Criteria for Determining the Medical Necessity for the Diagnosis and Treatment of Sleep Disordered Breathing in Adults and Children

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Clinical Guideline: Diagnosis and Treatment of Sleep Disordered Breathing in Adults And Children

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This is a guideline only. The guideline does not represent medical advice. Medical decisions are the responsibility of the patient and the attending physician. Benefits are determined by the health plan and employer group contract and eligibility of the subscriber at the time services were rendered.

Sleep studies are performed to diagnose sleep disorders, and to determine the effectiveness of treatments prescribed for patients who have been previously diagnosed with sleep disorders. Evaluation of signs and symptoms of sleep-disordered breathing should be conducted as part of routine health evaluations with adequate follow up.

Signs and Symptoms of Sleep Disordered Breathing

Initial testing for the diagnosis of sleep disordered breathing is appropriate via laboratory polysomnography (PSG) or home sleep apnea testing (HSAT), if a patient presents with at least one sign/symptom from category A and one sign/symptom from category B.

A. Evidence of Excessive Daytime Sleepiness
- Disturbed or restless sleep
- Non-restorative sleep
- Frequent unexplained arousals from sleep
- Fragmented sleep
- Epworth Sleepiness Scale (ESS) greater than or equal to 10
- Fatigue

B. Evidence Suggestive of Sleep Disordered Breathing
- Habitual snoring
- Witnessed apneas during sleep
- Choking or gasping during sleep

- BMI greater than or equal to 30
- Neck circumference greater than17 inches (men) or greater than16 inches (women)

Determining the Appropriate Site of Service for Sleep Testing

Sleep tests can be performed in an attended setting in a sleep laboratory facility or outside of the sleep laboratory using a portable monitoring device. Selection of the appropriate site of service for sleep testing requires evaluation of all of the following:

- Medical necessity to perform sleep testing
  - Evaluation of the patient's clinical signs and symptoms related to the sleep disorder, including review of the patient's medical history and physical examination
- Evaluation of any comorbid medical conditions
- Evaluation of any secondary concomitant or associated sleep disorders
- Assessment of the patient's cognitive and physical ability to safely and effectively perform the sleep test outside of the sleep laboratory

Attended Sleep Study - Polysomnography (PSG)

Polysomnography is the standard diagnostic test for the diagnosis of obstructive sleep apnea (OSA) in adult patients, when there is a concern for OSA based on a comprehensive sleep evaluation and the patient has significant comorbid conditions which may necessitate attended monitoring or could degrade the accuracy of a home sleep test.

Polysomnography is performed overnight, in a sleep laboratory facility. The patient is continuously monitored by a trained sleep technologist who directly observes the patient during the test. Parameters measured, at a minimum, are frontal, central and occipital lead of electroencephalogram (EEG) a submental electromyogram (EMG) and a left and right electrooculogram (EOG) to allow sleep staging, extremity muscle and motor activity (EMG), as well as respiratory indicators such as ventilation, respiratory effort and pulse oximetry.

Monitoring may include additional EEG or EMG channels, capnography or esophageal manometry, if clinically indicated. The patient is directly monitored throughout the sleep test, with continuous video and audio recording.

An attended sleep study-(95808, 95810) may be medically necessary when a patient presents with (**A and B**, or **A and C**, or **D**)

A. Signs/symptoms of **Sleep Disordered Breathing**

1. Evidence of Excessive Daytime Sleepiness

At least one:

- Disturbed or restless sleep
- Non-restorative sleep
- Frequent unexplained arousals from sleep
- Fragmented sleep
- Epworth Sleepiness Scale (ESS) greater than or equal to 10
- Fatigue

2. Evidence Suggestive of Sleep Disordered Breathing

At least one:

- Habitual snoring
- Witnessed apneas during sleep
- Choking or gasping during sleep
- BMI greater than or equal to 30
- Neck circumference greater than 17 inches (men) or greater than 16 inches (women)

B. Comorbid medical conditions which may necessitate attended monitoring or could degrade the accuracy of the HSAT, such as:

- Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)
- Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome
- Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation
- Chronic opioid medication use.

C. Recent Home Sleep Apnea Test (HSAT) (less than 90 days old) confirmed to be non-diagnostic:

A previous home sleep study was technically inadequate and there was a valid attempt to retest the patient via a HSAT. (Of note:

there is no minimum required HSAT recording time required for HSAT to be considered diagnostic)**, or**

- A previous home sleep study failed to establish the diagnosis of OSA in a patient with a high pretest probability of OSA

D. Secondary concomitant or associated sleep disorders which would degrade HSAT, such as:

  - Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal, when the arousals are not associated with respiratory events ([1])
  - Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
  - Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated, as documented by the patient's objective adherence to therapy (PAP download)
  - Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas
  - Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour. ([1])
  - Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

In-Facility Polysomnography Positive Airway Pressure (PAP)Titration for adult patients (age 18 years or older) (CPT code 95811) is appropriate after an initial diagnostic sleep study (PSG or HSAT) has confirmed the presence of significant obstructive sleep apnea and the patient is not appropriate for unattended titration using auto-titrating PAP (APAP or auto bi-level PAP) device.

A full night, attended PAP titration study (95811) is medically necessary when the following conditions are met: (**A and B,** or **A and C**, or **A and D)**

A. Patient has been previously diagnosed with significant obstructive sleep apnea

1. Results of a PSG or HSAT indicate AHI or RDI or REI measured on HSAT greater than or equal to 15 events per hour, **OR**

2. AHI or RDI or REI measured on HSAT greater than or greater than or equal to 5 events per hour but less than 15 with clinical evidence of **one** of the following conditions:

a. Excessive daytime sleepiness
b. Impaired cognition
c. Mood disorders (e.g. depression, anxiety)
d. Insomnia
e. Hypertension
f. Ischemic heart disease
g. History of stroke

B. Results of the initial diagnostic PSG or HSAT indicate significant oxygen desaturations during the study:

1. O2 saturation <90% for greater than 30% of recording time during a diagnostic home sleep apnea test or diagnostic facility based PSG, **OR**

2. O2 saturation < 80% for greater than 1% of recording time during a diagnostic home sleep apnea test or diagnostic facility based PSG

C. Presence of a comorbid condition or concomitant secondary sleep disorder that could impact the technical quality or sensitivity of the APAP in adjusting pressure to meet patient's needs:

- Comorbid medical conditions which would degrade APAP, such as:
  - Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)
  - Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%
  - Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
  - Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia

gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome

- Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation

- Chronic opioid medication use.

- Secondary concomitant or associated sleep disorders which would degrade HSAT, such as:

- Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal when the arousals are not associated with respiratory events ([1])

    - Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking

    - Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated as documented by the patient's objective adherence to therapy (PAP download)

    - Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

    - Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour (1)

    - Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

D. The patient has failed recent APAP trial at home.

APAP failure is defined as:

- The patient has a residual AHI on APAP download of greater than or equal to 5 with adequate objective adherence to therapy (> = 70% use for 4 or more hours in a 24 hour period during a consecutive 30 day period reported on APAP download), ***or***

- The patient has residual symptoms of excessive daytime sleepiness with adequate objective adherence to therapy (> = 70% use for 4 or more hours ~~per~~ in a 24 hour period during a consecutive 30 day period reported on APAP download), ***or***

- The patient is not a candidate for auto bi-level therapy or auto bi-level therapy has been tried and has not been effective

Split Night Sleep Study (CPT code 95811) is a sleep study that combines an initial diagnostic PSG followed by the therapeutic initiation of PAP therapy within a single sleep study.

A facility-based split night sleep study may be medically necessary when a patient presents with (**A and B**, or **A and C**, or **D**)

A. Signs/symptoms of sleep disordered breathing:

1. Evidence of Excessive Daytime Sleepiness
   At least one:
   - Disturbed or restless sleep
   - Non-restorative sleep
   - Frequent unexplained arousals from sleep
   - Fragmented sleep
   - Epworth Sleepiness Scale (ESS) greater than or equal to 10 (ESS)
   - Fatigue

2. Evidence Suggestive of Sleep Disordered Breathing
   At least one:
   - Habitual snoring
   - Witnessed apneas during sleep
   - Choking or gasping during sleep
   - BMI greater than or equal to 30
   - Neck circumference greater than 17 inches (men) or greater than 16 inches (women)

AND

B. Presence of a comorbid condition
- Comorbid medical conditions which would degrade HSAT, such as:
  - Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)

- Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome
- Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation
- Chronic opioid medication use.

OR

C. Recent HSAT (less than 90 days old) confirmed to be non-diagnostic

- A previous home sleep study was technically inadequate (Of note: there is no minimum required HSAT recording time for HSAT to be considered diagnostic)**, or**
- A previous home sleep study failed to establish the diagnosis of OSA in a patient with a high pretest probability of OSA

D. Secondary concomitant or associated sleep disorders which would degrade HSAT, such as:

- Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal when the arousals are not associated with respiratory events ([1])
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated as documented by the patient's objective adherence to therapy (PAP download)
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

- Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour. ([1])

- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

Diagnostic Testing for Commercial Driver License

Diagnostic testing (CPT codes 95808, 95810 and 95811) for CDL (commercial driver's license) or other government license purposes is not considered medically necessary unless the member meets criteria for in facility testing or home sleep testing as noted in the guideline.

Multiple Sleep Latency Test (MSLT) (CPT code 95805)

MSLT is facility-based test used to objectively measure the ability or tendency to fall asleep during the patient's typical hours of wakefulness. This test is used to diagnose narcolepsy with or without cataplexy and idiopathic hypersomnia with long sleep time, when other comorbid sleep disorders, including obstructive sleep apnea, have been evaluated and effectively treated and symptoms of excessive sleepiness persist.

The MSLT should be performed when a patient is in a fully rested state, and not experiencing sleepiness due to inadequate prior sleep. For this reason, the MSLT is performed during the patient's typical wake hours and always follows a facility-based PSG, during which the patient's sleep adequacy is objectively measured.

The MSLT should not be performed after a split night study (CPT code 95811).

To assure the accuracy of the MSLT, sufficient sleep and the patient's sleep-wake cycles must be documented prior to the MSLT. Sufficient sleep may be evaluated by the use of sleep logs (paper or electronic format) or actigraphy (CPT code 95803). Sleep data is typically collected for at least 7 days. ([1])

The MSLT is medically necessary when the following criteria are met:

A. Patient exhibits documented symptoms of narcolepsy:

1. Excessive daytime sleepiness and at least one of the following:
   - Epworth Sleepiness Scale greater than or equal to 10
   - Recent history of routine unintentional naps or lapses into sleep during the day for more than 30 days

AND

2. Other recurrent symptoms of narcolepsy and one or more of the following:

- Cataplexy (sudden and transient loss of muscle tone, often triggered by emotions such as laughing or crying)
- Sleep paralysis
- Hypnagogic hallucinations
- Vivid dreams

AND

B. If the patient is known to have OSA, the patient has residual unexplained symptoms of narcolepsy despite documented objective adherence to OSA therapy, defined as > = 70% use for 4 or more hours in a 24 hour period during a consecutive 30-day period reported on PAP download

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Maintenance of Wakefulness Test (MWT) (CPT code 95805)

The MWT is a validated objective measure of the ability to stay awake for a defined time and is used in association with the clinical history to assess the ability to maintain wakefulness.

The MWT is a facility-based test used to determine the ability to maintain wakefulness as an assessment of treatment of a previously diagnosed sleep disorder.

This test is medically necessary to evaluate the patient's response treatment for a sleep disorder, such as obstructive sleep apnea, narcolepsy or periodic limb movement disorder, especially when the patient's inability to say awake constitutes a personal or public safety issue.

Only the MWT (not MSLT) *may be* performed without a preceding PSG (CPT code 95810) or PAP titration (CPT code 95811), at the discretion of the ordering healthcare professional.

MWT can be performed as a stand-alone test

Actigraphy

- In patients who are to undergo MSLT testing, actigraphy (95803) is a one-time covered service in lieu of paper or electronic sleep logs to evaluate sufficient sleep and to assess sleep-wake schedules prior to MSLT testing.

- It is recommended that actigraphy be performed for at least 7 days to assure the validity of MSLT testing data. ([1])

- In evaluating the patient for the diagnosis of obstructive sleep apnea alone, actigraphy is not medically necessary.

Sleep Testing in Pediatric Patients (Younger than age 18 years)

Sleep disordered breathing in pediatric patients younger than age 18 years is evaluated when there is the presence of one or more of the following: ([1])

A. Snoring

B. Labored, paradoxical, or obstructed breathing during the child's sleep

C. Sleepiness, hyperactivity, behavioral problems, or learning problems

In-Facility Polysomnography (PSG) or PAP Titration - Pediatric (Younger than age 18 years)

Pediatric in-facility polysomnography (PSG) (CPT code 95782, 95808, 95810) is considered medically necessary for **ANY the following indications:**

A. Obstructive sleep apnea is suspected based on clinical signs/symptoms

B. Prior to adenotonsillectomy to treat obstructive sleep apnea or snoring

C. Following adenotonsillectomy in a child with mild preoperative obstructive sleep apnea with residual symptoms of obstructive sleep apnea or snoring

D. Following adenotonsillectomy to assess for residual obstructive sleep apnea in child with preoperative evidence of moderate to severe obstructive sleep apnea, obesity, craniofacial anomalies that obstruct the upper airway, or neurologic disorder (e.g., Down syndrome, Prader-Willi syndrome, myelomeningocele)

E. Suspected congenital central alveolar hypoventilation syndrome or sleep related hypoventilation due to neuromuscular disorders or chest wall deformities

F. Primary apnea of infancy

G. Evidence of a sleep related breathing disorder in infant who has experienced a brief resolved unexplained event

H. Assessment of response to treatment with an oral appliance

I. Evaluation of child treated with mechanical ventilation for adjustment of ventilator settings.

J. Evaluation prior to decannulation in child treated with tracheostomy

K. Clinical suspicion of an accompanying sleep related breathing disorder in a child with chronic asthma, cystic fibrosis, pulmonary hypertension, bronchopulmonary dysplasia, or chest wall abnormality (e.g., kyphoscoliosis)

Pediatric in-facility PAP titration (CPT code 95783, 95811) is considered medically necessary when:

A. The pediatric patient is diagnosed with obstructive sleep apnea, defined as: ([1])

1. AHI or RDI greater than or equal to 1 on polysomnography

OR

2. A pattern of obstructive hypoventilation, defined as at least 25% of total sleep time with hypercapnia ($PaCO_2$ greater than or equal to 50 mm Hg) in association with one or more of the following:
    a. Snoring
    b. Flattening of the inspiratory nasal pressure waveform
    c. Paradoxical thoracoabdominal motion

AND

B. PAP therapy is the desired treatment

OR

C. Follow-up for child on chronic PAP support, to determine whether pressure requirements have changed due to growth and development; if symptoms recur while on PAP

OR

D. Adenotonsillectomy has been unsuccessful, contraindicated, not considered appropriate, or when definitive surgery is indicated but must await complete dental and facial development in a pediatric patient who is found to have obstructive sleep apnea diagnosis established by PSG.

PAP titration may also be undertaken in a child with other sleep-related breathing disorders (not obstructive sleep apnea) when treatment with noninvasive positive pressure ventilation (NIPPV) is recommended.

Home Sleep Apnea Test (HSAT) (95800, 95801, 95806, G0398, G0399, G0400) is an unattended sleep study administered using a portable monitoring device that measures physiologic indicators of respiratory activity during sleep, unattended, in a setting outside of the sleep center facility for adult patients, age 18 years or older. The HSAT is the preferred method to diagnose obstructive sleep (OSA) apnea when OSA is suspected and there are no comorbid conditions which may necessitate attended monitoring or could degrade the accuracy of HSAT.

An initial HSAT may be medically necessary when **all of the following** conditions are met:

A. Signs/symptoms of sleep-disordered breathing are present

B. Absence of other comorbid medical conditions or concomitant sleep disorders that could degrade the accuracy of HSAT

- Comorbid medical conditions which would degrade HSAT, such as:
    - Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)
    - Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%
    - Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
    - Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome
    - Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation
    - Chronic opioid medication use.
    -
- Secondary concomitant or associated sleep disorders which would degrade HSAT, such as:

- Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal when the arousals are not associated with respiratory events ([1])

- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking

- Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated as documented by the patient's objective adherence to therapy (PAP download)

- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

- Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour. ([1])

- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

C. Cognitive and physical ability to safely and effectively perform the sleep test outside of the sleep laboratory

D. Age 18 years or older

HSAT testing may be administered over multiple nights, at the discretion of the ordering qualified healthcare professional. The results should be aggregated into one single report. This is considered one diagnostic sleep test and multiple HSAT tests should be reported as a single HSAT procedure.

HSAT is not medically necessary to monitor PAP efficacy in a patient already diagnosed with OSA and using PAP therapy. The PAP download should provide sufficient efficacy and usage data.

Portable monitoring devices used in HSAT are categorized based on the number of channels measured. Portable monitoring devices that measure fewer than 3 channels provide only limited information and are therefore not considered medically necessary.

Sleep testing (PSG or HSAT) is not considered medically necessary in patients with insomnia, circadian rhythm disorders or restless leg syndrome (RLS).

Sleep testing (PSG or HSAT) is not considered medically necessary for screening asymptomatic patients who have no sleep-related complaints.

Sleep testing (PSG or HSAT) is not considered medically necessary for patients who have symptoms of snoring only.

Sleep testing (PSG or HSAT) is not considered medically necessary for patients for whom sleep testing is required by an employer or other government or regulatory agency and has no symptoms of excessive daytime somnolence or other signs/symptoms of OSA.

Overnight oximetry testing is not considered medically necessary for OSA screening or as a diagnostic test for patients in whom obstructive sleep apnea is suspected.

Repeat Diagnostic Sleep Studies

A repeat PSG or HSAT for the diagnosis and treatment of sleep disorders is medically necessary and appropriate when at least **one of the following conditions is met**:

A. Initial testing results are inconclusive due to poor technical administration
- If the initial test was a HSAT (less than 90 days old), and the results were inconclusive or negative, and there is still a high pre-test probability of obstructive sleep apnea, the repeat test may be performed as an in-laboratory polysomnogram.

B. Patient has had a significant change in weight that has impacted signs/symptoms of obstructive sleep apnea, specifically weight gain or weight loss of greater than or equal to 10% of total body weight, when re-evaluation is warranted to modify therapy

C. Reassessment of clinical indicators of obstructive sleep apnea to determine the effectiveness of treatment after surgical intervention

- Tonsillectomy,
- Adenoidectomy,
- Uvulopalatoplasty (UPPP),
- Maxillomandibular Advancement Surgery (MMA)
- Other upper airway surgery

D. Implementation and evaluation of a fabricated oral mandibular advancement appliance (OAT) by a qualified healthcare professional:

1. Treatment efficacy of an oral mandibular appliance may be assessed using HSAT, **OR**

2. An oral mandibular appliance may be adjusted manually during polysomnography to eliminate sleep disordered breathing in the sleep laboratory by a sleep technologist, and as prescribed by the qualified healthcare professional.

- The qualified healthcare professional may request in-facility polysomnography (CPT code 95810) for manual adjustment of the appliance, if medically necessary

- Alternatively, the oral appliance may be adjusted in the office empirically and then HSAT may be performed to assess therapeutic efficacy PAP titration study (CPT code 95811) or split night sleep testing (CPT code 95811) is not correct coding for adjustment of an oral mandibular appliance

Therapies used to treat snoring only, without diagnosed OSA are not considered medically necessary

PAP Re-Titration (CPT Code 95811)

A repeat in-lab PAP titration may be considered for a patient who is known to have OSA when:

A. A diagnostic sleep test has been submitted to confirm the diagnosis of OSA

AND

B. The patient is documented to have a recurrence of OSA-related symptoms, such as snoring, excessive daytime somnolence, fatigue, disrupted sleep, etc. and has been documented in clinical notes or PAP download to be adherent to PAP therapy (> = 70% use for 4 or more hours in a 24 hour period over a consecutive 30 day period), **OR**

C. The patient has a 10% change in body weight which has resulted in a recurrence of OSA-related symptoms, **OR**

D. The patient has upper airway surgery, which has resulted in a recurrence of OSA-related symptoms,

AND

E. The patient is not a candidate for APAP based on the presence of co-morbid medical conditions or concomitant sleep disorders, which would degrade APAP efficacy:

- Comorbid medical conditions such as:
    - Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)
    - Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%
    - Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
    - Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome
    - Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation
    - Chronic opioid medication use.
- Secondary concomitant or associated sleep disorders such as:
    - Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal when the arousals are not associated with respiratory events. ([1])
    - Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
    - Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated as documented by the patient's objective adherence to therapy (PAP download)
    - Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

- Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour. ([1])

- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

Titration Studies for Positive Airway Pressure (PAP) therapy

Treatment of obstructive sleep apnea using PAP therapy requires that PAP pressure be titrated to the appropriate settings to achieve optimal therapeutic benefit. PAP pressure settings can be determined through an attended overnight, facility-based titration study, or through use of auto-titrating PAP (APAP) device, which automatically adjusts pressure based on the patient's physiological response during use outside of the sleep laboratory.

APAP titration, unattended, is medically necessary and appropriate when **all** of the following criteria are met:

A. Patient has been diagnosed with obstructive sleep apnea:

1. Results of a PSG or HSAT indicate Apnea Hypopnea Index (AHI) or Respiratory Disturbance Index (RDI) or Respiratory Event Index (REI) measured on HSAT of greater than or equal to15 events per hour,

OR

2. AHI or RDI or REI measured on HSAT of greater than or equal to 5 but less than 15, with clinical evidence of one of the following conditions:

   - Excessive daytime sleepiness
   - Impaired cognition
   - Mood disorders (e.g., depression, anxiety)
   - Insomnia
   - Hypertension
   - Ischemic heart disease
   - History of stroke

B. Absence of comorbid condition or concomitant secondary sleep disorders that could impact the technical quality or sensitivity of the APAP in adjusting pressure to meet patient's needs:

Comorbid medical conditions, which would degrade APAP, such as:

- Moderate to severe COPD or asthma, as diagnosed on pulmonary function studies (PFTs)

- Moderate to severe congestive heart failure (NYHA Class III or IV) or LVEF less than or equal to 45%

- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg

- Neuromuscular/neurodegenerative disorder causing restrictive lung disease, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian Barre syndrome

- Acute, uncontrolled cardiac arrhythmia(s) supported by clinical documentation

- Chronic opioid medication use.

Secondary concomitant or associated sleep disorders which would degrade APAP, such as:

- Previously diagnosed periodic limb movement disorder (PLMD), defined as greater than or equal to 15 periodic limb movements per hour resulting in arousal when the arousals are not associated with respiratory events ([1])

- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking

- Narcolepsy, or narcolepsy-related symptoms, after obstructive sleep apnea has been evaluated and effectively treated as documented by the patient's objective adherence to therapy (PAP download)

- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

- Central sleep apnea or treatment-emergent sleep apnea, defined as central apneas/ hypopneas greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour ([1])

- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

TREATMENT FOR SLEEP DISORDERS WITH POSITIVE AIRWAY PRESSURE (PAP) DEVICES

Treatment for obstructive sleep apnea should be coordinated by a qualified healthcare professional who works with the patient to identify an appropriate treatment plan. It is expected that members receive lifestyle counseling, where applicable, for treatment of underlying factors contributing to the obstructive sleep apnea symptoms.

Continuous Positive Airway Pressure (CPAP) or auto titrating PAP (APAP) (E0601) at an effective pressure level is a standard treatment for obstructive sleep apnea. The appropriate pressure setting for CPAP may be determined during an attended facility titration study. A sleep technologist manually adjusts the CPAP pressure to determine the optimal therapeutic pressure setting, which is then programmed into the CPAP so that a fixed airflow pressure is consistently administered during therapy. ([11]) Auto-Titrating Positive Airway Pressure (APAP) devices vary the pressure during treatment, based on measurements of the patient's physiologic response, such as airflow, pressure fluctuations or measures of airway resistance. Auto-adjusting PAP devices apply constant pressure, or bi-level pressure changes, as in bi-level PAP.

For patients without significant comorbidities (e.g., CHF, COPD, central or treatment-emergent sleep apnea, obesity hypoventilation syndrome, or other concomitant sleep disorders) APAP devices may be initiated in the home setting and used in the self-adjusting mode for treatment of patients with obstructive sleep apnea.

Treatment of snoring alone, without significant obstructive sleep apnea, is *not* considered medically necessary.

CPAP or APAP therapy is considered medically necessary for an initial period of 90 days for members who are diagnosed with obstructive sleep apnea, as evidenced by a positive facility-based PSG, or a positive HSAT, as defined by ***either*** of the following criteria:

A. AHI or RDI or REI measured on HSAT greater than or equal to 15 events per hour

B. AHI or RDI or REI measured on HSAT greater than or equal to 5 and less than 15 events per hour and at least one of the following is met:

- History of stroke
- Hypertension
- Ischemic heart disease
- Symptoms of impaired cognition, mood disorders or insomnia
- Excessive daytime sleepiness

Bi-level Therapy (E0470, E0471)

Clinical practice standards advise that patients being treated with fixed CPAP or APAP (E0601) therapy have close clinical follow up to determine the effectiveness of treatment, especially during the initial weeks of therapy. If obstructive sleep apnea symptoms are not resolved effectively with CPAP or APAP, a clinical re-evaluation, and possibly in-laboratory PAP titration study, may be medically necessary. ([10])

Bi-level therapy delivers a higher inspiratory PAP pressure than expiratory PAP pressure, and may improve results and comfort for some patients.

Bi-level therapy with or without a back up, respiratory rate is medically necessary for treatment of breathing disorders, such as: restrictive thoracic disorders, central or treatment-emergent sleep apnea, COPD and obesity hypoventilation syndrome. ([18]) Central sleep apnea not explained by another central sleep apnea disorder (e.g., central sleep apnea with Cheyne-Stokes breathing or due to a medication or substance) may also respond to bi-level therapy.

Bi-level therapy (BPAP) without a backup rate (E0470) is considered medically necessary for an initial period of 90 days when:

The patient with obstructive sleep apnea is unable to tolerate CPAP or APAP therapy or therapy has proven ineffective as documented by a qualified health professional after trial of CPAP or APAP.

Bi-level therapy (BPAP) <u>with</u> a backup respiratory rate (E0471) is considered medically necessary for an initial period of 90 days when:

Bi-level therapy without a backup rate has been trialed and proven to be ineffective ***and,***

The patient has any of the following conditions:

- restrictive thoracic disorder
- severe COPD with evidence of hypercapnia, or
- hypoventilation syndrome

Bi-level therapy (BPAP) <u>with</u> a backup respiratory rate or Adaptive Servo-Ventilation (ASV) may be considered medically necessary for the treatment of central or treatment-emergent sleep apnea when **all of the following criteria are met:**

- Diagnostic PSG shows 5 or more predominantly obstructive respiratory events (obstructive or mixed apneas, hypopneas or respiratory effort related arousals [RERAs]) per hour of sleep

- PSG during use of positive airway pressure without a backup rate shows significant resolution of obstructive events and emergence or persistence of central apneas or central hypopneas with all of the following:

- Central apnea/ hypopnea index of greater than or equal to 5/hour

- The number of central apneas/ hypopneas greater than or equal to 50% of total number of apneas/hypopneas

Adaptive Servo-Ventilation, autoSV/BiPAP and autoSV advanced devices should not be used in patients with symptomatic chronic congestive heart failure (CHF) with reduced ejection fraction (LVEF less than or equal to 45%). ResMed Ltd ®. identified a significant increase in the risk of cardiovascular death in patients with symptomatic, chronic heart failure (NYHA II – IV) with reduced ejection fraction (LVEF less than or equal to 45%) and moderate to severe predominant central sleep apnea (AHI greater than or equal to 15, CAHI/AHI greater than or equal to 50% and CAI greater than or equal to 10). ([24])(***)

Philips Respironics® issued the same warning for at-risk patients using BiPAP autoSV/BiPAP autoSV Advanced devices. ([25])

In patients with LVEF greater than 45% or mild CHF-related central sleep apnea, ASV may be used as an option for treatment, at the clinical discretion of the prescribing qualified healthcare professional.

PAP Adherence

Treatment of obstructive sleep apnea with PAP therapy is dependent on patient adherence to the prescribed treatment. Close follow-up by a qualified healthcare professional and review of objective adherence data is recommended during PAP treatment to assure that the patient is prescribed the appropriate therapeutic pressure and is fit with an appropriate interface to encourage maximum use.

The first 90 days of PAP therapy are frequently considered an important trial period to assess patients' ability to comply with the treatment, and to evaluate the overall efficacy of PAP in resolving and/or minimizing the obstructive sleep apnea symptoms. If PAP is considered inadequate, based on objective adherence monitoring and symptom evaluation, efforts should be implemented to improve PAP adherence, or alternative therapies should be considered. ([2])

PAP may be prescribed with expiratory pressure relief (e.g., C-Flex, C-Flex +, A-Flex, Bi-Flex) [Respironics, Inc., Murrysville, PA]) to facilitate patient comfort and adherence.

When PAP therapy is not successful, as evidenced by lack of patient adherence to prescribed therapy, and/or inadequate clinical response to therapy, the ordering qualified healthcare professional should discuss other treatment options with the patient.

Continued coverage of a PAP device (E0470/E0471 or E0601) beyond the first three months (90 days) of therapy requires that, no sooner than the 31st day but no later than the 91st day after initiating therapy, there must be documentation the member is adhering to PAP therapy.

Objective evidence of adherence use of PAP therapy is defined as:

- Use of PAP ≥4 hours in a 24 hour period for > = 70% of use during a consecutive thirty (30) day period anytime during the first three (3) months of initial usage.

If the above criterion is not met, continued coverage of a PAP device and related accessories will be considered not medically necessary.

In cases of lack of adherence, coverage of the PAP equipment and supplies may be discontinued based upon the health plan's coverage policy.

PAP REPLACEMENT

A replacement PAP/Bi-level device is considered medically necessary to treat obstructive sleep apnea and/or essential sleep apnea with a prescription from a qualified health professional due to reasonable wear and tear to the device, which renders the item:

- non-functioning and not repairable, AND
- the item is no longer under warranty

Travel PAP Therapy

Duplicate equipment is considered a convenience (e.g., travel PAP) and is ***not considered medically necessary***.

Accessories and Supplies

The following accessories and supplies are considered medically necessary for members who meet criteria for PAP therapy. Guidelines for use and frequency of replacement should be based on industry standard practice and medical necessity, and are acceptable to most patients with normal usage. (See section titled ***PAP Supply Guidance)***

- Chinstrap
- Disposable and/or non-disposable filters
- Nasal mask or oronasal mask (full face mask)
- Headgear
- Humidifier – heated or non-heated
- Replacement cushion or nasal pillows for nasal application device
- Replacement interface for oronasal mask
- Tubing - heated or non-heated

Other non-surgical therapies

PAP therapy remains the "gold standard" for treatment for obstructive sleep apnea. However, other non-surgical therapies may be considered when PAP cannot be tolerated or when an alternate therapeutic option is considered medically appropriate.

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.

A tongue-retaining device or a mandibular repositioning appliance (HCPCS codes E0485, E0486, S8262)), also referred to as mandibular advancement appliance or mandibular advancement splint, as medically necessary for an individual with mild or moderate obstructive sleep apnea when EITHER of the following criteria is met:

- Apnea/hypopnea index (AHI) or respiratory disturbance index (RDI) or respiratory event index (REI) greater than or equal to 15 but less than 30, as documented by polysomnography (PSG) or HSAT

- AHI or RDI or REI greater than or equal to 5 and less than 15 as documented by PSG or HSAT, when accompanied by symptoms of obstructive sleep apnea (e.g., excessive daytime sleepiness, impaired cognition, mood disorders or insomnia) or when individual has hypertension, ischemic heart disease or history of stroke

- AHI or RDI or REI greater than or equal to 30, in a patient who is unable to adhere to PAP therapy

The qualified healthcare professional must provide clinical documentation:

- PAP therapy has been tried and failed
- A tongue retaining device or mandibular repositioning device is medically necessary to treat obstructive sleep apnea

A tongue retaining device or mandibular repositioning device may be used in combination with PAP therapy, at the discretion of the qualified healthcare professional. This combined therapy typically allows PAP pressure to be reduced and often facilitates patient comfort and therapy adherence.

Over-the-counter (OTC) oral appliances obtained without a prescription are not considered medically necessary.

Experimental and Investigational

The following **diagnostic tests** are considered experimental and investigational or unproven in members with symptoms suggestive of obstructive sleep apnea:

- Actigraphy testing when used alone is not a validated method of diagnosing obstructive sleep apnea.
- Acoustic pharyngometry, or SNAP testing with fewer than 3 channels
- 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
- X-rays of the temporomandibular joint or sella turcica
- Laryngeal function studies
- Sonography
- Static charge sensitive bed
- Tomographic x-ray
- A limited daytime sleep study sometimes used for PAP desensitization and acclimatization (e.g., “PAP-Nap” study, CPT code 95807, modifier 52)

The following **OSA therapies** are considered experimental and investigational or unproven. Sleep testing related to the application or assessment of these therapies are not considered medically necessary.

- Sleep Strip
- Oral pressure therapy (e.g., Winx® Sleep Therapy System)
- Provent™ Professional Sleep Apnea Therapy Device
- Atrial overdrive pacing
- Cautery-assisted palatal stiffening operation (CAPSO)
- Electrical devices (e.g., Night Shift™ Sleep Positioner) as therapy for positional obstructive sleep apnea
- Electrosleep therapy
- Implanted upper airway hypoglossal nerve stimulation devices (e.g., Inspire® II Upper Airway Stimulation)
- Injection Snoreplasty

- Laser-assisted uvulopalatoplasty (LAUP)
- Over-the-counter, non-customized mandibular appliances
- Pillar™ Palatal Implant System
- Radiofrequency volumetric tissue reduction (RFVTR) of the soft palate, uvula, or tongue base (e.g., Coblation®, Somnoplasty®)
- Tongue-base suspension (e.g., AIRVance System)
- Transpalatal advancement pharyngoplasty
- Diaphragmatic-Phrenic Nerve Stimulation for the treatment of CSA

Attended polysomnography (PSG) or home sleep apnea testing (HSAT) in an adult or child for any of the following indications because each is considered experimental, investigational or unproven:

- Chronic lung disease in the absence of symptoms of a sleep disorder
- Circadian rhythm disorders
- Transient or chronic insomnia
- Seizures in the absence of symptoms of a sleep disorder
- Depression or other psychiatric disorders
- Snoring without excessive daytime sleepiness

Home sleep apnea testing (HSAT) in pediatric patients, younger than age 18 years, is not FDA-approved, and is therefore considered to be experimental and investigational.

Facility Based Sleep Testing Codes	
95805	Multiple Sleep Latency Test (MSLT) or Maintenance of Wakefulness Test (MWT), recording, analysis and interpretation of physiological measurements of sleep during multiple trials. The MSLT is used to measure abnormal sleepiness during the patient's typical period of wakefulness. The MWT is used to measure wakefulness as an assessment of treatment of a sleep disorder.
95807	Sleep study, simultaneous recording of ventilation, respiratory effort, ECG or heart rate and oxygen saturation, attended by a technologist.
95808	Polysomnography; sleep staging with 1-3 additional parameters of sleep, attended by a technologist
95810	Polysomnography; age 6 years or older, sleep staging with 4 or more additional parameters of sleep, attended by a technologist

95811	Polysomnography; age 6 or older, sleep staging with 4 or more additional parameters of sleep, with initiation of continuous positive airway pressure therapy or bi-level ventilation, attended by technologist
95782	Polysomnography; younger than 6 years, sleep staging with 4 or more additional parameters of sleep, attended by a technologist
95783	Polysomnography; younger than 6 years, sleep staging with 4 or more additional parameters of sleep, with initiation of continuous positive airway pressure therapy or bi-level ventilation, attended by a technologist.
Current Procedure Terminology (CPT)/ Health Care Procedure Coding (HCPC) codes for HSAT:	
95800	Sleep study, unattended, simultaneous recording of, heart rate, oxygen saturation, respiratory analysis (e.g., by airflow or peripheral arterial tone), and sleep time
95801	Sleep study, unattended, simultaneous recording; minimum of, heart rate, oxygen saturation, respiratory analysis (e.g., by airflow or peripheral arterial tone)
95806	Sleep study, unattended, simultaneous recording of, heart rate, oxygen saturation, respiratory airflow, and respiratory effort (e.g., thoracoabdominal movement)
G0398	HSAT with type II portable monitor, unattended, minimum of 7 channels; EEG, EOG, EMG, ECG/heart rate, airflow, respiratory effort and oxygen saturation
G0399	HSAT with type III portable monitor, unattended; minimum of 4 channels; 2 measuring respiratory movement/airflow, 1 ECG/heart rate and 1 oxygen
G0400	HSAT with type IV monitor, unattended; minimum of 3 channels,
Other Sleep Testing Codes	
95803	Actigraphy testing, recording, analysis, interpretation, and report (minimum 72 hours to 14 consecutive days)

PAP SUPPLY GUIDANCE

The following supply table represents the usual maximum of supplies expected to be reasonable and necessary.

A4604	TUBING WITH INTEGRATED HEATING ELEMENT FOR USE WITH POSITIVE AIRWAY PRESSURE DEVICE	1 per 3 months
A7027	COMBINATION ORAL/NASAL MASK, USED WITH CONTINUOUS POSITIVE AIRWAY PRESSURE DEVICE, EACH	1 per 3 months
A7028	ORAL CUSHION FOR COMBINATION ORAL/NASAL MASK, REPLACEMENT ONLY, EACH	2 per 1 month

A7029	NASAL PILLOWS FOR COMBINATION ORAL/NASAL MASK, REPLACEMENT ONLY, PAIR	2 per 1 month
A7030	FULL FACE MASK USED WITH POSITIVE AIRWAY PRESSURE DEVICE, EACH	1 per 3 months
A7031	FACE MASK INTERFACE, REPLACEMENT FOR FULL FACE MASK, EACH	1 per 1 month
A7032	CUSHION FOR USE ON NASAL MASK INTERFACE, REPLACEMENT ONLY, EACH	2 per 1 month
A7033	PILLOW FOR USE ON NASAL CANNULA TYPE INTERFACE, REPLACEMENT ONLY, PAIR	2 per 1 month
A7034	NASAL INTERFACE (MASK OR CANNULA TYPE) USED WITH POSITIVE AIRWAY PRESSURE DEVICE, WITH OR WITHOUT HEAD STRAP	1 per 3 months
A7035	HEADGEAR USED WITH POSITIVE AIRWAY PRESSURE DEVICE	1 per 6 months
A7036	CHINSTRAP USED WITH POSITIVE AIRWAY PRESSURE DEVICE	1 per 6 months
A7037	TUBING USED WITH POSITIVE AIRWAY PRESSURE DEVICE	1 per 3 months
A7038	FILTER, DISPOSABLE, USED WITH POSITIVE AIRWAY PRESSURE DEVICE	2 per 1 month
A7039	FILTER, NON DISPOSABLE, USED WITH POSITIVE AIRWAY PRESSURE DEVICE	1 per 6 months
A7046	WATER CHAMBER FOR HUMIDIFIER, USED WITH POSITIVE AIRWAY PRESSURE DEVICE, REPLACEMENT, EACH	1 per 6 months

DEFINITIONS:

Actigraphy: measures physical activity, typically via a wrist-worn movement sensor, employed to estimate sleep and wakefulness based on relative levels of physical inactivity and activity. [1]

Apnea: cessation of airflow for at least ten seconds

Apnea-Hypopnea Index (AHI): the total number of apneas and hypopneas per hour of sleep. AHI is an index of severity of obstructive sleep apnea. AHI is calculated by dividing the number of apneas plus the number of hypopneas by the number of hours of sleep.
If the AHI is calculated based on less than 2 hours of continuous recorded sleep, the total number of recorded events used to calculate the AHI must be at least the number

of events that would have been required in a 2-hour period (i.e., greater than or equal to 10 events).

Brief resolved unexplained event (BRUE)-- an event occurring in an infant younger than 1 year when the observer reports a sudden, brief, and now resolved episode of ≥1 of the following: (1) cyanosis or pallor; (2) absent, decreased, or irregular breathing; (3) marked change in tone (hyper or hypotonia); and (4) altered level of responsiveness. A BRUE is diagnosed only when there is no explanation for a qualifying event after conducting an appropriate history and physical examination

Cataplexy: sudden attacks of muscle weakness and hypotonia triggered by an emotional stimulus such as laughter, anger or fear

Central Sleep Apnea (CSA): the repeated cessation of breathing caused by the temporary signal loss from the brain sent to the breathing muscles. CSA is most often seen in patients with neurologic disorders, congestive heart failure and in patients who take certain medications (e.g., opiates, benzodiazepines).

Cheyne-Stokes Respirations: a type of central sleep apnea seen in patients with congestive heart failure

Electroencephalography (EEG): evaluates brain waves during different stages of sleep.

Electrocardiography (EKG/ECG): measures electrical rhythm of the heart.

Electromyography (EMG): evaluates muscle movement during sleep.

Electrooculography (EOG): evaluates eye movement during dream (REM) sleep.

Home Sleep Apnea Test (HSAT): also known as portable or unattended sleep test. HAST is conducted in the home setting or in a facility outside of the sleep laboratory. This test is unattended by a sleep technologist and may provide many of the same measurements as an in-lab sleep study, such as brain waves, heart rate, breathing, sleep position and oxygen saturation. This test is used to diagnose OSA in patients without comorbid conditions.

Hypersomnolence: excessive sleepiness during the typical period of wakefulness

Hypnagogic Hallucinations: vivid, dream-like experiences occurring at sleep onset.

Hypopnea: an abnormal respiratory event lasting at least ten seconds with at least 30% reduction in thoracoabdominal movement or airflow as compared to baseline and with at least a 4% oxygen desaturation [1]

Insomnia: an inability to sleep; abnormal wakefulness which may be characterized as difficulty falling asleep or sustained awakenings from sleep

Maintenance of Wakefulness Test (MWT): measures sleep latency when the patient is instructed to attempt to remain awake in an unstimulated environment. MWT measures wakefulness during a person's typical wake period. It is used to assess a person's response to therapy (wakefulness) when treatment for a sleep disorder (e.g., OSA, PLMD, narcolepsy, etc.) has been undertaken (e.g., PAP, pharmacotherapy, etc.).

Multiple Sleep Latency Test (MSLT): measures how quickly the patient falls asleep when instructed to relax in a quiet and dimly lit room. MSLT is performed to assess pathologic sleepiness during the patient's typical wake period.

Myoclonus: abnormal contraction of muscles, which can prevent restful sleep

Narcolepsy: recurrent, uncontrollable episodes of sleep often associated with hypnogogic hallucinations, sleep paralysis and cataplexy. Patients experience profound daytime sleepiness.

Nocturnal: pertaining to, occurring at, or active at night

O2 Saturation: percentage of oxygen carried by the blood

Obstructive Sleep Apnea (OSA): characterized by repetitive apneas and/or hypopneas during sleep, caused by complete or partial collapse of the pharyngeal airway during sleep. In adults, an apnea/hypopnea index (AHI) greater than or equal to 5 but less 15, is considered mild OSA. AHI greater than or equal to 15 but less than 30 is considered moderate OSA. AHI greater than or equal to 30 is considered severe OSA. In pediatric patients, an AHI greater than or equal to one is considered abnormal.

PAP-NAP: limited sleep study during which sleep technologists provide behavioral coaching and PAP therapy desensitization to sleep patients

Parasomnias: abnormal sleep behaviors during sleep, such as sleepwalking, sleep talking, sleep eating, sleep terrors, dream enactment

Periodic Limb Movement Disorder (PLMD): characterized by an involuntary, repetitive limb movement that may occur during sleep and usually involve the legs. This causes frequent arousals from sleep and often results in excessive daytime sleepiness.

Polysomnography: test performed in the sleep laboratory to evaluate the parameters of sleep.

REM Behavior Disorder (RBD): parasomnia occurring in REM sleep that primarily affects men of middle age or older with a history of cerebrovascular disease. Presenting

symptoms include violent behavior during sleep and dream enactment, typically with memory of the event.

Respiratory Disturbance Index (RDI): number of apneas + hypopneas + respiratory-related events during the sleep test divided by the total number of hours slept.

Respiratory Event Index (REI): a measurement of sleep-disordered breathing on home sleep apnea testing defined as number of apneas + hypopneas during the sleep test divided by the total sleep or recording time reported in hours.

Restless Leg Syndrome (RLS): unpleasant discomfort typically inside the calves when sitting or lying down, especially just before sleep. This produces an irresistible urge to move the legs and may interfere with the ability to fall asleep. Other extremities or other body parts may also be affected [2].

Seizure: a paroxysmal event resulting from a sudden excessive discharge of the neurons of the cerebral cortex. Lack of sleep facilitates epileptic activity and seizures [1].

Sleep Paralysis: experience of being awake but unable to move and lasting a few seconds. By itself, sleep paralysis may be a normal phenomenon. However, when present with other symptoms, it may be a part of the symptomatology of narcolepsy [2].

Sleep Terrors: similar to nightmares, but occurring in non-REM sleep. The patient may enact the nightmare without memory of the event.

Snoring: noisy breathing occurring during sleep due to vibration of the uvula and soft palate

Split-Night Sleep Study: the initial diagnostic portion of polysomnography followed by PAP titration therapy occurring during the same sleep test.

Treatment-Emergent Central Sleep Apnea: previously known as complex sleep apnea; persistence or emergence of central apneas and hypopneas during the initiation of PAP therapy without a backup respiratory rate for OSA, despite significant resolution of obstructive respiratory events. [1]

Type I Sleep Study Devices: for sleep studies performed, attended in a sleep laboratory. Minimum requirements include recording of EEG, EOG, chin EMG, anterior tibialis EMG, ECG, airflow, respiratory effort and oxygen saturation. Body position is documented. The sleep technologist is in attendance during Type I sleep studies [2].

Type II Sleep Study Devices: for sleep studies performed unattended outside of a sleep laboratory. Type II devices are portable devices that have a minimum of seven channels (e.g. EEG, EOG, EMG, ECG or heart rate, airflow, respiratory effort and

oxygen saturation and monitor sleep staging). The sleep technologist is not in attendance during Type II sleep studies [2].

Type III Sleep study Devices: for sleep studies performed unattended outside of a sleep laboratory. Type III devices are portable devices that monitor and record a minimum of four channels and must record airflow, heart rate or ECG and oxygen saturation. The sleep technologist is not in attendance during Type III sleep studies [2].

Type IV Sleep Study Devices: for sleep studies performed unattended outside of a sleep laboratory. Type IV devices are portable devices that monitor and record a minimum of three channels and must record airflow as one of the required channels. Other measurements may include oximetry and heart rate. The sleep technologist is not in attendance during Type IV sleep studies [2].

[1] International **Classification of Sleep Disorders – Third Edition (ICSD-3), American Academy of Sleep Medicine; 2014**

[2] Florida Blue Clinical Guidelines; 2015

References:

1. International Classification of Sleep Disorders – 3rd Edition (ICSD-3), American Academy of Sleep Medicine; 2014
2. Epstein LJ, Kristo D, Strollo PJ, et. al. Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea In Adults. Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine Journal of Clinical Sleep Medicine, Vol.5, No. 3, 2009;263-276.
3. Collop, NA; Anderson, WM; Boehlecke, B; Clinical Guidelines for the Use of Unattended Portable Monitors in the Diagnosis of Obstructive Sleep Apnea in Adult Patients. Portable Monitoring Task Force of the American Academy of Sleep Medicine. Journal of Clinical Sleep Medicine 2007:3(7):737-747.
4. Centers for Medicare and Medicaid Services National Coverage Decision for Sleep Testing for Obstructive Sleep Apnea (OSA) 240.4.1 Published 3/3/2009 http://www.cms.gov/medicare-coverage-database/details/ncd-details
5. Kushida CA; Littner MR; Morgenthaler T et al. Practice parameters for the indications for polysomnography and related procedures: An update for 2005. Sleep 2005;28(4):499-521.
6. Centers for Medicare and Medicaid Services. National Coverage Determination for Continuous Positive Airway Pressure (CPAP) Therapy for Obstructive Sleep Apnea (OSA). NCD #240.4. Effective March 13, 2008.
7. Gay P, Weaver T, Loube D, Iber C. American Academy of Sleep Medicine (AASM). Positive Airway Pressure Task Force Standards of Practice Committee. Evaluation of positive airway pressure treatment for sleep-related breathing disorders in adults. Sleep 2006; 29(3):381-

8. Kushida CA, Littner MR, Hirshkowitz M, et al. Practice parameters for the use of continuous and bi-level positive airway pressure devices to treat adult patients with sleep-related breathing disorders. Sleep. 2006; 29(3):375-380.
9. Morgenthaler TI, 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 American Academy of Sleep Medicine Report (AASM). Sleep; 2008; 31(1):141-147.
10. Kushida CA; Chediak A; Berry RB; Brown LK; Gozal D; Iber C; Parthasarathy S; Quan SF; Rowley JA; Clinical Guidelines for the Manual Titration of Positive Airway Pressure in Patients with Obstructive Sleep Apnea. Positive Airway Pressure Titration Task Force of the American Academy of Sleep Medicine. Journal of Clinical Sleep Medicine, Vol. 4, No. 2, 2008
11. Marcus CL, Brooks LJ, Ward SD, et. al. Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome. Pediatrics 2012 130(3) 715-755.
12. L J Gula, A D Krahn, A C Skanes, R Yee, and G J Klein. Clinical relevance of arrhythmias during sleep: guidance for clinicians. Heart. 2004 March; 90(3): 347–352.
13. Kribbs NB, Pack AI, Kline LR et. Cal. Objective Measurement of Patterns of Nasal CPAP Use by Patients with Obstructive Sleep Apnea. American Review of Respiratory Diseases1993:147(4): 887-895.
14. Sin DD, Mayers I, Man GCW, et al. Long-tern Compliance Rates to Continuous Positive Airway Pressure in Obstructive Sleep Apnea. Chest 2002;121(2);430-435.
15. Fry JM. Current issues in the diagnosis and management of narcolepsy. *Neurology.* 1998;50(2, suppl 1):S1–S48.
16. Kushida CA, Efron b, Guilleminault c. A Predictive Morphometric Model of the Obstructive Sleep Apnea Syndrome. Ann Int Med 127(8): 581-587.
17. Centers for Medicare and Medicaid Services LCD for Respiratory Assistive Devices (L11504) February 1, 2010.
18. Centers for Medicare and Medicaid Services LCD for Continuous Positive Airway Pressure System (CPAP) (L33718) Revision Effective Date 10/1/2015;
19. Mokhlesi B, Kryger MH, Grunstein RR. Assessment and management of patients with obesity hypoventilation syndrome. Proc Am Thorac Soc 2008;5(2):218-225.
20. Mokhlesi B. Positive Airway Pressure Titration in Obesity Hypoventilation Syndrome. Chest 2007;132(6):1624.
21. Mokhlesi B. Obesity Hypoventilation Syndrome: A State-of-the-Art Review. Respir Care 2010;55(10)1347-1362.
22. Kaw R, Hernandez A, Walker E, Aboussouan L, Mokhlesi B. Determinants of Hypercapnia in Obese Patients With Obstructive Sleep Apnea: A Systematic Review and Metaanalysis of Cohort Studies. Chest 2009;136(3):787-796.
23. Banerjee D, Yee B, Piper A, Zwillich C, Grunstein R. Obesity Hypoventilation Syndrome: Hypoxemia During Continuous Positive Airway Pressure. Chest 2007;131:1678-1684.

24. ResMed Ltd, Urgent: Field Safety Notice, Increased Risk of Cardiovascular Death with Adaptive Servo-Ventilation (ASV) Therapy For Patients with Symptomatic Chronic Heart Failure with Reduced Ejection Fraction; May 13, 2015.
25. Philips Response to ResMed Update on Phase IV SERVE-HF Study of Adaptive Servo-Ventilation (ASV) Therapy in Central Sleep Apnea and Chronic Heart Failure; May 15, 2015. http://www.reuters.com/article/2015/05/16/respironics-asv-idUSnPn906H17+84+PRN20150516
26. Joel S. Tieder, Joshua L. Bonkowsky, Ruth A. Etzel, Wayne H. Franklin, David A. Gremse, Bruce Herman, Eliot S. Katz, Leonard R. Krilov, J. Lawrence Merritt II, Chuck Norlin, Jack Percelay, Robert E. Sapién, Richard N. Shiffman, Michael B.H. Smith, for the SUBCOMMITTEE ON APPARENT LIFE THREATENING EVENTS, Brief, Unexplained Events in Newborns With No Underlying Health Problems or Risk For Sudden Infant Death, American Academy of Pediatrics, May 2016, VOLUME 137 / ISSUE 5, Clinical Practice Guideline.
27. American Academy of Pediatrics, AAP Recommends New Term for Brief, Unexplained Events in Newborns With No Underlying Health Problems or Risk or Sudden Infant Death, 4/25/2016.
28. Michael R. Littner MD1; Clete Kushida MD, PhD2; Merrill Wise MD3; David G. Davila, MD4; Timothy Morgenthaler MD5; Teofilo Lee-Chiong MD6; Max Hirshkowitz PhD7; Daniel L. Loube MD8; Dennis Bailey DDS9; Richard B. Berry MD10; Sheldon Kapen MD11; Milton Kramer MD1. Practice Parameters for Clinical Use of the Multiple Sleep Latency Test and the Maintenance of Wakefulness Test An American Academy of Sleep Medicine Report Standards of Practice Committee of the American Academy of Sleep Medicine
29. R. Nisha Aurora, MD, MHS1; Sabin R. Bista, MD2; Kenneth R. Casey, MD, MPH3; Susmita Chowdhuri, MD4; David A. Kristo, MD5; Jorge M. Mallea, MD6; Kannan Ramar, MD7; James A. Rowley, MD8; Rochelle S. Zak, MD9; Jonathan L. Heald, *Journal of Clinical Sleep Medicine, Vol. 12, No. 5, 2016.* Updated Adaptive Servo-Ventilation Recommendations for the 2012 AASM Guideline: “The Treatment of Central Sleep Apnea Syndromes in Adults: Practice Parameters with an Evidence-Based Literature Review and Meta-Analyses”

30. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016
Morbidity and Mortality Weekly Report, March 15, 2016
https://www.cdc.gov/mmwr/volumes/65/rr/pdfs/rr6501e1er.pdf

31.
Aurora RN, Bista SR, Casey KR, Chowdhuri S, Kristo DA, Mallea JM, et al. Updated Adaptive Servo-Ventilation Recommendations for the 2012 AASM Guideline: "The Treatment of Central Sleep Apnea Syndromes in Adults: Practice Parameters with an Evidence-Based Literature Review and Meta-Analyses". J Clin Sleep Med. 2016 May 15;12(5):757-61.

32. Vishesh K. Kapur, MD, MPH; Dennis H. Auckley, MD; Susmita Chowdhuri, MD; David C. Kuhlmann, MD ,Reena Mehra, MD, MS; Kannan Ramar, MBBS, MD; Christopher G. Harrod, MS
Clinical Practice Guideline for Diagnostic Testing for Adult Obstructive Sleep Apnea: An American Academy of Sleep Medicine Clinical Practice Guideline, *Journal of Clinical Sleep Medicine, Vol. 13, No. 3, 2017*
http://jcsm.aasm.org/ViewAbstract.aspx?pid=30972

33. Clete A. Kushida, MD, PhD1; Michael R. Littner, MD; Timothy Morgenthaler, MD; Cathy A. Alessi, MD; Dennis Bailey, DDS; Jack Coleman, Jr., MD; Leah Friedman, PhD; Max Hirshkowitz, PhD; Sheldon Kapen, MD; Milton Kramer, MD; Teofilo Lee-Chiong, MD; Daniel L. Loube, MD; Judith Owens, MD; Jeffrey P. Pancer,DDS; Merrill Wise, MD
Practice Parameters for the Indications for Polysomnography and Related Procedures: An Update for 2005, *J Clin Sleep Med. 2017;13(3):479–504.*
https://j2vjt3dnbra3ps7ll1clb4q2-wpengine.netdna-ssl.com/wp-content/uploads/2017/07/PP_Polysomnography.pdf

GUIDELINE UPDATE INFORMATION:

12/19/2013	New coverage guideline
5/22/2015	Scheduled review. Adherence criteria, criteria related to Adaptive Servo Ventilation and definitions added. Experimental/Investigational diagnostic tests updated: Actigraphy used alone, and use of Acoustic pharyngometry, or SNAP testing with fewer than 3 channels. Guideline reformatted, references updated
5/25/2016	• Updated definitions of comorbid conditions and secondary sleep disorders • Updated ASV indications with most current recommendations • Expanded definition of MWT • Provided list of standard PAP supply replacement schedule • Added REI as a measurement of sleep disordered breathing • Updated oxygen saturation requirements for PAP titration (CPT 95811) • Extensive reformatting changes
3/28/2017	• Sleep disorders without suspected OSA identified as criteria for in-facility testing
6/21/2017	• Scheduled review: added PAP replacement language, in-facility diagnostic testing for sleep disorders not associated with OSA
8/9/2018	• Scheduled review: describe snoring as habitual vs. disruptive as suggestive evidence of sleep disordered breathing; inclusion of chronic opioid use as a comorbid condition; expand measurement of compliance over a 24 hour period.