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# Sleep Disorder Treatment with Oral and Sleep Position Appliances

MEDICAL POLICY NUMBER: 46

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**INSTRUCTIONS FOR USE:** Company Medical Policies serve as guidance for the administration of plan benefits. Medical policies do not constitute medical advice nor a guarantee of coverage. Company Medical Policies are reviewed annually and are based upon published, peer-reviewed scientific evidence and evidence-based clinical practice guidelines that are available as of the last policy update. The Company reserves the right to determine the application of medical policies and make revisions to medical policies at any time. The scope and availability of all plan benefits are determined in accordance with the applicable coverage agreement. Any conflict or variance between the terms of the coverage agreement and Company Medical Policy will be resolved in favor of the coverage agreement. Coverage decisions are made on the basis of individualized determinations of medical necessity and the experimental or investigational character of the treatment in the individual case. In cases where medical necessity is not established by policy for specific treatment modalities, evidence not previously considered regarding the efficacy of the modality that is presented shall be given consideration to determine if the policy represents current standards of care.

**SCOPE:** Providence Health Plan, Providence Health Assurance, and Providence Plan Partners as applicable (referred to individually as “Company” and collectively as “Companies”).

## PLAN PRODUCT AND BENEFIT APPLICATION

Commercial

Medicaid/OHP\*

Medicare\*\*

### \*Medicaid/OHP Members

*Oregon:* Services requested for Oregon Health Plan (OHP) members follow the OHP Prioritized List and Oregon Administrative Rules (OARs) as the primary resource for coverage determinations. Medical policy criteria below may be applied when there are no criteria available in the OARs and the OHP Prioritized List.

Notice to Medicaid Policy Readers: For comprehensive rules and guidelines pertaining to this policy, readers are advised to consult the Oregon Health Authority. It is essential to ensure full understanding and compliance with the state's regulations and directives. Please refer to OHA's prioritized list for the following coverage guidelines:

Sleep Disorder Treatment:  
Diagnostic Guideline D8  
Guideline Note 27, Line 202

### \*\*Medicare Members

This Company policy may be applied to Medicare Plan members only when directed by a separate Medicare policy. Note that investigational services are considered “**not medically necessary**” for Medicare members.

## COVERAGE CRITERIA

### Fabricated Oral Appliance

- I. The use of a fabricated oral appliance, also referred to as a mandibular advancement device, for the treatment of obstructive sleep apnea (OSA) may be considered **medically necessary** when **at least one** of the following (A.-C.) criteria are met:
  - A. The patient has been diagnosed, using polysomnography or home sleep apnea testing, with mild OSA (defined as apnea hypopnea index [AHI] or respiratory disturbance index [RDI] of 5 to 14 events per hour) and is symptomatic with **at least one** of the following (1.-7.):
    1. Excessive daytime sleepiness characterized by **at least one** of the following (a.-c.)
      - a. Questionnaires (Epworth Sleepiness Scale [ESS], Belin, STOP BANG); **or**
      - b. Sleepiness that interferes with activities of daily living (ADLs) and is not explained by other conditions; **or**
      - c. Inappropriate daytime napping; **and/or**
    2. Impaired cognition; **or**

3. Mood disorders; **or**
4. Insomnia; **or**
5. Documented hypertension; **or**
6. Ischemic heart disease; **or**
7. History of stroke; **or**

**Note:** Oral appliance therapy would be considered a duplicative service and not covered in OSA if member is currently using positive airway pressure (PAP).

- B. The patient has been diagnosed, using polysomnography or home sleep apnea testing, with moderate OSA (defined as AHI or RDI of 15 to 30 events per hour) and meets **at least one** of the following (1.-2.) criteria:
    1. The patient meets **both** of the following criteria (a.-b.):
      - a. The patient has undergone a 1-month active trial of a positive airway pressure (PAP) device, including mask readjustment and pressure changes, but is still unable to tolerate PAP; **and**
      - b. A consult with a sleep specialist to ensure the PAP trial was adequate and all treatment options were discussed; **or**
    2. The use of a PAP device is contraindicated.
  - C. The patient has been diagnosed, using polysomnography or home sleep apnea testing, with severe OSA (defined as AHI or RDI greater than 30 events per hour) and meets **at least one** of the following (1.-2.) criteria:
    1. The patient meets **both** of the following criteria (a.-b.):
      - a. The patient has undergone a 1-month active trial of a positive airway pressure (PAP) device, including mask readjustment and pressure changes, but is still unable to tolerate PAP; **and**
      - b. A consult with a sleep specialist to ensure the PAP trial was adequate and all treatment options were discussed; **or**
    2. The use of a PAP device is contraindicated.
- II. The use of a fabricated oral appliance, also referred to as a mandibular advancement device, for the treatment of obstructive sleep apnea (OSA) is considered **not medically necessary** when criterion I. above is not met.

### **Replacement of Fabricated Oral Appliance**

**Note:** To receive a replacement device, the patient must receive a prescription from the doctor/dentist who initially made (synthesized) the oral appliance.

- III. Replacement of a fabricated oral appliance may be considered **medically necessary** when it has reached the end of its five-year reasonable use lifetime (RUL) or when wear and tear renders the item non-functioning and non-repairable.
- IV. Replacement of a fabricated oral appliance is considered **not medically necessary and** when criterion III. above is not met.

### **Dual PAP with Oral Appliance Therapy**

- V. Dual PAP with oral appliance therapy is considered **not medically necessary**, including but not limited to, as a convenience item (e.g. travel).

### Other Appliances

- VI. The use of other appliances for the treatment of obstructive sleep apnea (OSA) or any other sleep disorders are considered **not medically necessary**, including but not limited to the following:

- A. Prefabricated oral appliances
- B. Bite deprogrammer (CPT 21085) (e.g., AM Align, Morning Repositioner)
- C. Sleep position trainer (e.g., NightBalance)
- D. ExciteOSA
- E. EVO® Sleep and Snore Device (ProSomnus® Sleep Technologies)

### Upper Airway Resistance Syndrome (UARS)

- VII. Oral appliances for the treatment of upper airway resistance syndrome are considered **not medically necessary**.

Link to [Evidence Summary](#)

## POLICY CROSS REFERENCES

- [Sleep Disorder Testing \(All Lines of Business Except Medicare\)](#), MP60
- [Sleep Disorder Treatment with Positive Airway Pressure \(All Lines of Business Except Medicare\)](#), MP56
- [Sleep Disorder Treatment: Surgical \(All Lines of Business Except Medicare\)](#), MP179

The full Company portfolio of current Medical Policies is available online and can be [accessed here](#).

## POLICY GUIDELINES

### DEFINITIONS

- Apnea: the cessation of airflow for at least 10 seconds
- Hypopnea: abnormally slow or shallow breathing resulting in reduced airflow
- Apnea-hypopnea index (AHI): the number of apnea and hypopnea events per hour of sleep; used to indicate the severity of sleep apnea
- Respiratory disturbance index (RDI): the number of apnea and hypopnea events per hour of sleep plus the number of respiratory-effort related arousals (RERAs) per hour of sleep

- Respiratory-effort related arousals (RERAs): an abnormal breathing event which does not meet the criteria for an apnea or hypopnea, but is an arousal of sleep associated with a respiratory event noted during a sleep study
- Mild sleep apnea: AHI or RDI score of 5 to 14 and is typically associated with involuntary daytime sleepiness during activities that require little attention such as reading or watching television.
- Moderate sleep apnea: AHI or RDI score of 15 to 30 associated with involuntary sleepiness during activities that require moderate attention such as meetings or presentations.
- Severe sleep apnea: AHI or RDI score of greater than 30 and is typified by daytime sleepiness during activities that require active attention such as driving or talking. The score may exceed 100 in patients with very severe OSA.
- Epworth Sleepiness Scale (ESS): a self-administered questionnaire that asks respondents to rate their usual chances of dozing off or falling asleep while engaged in different activities
- Excessive daytime sleepiness: a score of > 10 on the ESS
- Upper airway resistance syndrome (UARS): AHI less than 5, not meeting OSA criteria but still experiencing daytime sleepiness due to partial collapse of the airway and increased resistance to airflow.

## BACKGROUND

### Obstructive Sleep Apnea (OSA)

OSA is a breathing disorder that results in either a decrease or complete cessation of airflow during sleep. Airflow obstruction arises when the muscles in the back of the throat fail to keep the airway open. These muscles support the soft palate, uvula, tonsils, and tongue. When the muscles relax too much, the airway narrows or closes during inhalation. Patients with OSA experience apneas (breathing cessation) and/or hypopneas (marked reduction in breathing volume) during sleep, which causes blood oxygen levels to fall. This cessation of oxygen results in periods of silence followed snorting, choking, or gasping upon continuation of breathing.

Symptoms of OSA include unrefreshing sleep, excessive daytime sleepiness, loud snoring, morning headaches, nocturnal choking, and/or apneas or choking witnessed by bed partner. According to Hayes, “(p)hysiological effects of untreated OSA include fluctuating blood oxygen levels, increased heart rate, chronic daytime hypertension, and impaired glucose tolerance/insulin resistance.”<sup>1</sup> Furthermore, OSA maybe be associated with hypertension, heart disease, stroke, and death.

According to Hayes, “(t)he reference standard for the diagnosis of OSA is the attended in-laboratory sleep test or polysomnograph (PSG), which quantifies the apnea-hypopnea index (AHI).”<sup>1</sup> The AHI score is an objective measure of the average number of apneas and hypopneas that occur during an hour of sleep. The AHI score is used to determine OSA severity:

- Mild OSA: AHI score of 5 to 14 and is typically associated with involuntary daytime sleepiness during activities that require little attention such as reading or watching television.
- Moderate OSA: AHI score of 15 to 30 associated with involuntary sleepiness during activities that require moderate attention such as meetings or presentations.
- Severe OSA: AHI score of greater than 30 and is typified by daytime sleepiness during activities that require active attention such as driving or talking. The score may exceed 100 in patients with very severe OSA.

## **Upper Airway Resistance Syndrome (UARS)**

Upper airway resistance syndrome is a sleep disorder characterized by increased resistance to airflow in the upper airway during sleep. While it shares some similarities to OSA, UARS does not involve complete blockage of the airway. Instead, individuals with UARS experience partial obstruction or resistance, leading to disruptions in their sleeps. Common symptoms include excessive daytime sleepiness, frequent awakenings during the night, snoring, fatigue, morning headaches, difficulty concentrating.<sup>2</sup>

## **Mandibular Advancement Device (MAD)**

A MAD appliance is used in the treatment of OSA to reduce or relieve upper airway obstruction by modifying the position of the mandible, tongue, and other oropharyngeal structures. According to Hayes, “MAD appliances cause protrusion, or advancement of the mandible forward relative to the maxilla. Protrusion of the mandible creates space behind the tongue and enlarges the upper airway, thus preventing it from collapse.”<sup>1</sup> MADs are either made fabricated (custom-fit) or prefabricated. Fabricated MADs require dental impressions and bite registration, and additional fine adjustments may be required to optimize mandible advancement and minimize discomfort.

## **Bite Deprogrammer**

Bite deprogrammers (e.g. AM Align, Morning Reposition) purport to aid in realigning the patient’s mandible following the night-time use of a MAD, during which time jaw positioning may have changed.

## **Sleep Position Trainer (i.e. NightBalance)**

NightBalance is a device worn in a band across the patient’s chest during sleep. When the device detects that the patient is sleeping on his or her back (supine), the device delivers vibrations to prompt the patient to shift to their side, without disturbing sleep. By avoiding supine sleeping, device manufacturers purport to reduce breathing disturbances and improve patient quality of sleep in patients with positional OSA.

## **ExciteOSA**

The ExciteOSA is a daytime therapy that targets the root cause of snoring and mild sleep apnea by using electrical currents to stimulate and improve muscle function in the mouth and tongue. The device is designed to strengthen tongue muscles so they no longer block the airway at night.

# **REGULATORY STATUS**

## **U.S. FOOD AND DRUG ADMINISTRATION (FDA)**

Approval or clearance by the Food and Drug Administration (FDA) does not in itself establish medical necessity or serve as a basis for coverage. Therefore, this section is provided for informational purposes only.

“Mandibular advancement devices (MAD) for sleep apnea are regulated through the FDA as Class II antisnoring devices. The Code of Federal Regulations (CFR) defines intraoral devices for snoring and intraoral devices for snoring and OSA as devices that are worn during sleep to reduce the incidence of snoring and to treat OSA. These devices are designed to increase the patency of the airway and to decrease air turbulence and airway obstruction. This classification includes palatal-lifting devices, tongue-retaining devices (TRD), and MAD (CDRH, 2009).

In 2002, the FDA issued a Special Controls Guidance Document to support the classification of intraoral devices for snoring and/or OSA as Class II devices. Any firm submitting a 510(k) premarket notification for intraoral devices for snoring and/or OSA needs to address the issues covered in the special control guidance. However, the firm need only show that its device meets the recommendations of the guidance or in some other way provides equivalent assurances of safety and effectiveness (CDRH, 2002). An extensive list of commercially available MAD has been approved for marketing by the FDA under the 510(k) clearance process to treat snoring and/or OSA (CDRH, 2010).”<sup>1</sup>

## **CLINICAL EVIDENCE AND LITERATURE REVIEW**

### **EVIDENCE REVIEW**

A review of the ECRI, Hayes, Cochrane, and PubMed databases was conducted regarding the use of oral appliances for the treatment of obstructive sleep apnea. Below is a summary of the available evidence identified through February 2022.

#### **Fabricated Mandibular Advancement Devices**

- In 2023, Hayes published an updated review of systematic reviews evaluating the safety and efficacy of mandibular advancement devices (MAD) for the treatment of sleep apnea.<sup>3</sup> In total, 1 systematic review (assessing 8 RCTs) and 7 additional primary RCTs were included for review. Sample sizes ranged from 10 to 114 patients in the systematic review; to 50 to 150 patients in the primary studies. Follow-up ranged from 1 week to 4 years. Outcomes of interest included apnea-hypopnea index (AHI), Epworth Sleepiness Scale (ESS) scores, quality of life and complications.

Compared to patients receiving no treatment or UPPP, MAD patients experienced superior improvements in AHI, ESS, and quality of life scores. MAD patients also experienced improved outcomes relative to placebo patients and CPAP for AHI, although not for ESS. No significant differences in outcome were found between MAD and tongue stabilizing device patients.

On the basis of moderate-quality evidence, Hayes concluded that MAD improves sleep-disordered breathing and daytime sleepiness in patients with mild-to-moderate OSA. While MAD patients experienced superior outcomes to patients receiving either no treatment or placebo MAD treatment, CPAP patients experienced the largest reductions in sleep-disordered breathing. Although CPAP is considered the standard of treatment, particularly for patients with severe OSA, MAD therapy was recommended for patients with OSA who might opt to go without treatment or cannot tolerate CPAP therapy. Limitations across individual studies included a lack of long-term follow-up, small sample sizes, a lack of power analyses, high attrition and lack of intention-to-treat analyses. Blinding was also inconsistent in studies comparing MAD with placebo MAD and not possible compared to other interventions (e.g. no treatment, CPAP).

Hayes ultimately assigned a “B” rating (some proven benefit) for MAD instead of no treatment for mild-to-moderate OSA in adults who do not respond to CPAP. Hayes assigned a “C” rating (potential but unproven benefit) for MAD instead of no treatment for severe OSA in adults who do not respond to CPAP. A “D2” rating (insufficient evidence) was assigned for MAD instead of CPAP in patients with severe OSA who prefer MAD over CPAP but who have not undergone a trial of CPAP therapy.

- In 2015, Bratton et al. conducted a systematic review and meta-analysis to compare the association of continuous positive airway pressure (CPAP) and mandibular advancement devices (MADs) with changes in systolic BP (SBP) and diastolic (DBP) in patients with obstructive sleep apnea.<sup>4</sup> Independent reviewers systematically identified eligible studies, assessed quality, and extracted data. Study authors were also contacted, if necessary, for additional information or data. The outcome of interest was absolute change in SBP and DBP from baseline to follow-up.

Following systematic review, the authors identified 51 studies as eligible for inclusion (n=4888). Of the 51 studies, 3 compared MADs with an inactive control, 1 compared MAD with a CPAP, and 3 compared CPAP, MADs, and inactive control. Compared with an inactive control, MADs were associated with a reduction in SBP of 2.1 mm Hg (95% CI, 0.8 to 3.4 mm Hg; P = .002) and in DBP of 1.9 mm Hg (95% CI, 0.5 to 3.2 mm Hg; P = .008). There was no significant difference between CPAP and MADs in their association with change in SBP (-0.5 mm Hg [95% CI, -2.0 to 1.0 mm Hg]; P = .55) or in DBP (-0.2 mm Hg [95% CI, -1.6 to 1.3 mm Hg]; P = .82).

Strengths of this systematic review include the gathering of evidence, assessment of quality, and extraction of data by several independent reviewers and inclusion of a large number of studies. Limitations are present in the poor quality of some selected studies and the heterogeneity present between studies. The authors concluded, “(a)mong patients with obstructive sleep apnea, both CPAP and MADs were associated with reductions in BP. Network meta-analysis did not identify a statistically significant difference between the BP outcomes associated with these therapies.”<sup>4</sup>

- In 2011, the Agency for Healthcare Research and Quality conducted a systematic review of the evidence to evaluate the diagnosis and treatment of obstructive sleep apnea (OSA) in adults.<sup>5</sup> Independent reviewers systematically identified eligible studies, assessed quality, and extracted data. The key questions focused on OSA screening and diagnosis, treatments, associations between apnea-hypopnea index (AHI) and clinical outcomes, and predictors of treatment compliance. For the specific evaluation of mandibular advancement devices (MADs), the authors compared MADs to no treatment, MADs to inactive (sham) oral devices, different types of MADs, and MADs versus continuous positive airway pressure (CPAP).

Five trials (4 fair/moderate quality, 1 poor quality) compared MAD to no treatment. Individually and after meta-analysis, the studies found significant improvements with MAD in apnea-hypopnea index (AHI), Epworth sleepiness scale (ESS), and other sleep study measures. In comparing MADs to inactive (sham) oral devices, five trials (all fair/moderate quality) were identified. The individual and meta-analysis results indicated MADs improved most sleep study measures compared to devices without mandibular advancement. Five studies were identified that compared different types of MADs. These studies found little or no differences between different types of methods and use of MAD or other oral devices in sleep study or sleepiness measures. Due to the small size and between-



study heterogeneity, there was insufficient evidence to draw conclusions with regards to the relative efficacy of different types of MADs in OSA patients. Ten trials (fair/moderate quality) compared MAD with CPAP. “There was sufficient evidence supporting greater improvements in sleep measures with CPAP as compared to MAD, but only weak evidence indicating no or only small differences favoring CPAP for improving compliance, treatment response, quality of life, or neurocognitive measures.”<sup>5</sup>

This AHRQ systematic review was of very good quality and had several strengths, including:

1. the gathering of evidence, assessment of quality, and extraction of data by several independent reviewers
2. contacting authors of selected studies for additional information or data
3. assessment of heterogeneity and publication bias
4. meta-analyses only being conducted when studies were determined to be homogeneous with respect to population, treatment, and outcome measures
5. sensitivity analyses to evaluate the influence of studies with a high risk of bias or high losses to follow-up

Limitations of this systematic review are seen in the inclusion of studies with a high risk of bias and the potential for publication bias due to a small number of studies included in some meta-analyses. Regarding the use of MADs for OSA, the authors concluded moderate strength of evidence for their efficacy in sleep outcomes. The authors also stated, “(b)ased on direct and indirect comparisons, CPAP appeared to be more effective than MAD. However, given the issues with noncompliance with CPAP, the decision as to whether to use CPAP or MAD will likely depend on patient preference.”<sup>5</sup>

### **Dual PAP with Oral Appliance Therapy**

Nonrandomized studies with very small sample sizes (n= 10 to 16) have published findings from combined PAP and oral appliance therapy investigations.<sup>6,7</sup> For those who do not tolerate or who fail PAP therapy, oral appliances are often a successful alternative. Reports of nasal-CPAP and MAD, and CPAP with MAD do not currently demonstrate sufficient or greater clinical utility than the existing use of one modality or the other. The literature base for each modality separately, clearly establishes clinical utility in defined populations making appropriate patient-selection possible.

### **Prefabricated Mandibular Advancement Devices**

#### Systematic Reviews

No systematic reviews were identified which evaluated the use of prefabricated mandibular advancement devices for the treatment of obstructive sleep apnea.

#### Randomized Controlled Trials (RCT)

In 2008, Vanderveken et al. conducted a randomized cross-over trial to evaluate custom-made (fabricated) and thermoplastic (prefabricated) oral appliances for the treatment of sleep disordered breathing (SDB).<sup>8</sup> Thirty-eight patients were enrolled in the study and randomly allocated (blindly) to two different treatment sequence. Treatment sequence A included a custom-made MAD for 4 months,

followed by a 1-month washout period, and then a thermoplastic MAD for 4 months. The remaining patients were randomized to the reversed treatment sequence—4-month trial of a thermoplastic MAD, 1 month washout, followed by a 4 month trial of a custom-made MAD. The treatment outcomes of interest included a reduction in snoring, apnea-hypopnea index (AHI), compliance, and Epworth sleepiness scale (ESS) score.

AHI was only statistically significantly reduced using the custom-made MAD ( $p=0.005$ ). Furthermore, the custom-made MAD reduced snoring more significantly than the thermoplastic device. In regards to compliance, one-third of patients had compliance failure with the thermoplastic device because of insufficient overnight retention. “The total failure rate with the thermoplastic device was 69%, whereas the majority (63%) of these were successfully treated with the custom-made device.”<sup>8</sup> At study completion, 82% of the patients preferred the custom-made MAD and 9% had no preference ( $p<0.0001$ ).

Strengths of this study included the randomized, controlled design using a comparator group. However, significant methodological limitations are present in the small sample size and short follow-up period. Ultimately, the authors concluded “(i)n this study, a custom-made device turned out to be more effective than a thermoplastic device in the treatment of SDB. Our results suggest that the thermoplastic device cannot be recommended as a therapeutic option nor can it be used as a screening tool to find good candidates for mandibular advancement therapy.”<sup>8</sup>

### **Bite Deprogrammer**

In 2018 (archived 2019), Hayes published a summary of the published literature assessing the efficacy of the Morning Repositioner to restore proper mandibular alignment after use of an overnight sleep apnea appliance.<sup>9</sup> The authors did not identify any systematic reviews.

No other studies were identified.

### **Sleep Position Trainer (e.g., NightBalance)**

- In 2017, de Ruyter and colleagues conducted a prospective, multi-center randomized controlled trial evaluating the efficacy of the sleep position trainer (SPT) for the treatment of positional obstructive sleep apnea. In total, 99 patients were randomized to receive either SPT or oral appliance therapy (OAT), of which 58 completed the study (29 in each group). Outcomes of interest included OSA severity; adherence, quality of life and adverse events. Follow-up was assessed via polysomnography at 3- and 12-month follow-up. Investigators reported that median AHI scores were significantly improved in SPT patients, although not superior to OAT patients. No between-group differences in adherence were identified. While investigators concluded that SPT demonstrated comparable efficacy to OAT, study limitations undermine results’ generalizability. Limitations included the study’s small sample size, lack of long-term follow-up, and significant attrition at 3-month and 12-month evaluations.
- In 2021, Hayes published a health technology assessment of NightBalance (Philips) for the treatment of positional OSA.<sup>10</sup> The review included 6 studies ( $n= 55-145$  patients) assessing the sleep position trainer (SPT) compared to no treatment, the tennis ball technique (TBT), mandibular advancement device (MAD), or auto-adjusting positive airway pressure (APAP). There were 2 RCTS, 2 RCTS with

crossover, and 2 pretest-posttest studies. Five studies found decreases in percent supine sleep with SPT compared to baseline, with some studies finding SPT was more effective than MAD or APAP, while others found no significant differences between SPT and TBT or no treatment. AHI and supine AHI were similar between SPT and other treatments. Across outcome measures, results were mixed for each study. Hayes found that there is an overall low-quality body of evidence for the use of NightBalance for treating positional OSA. There is a small body of comparative studies, and the individual studies were limited by sample size and short duration of controlled follow-up. Hayes gave NightBalance a C rating, stating: "This Rating reflects positive but low quality evidence suggesting that NightBalance is associated with decreased time spent in supine sleep position and improved apnea-hypopnea index scores from baseline. This Rating also reflects limited evidence suggesting similar effectiveness compared with the tennis ball technique (TBT), mandibular advancement device (MAD), or auto-adjusting positive airway pressure (APAP). However, considerable uncertainty remains due to the small body of comparative evidence (a single study was available for each active comparator), individual study limitations, and inconsistency across studies for measures of sleepiness."

### **ExciteOSA**

Two prospective cohort industry-sponsored studies on the effects of the ExciteOSA device on sleep-disordered breathing and snoring were identified. Baptista and colleagues published a 2021 study on primary snoring and mild OSA.<sup>11</sup> Kotecha and colleagues published a 2021 study on the device's effects on snoring.<sup>12</sup> Both studies used the same patient pool and found improvement in symptoms after 6 weeks. The studies had a number of limitations, including small sample size, short follow up, and no comparator group. Furthermore, The Kotecha study only investigated snoring, a non-medical outcome.

### **Upper Airway Resistance Syndrome (UARS)**

In 2015, Godoy and colleagues published results of a systematic review of treatments for UARS in adults. The review included 7 case reports, 8 nonrandomized studies, and 2 RCTs. Studies had significant heterogeneity in terms of definition of UARS and treatment. The authors concluded that there are few well designed studies available for UARS treatment. "CPAP has been the primary therapy prescribed, but its effectiveness has been limited because of low patient compliance and there are no randomized controlled trials evaluating this type of treatment in UARS patients. The available studies that have evaluated surgical treatments of UARS patients have methodological limitations and low numbers of patients evaluated. Oral appliances seem to be an effective option, but only case reports and small case series have been reported, and the efficacy of these devices is not yet established for this group of patients. Randomized controlled trials comparing different modalities of treatment with larger numbers of patients and including long-term follow-up are important to better define and establish treatment options in UARS patients."<sup>13</sup>

## **CLINICAL PRACTICE GUIDELINES**

### **Fabricated Mandibular Advancement Devices**

#### Carelton

In 2023, Carelon issued clinical appropriateness guidelines for sleep disorder management, including appropriate use criteria for diagnostic and treatment management of obstructive sleep apnea using oral appliances.<sup>14</sup> Investigators concluded that treatment with an oral appliance is appropriate for patients with severe OSA (apnea/hypopnea index [AHI] greater than 30) when the patient is not a candidate for PAP, a PAP trial has not been effective or the patient has tried CPAP but has not been compliant despite a trial and participation in a PAP compliance program.

For patients with mild or moderate OSA, Carelon concluded that an oral appliance is appropriate when the patient is not a candidate for PAP, a PAP trial has not been effective, the patient has tried CPAP but has not been compliant despite a trial and participation in a PAP compliance program, or the patient prefers to use an oral appliance rather than PAP as the initial therapy.

#### American Academy of Dental Sleep Medicine/American Academy of Sleep Medicine (AADSM/AASM)

The 2015 AADSM/AASM evidence-based clinical practice guideline for the treatment of obstructive sleep apnea and snoring with oral appliance therapy gave the following recommendations:<sup>15</sup>

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)

#### Oregon Health Authority, Health Evidence Review Commission (HERC)

The 2014 HERC evidence-based coverage guidance for the treatment of sleep apnea in adults stated, “(m)andibular advancement devices (oral appliances) are recommended for coverage for those for whom CPAP fails or is contraindicated (weak recommendation).”<sup>16</sup> The HERC reaffirmed the previously approved coverage guidance in 2017.

#### American Society of Anesthesiologists (ASA)

The 2006 (revised 2014) ASA evidence-based clinical practice guideline for the perioperative management of patients with obstructive sleep apnea stated, “(t)he preoperative use of mandibular

advancement devices or oral appliances and preoperative weight loss should be considered when feasible.”<sup>17</sup>

#### American College of Physicians (ACP)

The 2013 ACP evidence-based clinical practice guideline for the management of obstructive sleep apnea in adults stated the following:<sup>18</sup>

Recommendation 1: ACP recommends that all overweight and obese patients diagnosed with OSA should be encouraged to lose weight. (Grade: strong recommendation; low-quality evidence)

Recommendation 2: ACP recommends continuous positive airway pressure treatment as initial therapy for patients diagnosed with OSA. (Grade: strong recommendation; moderate-quality evidence)

Recommendation 3: ACP recommends mandibular advancement devices as an alternative therapy to continuous positive airway pressure treatment for patients diagnosed with OSA who prefer mandibular advancement devices or for those with adverse effects associated with continuous positive airway pressure treatment. (Grade: weak recommendation; low-quality evidence).

#### American Academy of Sleep Medicine (AASM)

The 2006 AASM evidence-based clinical practice guideline for the treatment of snoring and OSA with oral appliances gave the following recommendations:<sup>19</sup>

- Although not as efficacious as CPAP, oral appliances are indicated for use in patients with mild to moderate OSA who prefer them to CPAP therapy, or who do not respond to, are not appropriate candidates for, or who fail treatment attempts with CPAP.
- Oral appliances are appropriate for use in patients with primary snoring who do not respond to or are not appropriate candidates for treatment with behavioral measures such as weight loss or sleep-position change.
- Until there is higher quality evidence to suggest efficacy, CPAP is indicated whenever possible for patients with severe OSA before consideration of oral appliances. Upper airway surgery may also supersede the use of oral appliances in patients for whom these operations are predicted to be highly effective in treating sleep apnea.
- Oral appliances should be fitted by qualified dental personnel who are trained and experienced in the overall care of oral health, the temporomandibular joint (TMJ), dental occlusion, and associated oral structures.
- Follow-up polysomnography (PSG) or an attended cardiorespiratory (Type 3) sleep study is needed to verify efficacy and may be needed when the symptoms of OSA worsen or recur.
- Patients with OSA who are treated with oral appliances should return for follow-up office visits with the dental specialist at regular intervals to:
  - Monitor patient adherence
  - Evaluate device deterioration or maladjustment
  - Evaluate the health of the oral structures and integrity of the occlusion

- Assess for signs and symptoms of worsening OSA
- Patients with OSA who are treated with oral appliances should also have periodic follow-up office visits with the referring clinician to assess for signs and symptoms of worsening OSA.

## **Prefabricated Mandibular Advancement Devices**

### Carelon

The 2020 Carelon clinical appropriateness guidelines for sleep disorder management state that “prefabricated oral appliances are not considered to be appropriate therapy for obstructive sleep apnea in any clinical situation.”<sup>14</sup>

### American Academy of Dental Sleep Medicine (AADSM)

The AADSM published a 2019 report on the Definition of an Effective Oral Appliance for the Treatment of Obstructive Sleep Apnea and Snoring.<sup>20</sup> The guidance describes an effective oral appliance as follows:

“Current evidence indicates that custom oral appliances are superior to prefabricated devices. Custom-made devices have been associated with patient comfort and compliance with treatment. Overall, custom-made appliances have been associated with improved apnea-hypopnea index (AHI), reduced daytime sleepiness, improved endothelial function, and increased muscle activity. The literature heavily supports use of custom-made oral appliances over prefabricated devices. Nevertheless, if the device itself is custom made, it may include a prefabricated component (such as the connection mechanism) as long as the device is customized to the patient and not primarily prefabricated.”

### **Bite Deprogrammer**

No evidence-based clinical practice guidelines were identified which evaluate the use of bite deprogrammers for the treatment of obstructive sleep apnea.

### **Upper airway resistance syndrome**

#### UpToDate

UpToDate published a 2023 guideline on Clinical Presentation and Diagnosis of Obstructive Sleep Apnea in Adults. They state that there is currently no consensus about the optimal detection, proper management, an degree of clinical impact for UARS.<sup>2</sup>

## **POLICY SUMMARY**

### **Fabricated Oral Appliances and Replacements**

There is enough research to show that the use of custom fabricated mandibular advancement devices (MADs) does appear to improve sleep outcomes including, but not limited to, the apnea-hypopnea index (AHI) score, Epworth sleepiness scale (ESS) score, blood pressure, and treatment compliance in carefully selected patients with obstructive sleep apnea. However, MADs do not appear to be as effective as

continuous positive airway pressure (CPAP) in improving clinical outcomes. The American Academy of Sleep Medicine (AASM) recommends the use of MADs in patients with mild to moderate obstructive sleep apnea (OSA) who prefer, do not respond, or are not appropriate candidates for CPAP. The AASM also recommends a trial of CPAP therapy prior to consideration of an oral appliance in patients with severe OSA. The American Society of Anesthesiologists recommends the preoperative use of MADs, when feasible, in patients with OSA. The American College of Physicians, Oregon Health Authority Health Evidence Review Commission, and the American Academy of Dental Sleep Medicine also recommends the use of MADs in patients who fail treatment with CPAP. Therefore, the use of MADs may be considered medically necessary for the treatment of obstructive sleep apnea in patients meeting policy criteria. There is sufficient evidence to show that the use of MADs in those who do not meet policy criteria is considered not medically necessary.

For those who need a replacement fabricated oral appliance, a new device may be considered medically necessary when it has reached the end of its five-year reasonable use lifetime (RUL) or when wear and tear renders the item non-functioning and non-repairable. Otherwise, a replacement fabricated oral appliance is considered not medically necessary.

### **Dual Positive Airway Pressure with Oral Appliance Therapy**

There is enough evidence to show that dual positive airway pressure (PAP) with oral appliance therapy does not improve overall health outcomes versus therapy with either PAP or a medically necessary oral appliance for those with sleep disorders, whether used for as dual therapy or for travel (e.g., as a convenience item). No clinical practice guidelines based on research were identified specifically recommending dual PAP with oral appliance therapy. Therefore, dual PAP with oral appliance therapy is considered not medically necessary.

### **Other Appliances Including Prefabricated Oral Appliance, Bite Deprogrammer and Sleep Position Trainer**

There is not enough research to show that other oral appliances used to treat obstructive sleep apnea or any other sleep disorder, improve overall health outcomes. These appliances include, but are not limited to prefabricated oral appliances, bite deprogrammers, and sleep position trainers (NightBalance). Some research may show that one or more of these devices may help patients in select populations, though studies of higher methodological quality are required to demonstrate the clinical utility of these treatment options. In addition, no evidence-based clinical practice guidelines were identified recommending prefabricated oral appliances, bite deprogrammers, and sleep position trainers for any indication. Therefore, the use of these devices to treat sleep disorders including but not limited to obstructive sleep apnea are considered not medically necessary.

### **Upper Airway Resistance Syndrome**

There is no consensus about the optimal detection, proper measurement, or degree of clinical impact of UARS and its treatment. Neither the American Sleep Disorders Association nor any other professional medical organization has issued guidelines for the diagnosis and treatment of UARS. There is also not enough high-quality research on UARS and treatment of any type, including oral appliances and CPAP. Therefore, treatment of UARS with oral and sleep position appliances is considered not medically necessary.

## BILLING GUIDELINES AND CODING

CODES*		
CPT	21085	Impression and custom preparation; oral surgical splint
HCPCS	E0485	Oral device/appliance used to reduce upper airway collapsibility, adjustable or non-adjustable, prefabricated, includes fitting and adjustment
	E0486	Oral device/appliance used to reduce upper airway collapsibility, adjustable or non-adjustable, custom fabricated, includes fitting and adjustment
	E0490	Power source and control electronics unit for oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, controlled by hardware remote
	E0491	Oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, used in conjunction with the power source and control electronics unit, controlled by hardware remote, 90-day supply
	E0492	Power source and control electronics unit for oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, controlled by phone application
	E0493	Oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, used in conjunction with the power source and control electronics unit, controlled by phone application, 90-day supply
	E0530	Electronic positional obstructive sleep apnea treatment, with sensor, includes all components and accessories, any type
	E1399	Durable medical equipment, miscellaneous
	<del>K1001</del>	<del>TERMED 12/31/2023</del> <del>Electronic positional obstructive sleep apnea treatment, with sensor, includes all components and accessories, any type</del>
	K1027	Oral device/appliance used to reduce upper airway collapsibility, without fixed mechanical hinge, custom fabricated, includes fitting and adjustment
	<del>K1028</del>	<del>TERMED 12/31/2023</del> <del>Power source and control electronics unit for oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, controlled by phone application</del>
	<del>K1029</del>	<del>TERMED 12/31/2023</del> <del>Oral device/appliance for neuromuscular electrical stimulation of the tongue muscle, used in conjunction with the power source and control electronics unit, controlled by phone application, 90-day supply</del>
	K1037	Docking station for use with oral device/appliance used to reduce upper airway collapsibility

### \*Coding Notes:

- The above code list is provided as a courtesy and may not be all-inclusive. Inclusion or omission of a code from this policy neither implies nor guarantees reimbursement or coverage. Some codes may not require routine review for medical necessity, but they are subject to provider contracts, as well as member benefits, eligibility and potential utilization audit.



- All unlisted codes are reviewed for medical necessity, correct coding, and pricing at the claim level. If an unlisted code is submitted for non-covered services addressed in this policy then it will be **denied as not covered**. If an unlisted code is submitted for potentially covered services addressed in this policy, to avoid post-service denial, **prior authorization is recommended**.
- See the non-covered and prior authorization lists on the Company [Medical Policy, Reimbursement Policy, Pharmacy Policy and Provider Information website](#) for additional information.
- HCPCS/CPT code(s) may be subject to National Correct Coding Initiative (NCCI) procedure-to-procedure (PTP) bundling edits and daily maximum edits known as “medically unlikely edits” (MUEs) published by the Centers for Medicare and Medicaid Services (CMS). This policy does not take precedence over NCCI edits or MUEs. Please refer to the CMS website for coding guidelines and applicable code combinations.

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## POLICY REVISION HISTORY

DATE	REVISION SUMMARY
2/2023	Converted to new policy template.
3/2023	Changed AIM Speciality Health to Carelon
7/2023	Changed denial from “investigational” to “not medically necessary” for non-covered oral appliances.
10/2023	Interim review. 10/1 code update.
12/2023	Interim review. Updated criteria I.B and I.C.
1/2024	Interim update. Added non coverage criteria for upper airway resistance syndrome. Q1 2024 code set update.
4/2024	Interim review. 4/1 code update.

