MEDICAL POLICY

POLICY TITLE	DIAGNOSIS AND MEDICAL MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA
POLICY NUMBER	MP 2.045

Effective Date:	4/1/2024

I. POLICY

Diagnostic Testing for Obstructive Sleep Apnea

Initial Testing Unattended (Unsupervised) Testing

A single unattended (unsupervised) home sleep study with a minimum of **three (3) recording channels** with the following sensors: nasal pressure, chest and abdominal respiratory inductance plethysmography, and oximetry; or alternatively peripheral arterial tone (PAT), oximetry and actigraphy may be considered **medically necessary** for adult patients (greater than 18) who are at high risk for OSA when **ALL** of the following are met:

- Clinical need for sleep study, as indicated by **at least two (2)** of the following:
  - Observed apneas during sleep; **or**
  - Sleepiness that interferes with daily activities and is not explained by other conditions; **or**
  - Habitual snoring or gasping/choking episodes associated with awakenings; **or**
  - Hypertension; **or**
  - Body mass index (BMI) greater than 35; **or**
  - Neck circumference: greater than 16 inches for a female (includes transgender) or greater than 17 inches for a male (includes transgender); **or**
  - Waking headaches
- The medical professional who will interpret the home sleep study should have training in sleep medicine; **and**
- Agency providing in-home sleep study testing uses equipment that is FDA approved for home use; **and**
- No evidence by history and physical examination of a health condition that might alter ventilation or require alternative treatment including, but not limited to, one of the following:
  - Central sleep apnea; **or**
  - Moderate to severe heart failure (NYHA Class III or IV); **or**
  - Chronic pulmonary disease including moderate to severe asthma; **or**
  - Established diagnosis of obesity hypoventilation syndrome; **or**
  - Moderate to severe neuromuscular/neurodegenerative disorder causing restrictive lung diseases (e.g. kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, Guillian Barre syndrome) ; **or**

- Stroke/transient ischemic attack within the preceding 30 days; **or**
- Tachycardia or bradycardic arrhythmias; **or**
- Neuromuscular disorders with sleep-related symptoms; **or**
- Injurious or potentially injurious parasomnias; **or**
- Narcolepsy; **or**
- Chronic opioid use.

Note: For patients with sleep-related movement disorders (e.g., restless legs syndrome (RLS), periodic limb movement disorder (PLMD), narcolepsy or injurious or potentially injurious parasomnias, **See MP 2.335 Polysomnography for Non-Respiratory Sleep Disorders**

Unattended (unsupervised) home sleep studies are considered **investigational** in pediatric patients (less than 18 years of age). There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Repeat Unattended (Unsupervised) Testing

Repeat unattended (unsupervised) home sleep studies with a minimum of three recording channels with the following sensors: nasal pressure, chest and abdominal respiratory inductance plethysmography, and oximetry; or alternatively PAT, oximetry and actigraphy, may be considered **medically necessary** for adult patients under the following circumstances:

- To assess efficacy of surgery or oral appliances/devices; **or**
- To re-evaluate the diagnosis of OSA and need for continued positive airway pressure (CPAP) therapy, e.g., if there is significant change in weight or change in symptoms suggesting that CPAP therapy should be adjusted or possibly discontinued.

Multiple consecutive nights of supervised or unattended (unsupervised) sleep studies that do not meet the above criteria for repeat studies are considered **not medically necessary**.

Unattended (unsupervised) home sleep studies are considered **investigational** in pediatric patients (less than 18 years of age). There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Supervised Polysomnography Performed in a Sleep Laboratory

Initial Testing Performed in a Sleep Laboratory

Supervised Polysomnography or sleep study performed in a sleep laboratory may be considered **medically necessary** in adult patients with a moderate or high pretest probability of OSA in the following situations:

- Clinical need for sleep study, as indicated by **at least two (2)** of the following:
  - Observed apneas during sleep; **or**

- Sleepiness that interferes with daily activities and is not explained by other conditions, (this may be expressed as learning difficulties or other daytime neurobehavioral problems in young children) ; **or**
- Habitual snoring or gasping/choking episodes associated with awakenings; **or**
- Hypertension; **or**
- Body mass index (BMI) greater than 35; **or**
- Neck circumference: greater than 16 inches for a female (includes transgender) or greater than 17 inches for a male (includes transgender); **or**
- Waking headaches.

And **ONE** or more of the following:

- When patients do not meet criteria for an unattended home sleep study as described above; **or**
- A previous home study failed to establish the diagnosis of OSA in a patient with a high pretest probability of OSA; **or**
- A previous home study was technically inadequate; **or**
- Failure of resolution of symptoms or recurrence of symptoms during treatment; **or**
- To reevaluate the diagnosis of OSA and need for continued positive airway pressure (PAP) therapy, e.g., if there is a significant change in weight or change in symptoms suggesting that CPAP should be retitrated or possibly discontinued; **or**
- When testing is done to rule out other sleep disorders such as central sleep apnea, injurious or potentially injurious parasomnias, or narcolepsy; **or**
- Presence of a co-morbidity that might alter ventilation or decrease the accuracy of a home sleep study including, but not limited to **one** of the following:
  - Central sleep apnea; **or**
  - Moderate to severe heart failure (NYHA Class III or IV); **or**
  - Chronic pulmonary disease including moderate to severe asthma; **or**
  - Established or suspected diagnosis of obesity hypoventilation syndrome; **or**
  - Moderate to severe neuromuscular/neurodegenerative disorder causing restrictive lung diseases (e.g. kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, Guillian Barre syndrome); **or**
  - Stroke/transient ischemic attack within the preceding 30 days; **or**
  - Tachycardia or bradycardic arrhythmias; **or**
  - Chronic opioid use.

Note: For patients with sleep-related movement disorders (e.g., restless legs syndrome [RLS], periodic limb movement disorder [PLMD]), narcolepsy or injurious or potentially injurious parasomnias, **See MP 2.335 Polysomnography for Non-Respiratory Sleep Disorders**

Repeat Testing Performed in a Sleep Laboratory

A repeat supervised polysomnography performed in a sleep laboratory* may be considered **medically necessary** in adult patients who meet the criteria above for an in-laboratory PSG under the following circumstances:

- To initiate and titrate continuous positive airway pressure (CPAP), bilevel positive airway pressure (BiPAP) or therapy in adult patients age (greater than or equal to 18 years of age) who have:
  - An apnea/hypopnea index (AHI) or respiratory disturbance index (RDI) of at least 15 per hour; **or**
  - An AHI or RDI of at least five (5) events per hour in a patient with one or more signs or symptoms associated with OSA (e.g. excessive daytime sleepiness, hypertension, cardiovascular heart disease, or stroke.); **or**
- To re-evaluate the diagnosis of OSA, for retitration, or for reconsideration of need for continued CPAP, BiPAP or APAP therapy, (this includes patients with a significant change in weight or change in symptoms suggesting that therapy should be retitrated or possibly discontinued**); **or**
- To reevaluate the diagnosis of OSA and need for continued use of an oral appliance for a patient that does not meet the criteria for an unattended home sleep study described above (e.g., if there is a significant change in weight or change in symptoms suggesting an adjustment is required or the use of the appliance can be discontinued).

*A split-night study, in which severe OSA is documented during the first portion of the study using polysomnography, followed by PAP therapy during the second portion of the study, can eliminate the need for a second study to titrate PAP therapy.

**This statement does not imply that supervised studies are needed routinely following unattended studies. This statement means a re-evaluation based on a substantial change in symptoms or in the clinical situation.

Supervised or unattended home sleep studies that do not meet the above criteria are considered **not medically necessary**.

Video EEG monitoring

Video EEG monitoring performed concurrently with polysomnography is considered **investigational.** There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Abbreviated Daytime Sleep Study (PAP-NAP)

The use of abbreviated daytime sleep study (PAP-NAP) as a supplement to standard sleep studies is considered **investigational**. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Multiple Sleep Latency Testing

Multiple sleep latency testing is considered **not medically necessary** in the diagnosis of OSA.

Continuous Positive Airway Pressure (CPAP)

Initial Application of CPAP

Initial application of Continuous Positive Airway Pressure (CPAP) may be considered **medically necessary** in the medical management of patients when ONE (1) of the following is met:

- For **adult patients** who are diagnosed with obstructive sleep apnea when **ONE** of the following is met:
  - AHI, RDI, or REI is greater than or equal to 15 events per hour; **or**
  - AHI, RDI, or REI greater than or equal to five (5) events per hour and at least **one** of the following:
    - excessive daytime sleepiness; **or**
    - hypertension; **or**
    - mood disorders; **or**
    - impaired cognition; **or**
    - ischemic heart disease; **or**
    - history of stroke; **or**
    - insomnia.

- For **adult patients** who are diagnosed with clinically significant upper airway resistance when ONE (1) of the following is met:
  - Greater than 10 EEG arousals per hour; **or**
  - Presence of abnormally negative intrathoracic pressures (i.e., more negative than 10 cm) in conjunction with the EEG arousals.

Note: The measurement of intrathoracic pressures requires the use of an esophageal manometer as an adjunct to a polysomnogram.

- For **pediatric patients** who are diagnosed with obstructive sleep apnea when ONE of the following is met:
  - AHI or RDI of greater than or equal to five (5) per hour; **or**
  - AHI or RDI of greater than or equal to 1.5 per hour in a patient with excessive daytime sleepiness, behavioral problems or hyperactivity.

Bi-level Positive Airway Pressure (BiPAP), Auto-adjusting Positive Airway Pressure (APAP)

Initial application of Bi-level Positive Airway Pressure (BiPAP) or Auto-adjusting Positive Airway Pressure (APAP) may be considered **medically necessary** when **ONE** of the following is met:

- After an episode of respiratory failure at time of discharge from the hospital; **or**
- For patients with neurologic conditions that effect respiratory muscles; **or**
- For **adult patients** who are diagnosed with clinically significant obstructive sleep apnea when **BOTH** of the following are met:
  - AHI, RDI, or REI measurement is **ONE** of the following:

- Greater than or equal to 15 events per hour; **or**
- Greater than or equal to five (5) events per hour and less than or equal to 14 events per hour with documentation of ONE or MORE of the following;
  - excessive daytime sleepiness; **or**
  - hypertension; **or**
  - mood disorders; **or**
  - impaired cognition; **or**
  - ischemic heart disease; **or**
  - history of stroke; **or**
  - Insomnia.

o The ordering practitioner has determined that BiPAP or APAP will provide optimal benefit for the management of OSA; **or**

o If there is a significant change in weight or change in symptoms suggesting that continuous positive airway pressure (CPAP) should be adjusted or possibly discontinued.

Note: The patient is NOT required to have tried or failed CPAP prior to implementation of BiPAP, or APAP.

- For **adult patients** who are diagnosed with clinically significant upper airway resistance syndrome (UARS) when **BOTH** of the following are met:
  - o Clinical condition meets ONE of the following:
    - Greater than 10 EEG arousals per hour; **or**
    - Presence of abnormally negative intrathoracic pressures (i.e., more negative than 10 cm) in conjunction with the EEG arousals
  - o The ordering practitioner has determined that BiPAP or APAP will provide optimal benefit for the management of UARS.

Note: The patient is NOT required to have tried or failed CPAP prior to implementation of BiPAP, or APAP.

- For **pediatric patients** who are diagnosed with clinically significant obstructive sleep apnea when **ONE** of the following are met:
  - o AHI or RDI equal than or greater to five (5); **or**
  - o AHI or RDI equal than or greater to five 1.5 per hour in a patient with excessive daytime sleepiness, behavioral problems or hyperactivity; **or**
  - o The ordering practitioner has determined that BiPAP or APAP will provide optimal benefit for the management of OSA.

Note: The patient is NOT required to have tried or failed CPAP prior to implementation of BiPAP or APAP.

Humidification

A humidifier (either heated or non-heated) and tubing may be **medically necessary** for use with a medically necessary PAP device when prescribed by the treating physician to meet the needs of the individual patient.

Continued Application of Therapy

Continued CPAP, BiPAP or APAP therapy may be considered **medically necessary** when **BOTH** of the following are met:

- Objective evidence of adherence, defined as use of positive airway pressure 2 or more hours for 70% of nights in a continuous 30 day period, to be assessed at the end of the initial 90 days of use; **and**
- Face-to-face clinical re-evaluation (in-person or via telehealth) by the treating provider with documentation that symptoms of OSA are improved.

Other Therapy

Intraoral appliances

Custom fabricated intraoral appliances (tongue-retaining devices or mandibular advancing/positioning devices) may be considered **medically necessary** in patients with clinically significant OSA under the following conditions:

- For adult patients who are diagnosed with clinically significant upper airway resistance when ONE of the following is met:
  - OSA, defined by an apnea/hypopnea index (AHI) of at least 15 per hour; **or**
  - An AHI of at least five (5) events per hour in a patient with one of the following
    - Excessive daytime sleepiness; **or**
    - Hypertension; **or**
    - Mood disorders; **or**
    - Impaired cognition; **or**
    - Ischemic heart disease; **or**
    - History of stroke; **or**
    - Insomnia.

- For pediatric patients who are diagnosed with obstructive sleep apnea when ONE (1) of the following is met:
  - AHI or RDI measurement is **ONE** (1) of the following
    - AHI or RDI of at least five (5) per hour; **or**
    - AHI or RDI of at least 1.5 per hour in a patient with excessive daytime sleepiness, behavioral problems or hyperactivity.

AND (for both adult and pediatric patients)

- A trial with CPAP, BiPAP, or APAP has failed, contraindicated, or refused; **and**
- The device is prescribed by a treating physician; **and**
- The device is custom-fitted by qualified dental personnel; **and**

- There is absence of temporomandibular dysfunction or periodontal disease

Prefabricated or off the shelf intraoral appliances are considered **not medically necessary.**

The use of CPAP, bi-level positive airway pressure, APAP, and intraoral appliances that do not meet the above criteria is considered **investigational** for the treatment of OSA. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure**.**

Palate and Mandible Expansion Devices

Palate and mandible expansion devices may be considered **investigational** for the treatment of OSA. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Nasal Expiratory Positive Airway Pressure (EPAP)

A nasal expiratory positive airway pressure (EPAP) device may be considered **investigational**. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Flexible Positive Airway Pressure (PAP)

The use of flexible positive airway pressure (PAP) devices, (such as C-Flex) may be considered **investigational**. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

Electronic Positional Obstructive Sleep Apnea Devices

Devices for positional therapy are considered **investigational** in the treatment of positional OSA. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with these procedures.

Policy Guidelines

Specialist Training

Polysomnography or home sleep apnea testing should be performed in appropriately selected patients and the test summary results reviewed by a physician who is trained in sleep medicine.

Medical professionals who interpret a polysomnogram or home sleep apnea test should be trained in sleep medicine and should review the raw data from PSG and home sleep apnea tests to detect artifacts and data loss.

Treatment of patients diagnosed with OSA should be initiated and monitored by a professional trained in sleep medicine. It is important to monitor symptoms and adherence to positive airway pressure (PAP) treatment.

Risk Factors for Obstructive sleep apnea

Although not an exclusive list, patients with all of the following symptoms are considered to be at high-risk for obstructive sleep apnea (OSA):

- Habitual snoring; or
- Observed apneas; or
- Excessive daytime sleepiness; or
- A body mass index (BMI) greater than 35 kg/m^2.

If no bed partner is available to report snoring or observed apneas, other signs and symptoms suggestive of OSA (e.g., age of the patient, male gender, thick neck, craniofacial or upper airway soft tissue abnormalities, unexplained hypertension) may be considered. Objective clinical prediction rules are being developed; at present, risk assessment is based primarily on clinical judgment.

The STOP-BANG questionnaire, a method developed for non-sleep specialists, assesses the signs and symptoms of OSA (Snore, Tired, Observed apnea, blood Pressure, BMI, Age, Neck, Gender), has been shown to have 97% sensitivity and 96% negative predictive value (specificity, 33%) for the identification of patients with severe OSA (Apnea/Hypopnea Index [AHI] >30 events per hour). Overnight oximetry has been used by some sleep specialists as a component of the risk assessment but is inadequate for the diagnosis of OSA. Therefore, a follow-up polysomnography (PSG) or home sleep apnea test would still be required to confirm or exclude a diagnosis of OSA.

OSA in Children

The presentation of OSA in children may differ from that of adults. Children frequently exhibit behavioral problems or hyperactivity rather than daytime sleepiness. Obesity is defined as a BMI greater than the 90th percentile for the weight/height ratio. Although the definition of severe OSA in children is not well established, an AHI or RDI greater than 1.5 events per hour is considered abnormal (an AHI or RDI ≥10 events per hour may be considered severe). In addition, the first-line treatment in children is usually adenotonsillectomy. Continuous positive airway pressure (CPAP) is an option for children who are not candidates for surgery or who have an inadequate response to surgery.

Bariatric Surgery Patients

Screening for OSA should be performed routinely in patients scheduled for bariatric surgery, due to the high prevalence of OSA in this population. The optimal screening approach is not certain. An in-laboratory PSG or home sleep apnea test is the most accurate screening method.

Some experts recommend a symptom-based screening instrument, followed by PSG in patients who exceed a certain threshold, as an alternative to performing PSG in all patients. It should be noted that there is a high prevalence of obesity hypoventilation syndrome in patients who are candidates for bariatric surgery. Therefore, obesity hypoventilation syndrome should be ruled out prior to home sleep apnea testing in this population.

Significant Weight change

There is no established threshold for significant change in weight. Studies have reported improvements in OSA with an average weight loss of 20 kg or 20% of body weight.

Multiple Sleep Latency Test

The multiple sleep latency test (MSLT) is an objective measure of the tendency to fall asleep in the absence of alerting factors, while the maintenance of wakefulness test is an objective measure of the ability to stay awake under soporific conditions (used to assess occupational safety). The MSLT and maintenance of wakefulness test are not routinely indicated in the evaluation and diagnosis of OSA or in the assessment of change following treatment with CPAP. The MSLT may be indicated in the evaluation of patients with suspected narcolepsy to confirm the diagnosis (often characterized by cataplexy, sleep paralysis, and hypnagogic/hypnopompic hallucinations) or to differentiate between suspected idiopathic hypersomnia and narcolepsy. Narcolepsy and OSA can co-occur. Because it is not possible to differentiate between the excessive sleepiness caused by OSA and by narcolepsy, OSA should be treated before confirming a diagnosis of narcolepsy with the MSLT.

Split-Night Studies

American Academy of Sleep Medicine practice parameters (2005) have indicated that a split-night study (initial diagnostic PSG followed by CPAP titration during PSG on the same night) is an alternative to 1 full night of diagnostic PSG followed by a second night of titration if the following 4 criteria are met:

1. An AHI of at least 40 events per hour is documented during a minimum of 2 hours of diagnostic PSG. Split-night studies may sometimes be considered at an AHI between 20 and 40 events per hour, based on clinical judgment (e.g., if there are also repetitive long obstructions and major desaturations). However, at AHI values below 40, determination of CPAP-level requirements, based on split-night studies, may be less accurate than in full-night calibrations.
2. CPAP titration is carried out for more than 3 hours (because respiratory events can worsen as the night progresses).
3. PSG documents that CPAP eliminates or nearly eliminates the respiratory events during rapid eye movement (REM) and non-REM sleep, including REM sleep with the patient in the supine position.

4. A second full night of PSG for CPAP titration is performed if the diagnosis of a sleep-related breathing disorder is confirmed, but criteria (2) and (3) are not met.

Categorization of PSG and Portable Monitoring

Full correspondence does not exist between CPT codes and the most current categorization scheme for the different types of studies. The 2005 practice parameters from the American Academy of Sleep Medicine list 4 types of monitoring procedures: type 1, standard attended in-lab comprehensive PSG; type 2, comprehensive portable PSG; type 3, modified portable sleep apnea testing (also referred to as cardiorespiratory sleep studies), consisting of 4 or more channels of monitoring; and type 4, continuous single or dual bioparameters, consisting of 1 or 2 channels, typically oxygen saturation, or airflow. Types 1 and 2 would be considered polysomnographic studies, and types 3 and 4 would be considered polygraphic sleep studies. The terms sleep studies and PSG are often used interchangeably. CPT coding distinguishes between sleep studies that do not include electroencephalographic (EEG) monitoring, and PSG, which includes EEG monitoring. PSG is usually conducted in a sleep laboratory and attended by a technologist, but may also be conducted with type 2 portable monitoring. The type of study is further characterized as attended (supervised) or unattended by a technologist. Home or portable monitoring implies unattended sleep studies, typically conducted in the patient's home. There are no specific codes for remotely monitored home sleep studies. They would likely be reported with the CPT code for the sleep study with the GT modifier ("via interactive audio and video telecommunications systems") appended. There is no CPT code for "unattended" PSG.

Cardiorespiratory sleep studies without EEG may be called polygraphic studies and can be attended or unattended by a technologist. CPT codes 95807 and 95806 distinguish polygraphic sleep studies that are attended or unattended, but there are no codes that distinguish between type 3 and type 4 sleep studies. A wide variety of portable monitors and proprietary automated scoring systems are being tested and marketed, but the optimum combination of sensors and scoring algorithms is currently unknown. Current recommendations are that the portable monitoring device have 4 channels (oxygen saturation, respiratory effort, respiratory airflow, heart rate) and permit review of the raw data. Type 4 monitors with fewer than 3 channels are not recommended due to reduced diagnostic accuracy and higher failure rates. As with attended PSG, it is important that the raw data from home sleep studies be reviewed by a professional trained in sleep medicine to detect artifacts and data loss.

CPAP has been shown to have greater effectiveness than oral appliances in general. This difference in efficacy is more pronounced for patients with severe OSA, because oral appliances have been shown to be less efficacious in patients with severe OSA than they are in patients with mild-moderate OSA. Therefore, it is particularly important that patients with severe OSA have an initial trial of CPAP and that all reasonable attempts are made to continue treatment with CPAP, prior to the decision to switch to an oral appliance.

Cross-references:

MP 1.101 Orthognathic Surgery
MP 1.128 Surgical Treatment of Snoring and Obstructive Sleep Apnea

MP 2.062 Temporomandibular Joint Dysfunction (TMJ)
MP 2.087 Actigraphy
MP 2.335 Polysomnography for Non-Respiratory Sleep Disorders

II. PRODUCT VARIATIONS

TOP

This policy is only applicable to certain programs and products administered by Capital Blue Cross and subject to benefit variations as discussed in Section VI. Please see additional information below.

FEP PPO:

FEP PPO - Refer to FEP Medical Policy Manual. The FEP Medical Policy manual can be found at:
https://www.fepblue.org/benefit-plans/medical-policies-and-utilization-management-guidelines/medical-policies

III. DESCRIPTION/BACKGROUND

TOP

Obstructive Sleep Apnea

Obstructive sleep apnea (OSA) syndrome is characterized by repetitive episodes of upper airway obstruction due to the collapse of the upper airway during sleep. This causes a drop in blood oxygenation and brief arousal and can occur as frequently as every minute throughout the night. The most common signs and symptoms in adults are snoring, excessive daytime sleepiness, and hypertension. Excessive daytime sleepiness may be subjective and is assessed by questionnaires such as the Epworth Sleepiness Scale, a short self-administered questionnaire, that asks patients how likely they are to fall asleep in different scenarios such as watching TV, sitting quietly in a car, or sitting and talking to someone. Daytime sleepiness is uncommon in young children with OSA. Symptoms in children may include disturbed sleep and daytime neurobehavioral problems. In otherwise healthy children OSA is usually associated with adenotonsillar hypertrophy and/or obesity.

The hallmark of OSA is snoring. The snoring abruptly ceases during the apneic episodes and during the brief period of patient arousal and then resumes when the patient again falls asleep. The sleep fragmentation associated with repeated sleep disruption can lead to impairment of daytime activity. Adults with OSA-associated daytime somnolence are thought to be at higher risk for collisions involving motorized vehicles (i.e., cars, trucks, heavy equipment), while OSA in children may result in neurocognitive impairment and behavioral problems.

OSA can also affect the cardiovascular and pulmonary systems. For example, apnea leads to periods of hypoxemia, alveolar hypoventilation, hypercapnia, and acidosis. This, in turn, can cause systemic hypertension, cardiac arrhythmias, pulmonary hypertension, and cor pulmonale. Systemic hypertension is common in patients with OSA. Severe OSA is also associated with decreased survival, presumably related to severe hypoxemia, hypertension, or an increase in

automobile collisions related to daytime sleepiness. It is estimated that about 7% of adults have moderate or severe OSA, 20% have mild OSA, and the referral population of OSA patients represents a small proportion of patients who have clinically significant and treatable disease.

Diagnosis

The criterion standard for a diagnosis of sleep disorders is a polysomnogram performed in a sleep laboratory. A standard polysomnogram includes electroencephalogram (EEG), submental electromyogram, and electrooculogram (to detect rapid eye movement sleep) for sleep staging. Polysomnography also typically includes electrocardiography and monitoring of respiratory airflow, effort, snoring, oxygen desaturation, and sleep position. An attended study ensures that the electrodes and sensors are functioning adequately and do not dislodge during the night. In addition, an attendant is able to identify severe OSA in the first part of the night and titrate continuous positive airway pressure (CPAP) in the second part of the night, commonly known as a "split-night" study. If successful, this strategy eliminates the need for additional polysomnography for CPAP titration.

Table 1. Definitions of Terms and Scoring Criteria for OSA

Terms	Definition
Respiratory Event	
Apnea	The frequency of apneas and hypopneas is measured from channels assessing oxygen desaturation, respiratory airflow, and respiratory effort. In adults, apnea is defined as a drop in airflow by 90% or more of pre-event baseline for at least 10 seconds. Due to faster respiratory rates in children, pediatric scoring criteria define an apnea as 2 or more missed breaths, regardless of its duration in seconds.
Hypopnea	Hypopnea in adults is scored when the peak airflow drops by at least 30% of pre-event baseline for at least 10 seconds in association with either at least 4% arterial oxygen desaturation or an arousal. Hypopneas in children are scored by a 50% or greater drop in nasal pressure and either a 3% or more decrease in oxygen saturation or associated arousal.
RERA	Respiratory event-related arousal is defined as an event lasting at least 10 seconds associated with flattening of the nasal pressure waveform and/or evidence of increased respiratory effort, terminating in arousal but not otherwise meeting criteria for apnea or hypopnea
Respiratory Event Reporting	
AHI	The apnea/hypopnea index is the average number of apneas or hypopneas per hour of sleep
RDI	The respiratory disturbance index is the number of apneas, hypopneas, or respiratory event-related arousals per hour of sleep time. RDI is often used synonymously with the AHI.

REI	The respiratory event index is the number of events per hour of monitoring time. Used as an alternative to AHI or RDI in-home sleep studies when actual sleep time from EEG is not available.
OSA	Obstructive sleep apnea is repetitive episodes of upper airway obstruction due to the collapse and obstruction of the upper airway during sleep
Mild OSA	•In adults: AHI or RDI of 5 to <15 •In children: AHI ≥1.5 is abnormal
Moderate OSA	AHI or RDI of 15 to < 30
Severe OSA	•Adults: AHI or RDI ≥30 •Children: AHI of ≥10
UARS	Upper airway resistance syndrome is characterized by a partial collapse of the airway and results in increased resistance to airflow. The increased respiratory effort is associated with multiple sleep fragmentations, as measured by very short alpha EEG arousals.
Positive Airway Pressure	
APAP	Auto-adjusting positive airway pressure may be used either to provide treatment or to determine the most effective pressure for CPAP
PAP	Positive airway pressure (PAP) may be continuous (CPAP) or auto-adjusting (APAP) or bi-level (bi-PAP). CPAP is a more familiar abbreviation for delivery of positive airway pressure.
PAP failure	Usually defined as an AHI >20 events per hour while using CPAP
PAP intolerance	CPAP use for <4 hours per night for ≥5 nights per week, or refusal to use CPAP. CPAP intolerance may be observed in patients with mild, moderate, or severe OSA

AHI: Apnea/hypopnea Index; APAP: auto-adjusting positive airway pressure; EEG: electroencephalogram; OSA: obstructive sleep apnea; PAP: positive airway pressure; RDI: Respiratory Disturbance Index; REI: Respiratory Event Index; RERA: respiratory event-related arousal: UARS: upper airway resistance syndrome.

Due to faster respiratory rates in children, pediatric scoring criteria define an apnea as two or more missed breaths, regardless of its duration in seconds. In pediatric patients, an AHI greater than 1.5 events per hour is considered abnormal, and an AHI of 10 or more may be considered severe.

A variety of devices have been developed specifically to evaluate OSA at home. They range from portable full polysomnography systems to single-channel oximeters. Available devices evaluate different parameters, which may include oximetry, respiratory and cardiac monitoring, and sleep/wake activity, but most portable monitors do not record EEG activity.

Treatment

Medical management of OSA in adults may include weight loss, avoidance of stimulants, body position adjustment, oral appliances, and use of various types of positive airway pressure therapy (i.e., fixed CPAP, bilevel positive airway pressure, or auto-adjusting positive airway pressure) during sleep. This evidence review, addresses CPAP, oral appliances, and novel devices including the Daytime-Nighttime Appliance (BioModeling Solutions), the mandibular Repositioning Nighttime Appliance (BioModeling Solutions), Provent and Winx. Provent is a single-use nasal expiratory resistance valve device containing valves inserted into the nostrils and secured with adhesive. The Winx system uses oral pressure therapy to treat OSA.Surgical management of OSA (i.e., adenotonsillectomy, uvulopalatopharyngoplasty, orthognathic surgery) is discussed in evidence review (surgical treatment of snoring and OSA syndrome).

CPAP Adherence

Schwab et al (2013) said the following:

> Although there are important concerns with CPAP tracking systems, third-party payers are mandating the use of CPAP adherence tracking systems to objectively document therapeutic use to reimburse CPAP. The Centers for Medicare and Medicaid Services (CMS) have developed specific guidelines on CPAP (or bilevel) reimbursement. Initial CPAP reimbursement is limited to 12 weeks. Continued coverage of a CPAP device beyond the first 3 months of therapy requires that, no sooner than Day 31 but no later than Day 91 after initiating therapy, the treating physician must conduct a clinical reevaluation and document that the patient is benefiting from CPAP therapy. Clinical benefit is demonstrated by a face-to-face clinical reevaluation by the treating provider with documentation that symptoms of OSA are improved with objective evidence of CPAP adherence. Adherence is defined as use of CPAP for at least 4 hours/night on 70% of nights during a consecutive 30-day period any time during the first 3 months of initial usage. However, there is insufficient evidence to support this definition of CPAP adherence as a threshold for improved neurocognitive and cardiovascular outcomes. As described previously, there is a dose–response relationship between amount of nightly CPAP use and clinical outcomes. These data indicate that even subjects who use CPAP for only 2 hours show improvement in measures of some outcomes (ESS, FOSQ, MSLT). Moreover, several studies (some randomized controlled trials) have shown improvements in daytime sleepiness, functional outcomes, cognitive function, and blood pressure in patients treated with CPAP for less than 4 hours/night, 70% of the nights. The CMS criteria assume that CPAP treatment has a threshold effect and therefore do not address whether outcomes may have a linear response with much lower levels of CPAP use. The CMS requirements also mandate an in-laboratory polysomnogram if CPAP was prescribed on the basis of portable monitoring and the patient subsequently fails the 90-day use criteria. The validity of this requirement is unclear, especially in the patient whose portable study demonstrates unequivocal severe OSA.
>
> What specific clinical outcomes independent of the data from CPAP tracking systems should be measured to ascertain a salutary response to CPAP? Such outcomes could include

(1) subjective daytime sleepiness (ESS [it should be noted, however, that the ESS is highly variable when administered sequentially to a clinical OSA population], etc.);
(2) objective daytime sleepiness (PVT [Psychomotor Vigilance Test], MSLT, MWT [Maintenance of Wakefulness Test]);
(3) self-reported improvement in the presenting symptom (i.e., nocturia, headache, sleep fragmentation, insomnia);
(4) blood pressure;
(5) cardiovascular outcomes (MI, hypertension, cardiovascular accident, heart failure, arrhythmias, improved insulin resistance or diabetic control);
(6) cognitive functioning (memory, neurocognitive testing);
(7) quality of life (FOSQ, SF [Short Form Health Survey], Calgary Sleep Apnea Specific Quality of Life Instrument [SAQLI], depression scales);
(8) sexual function;
(9) spousal outcomes; and
(10) MVAs. It is likely that specific outcomes (e.g., cardiovascular vs. cognitive) in various populations (e.g., old vs. young, etc.) will be dependent on a range of CPAP durations.

We believe optimal clinical practices (largely based on clinical experience) for chronically managing CPAP in patients with OSA should include the following:

- We encourage patients to use CPAP whenever they are asleep (during the day or night).
- We consider patients adherent if they regularly use CPAP for more than 4 h/night or if they use CPAP for more than 2 h/night and are making progress toward improved daytime sleepiness as measured by the ESS, subjective improvement in quality of life, or improvement of other OSA-associated health impairments (e.g., diabetes, hypertension). This reflects our belief that partial use is better than no use, although our goal is always to achieve full-time CPAP use during sleep.
- We assess these outcomes soon after the initiation of CPAP therapy, because data demonstrate that CPAP adherence is typically established early in the course of treatment, perhaps as early as the first 3–7 days. We measure the outcomes after 1 week, 4–6 weeks, 12 weeks, 6 months, 1 year after the initiation of CPAP, and then monitor them yearly thereafter.

Regardless of the specific time frame these outcomes need to be measured longitudinally because OSA should be viewed and treated as a chronic disease. Addressing CPAP intolerance early may improve CPAP adherence, whereas waiting for the requisite minimum 30 days may allow entrenched problems to result in abandonment of, or suboptimal adherence to, CPAP. The current 31- to 90-day requirement for documentation of CPAP adherence is arbitrary and not supported by evidence. The committee members prefer to document CPAP adherence earlier (i.e., 7–90 d) because there is evidence that addressing CPAP intolerance early may improve long-term adherence. Moreover, CPAP adherence needs to be monitored long term (for as long as the patient is using CPAP).

Finally, there are potentially ethical issues associated with the use of CPAP adherence monitoring systems as a requirement for Medicare payment. CPAP adherence has been shown to be related to socioeconomic class, marital status, race, and psychiatric disease. These patients may have a difficult time achieving the Medicare adherence patterns and thus certain segments of the population are potentially targets of government-mandated reimbursement discrimination. (p. 616)

IV. RATIONALE

TOP

SUMMARY OF EVIDENCE

Diagnosis

For individuals who have suspected OSA who receive home sleep apnea testing with at least three recording channels, the evidence includes RCTs. The relevant outcomes are test accuracy, symptoms, functional outcomes, and resource utilization. RCTs have reported that home sleep apnea testing (with sensors for respiratory effort, airflow, and oxygen saturation, or alternatively with peripheral arterial tone, actigraphy and oxygen saturation) is noninferior to testing in the sleep lab for adults with a high pretest probability of OSA and absence of comorbid conditions as determined by clinical evaluation. A positive portable monitoring study with channels that include arterial oxygen saturation, airflow, and respiratory effort has a high positive predictive value for OSA and can be used as the basis for a CPAP trial to determine the efficacy of treatment. A negative portable monitoring study cannot be used to rule out OSA. Patients who have a negative result from portable monitoring or have a positive study but do not respond to CPAP should undergo further evaluation. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have suspected OSA who receive limited channel home sleep apnea testing, the evidence includes studies on diagnostic accuracy. The relevant outcomes are test accuracy, symptoms, functional outcomes, and resource utilization. The ability to detect clinically significant OSA without sensors forrespiratory effort, airflow, and oxygen saturation, or alternatively without peripheral arterial tone, actigraphy and oxygen saturation, lacks support in the literature. The evidence is insufficient to determine the effects of the technology on health outcomes.

Treatment

For individuals who have OSA who receive PAP devices or oral appliances, the evidence includes RCTs and systematic reviews of RCTs. The relevant outcomes are symptoms, functional outcomes, and QOL. Conventional medical management of OSA includes weight loss, avoidance of stimulants, body position adjustment, oral appliances, and use of CPAP during sleep. A diagnostic sleep study may be followed by a trial of APAP to evaluate the efficacy and adjust pressure. APAP or bilevel PAP may also be indicated if the patient is intolerant of CPAP. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.For individuals who have OSA who receive novel OSA treatments (e.g., palate expansion, EPAP, oral pressure therapy), the evidence includes an RCT and a meta-analysis of case series. The relevant outcomes are symptoms,

functional outcomes, and QOL. The evidence on palate and mandible expansion devices includes a few small series. Further study with well-designed trials is needed to evaluate this treatment. The evidence on EPAP devices in patients with OSA has been reported in prospective case series, an industry-sponsored RCT, and a systematic review that did not include the RCT. The main finding of the RCT was a decrease in the AHI, with minor impact on oxygenation, and a decrease in ESS score. One comparative trial with historical controls used a PAP-NAP to study patients with complex insomnia resistant to CPAP titration or use. Additional study is needed to evaluate with greater certainty the efficacy of this intervention. No evidence was identified on the use of the oral therapy device. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with the diagnosis of positional sleep apnea and treatment using positional therapy, the evidence is lacking on long-term efficacy on this treatment and effectiveness cannot be demonstrated. Most studies only appear to look at short term outcomes. The evidence is insufficient to determine the effects of the technology on health outcomes.

V. DEFINITIONS

TOP

AHI - The apnea/hypopnea index is the average number of apneas or hypopneas per hour of sleep

APAP - Auto-adjusting positive airway pressure may be used either to provide treatment or to determine the most effective pressure for CPAP

APNEA - The frequency of apneas and hypopneas is measured from channels assessing oxygen desaturation, respiratory airflow, and respiratory effort. In adults, apnea is defined as a drop in airflow by 90% or more of pre-event baseline for at least 10 seconds. Due to faster respiratory rates in children, pediatric scoring criteria define an apnea as 2 or more missed breaths, regardless of its duration in seconds.

BILEVEL POSITIVE AIRWAY PRESSURE VENTILATION, ALSO KNOWN AS BIPAP is non-invasive, pressure-controlled ventilation, which allows unobstructed spontaneous breathing throughout the respiratory cycle. BIPAP provides airway support by blowing air into the airway, through a mask covering the nose. The pressure increases when the patient inhales and decreases when they exhale, making it easier for patients who have difficulty breathing impulsively at their own rate. Bi-level ventilation is used to treat sleep apnea in children. Based on the precise requirements of the patient, bi-level may be favored over continuous ventilation.

CLINICALLY SIGNIFICANT OBSTRUCTIVE SLEEP APNEA SYNDROME (OSA) (ADULT PATIENTS) is defined as those patients who meet any of the following criteria:

- An apnea-hypopnea index (AHI) or respiratory disturbance index (RDI) greater than or equal to fifteen (≥ 15) events per hour ; **or**
- The AHI or RDI is greater than or equal to five (≥5) and less than or equal to fourteen (≤ 14) events per hour with documented symptoms of excessive daytime sleepiness,

impaired cognition, mood disorders or insomnia, or documented hypertension, ischemic heart disease or history of stroke.

CLINICALLY SIGNIFICANT OBSTRUCTIVE SLEEP APNEA SYNDROME (OSA) (PEDIATRIC PATIENTS) is defined as those pediatric patients who meet any of the following criteria

- AHI or RDI of at least 5 per hour; **or**
- AHI or RDI of at least 1.5 per hour in a patient with excessive daytime sleepiness, behavioral problems or hyperactivity.

CPAP - Positive airway pressure (PAP) may be continuous (CPAP) or auto-adjusting (APAP) or bi-level (bi-PAP). CPAP is a more familiar abbreviation and will refer to the 3 types of devices for delivery of positive airway pressure.

CPAP FAILURE – Usually defined as an AHI >20 events per hour while using CPAP

CPAP INTOLERANCE - CPAP use for <4 hours per night for ≥5 nights per week, or refusal to use CPAP. CPAP intolerance may be observed in patients with mild, moderate, or severe OSA

ELECTROENCEPHALOGRAM (EEG) is the tracing of the electrical activity of the brain by an electroencephalograph.

EPWORTH SLEEPINESS SCALE is a self-administered questionnaire that asks patients their likelihood of falling asleep in eight situations ranked from zero (never doze) to three (high chance of dozing). The numbers are then added together to score between zero and twenty-four. The eight situations are as follows:

1. Sitting and reading
2. Watching TV
3. Sitting inactive in a public place, i.e., theater
4. As a passenger in a car for one hour without a break
5. Lying down to rest in the afternoon when circumstances permit
6. Sitting and talking to someone
7. Sitting quietly after a lunch without alcohol
8. In a car, while stopped for a few minutes in traffic.

HYPOPNEA in adults is scored when the peak airflow drops by at least 30% of pre-event baseline for at least 10 seconds in association with either at least 4% arterial oxygen desaturation or an arousal. Hypopneas in children are scored by a 50% or greater drop in nasal pressure and either a 3% or more decrease in oxygen saturation or an associated arousal.

INTRA-ORAL APPLIANCE is a device placed in the mouth to correct or alleviate malocclusion.

MILD ASTHMA is a condition limited to episodes of wheezing and mild symptoms (mild attack) which can be controlled primarily by the use of bronchodilators as needed.

MILD OSA - In adults: AHI or RDI of 5 to <15. In children: AHI ≥1.5 is abnormal

MODERATE ASTHMA is a condition which includes a wide range of clinical findings between mild and severe asthma. Patients with moderate asthma show chronic mild to moderate symptoms which frequently interfere with daily activities and sleep and require the use of managers and anti-inflammatory agents. **MODERATE OSA –** Adults: AHI or RDI ≥30. Children: AHI of ≥1

MULTIPLE SLEEP LATENCY TESTS (MSLT) involve repeated measurement of sleep latency, which is the time to the onset of sleep. The test is performed in the daytime under standardized conditions following quantified nocturnal sleep. Usually two to six tests are performed, one testing every two hours, to measure daytime sleep tendency.

ORAL PRESSURE THERAPY (OPT) is comprised of three major components: an oral interface (mouthpiece), a pump, and tubing. The negative pressure generated by the pump and conveyed via tubing through the mouthpiece into the oral cavity creates a pressure gradient to draw the soft palate anteriorly into stable contact with the tongue to permit improved airflow during sleep.

OSA - Obstructive sleep apnea is repetitive episodes of upper airway obstruction due to the collapse and obstruction of the upper airway during sleep

POLYSOMNOGRAPHY refers to the continuous and simultaneous monitoring and recording of various physiological and pathophysiological parameters of sleep for six or more hours with physician review, interpretation and report. In addition, polysomnography has sleep staging, which includes an electroencephalogram (EEG), electro-oculogram (EOG), and submental electromyogram (EMG).

RDI - The respiratory disturbance index is the number of apneas, hypopneas, or respiratory event-related arousals per hour of sleep time. RDI is often used synonymously with the AHI.

REI -The respiratory event index is the number of events per hour of monitoring time. Used as an alternative to AHI or RDI in home sleep studies when actual sleep time from EEG is not available.

RERA - Respiratory event-related arousal is defined as an event lasting at least 10 seconds associated with flattening of the nasal pressure waveform and/or evidence of increasing respiratory effort, terminating in an arousal but not otherwise meeting criteria for apnea or hypopnea

SEVERE ASTHMA is a condition in which daily activities are severely restricted by frequent episodes of moderate to severe asthma symptoms (moderate to severe attack) controlled only by the regular use of high doses of inhaled corticosteroids with the regular addition of oral corticosteroids in some cases

SEVERE OSA - Adults: AHI or RDI ≥30. Children: AHI of ≥10

UARS - Upper airway resistance syndrome is characterized by a partial collapse of the airway and results in increased resistance to airflow. The increased respiratory effort is associated with multiple sleep fragmentations, as measured by very short alpha EEG arousals.

UPPER AIRWAY RESISTANCE SYNDROME (UARS) is a variant of OSA that is characterized by a partial collapse of the airway, resulting in increased resistance to airflow. It is defined by greater than ten alpha EEG arousals per hour. The presence of abnormally negative intrathoracic pressures (i.e., more negative than –10 cm) in conjunction with the EEG arousals supports the diagnosis. The measurement of intrathoracic pressures requires the use of an esophageal manometer as an adjunct to a polysomnogram.

VI. BENEFIT VARIATIONS

TOP

The existence of this medical policy does not mean that this service is a covered benefit under the member's health benefit plan. Benefit determinations should be based in all cases on the applicable health benefit plan language. Medical policies do not constitute a description of benefits. A member's health benefit plan governs which services are covered, which are excluded, which are subject to benefit limits and which require preauthorization. There are different benefit plan designs in each product administered by Capital Blue Cross. Members and providers should consult the member's health benefit plan for information or contact Capital Blue Cross for benefit information.

VII. DISCLAIMER

TOP

Capital Blue Cross's medical policies are developed to assist in administering a member's benefits, do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member's benefit information, the benefit information will govern. If a provider or a member has a question concerning the application of this medical policy to a specific member's plan of benefits, please contact Capital Blue Cross' Provider Services or Member Services. Capital Blue Cross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

TOP

Note: This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

Investigational; therefore, not covered:

Procedure Codes								
94799	95805	E0490	E0491	E0492	E0493	E0530	E1399	

POLICY TITLE	DIAGNOSIS AND MEDICAL MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA
POLICY NUMBER	MP 2.045

Covered when medically necessary, unattended (unsupervised) home sleep studies:

Procedure Codes								
95800	95801	95806	G0398	G0399	G0400			

ICD-10-CM Diagnosis Codes	Description
G47.10	Hypersomnia, unspecified
G47.11	Idiopathic hypersomnia with long sleep time
G47.12	Idiopathic hypersomnia without long sleep time
G47.13	Recurrent hypersomnia
G47.19	Other hypersomnia
G47.30	Sleep apnea, unspecified
G47.32	High altitude periodic breathing
G47.33	Obstructive sleep apnea (adult) (pediatric) – for repeat testing only
G47.34	Idiopathic sleep related non-obstructive alveolar hypoventilation
G47.39	Other sleep apnea
I10	Essential (primary) hypertension
R06.83	Snoring
R40.0	Somnolence
Z13.89	Encounter for screening for other disorder
Z68.35	Body mass index (BMI) 35.0-35.9, adult
Z68.36	Body mass index (BMI) 36.0-36.9, adult
Z68.37	Body mass index (BMI) 37.0-37.9, adult
Z68.38	Body mass index (BMI) 38.0-38.9, adult
Z68.39	Body mass index (BMI) 39.0-39.9, adult
Z68.41	Body mass index (BMI) 40.0-44.9, adult
Z68.42	Body mass index (BMI) 45.0-49.9, adult
Z68.43	Body mass index (BMI) 50-59.9 , adult
Z68.44	Body mass index (BMI) 60.0-69.9, adult
Z68.45	Body mass index (BMI) 70 or greater, adult

Covered when medically necessary; supervised polysomnography performed in a sleep laboratory:

Procedure Codes								
95807	95808	95810	95811					

POLICY TITLE	DIAGNOSIS AND MEDICAL MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA
POLICY NUMBER	MP 2.045

ICD-10-CM Diagnosis Codes	Description
E66.2	Morbid (severe) obesity with alveolar hypoventilation
F51.01	Primary insomnia
F51.02	Adjustment insomnia
F51.09	Other insomnia not due to a substance or known physiological conditions
F51.11	Primary hypersomnia
F51.12	Insufficient sleep syndrome
F51.19	Other hypersomnia not due to a substance or known physiological condition
F51.8	Other sleep disorders not due to a substance or known physiological condition
F51.9	Sleep disorder not due to a substance or known physiological condition, unspecified
G25.81	Restless legs syndrome
G47.00	Insomnia, unspecified
G47.10	Hypersomnia, unspecified
G47.11	Idiopathic hypersomnia with long sleep time
G47.12	Idiopathic hypersomnia without long sleep time
G47.13	Recurrent hypersomnia
G47.14	Hypersomnia due to medical condition
G47.19	Other hypersomnia
G47.30	Sleep apnea, unspecified
G47.31	Primary central sleep apnea
G47.32	High altitude periodic breathing
G47.33	Obstructive sleep apnea (adult) (pediatric) – for repeat testing only
G47.34	Idiopathic sleep related non-obstructive alveolar hypoventilation
G47.35	Congenital central alveolar hypoventilation syndrome
G47.36	Sleep related hypoventilation in conditions classified elsewhere
G47.37	Central sleep apnea in conditions classified elsewhere
G47.39	Other sleep apnea
G47.61	Periodic limb movement disorder
G47.69	Other sleep related movement disorders
I10	Essential (primary) hypertension
R06.83	Snoring
Z68.35	Body mass index (BMI) 35.0-35.9, adult
Z68.36	Body mass index (BMI) 35.0-35.9, adult
Z68.37	Body mass index (BMI) 37.0-37.9, adult
Z68.38	Body mass index (BMI) 38.0-38.9, adult

ICD-10-CM Diagnosis Codes	Description
Z68.39	Body mass index (BMI) 39.0-39.9, adult
Z68.41	Body mass index (BMI) 40.0-44.9, adult
Z68.42	Body mass index (BMI) 45.0-49.9, adult
Z68.43	Body mass index (BMI) 50-59.9 , adult
Z68.44	Body mass index (BMI) 60.0-69.9, adult
Z68.45	Body mass index (BMI) 70 or greater, adult

Covered when medically necessary; Continuous Positive Airway Pressure (CPAP), Bi-level Positive Airway Pressure (BiPAP), Auto-adjusting Positive Airway Pressure (APAP), and supplies:

Procedure Codes								
94660	A4604	A7027	A7028	A7029	A7030	A7031	A7032	A7033
A7034	A7035	A7036	A7037	A7038	A7039	A7044	A7045	A7046
A7049	E0470	E0471	E0472	E0561	E0562	E0601		

ICD-10-CM Diagnosis Codes	Description
G47.33	Obstructive sleep apnea (adult) (pediatric)
G47.8	Other sleep disorders

Covered when medically necessary; Intraoral Appliances:

Procedure Codes								
E0485	E0486	K1027	K1037					

ICD-10-CM Diagnosis Codes	Description
G47.33	Obstructive sleep apnea (adult) (pediatric)

IX. REFERENCES

Top

1. *Somers VK, White DP, Amin R, et al. Sleep apnea and cardiovascular disease: an American Heart Association/American College of Cardiology Foundation Scientific Statement from the American Heart Association Council for High Blood Pressure Research Professional Education Committee, Council on Clinical Cardiology, Stroke Council, and Council on Cardiovascular Nursing. In collaboration with the National Heart, Lung, and Blood Institute*

National Center on Sleep Disorders Research (National Institutes of Health). Circulation. Sep 2 2008;118(10):1080-1111. PMID 18725495

2. *Kushida CA, Littner MR, Morgenthaler T, et al. Practice parameters for the indications for polysomnography and related procedures: an update for 2005. Sleep. Apr 1 2005;28(4):499-521. PMID 16171294*
3. *Balk EM, Moorthy D, Obadan NO, et al. Diagnosis and Treatment of Obstructive Sleep Apnea in Adults. Comparative Effectiveness Review No. 32 (AHRQ Publication No. 11-EHC052-EF). Rockville, MD: Agency for Healthcare Research and Quality; 2011. Accessed October 3, 2022.*
4. *Corral J, Sanchez-Quiroga MA, Carmona-Bernal C, et al. Conventional Polysomnography Is Not Necessary for the Management of Most Patients with Suspected Obstructive Sleep Apnea. Noninferiority, Randomized Controlled Trial. Am J Respir Crit Care Med. Nov 1 2017;196(9):1181-1190. PMID 28636405*
5. *Mulgrew AT, Fox N, Ayas NT, et al. Diagnosis and initial management of obstructive sleep apnea without polysomnography: a randomized validation study. Ann Intern Med. Feb 6 2007;146(3):157-166. PMID 17283346*
6. *Senn O, Brack T, Russi EW, et al. A continuous positive airway pressure trial as a novel approach to the diagnosis of the obstructive sleep apnea syndrome. Chest. Jan 2006;129(1):67-75. PMID 16424414*
7. *Berry RB, Hill G, Thompson L, et al. Portable monitoring and autotitration versus polysomnography for the diagnosis and treatment of sleep apnea. Sleep. Oct 1 2008;31(10):1423-1431. PMID 18853940*
8. *Ayappa I, Norman RG, Seelall V, et al. Validation of a self-applied unattended monitor for sleep disordered breathing. J Clin Sleep Med. Feb 15 2008;4(1):26-37. PMID 18350959*
9. *Fox N, Hirsch-Allen AJ, Goodfellow E, et al. The impact of a telemedicine monitoring system on positive airway pressure adherence in patients with obstructive sleep apnea: a randomized controlled trial. Sleep. Apr 2012;35(4):477-481. PMID 22467985*
10. *Patil, SS, Ayappa, II, Caples, SS, Kimoff, RR, Patel, SS, Harrod, CC. Treatment of Adult Obstructive Sleep Apnea With Positive Airway Pressure: An American Academy of Sleep Medicine Systematic Review, Meta-Analysis, and GRADE Assessment. J Clin Sleep Med, 2019 Feb 10;15(2):301-334. PMID 30736888*
11. *Patil, SS, Ayappa, II, Caples, SS, Kimoff, RR, Patel, SS, Harrod, CC. Treatment of Adult Obstructive Sleep Apnea with Positive Airway Pressure: An American Academy of Sleep Medicine Clinical Practice Guideline. J Clin Sleep Med, 2019 Feb 10;15(2). PMID 30736887*
12. *Berry RB, Parish JM, Hartse KM. The use of auto-titrating continuous positive airway pressure for treatment of adult obstructive sleep apnea. An American Academy of Sleep Medicine review. Sleep. Mar 15 2002;25(2):148-173. PMID 11902425*
13. *Littner M, Hirshkowitz M, Davila D, et al. Practice parameters for the use of auto-titrating continuous positive airway pressure devices for titrating pressures and treating adult patients with obstructive sleep apnea syndrome. An American Academy of Sleep Medicine report. Sleep. Mar 15 2002;25(2):143-147. PMID 11902424*
14. *Kushida CA, Morgenthaler TI, Littner MR, et al. Practice parameters for the treatment of snoring and Obstructive Sleep Apnea with oral appliances: an update for 2005. Sleep. Feb 1 2006;29(2):240-243. PMID 16494092*

15. *Morgenthaler TI, Aurora RN, Brown T, et al. Practice parameters for the use of autotitrating continuous positive airway pressure devices for titrating pressures and treating adult patients with obstructive sleep apnea syndrome: an update for 2007. An American Academy of Sleep Medicine report. Sleep. Jan 1 2008;31(1):141-147. PMID 18220088*
16. *Hussain SF, Love L, Burt H, et al. A randomized trial of auto-titrating CPAP and fixed CPAP in the treatment of obstructive sleep apnea-hypopnea. Respir Med. Apr 2004;98(4):330-333. PMID 15072173*
17. *Marrone O, Resta O, Salvaggio A, et al. Preference for fixed or automatic CPAP in patients with obstructive sleep apnea syndrome. Sleep Med. May 2004;5(3):247-251. PMID 15165530*
18. *Stammnitz A, Jerrentrup A, Penzel T, et al. Automatic CPAP titration with different self-setting devices in patients with obstructive sleep apnoea. Eur Respir J. Aug 2004;24(2):273-278. PMID 15332397*
19. *Yu J, Zhou Z, McEvoy RD, et al. Association of Positive Airway Pressure With Cardiovascular Events and Death in Adults With Sleep Apnea: A Systematic Review and Meta-analysis. JAMA. Jul 11 2017;318(2):156-166. PMID 28697252*
20. *McEvoy RD, Antic NA, Heeley E, et al. CPAP for prevention of cardiovascular events in obstructive sleep apnea. N Engl J Med. Sep 8 2016;375(10):919-931. PMID 27571048*
21. *Lisan, QQ, Van Sloten, TT, Marques Vidal, PP, Haba Rubio, JJ, Heinzer, RR, Empana, JJ. Association of Positive Airway Pressure Prescription With Mortality in Patients With Obesity and Severe Obstructive Sleep Apnea: The Sleep Heart Health Study. JAMA Otolaryngol Head Neck Surg, 2019 Apr 12. PMID 30973594*
22. *Mutter TC, Chateau D, Moffatt M, et al. A matched cohort study of postoperative outcomes in obstructive sleep apnea: could preoperative diagnosis and treatment prevent complications? Anesthesiology. Oct 2014;121(4):707-718. PMID 25247853*
23. *Ramar K, Dort LC, Katz SG, et al. Clinical practice guideline for the treatment of obstructive sleep apnea and snoring with oral appliance therapy: an update for 2015. J Clin Sleep Med. Jul 2015;11(7):773-827. PMID 26094920*
24. *Johal A, Haria P, Manek S, et al. Ready-made versus custom-made mandibular repositioning devices in sleep apnea: a randomized clinical trial. J Clin Sleep Med. Feb 15 2017;13(2):175-182. PMID 27784410*
25. *Singh GD, Griffin T, Cress SE. Biomimetic oral appliance therapy in adults with severe obstructive sleep apnea. J Sleep Disord Ther. 2016;5:227.*
26. *Singh GD, Cress SE. Biomimetic oral appliance therapy in adults with mild to moderate obstructive sleep apnea using combined maxillo-mandibular correction. J Sleep Disord Manag. 2017;3(1):014.*
27. *Krakow B, Ulibarri V, Melendrez D, et al. A daytime, abbreviated cardio-respiratory sleep study (CPT 95807-52) to acclimate insomnia patients with sleep-disordered breathing to positive airway pressure (PAP-NAP). J Clin Sleep Med. Jun 15 2008;4(3):212-222. PMID 18595433*
28. *Berry RB, Kryger MH, Massie CA. A novel nasal expiratory positive airway pressure (EPAP) device for the treatment of obstructive sleep apnea: a randomized controlled trial. Sleep. Apr 2011;34(4):479-485. PMID 21461326*

29. *Kryger MH, Berry RB, Massie CA. Long-term use of a nasal expiratory positive airway pressure (EPAP) device as a treatment for obstructive sleep apnea (OSA). J Clin Sleep Med. Oct 15 2011;7(5):449-453B. PMID 22003339*
30. *Riaz M, Certal V, Nigam G, et al. Nasal expiratory positive airway pressure devices (Provent) for OSA: a systematic review and meta-analysis. Sleep Disord. Jan 2015;2015:734798. PMID 26798519*
31. *Kureshi SA, Gallagher PR, McDonough JM, et al. Pilot study of nasal expiratory positive airway pressure devices for the treatment of childhood obstructive sleep apnea syndrome. J Clin Sleep Med. Jun 2014;10(6):663-669. PMID 24932147*
32. *Kapur VK, Auckley DH, Chowdhuri S, et al. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: an American Academy of Sleep Medicine Clinical Practice Guideline. J Clin Sleep Med. Mar 15 2017;13(3):479-504. PMID 28162150*
33. *Epstein LJ, Kristo D, Strollo PJ, Jr., et al. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. J Clin Sleep Med. Jun 15 2009;5(3):263-276. PMID 19960649*
34. *Aurora RN, Zak RS, Karippot A, et al. Practice parameters for the respiratory indications for polysomnography in children. Sleep. Mar 2011;34(3):379-388. PMID 21359087*
35. *Rosen IM, Kirsch DB, Chervin RD, et al. Clinical Use of a Home Sleep Apnea Test: An American Academy of Sleep Medicine Position Statement. J Clin Sleep Med. Oct 15 2017;13(10):1205-1207. PMID 28942762*
36. *Section on Pediatric Pulmonology - Subcommittee on Obstructive Sleep Apnea Syndrome. Clinical practice guideline: diagnosis and management of childhood obstructive sleep apnea syndrome. Pediatrics. Apr 2002;109(4):704-712. PMID 11927718*
37. *Marcus CL, Brooks LJ, Draper KA, et al. Diagnosis and management of childhood obstructive sleep apnea syndrome. Pediatrics. Sep 2012;130(3):576-584. PMID 22926173*
38. *Qaseem A, Dallas P, Owens DK, et al. Diagnosis of obstructive sleep apnea in adults: a clinical practice guideline from the American College of Physicians. Ann Intern Med. Aug 5 2014;161(3):210-220. PMID 25089864*
39. *Qaseem A, Holty JE, Owens DK, et al. Management of obstructive sleep apnea in adults: A clinical practice guideline from the American College of Physicians. Ann Intern Med. Oct 1 2013;159(7):471-483. PMID 24061345*
40. *Spencer J, Patel M, Mehta N, et al. Special consideration regarding the assessment and management of patients being treated with mandibular advancement oral appliance therapy for snoring and obstructive sleep apnea. Cranio. Jan 2013;31(1):10-13. PMID 23461257*
41. *American Society of Metabolic and Bariatric Surgery (ASMBS) Clinical Issues Committee. Peri-operative management of obstructive sleep apnea. Surg Obes Relat Dis. May-Jun 2012;8(3):e27-32. PMID 22503595*
42. *Roland PS, Rosenfeld RM, Brooks LJ, et al. Clinical practice guideline: Polysomnography for sleep-disordered breathing prior to tonsillectomy in children. Otolaryngol Head Neck Surg. Jul 2011;145(1 Suppl): S1-15. PMID 21676944*
43. *Chowdhuri S, Quan SF, Almeida F, et al. An official American Thoracic Society research statement: impact of mild obstructive sleep apnea in adults. Am J Respir Crit Care Med. May 1 2016;193(9):e37-54. PMID 27128710*

44. *RJ Schwab, SM Badr, et. Al. An official American Thoracic Society Statement: continuous positive airway pressure adherence tracking systems. The optimal monitoring strategies and outcome measures in adults. September 1 2013; 188(5):613-20. PMID 23992588*
45. *US Preventive Services Task Force. Screening for Obstructive Sleep Apnea in Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2017;317(4):407–414. doi:10.1001/jama.2016.20325*
46. *Jonas DE, Amick HR, Feltner C, et al. Screening for obstructive sleep apnea in adults: evidence report and systematic review for the US Preventive Services Task Force. JAMA. Jan 24 2017;317(4):415-433. PMID 28118460*
47. *Kryger M. Management of obstructive sleep apnea in adults. In: UpToDate Online JournalWaltham, MA: UpToDate; updated August 11, 2022.*
48. *Weaver T. Assessing and managing nonadherence with continuous positive airway pressure (CPAP) for adults with obstructive sleep apnea. In: UpToDate Online Journal. Waltham, MA: UpToDate; updated September 13, 2022.*
49. *Srijitesh PR, Aghoram R, Goal A, Dhanya J, et al. Positional therapy for obstructive sleep apnoea. Cochrane Library. May 1 2019. PMID 31041813*
50. *Ravesloot M, et al. Efficacy of the New Generation of Devices for Positional Therapy for Patients With Positional Obstructive Sleep Apnea: A Systematic Review of the Literature and Meta-Analysis. Journal of Clinical Sleep Medicine. June 15 2017 (6): e813-824. PMID 28212691*
51. *Maanen J, et al. Long-Term Effectiveness and Compliance of Positional Therapy with the Sleep Position Trainer in the Treatment of Positional Obstructive Sleep Apnea Syndrome. Sleep. July 1 2014 (7): e1209-1215. PMID 25061249*
52. *Robertson BD, Lerner BS, Collen JF, Smith PR. The Effects of Transgender Hormone Therapy on Sleep and Breathing: A Case Series. J Clin Sleep Med. 2019;15(10):1529-1533. doi:10.5664/jcsm.7992*
53. *Earl DC, Brown LK. On Not Knowing What We Don't Know to Knowing What We Don't Know: Obstructive Sleep Apnea in the Transgender Community. J Clin Sleep Med. 2019 Oct 15;15(10):1393-1395. doi: 10.5664/jcsm.8010. PMID: 31596202; PMCID: PMC6778361..*
54. *Schwab RJ, Badr SM, Epstein LJ et al for the ATS Subcommittee on CPAP Adherence Tracking Systems. An Official American Thoracic Society Statement: Continuous Positive Airway Pressure Adherence Tracking Systems; The Optimal Monitoring Strategies and Outcome Measures in Adults. Am J Respir Crit Care Med; 188(5), pp 613–620, Sep 1, 2013. Accessed September 29, 2022.*
55. *Grigg-Damberger, Madeleine MD. Overview of polysomnography in infants and children. In: UpToDate Online Journal. Waltham, MA: UpToDate; updated April 15, 2022.*
56. *Auckley, Dennis, MD. Sleep disorders in hospitalized adults: Evaluation and management. In: UpToDate Online Journal. Waltham, MA: UpToDate; updated June 24, 2021.*
57. *Aurora RN, Zak RS, Karippot A, et al. Practice parameters for the respiratory indications for polysomnography in children. Sleep. 2011;34(3):379-388. Published 2011 Mar 1. doi:10.1093/sleep/34.3.379*
58. *Aurora RN, Lamm CI, Zak RS, et al. Practice parameters for the non-respiratory indications for polysomnography and multiple sleep latency testing for children. Sleep. 2012;35(11):1467-1473. Published 2012 Nov 1. doi:10.5665/sleep.2190*

59. *Owens JA, Babcock D, Weiss M. Evaluation and Treatment of Children and Adolescents With Excessive Daytime Sleepiness. Clin Pediatr (Phila). 2020;59(4-5):340-351. doi:10.1177/0009922820903434*
60. *Caples SM, Anderson WM, Calero K, Howell M, Hashmi SD. Use of polysomnography and home sleep apnea tests for the longitudinal management of obstructive sleep apnea in adults: an American Academy of Sleep Medicine clinical guidance statement. J Clin Sleep Med. 2021;17(6):1287–1293.*
61. *Blue Cross Blue Shield Association Medical Policy Reference Manual. 8.01.67, Medical Management of Obstructive Sleep Apnea. July 2023.*
62. *Blue Cross Blue Shield Association Medical Policy Reference Manual. 2.01.18, Diagnosis a of Obstructive Sleep Apnea. July 2023.*

Other Sources

Taber's Cyclopedic Medical Dictionary, 19th edition.

X. POLICY HISTORY

TOP

MP 2.045	**6/18/2020 Consensus review.** Policy Statement unchanged. Coding reviewed with no changes. References reviewed and updated. Policy Variation statement updated.
	9/16/2020 Minor review. K1001 to INV. References and Rationale Updated to support this change.
	9/22/2021 Administrative update. Added new code K1027 to policy. Effective 10/1/2021
	10/18/2021 Minor review. Added neck circumference and waking headaches to criteria for clinical need for sleep study. Added chronic opioid use to criteria that might alter ventilation or require alternative treatment. Adjusted criteria for continued application of therapy. Description/Background updated. FEP language updated. References added and reviewed.
	3/11/2022 Administrative update. Added new codes K1028 and K1029 to policy. Effective 4/1/2022
	11/15/2022 Major review. Removed management of supervised pediatric studies. Updated formatting. Reviewed and updated coding. Review and updated references. Added new code A7049 effective 4/1/23
	9/7/2023 Administrative update. Added new codes E0490 and E0491 as INV. Effective 10/1/2023.
	12/13/2023 Administrative update. Added new codes E0492, E0493, and E0530 as INV. Deleted codes K1001, K1028, and K1029. Eff 1/1/2024.

POLICY TITLE	DIAGNOSIS AND MEDICAL MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA
POLICY NUMBER	MP 2.045

	1/19/2024 Consensus Review. No changes to policy statement. References updated. Coding reviewed, no changes.
	3/15/2024 Administrative update. Added new code K1037 as MN with criteria. Effective 4/1/2024.

Top