Obstructive Sleep Apnea and the Commercial Driver

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Disclosure

I have no conflicts of interest to report. Any products or images shown are for illustrative purposes only.

Objectives

Introduction
Pathophysiology
Clinical Signs
Treatment
Screening guidelines
OSA case review
Introduction

It is estimated that up to 28% of commercial drivers suffers from some degree of Obstructive Sleep Apnea (OSA).

More prevalent as we age:
- Affects
- 4% of middle-aged men
- 2% of middle aged women
- 27% of older men
- 19% of older men and women

Characterized by pauses or gaps in breathing due to an obstruction of the airway.

Obstructive Sleep Apnea: Physiology
Obstructive Sleep Apnea: Physiology

Partial blockage of airway causing abnormal breathing and sleep disruptions
37 million experience on a regular basis

Obstructive Sleep Apnea and Cardiovascular Effects

**Obstructive Apnea**
- Oxygen level drops
- Carbon Dioxide builds

**Brain arousal**
- Nervous system stimulates brain to awaken

**Resumption of breathing**
- Elevated blood pressure
The Relationship Between Obstructive Sleep Apnea and Hypertension

Conditions Associated With OSA
Definitions

- **Apnea**
  - airflow ceases for more than 10 seconds.
- **Hypopnea**
  - airflow decrease > 10 seconds
  - + decrease in CO2 sat
  - + an arousal from sleep.
- **Severity (apnea-hypopnea index):**
  - Mild – 5+ episodes/hour.
  - Moderate – 15+ episodes/hour.
  - Severe – 30+ episodes/hour.

Sleep Apnea

**Predisposing Factors**

- Obesity
- Narrow oropharynx
- Large neck size
- Small jaw
- Other

**Clinical Signs**

**Mallampati Classification**
Neck Circumference

Jaw Size

Sleep Apnea Symptoms
- Loud, regular/irregular snoring
- Unrefreshing sleep
- Daytime sleepiness
- Falling asleep in non-stimulating environments
  - Watching TV
  - Long drives
How Do We Test for Sleep Apnea?

Sleep Studies can be performed at home (unsupervised) or in a sleep lab (supervised).

Epworth Sleepiness Scale

Treating Obstructive Sleep Apnea

- Constant Positive Airway Pressure (CPAP)
  - Newer machines have "a compliance card" which documents CPAP usage.
Who do we screen?

- Only those who report symptoms?
- Only those who look symptomatic?
- According to what guidelines?
  - FMCSA
  - Current medical literature
  - Other?

Controversy #1- Regulation or Guideline?

391.41 (b) 5

- Has no established medical history or clinical diagnosis of a respiratory dysfunction likely to interfere with the ability to control and drive a commercial motor vehicle safely.
Controversy

Is OSA considered “a respiratory dysfunction likely to interfere with the ability to control and drive a commercial motor vehicle safely”? Doesn’t this refer more to COPD or other “serious” respiratory problems likely to cause the patient sudden incapacitation such as severe sudden dyspnea?

Federal Motor Carrier Safety Administration (FMCSA)

Since a driver must be alert at all times, any change in his or her mental state is in direct conflict with highway safety. There are many conditions that interfere with oxygen exchange and may result in incapacitation, including emphysema, chronic asthma, carcinoma, tuberculosis, chronic bronchitis and sleep apnea. If the medical examiner detects a respiratory dysfunction, that in any way is likely to interfere with the driver’s ability to safely control and drive a commercial motor vehicle, the driver must be referred to a specialist for further evaluation and therapy.
Joint Task Force 2006

Screening Recommendation for Commercial Drivers With Possible or Probable Sleep Apnea

1. Sleep history suggestive of OSA (snoring, excessive daytime sleepiness, witnessed apneas)

2. Two or more of the following:
   a) BMI ≥ 35 kg/m²
   b) Neck circumference greater than 17” in men or 16” in women;
   c) Hypertension (new, uncontrolled, or unable to control with less than 2 medications).

3. ESS > 10

4. Previously diagnosed OSA: compliance claimed, but no recent medical compliance data available for immediate review

5. AHI > 5 but < 30 in a prior sleep study and no excessive daytime somnolence (ESS 11), no MVA’s, no hypertension requiring 2 or more agents to control

March 2009
Key Points

- 456 drivers
  - 53 (12%) sent for sleep study using JTF criteria
  - 20 studies performed and all 20 confirmed as OSA via Sleep Study
  - 33 patients lost to f/u

DOT Medical Review Board

FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION
MEDICAL REVIEW BOARD

Meeting Summary

[Meeting details are here]
Summary of MRB Minutes 1/2008

a) As BMI increases the risk for crash increases
b) Obesity (BMI ≥ 30) is predictor of OSA
c) Commercial Drivers BMI
   • 42 percent of drivers have a BMI of ≥ 30
   • 24 percent of drivers have BMI ≥ 33

Medical Expert Panel
   • Screen all drivers with BMI ≥ 33. Screening all with a BMI of 30 would be better but infrastructure to screen everyone is not yet available. Symptomatic or high risk should also be screened.

Medical Review Board
   • Screen all drivers with BMI ≥ 30

Medical Expert Panel Guidance

- Asymptomatic patients
  • AHI <20: Clear for 1 year, CPAP not mandatory
  • AHI =>20: Mandatory treatment

- Symptomatic
  • Require treatment
    • If on CPAP need to demonstrate compliance and effectiveness.
    • If surgery then require repeat AHI<10
  • Consider use of sleep specialist
Case 1

51 year-old male Long Haul Trucker
- Hypertension x1 year
- Hydrochlorthiazide
- Atenolol
- Lisinopril
- BP 140/84

Case 2

51 yo male driver present for recertification
- Snored when young, but “cured” by sleeping on side
- No history of MVAs
- Denies daytime sleepiness
- Hypertension controlled on Hctz (132/82)
- Ht = 71 in, wt = 235 lb >>> BMI = 33
- Neck circumference=18 inches
- Upper airway appears normal (Mallampati 2)

Case 3

- 42 yo male school bus driver;
- BMI 35
- Mallampati 4
- Denies symptoms
- AHI = 18
Case 3b

- 42 yo male school bus driver;
  - BMI 35
  - Mallampati 4
  - Denies symptoms
  - AHI = 18

- 1 year later returns for recertification
  - Essentially the same except;
    - Gained 20 lbs
    - Lost 20 lbs

Case 4

- 51 yo male commercial driver;
  - Diagnosed with OSA last year
  - Unable/Unwilling to tolerate CPAP
  - Currently feels fine
    * No history of MVAs
    * Denies daytime sleepiness
  - Ht = 72 in, wt = 160 lb >>> BMI = 22
  - Neck circumference=16 inches
  - Upper airway appears with Mallampati 1

Case 5

- 51 yo male Firefighter;
  - Diagnosed with OSA last year
  - Treated with a Mandibular Advancement device
  - Had repeat sleep study while wearing dental device and AHI improved from 22 to 15.
  - Currently feels fine
    * No history of MVAs
    * Denies daytime sleepiness
    * Reports excellent compliance
### Case 6

55 yo female bus driver;
- BMI = 40
- Mallampati 4
- Denies symptoms
- Given 1 month temp clearance for PSG
- 1 week later AHI found to be 70

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### Case 6

25 yo male road service worker presents for recertification;
- BMI 28
- Mallampati 4
- HTN barely controlled on 3 meds
- PSG with AHI of 35
- Refuses CPAP but schedules an appt with ENT for surgery evaluation.

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### Case 6

- Undergoes a UPPP and returns 3 months later for a clearance.
- Reports feeling much better.
- Sent for repeat PSG and AHI is now:
  - 5
  - 25
  - 15
Case 7

• 40 yo male school bus driver with OSA on CPAP presents for recertification;
  ▪ Reports being compliant on CPAP and feeling well.
  ▪ You request a print out from his compliance card and…

Case 7

• No compliance card
  ▪ Repeat PSG with CPAP

• Patient brings in data for the past month
  ▪ Effectively wearing CPAP 4 hours a night and for 5 nights/week

Case 7

• 35 yo male truck driver presents for initial certification of CDL.
  ▪ BMI 38
  ▪ Mallampati 4
  ▪ Neck size 18 inches
  ▪ Denies excessive daytime sleepiness
  ▪ PSG performed with ambulatory sleep study and AHI- 25
  ▪ Patient reports that he had severe nasal congestion and would like a retest.
Case 7

- Repeat ambulatory sleep study performed
  - AHI is now 2.5

Summary

- OSA
  - Well known and common condition which is caused by several factors of which BMI and age appear to be strong predictors.
  - Leads to an increased risk of
    - Motor vehicle accidents
    - A variety of negative health outcomes.
  - Is easily detectable and treatable

Summary

- Although the FMCSA has regulations in regards to driving with sleep apnea, they have not formally adopted a set of screening guidelines as they have for Hypertension.
- For providers to not follow the current clinical guidelines, can bring significant risk.