
 - b) Refer for HST (home sleep testing)
 - c) Other ?
-
- Patient has complaints of daytime sleepiness and a **high ESS** – he’s very sleepy.
 - Yet, he does **not snore** and his overall **STOP/BANG score is only 2**.
 - Before referring, **more history is needed**:
 - ✓ **How many hours of sleep** per night is he getting?
 - ✓ Does he have any history to suggest **narcolepsy**, such as apoplectic episodes?
 - ✓ During sleep, are there **movements to suggest nocturnal seizures or periodic limb movement disorder**?
 - ✓ Does the history suggest **fatigue** rather than daytime sleepiness?
 - Systemic or metabolic conditions such as anemia, diabetes, or hypothyroidism should be considered.
 - Sometimes sorting this out by history alone can be difficult, thus checking a few basic lab tests is appropriate.



Module V: Case Example 2 – Charles – Obtain Additional History

- **42 year-old truck driver**
 - Hypertensive
 - Not obese
 - does not snore
 - STOP/BANG score = 2
 - ESS score = 16
- **Take additional history:**
 - Working more at restaurant lately - often getting only 2-4 hours of sleep per night.
 - No history of limb or other movements during sleep.
 - No apoplectic episodes.

What would you do?



Module V: Case Example 2 – Charles – Review of Options

Options:

- a) **Refer for PSG (polysomnography)**
 - b) Refer for HSG (home sleep testing)
 - c) **Other?**
-
- ✓ He has a **low probability of OSA**, so HST would not be recommended.
 - ✓ Charles' daytime sleepiness is likely related to being **sleep-deprived**. He urgently needs more sleep and should **not drive** until he has resumed a schedule that allows for **at least 6 hours of sleep per night**.
 - ✓ Checking a CBC, chemistry panel, and TSH are reasonable to **rule out** fatigue from a **systemic or metabolic cause**.
 - ✓ Given his occupation, a **PSG may still be recommended**.
 - ✓ If after completing the evaluation he receives a diagnosis of OSA or another sleep disorder or his day time sleepiness does not resolve, he should be instructed to notify his Department of Transportation (DOT) certifying provider.



Module V: Case Example 3 – Harry – Assessment

Harry is a 55 year-old white male:

- Occupation is long-haul commercial truck driver.
 - Weight 250 lbs. (BMI = 38)
 - His blood pressure is 156/96; his fasting blood sugar is 128. He is not yet being treated with medication for these.
 - Harry complains of being “tired from working too much.”
 - He snores, has headaches and GERD.
-
- Score on the STOP/BANG survey = **7**

 - Score on the Epworth Sleepiness Scale = **14**

 - He has had a home sleep test, consistent with his high probability of OSA, which yielded an **AHI of 40.**



Module V: Case Example 3 – Harry – Course of Action Options

Options:

- a) Order CPAP?
- b) Order oral appliance?
- c) Other?

What would you do?



Module V: Case Example 3 – Harry – Review of Options

If you chose option a):

- a) **Order CPAP?**
- b) Order oral appliance?
- c) Other?

CPAP is indicated in this case:

- ✓ Patient has **severe OSA and is symptomatic.**
- ✓ Would an **oral appliance** be inappropriate?
- ✓ Is it safe for him to drive? And what advice would you provide about his driving?



Is an oral appliance a reasonable option for Harry?

According to a recent summary in the literature:

- *“Oral appliance therapy is an alternative to positive airway pressure therapy for patients with OSA who have failed or declined CPAP, particularly those with mild or moderate OSA. Potential advantages of oral appliance therapy over CPAP include portability, tolerability, and improved adherence.”*
- *“Oral appliances are generally less effective than positive airway pressure at improving the AHI and oxyhemoglobin saturation, although there is no difference in the impact on symptoms (e.g., subjective daytime sleepiness) or other health outcomes (e.g., blood pressure, neurocognitive function, or quality of life). Patients often prefer oral appliances.”*
- *“Oral appliance therapy may be used with caution in patients with severe OSA (AHI>30 events per hour), since variable efficacy of oral appliances has been reported in this patient population.”*
- *“Contraindications to oral appliance therapy include severe oxyhemoglobin desaturation and certain dental conditions.”*



Module V: Case Example 3 – Harry – Treatment Options

- **Is an oral appliance a reasonable option for Harry ?**
 - As a long-haul commercial truck driver, his diagnosis of OSA has implications for his DOT certification
 - The Department of Transportation (DOT) has a preference for CPAP treatment in drivers with OSA
 - ✓ More extensive studies documenting efficacy
 - ✓ Adherence to treatment can be tracked via utilization data from CPAP machines
 - ✓ **Therefore for Harry, CPAP would be a better first choice therapy option**
 - If Harry were not in a high risk occupation an oral appliance would be a reasonable option- if there is close follow-up and he has no TMJ or other dental issue.
 - Some might still prefer to recommend CPAP as the initial choice, since his AHI = 40.
- **With either treatment , Oral Appliance or CPAP, it is important that the primary care provider:**
 - Review with the patient the pathophysiology of OSA.
 - Discuss the importance of treatment
 - ✓ For his future health;
 - ✓ For his current state of well-being.
 - Consider an additional encounter with the patient's spouse, to advise on the disease, treatment, and monitoring for adherence.
 - Advise the patient about driving:
 - ✓ **He should not drive until he has been successfully treated.**
 - ✓ **He will need to start treatment and be assessed in follow-up.**
 - ✓ **Resumption of driving should be discussed as part of the follow-up process and if a commercial trucker he should notify his DOT certifying provider that he now has a diagnosis of OSA.**



Module V: Case Example 4 – Sara – Assessment

Sara is a 58 year-old African American female:

- Occupation - accountant.
 - Weight 175 lbs. (BMI = 27)
 - Type II diabetes; taking metformin Hcl; her hemoglobin A1c = 7.5
 - Snores loudly, but feels well.
-
- **Score on the STOP/BANG Survey = 3**
(Affirmatives are: age >50, snores loudly, and breathing pauses during sleep noted by husband)

 - **Score on the Epworth Sleepiness Scale = 7**

 - **HST results are consistent with mild OSA, with an AHI of 12.**



Module V: Case Example 4 – Sara – Course of Action Options

Options:

- a) Suggest weight reduction and see her back in a year ?
- b) Order oral appliance?
- c) Order CPAP?

What would you do?



Module V: Case Example 4 – Sara – Review of Options

If you recommended option b) or c):

- a) Suggest weight reduction and see her back in a year?
- b) **Order oral appliance?**
- c) **Order CPAP?**

Treatment for patients with mild OSA, with either oral appliance or CPAP, is recommended if:

- ✓ The patient has significant daytime sleepiness, which is **not the case** with Sara.
- ✓ If a **significant OSA-related co-morbidity is present** -- in this case, Sara's **Type II diabetes**.
- ✓ Weight loss should be recommended, but if utilized as the only intervention in this case, it should be accompanied by close follow-up to **document that weight reduction occurs, is sustained, and the snoring and Type II diabetes are eliminated**.





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