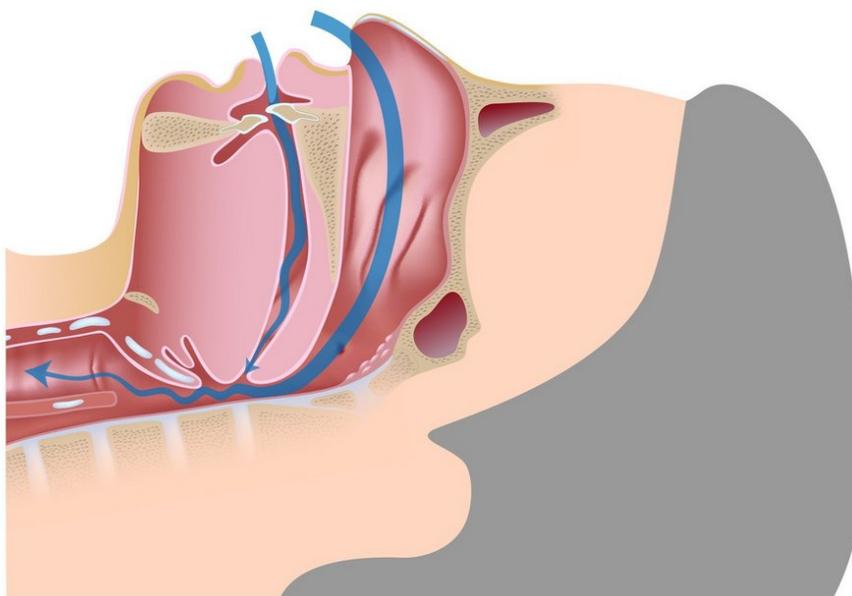


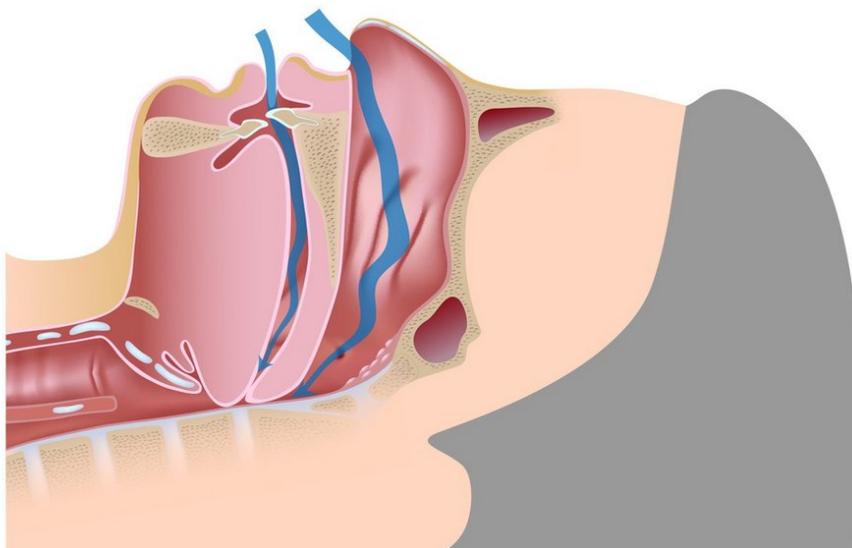
Dental Sleep Medicine Basics

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Snoring - Partial obstruction of the airway



OSA - Complete obstruction of the airway



INTRODUCTION

Here are some basic aspect of Dental Sleep Medicine. This viewpoint is from an industry participant, **not a medical opinion.**

Step 1 — What's the Problem?



- Obstructive sleep apnea (OSA) is a huge health issue in North America and around the world
- In the United States, it is reported that over 90 million of our friends and neighbors are afflicted with some level of sleep disordered breathing. Including 20-40 million with OSA.
- If we deprive our bodies of oxygen and are constantly waking up at night, bad things happen.
- From daytime sleepiness to high blood pressure to diabetes, OSA is a gateway for all the bad things to creep into our lives.
- This short video clip is from our Australian friends and makes the point clearly.

Step 2 — Let's define the issue...

The Basics

Normal Breathing
No Blockage

Snoring
Partial Blockage

Sleep Apnea (OSA)
Complete Blockage

Sleep Disordered Breathing

90 million

Occasional Snoring

Regular Snoring

Upper Airway Resistance Syndrome

Mild Sleep Apnea

Moderate Sleep Apnea

Severe Sleep Apnea

AHI: < 5

AHI: 5-15

AHI: 15-30

AHI: > 30

Snoring vs. Obstructive Sleep Apnea

Sleep Disordered Breathing is broken down in two categories: snoring and obstructive sleep apnea. Then further categorized into three major sub-groups. These sub-groups are defined by the Apnea-Hypopnea Index (AHI). AHI is measured with a home sleep test (HST) or a Laboratory sleep study (PSG)

Apnea event = 80-100% reduction in airflow with stoppage of breathing for 10 seconds or more.

Hypopnea event = 50-80% reduction of airflow with stoppage of breathing for 10 seconds or more.

AHI = (Number of apnea + hypopnea events) / hour

- Sleep disordered breathing (SDB) is the medical term that describes any issues with breathing while sleeping
- There is one major measurement that helps define the range = AHI
- The Apnea Hypopnea Index (AHI) is measured by how many times we have a reduction in airflow per hour.
 - Apnea Event = 80-100% reduction in airflow with stoppage of breathing for 10 seconds or more.
 - Hypopnea Event = 50-80% reduction of airflow with stoppage of breathing for 10 secs or more
- Obstructive Sleep Apnea (OSA) is defined as a minimum of 5 AHI. Below that threshold is non-medical. Either snoring or upper airway resistance.
- OSA is broken into three major categories: Mild (5-15 AHI), Moderate (15-30) and Severe (>30).

Step 3 — How do we measure....

STOP-BANG Sleep Apnea Questionnaire
Chung F et al. Anesthesiology 2008 and SJA 2012

STOP		
Do you B NORE loudly (louder than talking or loud enough to be heard through closed doors)?	Yes	No
Do you often feel T IREd, fatigued, or sleepy during daytime?	Yes	No
Has anyone O BSEIVED you stop breathing during your sleep?	Yes	No
Do you have or are you being treated for high blood P RESSURE?	Yes	No
BANG		
B Mt more than 35kg/m ² ?	Yes	No
A GE over 50 years old?	Yes	No
N ECK circumference > 16 inches (40cm)?	Yes	No
G ENDER: Male?	Yes	No
TOTAL SCORE		
Number of Yes answers : Risk of Obstructive Sleep Apnea 0-2 : Low 3-4: Intermediate 5-8: High		



Home Sleep Testing - Private

Professional sleep testing from the comfort of your own bed. Inexpensive, accurate 2 night study using a type III device. Interpreted by a board certified MD. Results are private, only sent to you.

Laboratory Sleep Testing (PSG)

A supervised overnight sleep test is the gold standard for a variety of sleep disorders. Qualified technicians insure the data collected is accurate. Results are read and interpreted by a board certified MD. This is also known as polysomnogram testing or PSG.

 Anyone can screen for OSA, but remember only a Medical Physician can diagnose and prescribe treatment for this medical condition.

- There are several ways to determine if someone needs to see a physician to determine if OSA is present.
 - **Simple written quizzes** - like the STOP-BANG test. This particular 8 question quiz has been correlated to OSA in a peer reviewed study.
 - **Recording Pulse Oximeters:** Not a diagnostic tool, but certainly highly correlated. These devices record your O₂ level all night. If you are dropping below 90%, it's a strong indication to get checked.
 - **Home Sleep Testing (HST)** - These are sophisticated medical instruments that can be used diagnostically, when included with a more comprehensive physical exam. Wear this device in your own bed. Less expensive and more patient friendly than a PSG.
 - **Polysomnograph testing (PSG)** - This is the gold standard of testing for OSA and other sleep disorders. The patient spends the night in a laboratory and is monitored by a sleep technologist. By far, gives the most complete information for the diagnosing physician.

Step 4 — Regulations and Money



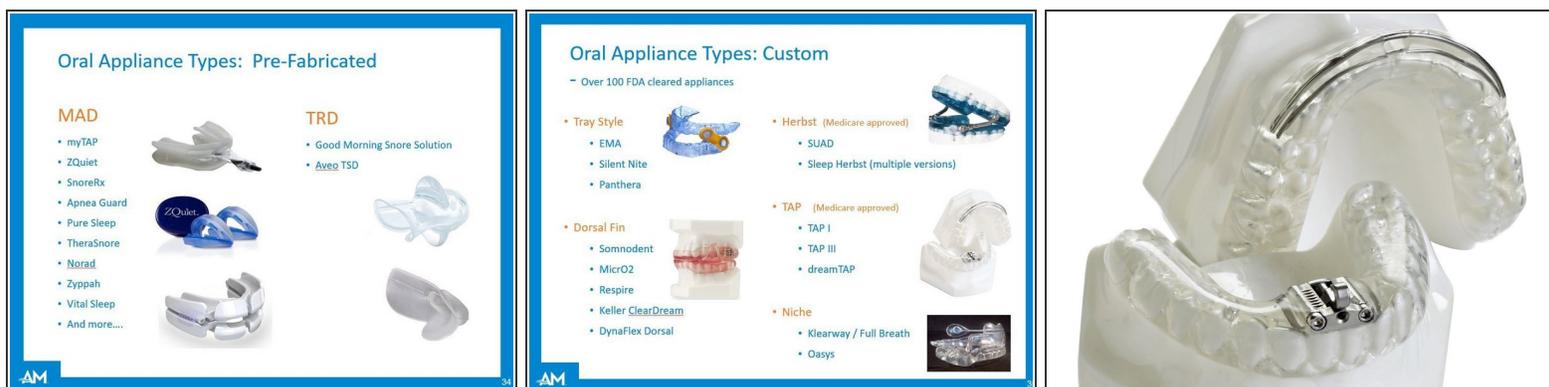
- **Licensing Reality:** Obstructive Sleep Apnea is a medical condition and can only be diagnosed by a medical physician.
 - Treatments can only be prescribed by a medical doctor
 - Dentists cannot diagnose or prescribe treatment.
 - In Dental Sleep Medicine, the Dentist is simply dispensing the prescribed treatment.
 - This doesn't prevent the Dentist from screening patients for evaluation or treating non-medical sleep disordered breathing
- **Cash Flow Reality:** Insurance reimbursement for the prescribed treatment for OSA will only be from Medical Insurance..
 - No dental insurance reimburses for treatment of medical conditions.
 - Private Insurance and Medicare both have ample coverage for qualified (EO486) devices.

Step 5 — Treatment options



- **Lifestyle Changes** - The simplest treatments are the least expensive. Weight loss, stop smoking and avoiding alcohol or muscle relaxers before bed are all recommended.
- **Tighten up the Throat** - There are several choices. How about playing the Didgeridoo? Or use an astringent to shrink the inflamed tissues? You can have a Dentist or Physician insert nylon rods at the back of the throat with the Pillar procedure. Or how about scarring the back of the throat with lasers or radio waves - Somnoplasty.
- **Breathe through the Nose** - The literature is clear that if we breathe through the nose, rather than the mouth, it opens the airway. The tongue positions forward. Nasal Dilators are an inexpensive and effective treatment option. Chin Straps can actually work for some. Septoplasty surgery is effective way to clear out any blockages.
- **Don't sleep on the Back** - Gravity works against us when we sleep on our back. The tongue drops back and fills the airway. This can be avoided several ways. Physical impediments like taping a tennis ball on a t-shirt or using a belt like the Zzoma work well. Electronic devices like the Night Shift or Night Balance are effective.
- **Open the Airway** - The most patient friendly option are oral appliances. The best are custom made devices from the Dentist. The most popular Medical treatment is the famous CPAP. Literally blows the airway open with positive air pressure. The last resort options are surgical. UPPP or BiMax jaw surgery can be effective.

Step 6 — Oral Appliances



- For a long term treatment, an oral appliance is the best solution.
 - Easy to use with few side effects.
- The literature shows that oral appliance therapy (OAT) matches CPAP in effectiveness for mild to moderate OSA.
- The big difference is the patient compliance. CPAP checks in with about 40% compliance within 2 years. OAT is about 95%.
 - If the patient doesn't use the treatment, it can't help the condition.
- As more folks realize that oral appliance therapy works, more patients can get treated. And the world will be a better place!