



# Clinical Policy Bulletin: Obstructive Sleep Apnea in Adults

Number: 0004

## Policy

Aetna considers the diagnosis and treatment of obstructive sleep apnea (OSA) in adults age 18 and older medically necessary according to the criteria outlined below.

### I. Diagnosis

Aetna considers *any* of the following diagnostic techniques medically necessary for members with symptoms suggestive of OSA (see Appendix B for definition of device types):

- A. Attended full-channel nocturnal polysomnography (NPSG) (Type I device) performed in a healthcare facility; *or*
- B. Attended or unattended sleep monitoring using a Type II device; *or*
- C. Attended or unattended sleep monitoring using a Type III device, *or*
- D. Attended or unattended sleep monitoring using a Type IV(A) device, measuring airflow and at least two other channels and providing measurement of apnea-hypopnea index (AHI); *or*
- E. Attended or unattended home sleep monitoring using a device that measures three or more channels that include pulse oximetry, actigraphy, and peripheral arterial tone (e.g., Watch-PAT device); *or*
- F. Split-night study NPSG in which the final portion of the NPSG is used to titrate continuous positive airway pressure (CPAP);

Note: On occasion, an additional full-night CPAP titration NPSG may be necessary if the split-night study did not allow for the abolishment of the vast majority of obstructive respiratory events or prescribed CPAP treatment does not control clinical symptoms.

- G. Video-EEG-NPSG (NPSG with video monitoring of body positions and extended EEG channels) to assist with the diagnosis of paroxysmal arousals or other sleep disruptions that are thought to be seizure related when the initial clinical evaluation and results of a standard EEG are inconclusive.

It may be necessary to perform repeat sleep studies up to twice a year for *any* of the following indications:

- A. To determine whether positive airway pressure treatment (i.e., CPAP, bilevel positive airway pressure (BiPAP), demand positive airway pressure (DPAP), variable positive airway pressure (VPAP), or auto-titrating positive airway pressure (AutoPAP))

## Policy History

- > [Last Review](#), 03/25/2011
- Effective: 08/10/1995
- Next Review: 01/12/2012
- > [Review History](#)
- > [Definitions](#)

## Additional Information

- > [Clinical Policy Bulletin Notes](#)

- continued to be necessary; or
- B. To determine whether positive airway pressure treatment settings need to be changed; or
- C. To determine whether continued treatment with positive airway pressure treatment is necessary; or
- D. To assess treatment response after upper airway surgical procedures and after initial treatment with oral appliances.

Aetna considers *any* of the following diagnostic techniques experimental and investigational in members with symptoms suggestive of OSA:

- A. Acoustic pharyngometry, or SNAP testing using fewer than three channels. See [CPB 336 - Acoustic Pharyngometers and SNAP Testing System](#); or
- B. Actigraphy testing when used alone. Actigraphy, which consists of a small portable device that senses physical motion and stores the resulting information, has been used in research studies for the evaluation of rest-activity cycles. This technique, when used alone (single channel study), has not been validated as a method of diagnosing OSA. See [CPB 710 - Actigraphy and Accelerometry](#); or
- C. Cephalographic X-rays for diagnosis of obstructive sleep apnea. Lateral cephalographic X-rays and orthopantograms may be medically necessary for evaluating persons for oral appliances; lateral cephalographic X-rays may also be necessary to evaluate persons for obstructive sleep apnea surgery; or
- D. Laryngeal function studies; or
- E. Sonography; or
- F. The static charge sensitive bed; or
- G. Tomographic X-ray; or
- H. X-rays of the temporomandibular joint or sella turcica.

## II. Treatment

Treatment of snoring alone, without significant OSA, is *not* considered medically necessary.

### A. Oral Appliances

Custom-fitted and prefabricated oral appliances to reduce upper airway collapsibility are considered medically necessary for members with OSA who meet the medical necessity criteria for CPAP. Oral appliances to reduce upper airway collapsibility are considered experimental and investigational for indications other than OSA.

Oral appliances for OSA that are available over-the-counter without a prescription are *not* considered medically necessary because they have not been shown to be as effective as prefabricated or custom-fitted oral appliances in the treatment of OSA.

Note: Dental rehabilitation services (dentures, bridgework, etc.) as treatment for OSA, even if medically necessary, are not available benefits under standard Aetna health insurance plans. Members should review their dental benefits plan, if any.

### B. Continuous Positive Airway Pressure (CPAP)

It is expected that members receive lifestyle advice where applicable (i.e., helping people to lose weight, stop smoking and/or decrease alcohol consumption).

Aetna considers CPAP medically necessary DME for members with a positive facility-based NPSG\*, or with a positive home sleep test\* including Type II, III, IV(A) or Watch-PAT devices, as defined by *either* of the following criteria:

**Subject:** Treatment for Obstructive Sleep Apnea in Adults

**Policy #:** MED 00054

**Current Effective Date:** 10/13/2010

**Status:** Reviewed

**Last Review Date:** 08/19/2010

#### Description/Scope

This document addresses both non-surgical and surgical treatments for obstructive sleep apnea (OSA) in adults, other than continuous positive airway pressure (CPAP) and related devices, (such as BiPAP<sup>®</sup>). This includes oral appliances, uvulopalatopharyngoplasty (UPPP), hyoid myotomy and jaw realignment surgery, various laser and radiofrequency surgical procedures, and surgical implants, and other more specialized procedures

**Note:** For information related to other technologies utilized in the diagnosis and management of sleep-related disorders, please see:

- [MED 00002 Diagnosis of Sleep Disorders;](#)
- [SURG 00074 Nasal Surgery for the Treatment of Obstructive Sleep Apnea \(OSA\) including Radiofrequency Ablation of Nasal Turbinates for Nasal Obstruction with or without OSA;](#)
- [Clinical UM Guideline CG-DME-32 Continuous Positive Airway Pressure \(CPAP\) for the Treatment of Obstructive Sleep Apnea in Adults and Children, and Related Devices for the Treatment of Obstructive Sleep Apnea in Adults;](#)
- [Clinical UM Guideline CG-MED-01 Polysomnography Studies in Adults and Children;](#)
- [Clinical UM Guideline CG-DME-27 Non-invasive Positive Pressure Respiratory Assist Devices \(BiPAP<sup>®</sup>\).](#)

#### Position Statement

##### Medically Necessary:

The treatment of OSA in adults is considered **medically necessary** for individuals who meet either of the following criteria on polysomnography:

1. Apnea Hypopnea Index (AHI) or a Respiratory Disturbance Index (RDI) greater than or equal to 15 events per hour;
2. AHI (or RDI) greater than or equal to 5, and less than 15 events per hour with documentation demonstrating **any** of the following symptoms:
  - Excessive daytime sleepiness, as documented by either a score of greater than 10 on the Epworth Sleepiness scale or inappropriate daytime napping, (e.g., during driving, conversation or eating) or sleepiness that interferes with daily activities; or
  - Impaired cognition or mood disorders; or
  - Hypertension; or
  - Ischemic heart disease or history of stroke; or
  - Cardiac arrhythmias, or
  - Pulmonary hypertension.

The AHI is equal to the average number of episodes of apnea and hypopnea per hour and must be based on a minimum of two hours of sleep recorded by polysomnography using actual recorded hours of sleep, (i.e., the AHI may not be extrapolated or projected).

**Note:** For the purposes of this document, the terms apnea hypopnea index (AHI) and respiratory disturbance index (RDI) are interchangeable, although they may differ slightly in clinical use; an AHI/RDI greater than 30 is consistent with severe obstructive sleep apnea. In some cases, respiratory effort-related arousals (or RERAS) are included in the RDI value. These RERA episodes represent EEG arousals associated with increased respiratory efforts but do not qualify as apneic or hypopneic episodes because of the absence of their defining air flow changes and/or levels of oxygen desaturation.

The following **non-surgical** treatment in adults is considered **medically necessary**:

##### Oral Appliances:

Custom-fitted and prefabricated oral appliances are considered **medically necessary** for persons with OSA who meet the above medical necessity criteria.

(For information about treatment with CPAP, see Clinical UM Guideline CG-DME-32 Continuous Positive Airway Pressure [CPAP] for the Treatment of Obstructive Sleep Apnea in Adults and Children, and Related Devices for the Treatment of Obstructive Sleep Apnea in Adults.)

**Note:** According to the medical literature, individuals undergoing oral appliance treatment for OSA may also undergo dental rehabilitation. Oral appliances and/or dental rehabilitation, (e.g., dentures, bridgework, etc.) may not be a covered benefit under the benefit plan/certificate. Therefore, it is important that the member understands his/her specific benefit inclusions/exclusions when making a decision regarding this treatment.

The following **surgical** treatments in adults are considered **medically necessary**:

##### Uvulopalatopharyngoplasty (UPPP):

Uvulopalatopharyngoplasty (UPPP) is considered **medically necessary** if **ALL** of the following (1-3) are present:

1. Documented OSA with AHI or RDI meeting the following parameters:
    - a UPPP as **sole** procedure: with AHI (or RDI) greater than 15 and less than 40, OR AHI/RDI 10-15 with **one or more** of the conditions listed below:
      - Hypertension; or
      - Cardiac arrhythmias predominately during sleep; or
      - Pulmonary hypertension; or
      - Documented ischemic heart disease; or
      - Impaired cognition or mood disorders; or
      - History of stroke; or
      - Excessive daytime sleepiness, as documented by either a score of greater than 10 on the Epworth Sleepiness Scale or inappropriate daytime napping, (e.g., during driving, conversation or eating) or sleepiness that interferes with daily activities
- OR**

- d UPPP as part of a **planned staged or combined surgery** aimed at also relieving retrolingual obstruction, (e.g., genioglossal advancement, hyoid myotomy and suspension): AHI/RDI greater than 15, OR AHI/RDI 10-15 with **one or more** of the conditions listed below:
- Hypertension; or
  - Cardiac arrhythmias predominately during sleep, or
  - Pulmonary hypertension; or
  - Documented ischemic heart disease; or
  - Impaired cognition or mood disorders; or
  - History of stroke; or
  - Excessive daytime sleepiness, as documented by either a score of greater than 10 on the Epworth Sleepiness Scale or inappropriate daytime napping, (e.g., during driving, conversation or eating) or sleepiness that interferes with daily activities. **AND**
- 2 CPAP has been tried with well-supported follow-up and clearly failed or is not tolerated.\* **AND**
- 3 Pre-operative evaluation including fiberoptic endoscopy suggests retro-palatal narrowing is the primary source of airway obstruction if UPPP is the **sole** procedure or a **contributing** source of airway obstruction if part of a planned staged or combined surgery aimed at also relieving retrolingual obstruction.

#### **Soft Tissue Reconstruction:**

Hyoid myotomy and suspension, and/or mandibular osteotomy with genioglossus (tongue) advancement for the treatment of OSA is considered **medically necessary** for individuals who have failed treatment with CPAP\* and have demonstrated significant soft tissue and/or tongue base abnormalities with airway collapse. Objective evidence of hypopharyngeal obstruction may be documented by either fiberoptic endoscopy or cephalometric radiographs.

#### **Jaw Realignment Surgery:**

Jaw realignment surgery (i.e., maxillomandibular advancement) is considered **medically necessary** for individuals who have failed treatment with CPAP\* and either UPPP or genioglossus advancement and/or hyoid myotomy with suspension or both of these surgical procedures.

Jaw realignment surgery is considered **medically necessary** as a first line treatment for individuals with a documented severe jaw/facial bony abnormality that contributes to OSA, including, but not limited to, craniofacial abnormalities, micrognathia, retrognathia or small retro-positioned jaw with associated overbite and small mouth.

**Note:** According to the medical literature, individuals undergoing jaw realignment surgery also typically undergo orthodontic therapy to correct changes in occlusion associated with the surgery. Orthodontic therapy (i.e., placement of orthodontic brackets and wires) may not be a covered benefit under the benefit plan/certificate. Therefore, it is important that the member understands his/her specific benefit inclusions/exclusions when making a decision regarding this treatment.

\*Failed CPAP is defined as any of the following criteria documented in the medical record:

- Claustrophobia; or
- Inability to breathe through the nose; or
- Pain or discomfort; or
- User intolerance; or
- Individuals at high pressures of CPAP (greater than 10 cm H2O) complaining of pressure discomfort.

#### **Not Medically Necessary:**

UPPP as a **sole** procedure with AHI/RDI under 10 is considered **not medically necessary**.

The use of oral appliances except as specified above for the treatment of OSA is considered **not medically necessary**.

Treatment of snoring without sleep apnea is considered **not medically necessary**, including, but not limited to the use of the following treatment methods:

1. UPPP;
2. Oral appliances (e.g., Snore Guard);
3. Radiofrequency Volumetric Tissue Reduction (RFVTR) of the soft palate and/or the base of the tongue, including Somnoplasty® and Coblation;®
4. Laser-Assisted Uvulopalatoplasty (LAUP);
5. Cautery Assisted Palatal Stiffening Operation (CAPSO) or Palatal Implants.

#### **Investigational and Not Medically Necessary:**

The use of Palatal implants is considered **investigational and not medically necessary** including, but not limited to

1. Injection snoreplasty;
2. The Pillar™ system.

UPPP is considered **investigational and not medically necessary** for UARS (upper airway resistance syndrome).

Other treatments for OSA (excluding CPAP/related devices, such as BiPAP) are considered **investigational and not medically necessary** including, but not limited to, the following:

1. Cautery-assisted Palatal Stiffening Operation (CAPSO);
2. Electro-sleep therapy;
3. Laser-Assisted Uvulopalatoplasty (LAUP);
4. Radiofrequency Volumetric Tissue Reduction (RFVTR) of the soft palate and/or the base of the tongue including Somnoplasty® and Coblation;®
5. Nasal surgery; (See SURG 00074 Nasal Surgery for the Treatment of Obstructive Sleep Apnea (OSA) including Radiofrequency Ablation of Nasal Turbinates for Nasal Obstruction with or without OSA for further information.)
6. Transpalatal advancement pharyngoplasty;
7. The Repose® System.

#### **Rationale**

In 2009, a Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea in Adults was prepared by the Adult OSA Task Force of the American Academy of Sleep Medicine (AASM) (Epstein, 2009). According to the AASM (which was formerly known as the American Sleep Disorders Association), "This task force was assembled to produce a clinical guideline from a review of existing practice parameters and available literature. All existing evidence-based AASM practice parameters relevant to the evaluation and management of OSA in adults were incorporated into this guideline." The following is excerpted from this AASM document:

- This guideline does not apply to surgical therapy for primary snoring

# CIGNA

**CIGNA does not cover an interface consisting of a boil and bite mouthpiece connected to nasal inserts (e.g., CPAP PRO® [Stevenson Industries, Inc., Simi Valley, CA]) because it is considered experimental, investigational or unproven.**

**Coverage for oral appliances may be subject to the terms, conditions and limitations of the applicable benefit plan's External Prosthetic Appliances and Devices (EPA) or Durable Medical Equipment (DME) benefit and schedule of copayments. Please refer to the applicable benefit plan document to determine benefit availability and terms, conditions and limitations of coverage**

**If coverage for oral appliances is available, the following conditions of coverage apply.**

**CIGNA covers a tongue-retaining device or a mandibular repositioning appliance, also referred to as mandibular advancement appliance or mandibular advancement splint, as medically necessary for individuals with mild or moderate OSA when EITHER of the following criteria is met:**

- apnea/hypopnea index (AHI)  $\geq 15$  and  $< 30$ , as documented by polysomnography (PSG)
- AHI  $\geq 5$  and  $< 15$  as documented by PSG, when accompanied by symptoms of OSA (e.g., excessive daytime sleepiness, impaired cognition, mood disorders or insomnia) or when individual has hypertension, ischemic heart disease or history of stroke

**CIGNA covers a tongue-retaining device or a mandibular repositioning appliance as medically necessary for individuals with severe OSA (i.e., AHI  $\geq 30$ ) who are unwilling or unable to comply with PAP treatment.**

**Over-the-counter (OTC) oral appliances that can be obtained without a prescription are excluded under many benefit plans and therefore are generally not covered. In addition, OTC oral appliances are not considered medically necessary.**

## **Surgical Treatment**

**CIGNA covers tonsillectomy and/or adenoidectomy as medically necessary for the treatment of OSA, as diagnosed by polysomnography (PSG).**

**CIGNA covers uvulopalatopharyngoplasty (UPPP) as medically necessary for the treatment of OSA when ALL of the following criteria are met:**

- presence of narrowing or collapse of the retropalatal region
- criteria for PAP met and individual has proved intolerant to or failed a trial of PAP
- consideration has been given to use of mandibular repositioning appliance (MRA) or tongue-retaining appliance

**CIGNA does not cover uvulectomy as a stand-alone procedure for the treatment of OSA because it is considered experimental, investigational or unproven. (Note: this Coverage Policy is not intended to address uvulectomy performed for other indications (e.g., acute inflammation/angioedema of the uvula).**

**CIGNA covers inferior sagittal mandibular osteotomy (ISO) and genioglossal advancement with hyoid myotomy and suspension (GAHM), with or without UPPP, as medically necessary for the treatment of OSA when ALL of the following criteria are met:**

- presence of retropalatal and retrolingual obstruction
- criteria for PAP met and individual has proved intolerant to or failed a trial of PAP
- consideration has been given to use of mandibular repositioning appliance (MRA) or tongue-retaining appliance

**CIGNA covers mandibular and maxillary osteotomy and advancement as medically necessary for the treatment of OSA when BOTH of the following criteria are met:**

- criteria for PAP met and individual has proved intolerant to or failed a trial of PAP
- individual has failed prior less invasive surgical procedures **OR** has craniofacial skeletal abnormalities that are associated with a narrowed posterior airway space and tongue-base obstruction

**CIGNA covers tracheostomy as medically necessary for the treatment of OSA when other medical and surgical options do not exist, have failed or are refused, or when deemed necessary by clinical urgency.**

#### **Additional Procedures/Services**

**CIGNA does not cover any of the following procedures or services for the treatment of OSA because they are considered experimental, investigational or unproven:**

- laser-assisted uvulopalatoplasty (LAUP)
- cautery-assisted palatal stiffening operation (CAPSO)
- Pillar™ Palatal Implant System
- radiofrequency volumetric tissue reduction (RFVTR) of the soft palate, uvula, or tongue base (e.g., Coblation®, Somnoplasty®)
- tongue-base suspension using the Repose™ Bone Screw System
- Provent™ Professional Sleep Apnea Therapy Device
- electrosleep therapy
- injection Snoreplasty
- atrial overdrive pacing

**CIGNA does not cover treatment of upper airway resistance syndrome (UARS) using any of the methods of treatment in this policy, including CPAP, BPAP and APAP, because they are considered experimental, investigational or unproven.**

**CIGNA does not cover the treatment of snoring by any method because it is not considered medically necessary.**

### **General Background**

Obstructive sleep apnea (OSA) is a treatable form of sleep disordered breathing characterized by repetitive obstruction of the upper airway resulting in oxygen desaturation and arousal from sleep. Apnea is defined as a drop in airflow of 90% or more, lasting 10 seconds, and is considered obstructive if there is effort to breathe during the episode. There is less consensus on the definition of hypopnea. The American Academy of Sleep Medicine (AASM) has proposed that hypopnea be defined as an abnormal respiratory event with at least a 30% reduction in thoracoabdominal movement or airflow as compared to baseline, lasting at least 10 seconds, with  $\geq$  4% oxygen desaturation. This definition is used by the Centers for Medicare and Medicaid Services (CMS) and has been used in several key studies. Hypopnea may result in partial obstruction of the airway, and most researchers have recognized that the clinical impact of apneas and hypopneas is virtually indistinguishable (AASM Task Force, 1999, (Kushida, et al., 2005; Goroll, et al., 2006).

Sleep is generally defined by combining behavioral observation with electrophysiological recording and consists of rapid eye movement (REM) sleep and nonrapid eye movement (NREM) sleep. NREM sleep usually precedes REM sleep and is divided into four stages. Sleep is usually entered through stage I sleep, a transitional phase when eye movements become slow and skeletal muscles relax. Stage I may not be perceived as sleep, although there is less sensory awareness and mental activity becomes dream-like. Sleep-deprived individuals enter unavoidable periods of microsleep consisting of five- to ten-second bouts of stage I sleep. These episodes may have serious consequences, especially in situations that demand constant attention, such as driving a motor vehicle. Stage II and subsequent stages are perceived as sleep. Stages III and IV are referred to as slow-wave sleep or deep sleep.

OSA occurs when the patency of the nasopharyngeal airway becomes insufficient during sleep. Anatomic risk factors include nuchal obesity (cricothyroid neck circumference greater than 17 inches in men or 16 inches in

# NON-SURGICAL TREATMENT OF OBSTRUCTIVE SLEEP APNEA

**Policy Number:** 2010T0526B  
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**Related Medical Policies:**

- [Polysomnography and Portable Monitoring for Evaluation of Sleep Related Breathing Disorders](#)
- [Surgical Treatment of Obstructive Sleep Apnea](#)

**Related Coverage Determination Guidelines:**

None

**INSTRUCTIONS FOR USE**

*This Medical policy provides assistance in interpreting UnitedHealthcare benefit plans. When deciding coverage, the enrollee specific document must be referenced. The terms of an enrollee's document (e.g., Certificate of Coverage (COC) or Summary Plan Description (SPD)) may differ greatly. In the event of a conflict, the enrollee's specific benefit document supersedes this medical policy. All reviewers must first identify enrollee eligibility, any federal or state regulatory requirements and the plan benefit coverage prior to use of this Medical Policy. Other Policies and Coverage Determination Guidelines may apply. UnitedHealthcare reserves the right, in its sole discretion, to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.*

**COVERAGE RATIONALE**

**Removable oral appliances are proven for treating mild or moderate obstructive sleep apnea (OSA) as documented by polysomnography.** Refer to the Medical Policy titled [Polysomnography and Portable Monitoring for Evaluation of Sleep Related Breathing Disorders](#) for further information.

Staging of the severity of sleep apnea can be accomplished by using the apnea-hypopnea index (AHI), also called the respiratory disturbance index (RDI). The American Academy of Sleep Medicine (AASM) defines OSA as follows:

- Mild OSA - AHI of 5-15
- Moderate OSA - AHI of 15-30
- Severe OSA - AHI of greater than 30

**Removable oral appliances are unproven for treating central sleep apnea.**

This type of sleep apnea is caused by impaired neurological function, and these devices are designed to manage physical obstructions.

**BACKGROUND**

Obstructive sleep apnea (OSA) is a breathing disorder that is defined by either a decrease or complete cessation of airflow during sleep. In OSA, airflow is obstructed when the muscles in the back of the throat fail to keep the airway open. Nocturnal respiration in patients with OSA is characterized by apnea (breathing cessation) and hypopnea (marked reduction in breathing volume). The signs and symptoms of untreated OSA include excessive daytime sleepiness, loud snoring, nocturnal choking, apneas or choking witnessed by bed partner, unrefreshing sleep, morning headaches, reduced libido and enuresis. Physiological effects of untreated OSA include fluctuating blood oxygen levels, increased heart rate, chronic daytime hypertension and impaired glucose tolerance/insulin resistance.

Diagnosis and evaluation of sleep apnea syndrome is determined through polysomnography (PSG). Staging of the severity of sleep apnea can be accomplished by using the apnea-hypopnea index (AHI), also called the respiratory disturbance index (RDI). The American Academy of Sleep Medicine (AASM) defines mild OSA as an AHI of 5-15, moderate OSA as an AHI of 15-30 and severe OSA as an AHI of greater than 30 (AASM, 2008).

Treatment for OSA includes lifestyle modifications (weight loss, avoidance of alcohol or other agents that decrease upper airway patency), positional therapy, positive airway pressure (CPAP or BiPAP), oral appliance therapy and surgery.

Non-surgical oral appliances, worn during sleep, are intended to treat OSA by keeping the airway open in one of three ways: by pushing the lower jaw forward (a mandibular advancement device or MAD), by preventing the tongue from falling back over the airway (a tongue-retaining device) or by combining both mechanisms (ASAA, 2007).

**CLINICAL EVIDENCE**

There is sufficient evidence to conclude that mandibular advancement devices (MAD) can improve sleep-disordered breathing in patients with mild to moderate OSA who prefer it to CPAP, do not respond to CPAP or fail treatment with CPAP. MAD therapy is more effective than placebo therapy but less effective than CPAP therapy for reducing sleep-disordered breathing (Hayes, 2010).

In a multicenter, randomized controlled trial (n=101), Lam et al. (2007) compared the effectiveness of three commonly used non-surgical treatment modalities in patients with mild to moderate OSA. Treatment groups consisted of conservative measures (sleep hygiene) only, continuous positive airways pressure (CPAP) in addition to conservative measures or an oral appliance in addition to conservative measures. The severity of sleep-disordered breathing was decreased in the CPAP and oral appliance groups compared with the conservative measures group, and the CPAP group was significantly better than the oral appliance group. Overall, CPAP produced the best improvement in terms of physiological, symptomatic and quality of life measures, while the oral appliance was slightly less effective.

A Cochrane review concluded that while CPAP appears to be more effective in improving sleep disordered breathing, there is increasing evidence suggesting that oral appliances (OA) improve subjective sleepiness and sleep disordered breathing compared with a control. Until there is more definitive evidence on the effectiveness of OA in relation to CPAP, with regard to symptoms and long-term complications, it would appear to be appropriate to recommend OA therapy to patients with mild symptomatic OSA, and those patients who are unwilling or unable to tolerate CPAP