

Clinical Practice Guideline for the Treatment of Obstructive Sleep Apnea and Snoring with Oral Appliance Therapy: An Update for 2015



Dr. Les Priemer

Introduction

Since the previous parameter and review paper publication on oral appliances (OAs) in 2006, the relevant scientific literature has grown considerably, particularly in relation to clinical outcomes. The purpose of this new guideline is to replace the previous and update recommendations for the use of OAs in the treatment of obstructive sleep apnea (OSA) and snoring.

Methods

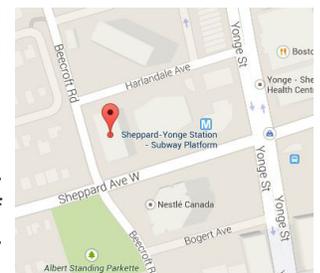
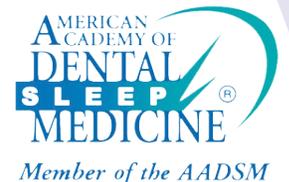
The American Academy of Sleep Medicine (AASM) and American Academy of Dental Sleep Medicine (AADSM) commissioned a seven-member task force. A systematic review of the literature was performed and a modified Grading of Recommendations Assessment, Development, and Evaluation (GRADE) process was used to assess the quality of evidence. The task force developed recommendations and assigned strengths based on the quality of the evidence counterbalanced by an assessment of the relative benefit of the treatment versus the potential harms. The AASM and AADSM Board of Directors approved the final guideline recommendations.

Recommendations

1. We recommend that sleep physicians prescribe oral appliances, rather than no therapy, for adult patients who request treatment of primary snoring (without obstructive sleep apnea). (STANDARD)
2. When oral appliance therapy is prescribed by a sleep physician for an adult patient with obstructive sleep apnea, we suggest that a qualified dentist use a custom, titratable appliance over non-custom oral devices. (GUIDELINE)
3. We recommend that sleep physicians consider prescription of oral appliances, rather than no treatment, for adult patients with obstructive sleep apnea who are intolerant of CPAP therapy or prefer alternate therapy. (STANDARD)
4. We suggest that qualified dentists provide oversight- rather than no follow-up-of oral appliance therapy in adult patients with obstructive sleep apnea, to survey for dental-related side effects or occlusal changes and reduce their incidence. (GUIDELINE)
5. We suggest that sleep physicians conduct follow-up sleep testing to improve or confirm treatment efficacy, rather than conduct follow-up without sleep testing, for patients fitted with oral appliances. (GUIDELINE)
6. We suggest that sleep physicians and qualified dentists instruct adult patients treated with oral appliances for obstructive sleep apnea to return for periodic office visits- as opposed to no follow- up-with a qualified dentist and a sleep physician. (GUIDELINE)

Conclusions

The AASM and AADSM expect these guidelines to have a positive impact on professional behavior, patient outcomes, and, possibly, health care costs. This guideline reflects the state of knowledge at the time of publication and will require updates if new evidence warrants significant changes to the current recommendations.



Ramar K, Dort LC, Katz SG, Lettieri CJ, Harrod CG, Thomas SM, Chervin RD. Clinical practice guideline for the treatment of obstructive sleep apnea and snoring with oral appliance therapy: an update for 2015. *J Clin Sleep Med* 2015;11(7):773-827.

How Oral Appliances Can Help Your Patients

Oral Appliance Therapy is a more comfortable and easier way for your non-CPAP compliant patients to get the relief they deserve from Sleep Apnea. Oral appliances hold the lower jaw forward while the patient sleeps, opening up the airways that would normally be blocked due to sleep apnea. To determine whether a patient has sleep apnea, the Apnea/Hypopnea index is examined through sleep monitoring. In a sleep lab the number of apneas or hypopneas the patient experiences per night will depend on the severity of their sleep apnea, and will define the type of treatment is best for them. Oral appliance therapy is often used as the first treatment of mild or moderate sleep apnea, and is one of the best options for people who cannot tolerate using the CPAP device. Oral appliances can work for many different patients, but some patients may not benefit from using one.

According to a recent study, the usage of an oral appliance significantly decreases the Apnea/Hypopnea Index, causing the patient to experience less discomfort throughout the night. The study showed that men were more likely to see a change in their AHI numbers, when they slept wearing a device that repositioned their lower jaw.

An oral appliance is more comfortable, discrete, and easier to use than the CPAP machine, and is a great option for those who refuse to wear the CPAP mask. Since they have such a high rate of acceptance by patients, oral appliances are considered the one of the best alternatives to treat sleep apnea for those who do not tolerate CPAP. Oral appliance therapy is increasingly gaining popularity as a first-line treatment option for many persons diagnosed with mild to moderate sleep apnea as well as those who are CPAP intolerant and have severe sleep apnea.

Levendowski, Daniel, Morgan, Todd, Popovic, Djordje, Melzer, Victoria. "Assessing Changes in the Apnea/Hypopnea Index Resulting from Increased Vertical Dimension of Occlusion of Mandibular Positioning Devices". Scripps Memorial Hospital. 2007. Print.



*** In my practice, I see many sleep patients suffering from OSA who can't/won't use CPAP at all. For those patients, especially, OAT is generally an excellent alternative. ***

What does this mean to me:

When I see patients who are CPAP compliant, I encourage them to continue with CPAP and utilize OAT for travel, camping, etc.

For patients who can tolerate CPAP only part time OAT is a useful adjunct; (e.g. to be used in the second half of the night or alternating nights, with CPAP, to decrease CPAP pressure etc.)

For patients who can't/won't use CPAP, OAT can offer great benefits and with appropriate titration protocol can have an excellent success rate and be very beneficial to our patients.

Patients referred from their sleep physicians are generally very grateful to be offered a second treatment modality. I stress to them, the need for proper follow up by their referring physician and the usefulness of a follow up oral titration polysomnogram

Good communication is the key to success.

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COPD and OSA

The most prevalent chronic respiratory disorders, obstructive sleep apnea (OSA) and chronic obstructive pulmonary disease (COPD), affect a significant number of individuals in the country. A small percentage of the population experience overlap syndrome between the two disorders, which is when a patient has two medical conditions (in this case OSA and COPD) occurring at the same time. Both COPD and OSA are influenced by a person's weight, age, and lifestyle choices (such as smoking). When both disorders present themselves in a patient, the patient experiences more pronounced nocturnal oxygen desaturation, predisposing them to pulmonary hypertension. A patient's lifestyle choices such as smoking cigarettes or drinking at night will affect the degree to which they deal with the disorders.

As you know when a person's blood oxygen level drops by three or more percent from their average baseline, this is called nocturnal oxygen desaturation (NOD). Since the patient cannot get enough air in their lungs, due to sleep apnea or chronic obstructive pulmonary disease, the body cannot provide itself enough oxygen. This drop in blood oxygen levels can lead to an increased chance of pulmonary hypertension in patients who experience overlap between COPD and OSA.

Just as OSA affects a person's sleep, COPD impairs sleep quality with patients experiencing consistent disturbances throughout the night. When coupled with OSA, these nighttime disturbances become worse and worse, and

the effect on the patients' health is extremely detrimental. Our bodies' respiratory responses rely on chemical inputs, which are diminished when both OSA and COPD overlap in a patient. Another concern that arises is the fact that some of the medications prescribed for one disorder can negatively affect the other. Long-acting inhalers that help COPD can reduce the oxygen a patient receives while they sleep, and corticosteroids promote obesity and pulmonary fluid retention, further aggravating sleep apnea. Oxidative stress occurs in both sleep apnea and COPD, but can be reduced through use of a CPAP machine or oral appliance. Hypoxia, a deficiency of oxygen in tissue matter, is also greater in those with the overlap of COPD and OSA.

While the data is limited, upper airway narrowing related to COPD may make a patient more likely to develop sleep apnea in their lifetime. Although overlapping between the disorders does occur, there are variations in the severity of the effects on each other.

McNicholas, W. T (2009). "Chronic Obstructive Pulmonary Disease and Obstructive Sleep Apnea". *Pulmonary Perspective*, Vol 180 pp 692-700.



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Measuring Compliance & Determining Overall Efficacy of Oral Appliances

In the past, compliance data for oral appliance therapy has been largely anecdotal. While modern CPAP devices are increasingly able to self-report on compliance, compiling similar objective data for oral appliances has been limited to clinical environments, which may not reflect real-world use patterns.

A study at the University of Antwerp, Belgium, sought to provide more objective data through the use of micro-sensor thermometers embedded into oral appliances. The devices were embedded in the upper right side of the oral appliances, with compliance data based on the assumption that the device was in use when the recorded temperature was greater than 35°C.

During a three-month clinical trial, a group of 51 patient participated in the study. None were aware of the monitoring device when they were initially provided with the oral appliance, and they were given no special instructions regarding compliance expectations. The study group had an established diagnosis of sleep breathing disorder and a mean AHI of 18 (+/-11.9), a median age of 47 (=/-10), a BMI of 26.6 (+/-4).

Post-study interviews and examinations determined that there were no adverse effects from use of the embedded monitoring devices, and the study groups overall mean rate of oral appliance use was shown to be 6.6 hours per day (=/-1.3 h). These numbers were used to calculate compliance by dividing time of appliance use by total sleep time.

Treatment efficacy was calculated based on reductions of the apnea/hypopnea index (AHI). Prior to beginning oral appliance therapy, and again at the end of the three-month study, all participants underwent a level 1 overnight polysomnography. Success was defined as a 50 percent or greater reduction in AHI and an AHI of less than 5 per hour of sleep. The study's overall reported success rate was 62 percent.

Using a combination of the objective compliance data obtained from the study, and AHI reduction success rates, the overall mean disease alleviation with oral appliance therapy was determined to be 51 percent. This was calculated based on a formula that took into account overall efficacy and compliance rates. In comparison, a generally-accepted MDA score for CPAP therapy is 50 percent.

Sources: Objective Measurement of Compliance During Oral Appliance Therapy for Sleep-Disorder Breathing; Anwerp University Hospital, Vanderverken. European Respiratory Journal, 2000/16

To Refer to Dr. Priemer
See Enclosed Referral Form

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