Diagnosis of Sleep Disordered Breathing in Adults and Children

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

This is a guideline only. The guideline does not represent medical advice. Medical decisions are the responsibility of the member 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

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 member presents with an increased risk of moderate to severe obstructive sleep apnea (OSA), indicated by the presence of:

- witnessed apnea during sleep, **or**
- 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 loud snoring
   - Choking or gasping during sleep
   - BMI greater than or equal to 30
   - Neck circumference greater than 17 in. (men) or greater than 16 in. (women)
   - Sleep related bruxism
   - Cognitive deficits such as inattention or memory
   - Unexplained nocturnal reflux
   - Erectile dysfunction
   - Apneas or hypoxemia during procedures requiring anesthesia
   - Morning headaches

Determining the Appropriate Site of Service for Sleep Testing

Sleep testing may be performed in an attended setting in a 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:

Evaluation of the member's clinical signs and symptoms related to the sleep disorder, and all of the following:

- Review of the member's medical history and physical examination
- Evaluation of any comorbid medical conditions
- Evaluation of any secondary concomitant or associated sleep disorders **AND**
- Assessment of the member's cognitive and physical ability to safely and effectively perform the sleep test outside of the sleep laboratory.

DIAGNOSTIC TESTING

Diagnostic testing for sleep disorders must be ordered by a licensed physician or advanced practice provider and reviewed and interpreted by a board certified sleep physician.

Home Sleep Apnea Test (HSAT)

Home Sleep Apnea Test (HSAT) **meets the definition of medical necessity** when all of the following conditions are met (A, B, C, & D):

A. Signs/symptoms of sleep-disordered breathing as noted above, in the Signs and Symptoms of Sleep Disordered Breathing section, are present (witnessed apnea OR at least one sign/symptom from category A and one sign/symptom from Category B)

B. Absence of other comorbid medical conditions or concomitant sleep disorders such as:

Comorbid medical conditions

- Moderate to severe COPD or interstitial lung disease as diagnosed on pulmonary function studies (PFTs), or chronic use of oxygen for the treatment of pulmonary disease
- Severe, persistent asthma as defined by use of:
  - Daily oral corticosteroids, or
  - Immunomodulator/biologics
- Moderate to severe heart failure with New York Heart Association (NYHA) Classification III or IV or reduced EF less than or equal to 40%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive disease or hypoventilation such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian-Barré syndrome
- Acute, uncontrolled or refractory cardiac arrhythmia(s) supported by clinical documentation, such as:
  - Recurrent palpitations, nocturnal
  - Syncope, dizziness, or light headedness
  - Short of breath, chest pain associated with arrhythmia

- Chronic opioid medication that would increase risk of central sleep apnea, (chronic use defined as use of opioids on most days per week for greater than 3 months)
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

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
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy, or narcolepsy-related symptoms (i.e. idiopathic hypersomnia), after obstructive sleep apnea has been evaluated and effectively treated as documented by the member's objective adherence to therapy (PAP download)
- Previously diagnosed 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
- Central nervous system disorders which may increase risk of central sleep apnea (e.g., Arnold Chiari malformation)
- 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

Note: A HSAT 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 **does not meet the definition of medical necessity** to monitor PAP efficacy in a member 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 therefore **does not meet the definition of medical necessity.**

Attended Sleep Study - Polysomnography (PSG)

An attended sleep study (95808, 95810) **meets the definition of medical necessity** when a member presents with (A and B, A and C, or D):

A. Signs/symptoms of sleep disordered breathing as noted in the Signs and Symptoms of Sleep Disordered Breathing section above (witnessed apnea OR at least one

sign/symptom from category A and one sign/symptom from Category B).

B. Comorbid medical conditions which may necessitate attended monitoring such as:

- Moderate to severe COPD or interstitial lung disease as diagnosed on pulmonary function studies (PFTs) or chronic use oxygen for the treatment of pulmonary disease
- Severe, persistent asthma as define by use of:
    - Daily oral corticosteroids, or
    - Immunomodulator/biologics
- Moderate to severe heart failure with New York Heart Association (NYHA) Classification of III or IV or reduced EF less than or equal to 40%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive disease or hypoventilation, such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian-Barré syndrome
- Acute, uncontrolled or refractory cardiac arrhythmia(s) supported by clinical documentation such as:
    - Recurrent palpitations, nocturnal
    - Syncope, dizziness, or light headedness
    - Short of breath, chest pain associated with arrhythmia
- Chronic opioid medication that would increase risk of central sleep apnea, (chronic use defined as use of opioids on most days per week for greater than 3 months)
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

C. Recent Home Sleep Apnea Test (HSAT) (less than 1 year old) confirmed to be non-diagnostic:

- A previous home sleep study was technically inadequate and there was a valid attempt to retest the member via 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 member with a high pretest probability of OSA

D. Presence of a secondary concomitant or associated sleep disorder other than suspected OSA which may necessitate attended monitoring 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
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy, or narcolepsy-related symptoms (i.e. idiopathic hypersomnia), after obstructive sleep apnea has been evaluated and effectively treated, as documented by the member's objective adherence to therapy (PAP download)
- Previously diagnosed 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.
- Central nervous system disorders which may increase risk of central sleep apnea (e.g. Arnold Chiari malformation)
- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

Overnight oximetry testing **does not meet the definition of medical necessity for OSA screening or as a diagnostic test for members suspected of obstructive sleep apnea**

Attended polysomnography (PSG) or home sleep apnea testing (HSAT) is not medically necessary (in children or adults) for the following indications:

- Chronic lung disease in the absence of symptoms of a sleep disorder
- Circadian rhythm disorders
- Transient or chronic insomnia
- Restless leg syndrome (RLS)
- Seizures in the absence of symptoms of a sleep disorder
- Depression or other psychiatric disorders
- Snoring without evidence suggestive of excessive daytime sleepiness.-
- Screening asymptomatic members with no sleep-related complaints
- Members required to be tested by an employer or other government or regulatory agency and who have no symptoms of excessive daytime somnolence or other signs/symptoms of OSA.

Full Night, Attended PAP Titration Study

Attended Titration for members (age 6 and 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 member is not appropriate for unattended titration using auto-titrating PAP (APAP or auto bi-level PAP) device.

A full night, attended titration study (95811) **meets the definition of medical necessity** when the following conditions are met (A and B, A and C, or A and D). **Unattended titration** using **APAP** (E0601) **meets the definition of medical necessity** only when condition A is met and conditions B, C, and D is not.

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

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

- O2 saturation <90% for greater than 15% of recording time during a diagnostic home sleep apnea test or diagnostic facility based PSG, **OR**
- 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 may necessitate an attended titration:

Comorbid medical conditions such as:

- Moderate to severe COPD or interstitial lung disease as diagnosed on pulmonary function studies (PFTs), or chronic use of oxygen for the treatment of pulmonary disease.
- Severe, persistent asthma as defined by use of:
  - Daily oral corticosteroids, or
  - Immunomodulator/biologics
- Moderate to severe heart failure with New York Heart Association (NYHA) Classification III or IV or reduced EF less than or equal to 40%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive disease or hypoventilation such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian-Barré syndrome
- Acute, uncontrolled or refractory cardiac arrhythmia(s) supported by clinical documentation, such as:
  - Recurrent palpitations, nocturnal
  - Syncope, dizziness, or light headedness
  - Short of breath, chest pain associated with arrhythmia
- Chronic opioid medication use that would increase risk of central sleep apnea, (chronic use defined as use of opioids on most days per week for greater than 3 months)
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mmHg on arterial blood gas

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
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy, or narcolepsy-related symptoms (i.e. idiopathic hypersomnia), after obstructive sleep apnea has been evaluated and effectively treated as documented by the member's objective adherence to therapy (PAP download)
- Central sleep apnea or treatment emergent sleep apnea, defined as central apneas/greater than 50% of the total apneas/hypopneas and central apneas/hypopneas greater than or equal to 5 times per hour
- Central nervous system disorders which may increase risk of central sleep apnea (e.g., Arnold Chiari malformation)
- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

D. The member has failed recent APAP trial at home. APAP failure is defined as:

- The member has a residual AHI on APAP download of greater than or equal to 5 with adequate objective adherence to therapy (use ≥4 hours per night on 70% of nights during a consecutive 30 day period reported on APAP download), **OR**

- The member has residual symptoms of excessive daytime sleepiness with adequate objective adherence to therapy (use ≥4 hours per night on 70% of nights during a consecutive 30 day period reported on APAP download), **OR**
- The member was unable to tolerate positive airway pressure therapy following a 1-month minimum trial of APAP as evidenced by the objective data (as noted in the bullet above) **AND** the member did not have a previous attended titration, **OR**
- The member 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

A facility-based split night sleep study (95811) **meets the definition of medical necessity** when a member presents with (A and B or A and C or A and D):

A. Signs/symptoms of sleep disordered breathing as noted above

B. Presence of a comorbid condition:
- Moderate to severe COPD or interstitial lung disease as diagnosed on pulmonary function studies (PFTs), or chronic use of oxygen for the treatment of pulmonary disease
- Severe, persistent asthma as defined by use of:
  - Daily oral corticosteroids
  - Immunomodulator/biologics
- Moderate to severe heart failure with New York Heart Association (NYHA) Classification III or IV or reduced EF less than or equal to 40%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive disease or hypoventilation such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian-Barré syndrome
- Acute, uncontrolled or refractory cardiac arrhythmia(s) supported by clinical documentation, such as:
  - Recurrent palpitations, nocturnal
  - Syncope, dizziness, or light headedness
  - Short of breath, chest pain associated with arrhythmia
- Chronic opioid medication use that would increase risk of central sleep apnea, (chronic use defined as use of opioids on most days per week for greater than 3 months).
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mmHg on arterial blood gas

C. Recent HSAT (less than 1 year old) confirmed to be non-diagnostic:
- A previous home sleep study was technically inadequate and there was a valid attempt to retest the member via HSAT (**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 member with a high pretest probability of OSA.

D. Presence of a secondary concomitant or associated sleep disorder other than suspected OSA 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
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy or narcolepsy-related symptoms (i.e. idiopathic hypersomnia) after obstructive sleep apnea has been evaluated and effectively treated as documented by the member's objective adherence to therapy (PAP download).
- 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
- Central nervous system disorders which may increase risk of central sleep apnea (e.g., Arnold Chiari malformation)
- Nocturnal seizures which are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders

Repeat Diagnostic Testing

HSAT/PSG/Split Night Study

A repeat PSG, HSAT, or Split Night Study to confirm the diagnosis of sleep disorders **meets the definition of medical necessity** when the member meets previously stated criteria for a PSG, HSAT, or Split Night as outlined above and at least **ONE** of the following conditions is met:

1. Recent HSAT (less than 1 year old) confirmed to be non-diagnostic:
    - A previous home sleep study was technically inadequate and there was a valid attempt to retest the member via HSAT (**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 member with a high pretest probability of OSA.

2. Member has had any of the following:
    - 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.
    - persistent or recurring signs or symptoms of OSA and adherent with PAP therapy,
    - develop or have a change in cardiovascular status, such as uncontrolled hypertension, hospitalization for heart failure, stroke, cardiac arrhythmia

3. 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/implantation for treatment of obstructive sleep apnea

4. Implementation and evaluation of a fabricated oral mandibular advancement appliance (OAT) by a qualified healthcare professional:
    - **a.** Treatment efficacy of an oral mandibular appliance may be assessed using HSAT, **OR**
    - b. 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 (95810) for manual adjustment of the appliance, if meets current criteria for in lab evaluation
        - Alternately, the oral appliance may be adjusted in the office empirically and then HSAT may be performed to assess therapeutic efficacy.

Note:
PAP titration study (CPT code 95811) or split night sleep testing (95811) is not correct coding for adjustment of an oral mandibular appliance.

Note:
If previous diagnostic test or baseline study is not available, physician attestation for the need of the requested test will be accepted and sleep study type will be determined by medical necessity.

If previous diagnostic test **or baseline study** is not available, physician attestation supporting a diagnosis of OSA will be accepted to support the request for replacement pap therapy or supplies, where medical necessity has already been established.

Sleep studies performed outside the United States are accepted as long as the sleep report contains sufficient data to determine medical necessity for the diagnosis

Repeat Attended Titration Study

A repeat in-lab PAP titration (95811) **meets the definition of medical necessity** for a member who is known to have OSA when (1&2) are met:

1. A diagnostic sleep test has been submitted to confirm the diagnosis of OSA
   AND, any of the following:
    - The member is documented to have a recurrence of OSA related symptoms, such as snoring, excessive daytime somnolence, fatigue, disrupted sleep, etc. or persistent elevation in AHI documented from PAP device download while adherent to PAP therapy (use ≥4 hours per night on 70% of nights during a consecutive thirty (30) day period),
    - The member has a 10% change in body weight which has resulted in a recurrence of OSA-related symptoms,
    - The member demonstrates intolerance to PAP therapy and the test is to re-titrate and evaluate for the proper therapeutic pressure and/or modality
    - The member has upper airway surgery, which has resulted in a recurrence of OSA-related symptoms,

- Significant oxygen desaturation found during diagnostic testing:
  - O2 saturation < 90% for greater than 15% of recording time during a diagnostic home sleep apnea test or diagnostic facility based PSG, **OR**
  - O2 saturation < 80% for greater than 1% of recording time during a diagnostic home sleep apnea test or diagnostic facility based PSG.

2. The member is not a candidate for APAP based on the presence of co-morbid medical conditions or concomitant sleep disorders, **OR** the member is currently on APAP therapy

Comorbid medical conditions such as:

- Moderate to severe COPD or interstitial lung disease as diagnosed on pulmonary function studies (PFTs) or chronic use of oxygen for the treatment of pulmonary disease
- Severe, persistent asthma as defined by use of :
  - Daily oral corticosteroids
  - Immunomodulator/biologics
- Moderate to severe heart failure with and New York Heart Association (NYHA) Classification III or IV or reduced EF less than or equal to 40%
- Moderate to severe pulmonary hypertension, with pulmonary artery pressure greater than 40 mm Hg
- Neuromuscular/neurodegenerative disorder causing restrictive disease or hypoventilation such as: severe kyphoscoliosis, myasthenia gravis, amyotrophic lateral sclerosis (ALS), post-polio syndrome, polymyositis, and Guillian-Barré syndrome
- Acute, uncontrolled or refractory cardiac arrhythmia(s) supported by clinical documentation, such as:
  - Recurrent palpitations, nocturnal
  - Syncope, dizziness, or light headedness
  - Short of breath, chest pain associated with arrhythmia
- Chronic opioid medication use that would increase risk of central sleep apnea, (chronic use defined as use of opioids on most days per week for greater than 3 months).
- Obesity hypoventilation syndrome, defined as pCO2 greater than 45 mm Hg and pO2 less than 60 mm Hg on arterial blood gas

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
- Complex parasomnias, with potentially injurious, disruptive or violent behavior, such as REM Behavior Disorder or sleep walking
- Narcolepsy, or narcolepsy-related symptoms (i.e. idiopathic hypersomnia), after obstructive sleep apnea has been evaluated and effectively treated as documented by the member's objective adherence to therapy (PAP download)
- 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
- Central nervous system disorders which may increase risk of central sleep apnea (e.g., Arnold Chiari malformation)
- Nocturnal seizures that are acute and/or not effectively controlled and occurring concomitantly with other sleep disorders.

NOTE: If previous diagnostic test is not available, physician attestation confirming the patient's diagnosis of OSA will be accepted.

Multiple Sleep Latency Test (MSLT) Attended Titration

A Multiple Sleep Latency Test (MSLT) (95805) **meets the definition of medical necessity** when:

The member exhibits documented symptoms suggestive of narcolepsy, either 1 and 2, or 3:

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.
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

OR

3. The member is currently on positive airway pressure therapy for the treatment of OSA, is adherent to therapy, download demonstrates resolution of sleep apnea and has persistent daytime sleepiness.

Note: The MSLT should be performed when a member is in a fully rested state, and not experiencing sleepiness due to inadequate prior sleep. For this reason, the MSLT is performed during the member's typical wake hours and **always follows a facility-based PSG** (95810) or an in lab titration (95811**)** for persistent hypersomnia for members adherent to therapy and which the sleep efficacy of CPAP adequacy is objectively measured. The MSLT **should not be performed after a split night study (CPT code 95811)**

Maintenance of Wakefulness Test MWT

Maintenance of Wakefulness testing (95805) **meets the definition of medical necessity** to evaluate a member's response to treatment for a sleep disorder, such as obstructive sleep apnea, narcolepsy or periodic limb movement disorder, especially when the member's inability to say awake constitutes a personal or public safety issue.

Note: Only an 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. The MWT can be performed as a stand-alone test.

Actigraphy

Actigraphy (95803) **meets the definition of medical necessity** as 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.

Note: It is recommended that Actigraphy be performed for at least 7 days to assure the validity of MSLT testing data.

Actigraphy alone **does not meet the definition of medical necessity** in evaluating a member for the diagnosis of obstructive sleep apnea.

Diagnostic Testing for Commercial Driver's License (CDL) or other Government Licenses

Diagnostic testing (CPT codes 95808, 95810 and 95811) for CDL (commercial driver's license) or other government license purposes **does not meet the definition of medical necessity** unless the member meets criteria for in facility testing or home testing as noted in the guideline.

SLEEP TESTING in PEDIATRIC MEMBERS (Younger than 18 years old)

Sleep disordered breathing in pediatric members younger than age 18 years is evaluated when there is the presence of one or more of the following:

- Snoring
- Labored, paradoxical, or obstructed breathing during the child's sleep
- Sleepiness, hyperactivity, behavioral problems, or learning problems.

Pediatric in-facility polysomnography (PSG) (95782, 95808, and 95810) **meets the definition of medical necessity** for **ANY** of the following indications:

- Obstructive sleep apnea is suspected based on clinical signs/symptoms
- Prior to adenotonsillectomy to treat obstructive sleep apnea or snoring
- Unexplained cor pulmonale
- Following adenotonsillectomyin a child with any one of the following:
  - mild preoperative obstructive sleep apnea with residual symptoms of obstructive sleep apnea or snoring
  - to assess for residual obstructive sleep apnea in child with preoperative evidence of
    - moderate to severe obstructive sleep apnea, or
    - obesity, or
    - craniofacial anomalies that obstruct the upper airway, or
    - neurologic disorder (e.g., Down syndrome, Prader-Willi syndrome, myelomeningocele)
  - under 3 years old,
  - cardiac complications of obstructive sleep apnea syndrome (e.g. right ventricular hypertrophy)
  - Failure to thrive
- Suspected congenital central alveolar hypoventilation syndrome or sleep related hypoventilation due to neuromuscular disorders or chest wall deformities
- Primary apnea of infancy
- Evidence of a sleep related breathing disorder in infant who has experienced a brief resolved unexplained event
- Assessment of response to treatment with an oral appliance
- Evaluation of child treated with mechanical ventilation for adjustment of ventilator settings.
- Evaluation prior to decannulation in child treated with tracheostomy
- 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).
- Parasomnias --when there is a history of sleep-related injurious or potentially injurious disruptive behaviors.
- Follow-up for child with OSA diagnosis to determine if PAP requirement treatment and diagnosis have changed due to growth and development; if symptoms recur while on PAP

Pediatric Split Night Study, (95811)
The member must meet criteria for Pediatric in-facility polysomnography

Pediatric in-facility PAP titration (95783, 95811) **meets the definition of medical necessity** when the following are met (A&B or A&C):

A. The pediatric member is diagnosed with obstructive sleep apnea, defined as (1 or 2):
   1. AHI or RDI greater than or equal to 1 on polysomnography

2. A pattern of obstructive hypoventilation, defined as at least 25% of total sleep time with hypercapnia (PaCO2 greater than or equal to 50 mm Hg) in association with one or more of the following:
    - Snoring
    - Flattening of the inspiratory nasal pressure waveform
    - Paradoxical thoracoabdominal motion

B. 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

C. . 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 member who is found to have obstructive sleep apnea diagnosis established by PSG

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

The use of Home Sleep Testing devices in pediatric members (younger than age 18 years) is not considered medically necessary. The evidence is insufficient to determine the effects of the technology on health outcomes.

Diagnostic Testing for Hypoglossal Nerve Stimulation Implantation

Prior to Implantation:
Attended sleep study (polysomnography (PSG) is considered medically necessary prior to hypoglossal nerve stimulation implantation for the treatment of moderate to severe obstructive sleep apnea when **all** of the following criteria are met:

1. Body mass index (BMI) is less than 35 kg/m2; **and**
2. A polysomnography (PSG) is performed within 24 months of first consultation for HGNS implant; **and**
3. The member has predominantly obstructive events (defined as central and mixed apneas less than 25% of the total AHI); **and**
4. AHI is 15 to 65 events per hour; **and**

6. The member has documentation that demonstrates CPAP failure (defined as AHI greater than 15 despite CPAP usage) or CPAP intolerance (defined as less than 4 hours per night, 5 nights per week or the CPAP has been returned) including shared decision making that the patient was intolerant of CPAP despite consultation with a sleep expert.

Post Diagnostic Testing following Hypoglossal Nerve Stimulation Implantation:

1. Polysomnography done at 2 to 6 months post-implantation for the purpose of titrating the device parameters and determining therapeutic stimulation settings.
2. Following the titration study subsequent retesting, either HSAT or PSG, can be performed if any of the following occurs:
    - Clinical response is insufficient despite regular treatment with hypoglossal nerve stimulator.
    - Substantial weight gain with return of symptoms

Experimental or Investigational
The following other diagnostic tests are considered not medically necessary for 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 members for oral appliances; lateral cephalographic x-rays may also be necessary to evaluate members 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" 95807study).

Note: Members under age 21 enrolled in Medicaid, can only be denied due to Medical Necessity based on Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) requirements.

FREQUENCY INFORMATION:

Sleep Testing is limited to two (2) in 12 months.

Multiple sleep latency (95805) is limited to one (1) day of testing in 12 months.

95805 is allowed in addition to (95808, 95810, or 95811). One (1) repeat (95805) may be covered if:

- The first test was invalid or uninterpretable in a member with a high clinical pretest probability of a sleep disorder.
- The member has more than one sleep disorder.

NOTE: Services in excess of the above limitations are subject to medical review of documentation that supports medical necessity. The following information is required documentation to support medical necessity: physician history and physical, physician procedure note, treatment plan, plan of treatment, electroencephalogram study, and polysomnography (sleep) study

CODING INFORMATION:

CPT Coding:

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
95800	Sleep study, unattended, simultaneous recording; 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, and respiratory analysis (e.g., by airflow or peripheral arterial tone)
95803	Actigraphy testing, recording, analysis, interpretation, and report (minimum of 72 hours to 14 consecutive days of recording)

95805	Multiple sleep latency or maintenance of wakefulness testing, recording, analysis and interpretation of physiological measurements of sleep during multiple trials to assess sleepiness
95806	Sleep study, unattended, simultaneous recording of, heart rate, oxygen saturation, respiratory airflow, and respiratory effort (e.g., thoracoabdominal movement)
95807	Sleep study, simultaneous recording of ventilation, respiratory effort, ECG or heart rate, and oxygen saturation, attended by a technologist (Not medically necessary)
95808	Polysomnography; any age, 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
G0398	Home sleep study test (HST) with type II portable monitor, unattended; minimum of 7 channels: EEG, EOG, EMG, ECG/heart rate, airflow, respiratory effort and oxygen saturation
G0399	Home sleep test (HST) with type III portable monitor, unattended; minimum of 4 channels: 2 respiratory movement/airflow, 1 ECG/heart rate and 1 oxygen
G0400	Home sleep test (HST) with type IV portable monitor, unattended; minimum of 3 channels

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.

Apnea: temporary cessation of breathing and, therefore, of the body's intake of oxygen and release of carbon dioxide; cessation of airflow for 10 seconds or more

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).

Cataplexy: sudden attacks of muscular 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).

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

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

Electromyography (EMG): evaluates muscle movements during sleep.

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

Excessive Daytime Sleepiness: Score greater than or equal to 10 on the Epworth Sleepiness Scale.

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.

Hypoglossal Nerve Stimulation: The hypoglossal nerve stimulator is an implanted medical device that reduces the occurrence of OSA by electrically stimulating the hypoglossal nerve, which causes tongue movement. This stimulation is timed with breathing to relieve upper airway obstruction. The hypoglossal nerve stimulation system is fully implanted beneath the skin and controlled with a remote, allowing patients to sleep free from devices on the face or in the mouth.

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, or a ≥ 3% oxygen desaturation from pre-event baseline and/or the event is associated with an arousal.

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, pharmacotherapies, etc.).

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

Narcolepsy: recurrent, uncontrollable, episodes of sleep, often associated with hypnagogic 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 pharyngeal airway during sleep. In adults, an apnea/hypopnea index (AHI) greater than or equal to 5 but less than 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 1 is consideredabnormal.

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

Parasomnia: abnormal sleep behavior during sleep, such as sleepwalking, sleep talking, sleep eating, sleep terrors, and 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 afflicts 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): an 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.

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.

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.

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

Treatment-Emergent Central Sleep Apnea is a form of central sleep apnea specifically identified by the persistence or emergence of central apneas and/or hypopneas upon exposure to CPAP, bi-level therapy, or APAP, when obstructive events have disappeared. These members have predominately obstructive or mixed apneas during the diagnostic sleep study occurring at greater than or equal to 5 times per hour. With use of a CPAP, bi-level therapy, or APAP, they show a pattern of central apneas and/or central hypopneas that meets the definition of CSA described above.

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

Type II Sleep Study Devices: for sleep studies performed unattended outside of a sleep lab facility. Type II devices are portable devices that have a minimum of 7 channels (e.g., EEG, EOG, EMG, ECG or heart rate, airflow, respiratory effort, and oxygen saturation and monitor sleep staging). A sleep technologist is not in attendance during Type II studies.

Type III Sleep Study Devices: for sleep studies performed unattended outside of a sleep laboratory facility. 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 studies.

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

References:

1. International Classification of Sleep Disorders – 3rd Edition (ICSD-3), American Academy of Sleep Medicine; 2014

2. Epstein LJ, Kristo D, Strollo PJ Jr, et al. Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea In adults. J Clin Sleep Med. 2009 Jun 15; 5(3):263-76.

3. Collop NA, Anderson WM, Boehlecke B, Claman D, Goldberg R, Gottlieb DJ, Hudgel D, Sateia M, Schwab R; Portable Monitoring Task Force of the American Academy of Sleep Medicine. 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. J Clin Sleep Med. 2007 Dec 15;3(7):737-47

4. Centers for Medicare and Medicaid Services National Coverage Decision for Sleep Testing for Obstructive Sleep Apnea (OSA) 240.4.1 Published 8/10/2009.

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 August 4, 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 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 (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 al. Objective Measurement of Patterns of Nasal CPAP Use by Patients with Obstructive Sleep Apnea. American Review of Respiratory Diseases 1993:147(4): 887-895.

14. Sin DD, Mayers I, Man GCW, et al. Long-term 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 (L33800) 8/8/2021

18. Centers for Medicare and Medicaid Services LCD for Positive Airway Pressure (PAP) Devices for the Treatment of Obstructive Sleep Apnea (L33718) Revision Effective Date 8/07/2021.

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 Resume Update on Phase IV SERVE-HF Study of Adaptive Servo-Ventilation (ASV) Therapy in Central Sleep Apnea and Chronic Heart Failure; May 15, 2015.

26. Tieder, Joel S., 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

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):757-6

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

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.

34. Susheel P. Patil, MD, PhD1; Indu A. Ayappa, PhD2; Sean M. Caples, DO3; R. John Kimoff, MD4; Sanjay R. Patel, MD5; Christopher G. Harrod, MS6. Treatment of Adult Obstructive Sleep Apnea with Positive Airway Pressure: An American Academy of Sleep Medicine Clinical Practice Guideline, Journal of Clinical Sleep Medicine, Vol. 15, No. 2 Feb. 15, 2019

35. Ilene M. Rosen, MD, MS1; Douglas B. Kirsch, MD2; Ronald D. Chervin, MD, MS3; Kelly A. Carden, MD4; Kannan Ramar, MD5; R. Nisha Aurora, MD6; David A. Kristo, MD7; Raman K. Malhotra, MD8,9; Jennifer L. Martin, PhD10; Eric J. Olson, MD5; Carol L. Rosen, MD11; James A. Rowley, MD12; American Academy of Sleep Medicine Board of Directors Clinical Use of a Home Sleep Apnea Test: An Updated American Academy of Sleep Medicine Position Statement, J Clin Sleep Med. 2018;14(12):2075–2077.

36. Kirk V, Baughn J, et al. American Academy of Sleep Medicine Position Paper for the Use of a Home Sleep Apnea Test for the Diagnosis of OSA in Children. J Clin Sleep Med. 2017 Oct 15;13(10):1199-1203

37. Susheel P. Patil, MD, PhD1; Indu A. Ayappa, PhD2; Sean M. Caples, DO3; R. John Kimoff, MD4; Sanjay R. Patel, MD5; Christopher G. Harrod, MS6 Treatment of Adult Obstructive Sleep Apnea with Positive Airway Pressure: An American Academy of Sleep Medicine Clinical Practice Guideline, J Clin Sleep Med. 2019;15(2):335–343.

38. Certal VF, Zaghi S, Riaz M, et al. Hypoglossal nerve stimulation in the treatment of obstructive sleep apnea: A systematic review and meta-analysis. Laryngoscope. 2015 May;125(5):1254-64. Epub 2014 Nov 12

39. Strollo PJ Jr, Soose RJ, Maurer JT, et al. Upper-airway stimulation for obstructive sleep apnea. N Engl J Med. 2014 Jan 9; 370 (2):139-49

40. Woodson BT, Strohl KP, Soose RJ, et al. Upper Airway Stimulation for Obstructive Sleep Apnea: 5-Year Outcomes. Otolaryngol Head Neck Surg. 2018;159(1):194. Epub 2018 Mar 27

41. Kent DT, Carden KA, Wang L, et al. Evaluation of Hypoglossal Nerve Stimulation Treatment in Obstructive Sleep Apnea. JAMA Otolaryngol Head Neck Surg. 2019 Sep 26. doi: 10.1001/jamaoto.2019.2723.

42. Kenneth D. Weeks, Jr., MD, FACC, The Basics of Obstructive Sleep Apnea Nov 30, 2012

43. Roth GA, Poole JE, Zaha R, Zhou W, Skinner J, Morden NE. Use of Guideline-Directed Medications for Heart Failure Before Cardioverter-Defibrillator Implantation. J Am Coll Cardiol. 2016 Mar 8;67(9):1062-1069. doi: 10.1016/j.jacc.2015.12.046. PMID: 26940927; PMCID: PMC4780248. https://pubmed.ncbi.nlm.nih.gov/26940927/

44. Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE Jr, Colvin MM, Drazner MH, Filippatos GS, Fonarow GC, Givertz MM, Hollenberg SM, Lindenfeld J, Masoudi FA, McBride PE, Peterson PN, Stevenson LW, Westlake C. 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. J Card Fail. 2017 Aug;23(8):628-651. doi: 10.1016/j.cardfail.2017.04.014. Epub 2017 Apr 28. PMID: 28461259.

45. Yancy, Clyde W. MD, MSC, MACC, Chair, James L. Januzzi, JR, MD, FACC, Vice Chair 2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment: Answers to 10 Pivotal Issues About Heart Failure With Reduced Ejection Fraction

46. Aubertin, G. Continuous positive airway pressure in childhood obstructive sleep apnea syndrome J Dentofacial Anom Orthod 2015;18:309, DOI: 10.1051/odfen/2018102

47. Michelle S. King, MD, Melissa S. Xanthopoulos, PhD, and Carole L. Marcus, MBBCh, Improving Positive Airway Pressure Adherence in Children, *Sleep Med Clin*. 2014 June 1; 9(2): 219–234. doi:10.1016/j.jsmc.2014.02.003 Sleep Center, The Children's Hospital of Philadelphia, Perelman School of Medicine, University of Pennsylvania, 34th and Civic Center Boulevard, Philadelphia, PA 19104, USA

48. Shalini Paruthi, MD, Management of obstructive sleep apnea in children 1/14/2021.

49. CLINICAL PRACTICE GUIDELINE, Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome, American Academy of Pediatrics, www.pediatrics.org/cgi/doi/10.1542/peds.2012-1671 doi:10.1542/peds.2012-1671

50. Marcus, Carole L., Lee Jay Brooks, Kari A. Draper, David Gozal, Ann Carol Halbower, Jacqueline Jones, Michael S. Schechter, Stephen Howard Sheldon, Karen Spruyt, Sally Davidson Ward, Christopher Lehmann and Richard N. Shiffman, Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome, American Academy of Pediatrics, Pediatrics September 2012, 130 (3) 576-584; DOI: https://doi.org/10.1542/peds.2012-1671

51. Masip J. Non-invasive ventilation. *Heart Fail Rev*. 2007;12(2):119-124. doi:10.1007/s10741-007-9012-7

52. Freedman N. Treatment of Obstructive Sleep Apnea: Choosing the Best Positive Airway Pressure Device. *Sleep Med Clin*. 2017;12(4):529-542. doi:10.1016/j.jsmc.2017.07.003

53. Chatburn RL. Which ventilators and modes can be used to deliver noninvasive ventilation? *Respir Care*. 2009;54(1):85-101.

54. Antonescu-Turcu A, Parthasarathy S. CPAP and bi-level PAP therapy: new and established roles. *Respir Care*. 2010;55(9):1216-1229.

55. Local Coverage Determination (LCD) L38398: Hypoglossal Nerve Stimulation for the Treatment of Obstructive Sleep Apnea (L38387) effective 4/1/2020, National Government Services:

Local Coverage Determination (LCD): Hypoglossal Nerve Stimulation for the Treatment of Obstructive Sleep Apnea (L38385) effective 3/15/2020, Novitas Solutions:

Local Coverage Determination (LCD): Hypoglossal Nerve Stimulation for the Treatment of Obstructive Sleep Apnea (L38398) effective 3/15/2020, First Coast Options,

Local Coverage Determination (LCD): Hypoglossal Nerve Stimulation for the Treatment of Obstructive Sleep Apnea (L38528) effective 4/28/2022, Wisconsin Physicians Service Insurance Corporation,

Local Coverage Determination (LCD): Hypoglossal Nerve Stimulation for the Treatment of Obstructive Sleep Apnea (L38276) effective 6/21/2020, Palmetto GBA

56. Amanda Piper, PhD, Brendon Yee, MBChB, PhD, Clinical manifestations and diagnosis of obesity hypoventilation syndrome, Aug 22, 2019.

57. Global Strategy for the Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease (GOLD report 2020)

58. Cloutier MM, Dixon AE, Krishnan JA, Lemanske RF, Pace W, Schatz M. Managing Asthma in Adolescents and Adults: 2020 Asthma Guideline Update From the National Asthma Education and Prevention Program. *JAMA*. 2020;324(22):2301–2317. doi:10.1001/jama.2020.21974

59. American Heart Association AHA: https://www.heart.org/en/health-topics/arrhythmia/symptoms-diagnosis--monitoring-of-arrhythmia NHLBI: https://www.nhlbi.nih.gov/health-topics/arrhythmia

60. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016 US Department of Health and Human Services for Disease Control and Prevention, MMWR / March 15, 2016 / Vol. 65

61. American Academy of Sleep Medicine. (2007, February 12). Parasomnias Are Common And Frequent In

Children, Study Finds. *ScienceDaily*. Retrieved May 11, 2022 from

62. Vishesh K. Kapur, MD, MPH1; Dennis H. Auckley, MD2; Susmita Chowdhuri, MD3; David C. Kuhlmann, MD4; Reena Mehra, MD, MS5; Kannan Ramar, MBBS, MD6; Christopher G. Harrod, MS7Clinical Practice Guideline for Diagnostic Testing for Adult Obstructive Sleep Apnea: An American Academy of Sleep Medicine Clinical Practice Guideline (page 490)

63. Paruthi, Shalini, MD, Evaluation of suspected obstructive sleep apnea in children. This topic last updated April 15, 2022.

64. Verhulst SL, Schrauwen N, Haentjens D, Van Gaal L, De Backer WA, Desager KN. Reference values for sleep-related respiratory variables in asymptomatic European children and adolescents. Pediatr Pulmonol. 2007 Feb;42(2):159-67. doi: 10.1002/ppul.20551. PMID: 17186545.

65. Uliel S, Tauman R, Greenfeld M, Sivan Y. Normal polysomnographic respiratory values in children and adolescents. Chest. 2004 Mar;125(3):872-8. doi: 10.1378/chest.125.3.872. PMID: 15006944.

66. Michael S. Schechter, Section on Pediatric Pulmonology, Subcommittee on Obstructive Sleep Apnea Syndrome Technical Report: Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome Pediatrics Apr 2002, 109 (4) e69;

67. American Sleep Apnea: Children and Sleep Apnea, Updated March 28/2023

68. Merrill S. Wise, MD1; Cynthia D. Nichols, PhD2; Madeleine M., et al, Respiratory Indications for Polysomnography in Children: An Evidence-Based Review, *SLEEP, Vol. 34, No. 3, 2011*

69. Patrick J. Strollo, Jr., M.D., Ryan J. Soose, M.D., Joachim T. Maurer, M.D., Nico de Vries, M.D., et al., for the STAR Trial Group* Upper-Airway Stimulation for Obstructive Sleep Apnea, January 9, 2014 N Engl J Med 2014; 370:139-149 DOI: 10.1056/NEJMoa1308659

70. Stimulation Therapy for Apnea Reduction (Www.theSTARtrial.Com) (STAR) https://clinicaltrials.gov/ct2/show/NCT01161420

71. 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

72. Centers for Medicare and Medicaid Services National Coverage Analysis, Sleep Testing for Obstructive Sleep Apnea (OSA), CAG-00405N

73. Kent D, Stanley J, Aurora RN, et al. Referral of adults with obstructive sleep apnea for surgical consultation: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med.* 2021;17(12):2499–2505.

74. 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.

75. American Academy of Sleep Medicine Guidance on Obstructive Sleep Apnea

76. Hypoglossal Nerve Stimulation, https://masseyeandear.org/treatments/hypoglossal-nerve-stimulation

77. Al-Shamrani A, Alharbi AS. Diagnosis and management of childhood sleep-disordered breathing. Clinical approach. Saudi Med J. 2020 Sep;41(9):916-929. doi: 10.15537/smj.2020.9.25262. PMID: 32893273; PMCID: PMC7557559.

78. Principles and Practice of Sleep Medicine in the Child. Ferber and Kryger. W. B Saunders Co. 1995.

79. Quan SF, Schmidt-Nowara W. The role of dentists in the diagnosis and treatment of obstructive sleep apnea: consensus and controversy. *J Clin Sleep Med*. 2017;13(10):1117–1119

80. Sleep Related Breathing Disorders and the Chiari I Malformation. Roberta M. Leu, MD. Chest Vol 148 No 5 Nov 2015 p 1346-1352.

81. Sleep Disordered Breathing in Patients with Chiari Malformations Type II. Lazzareschi, Ilaria et. al. Journal of Clinical Sleep Medicine Vol 18, No 9, September 1, 2022, p 2143-2154.

82. Albdewi MA, Liistro G, El Tahry R. Sleep-disordered breathing in patients with neuromuscular disease. Sleep Breath. 2018 May;22(2):277-286. doi: 10.1007/s11325-017-1538-x. Epub 2017 Jul 12. PMID: 28702830.

83. Deak MC, Kirsch DB. Sleep-disordered breathing in neurologic conditions. Clin Chest Med. 2014 Sep;35(3):547-56. doi: 10.1016/j.ccm.2014.06.009. Epub 2014 Jul 25. PMID: 25156770.

84. Bosschieter PFN, Schoustra E, de Vries N, Steinbusch MJL, Kasius KM, Ravesloot MJL. Daytime polysomnography to perform titration for upper airway stimulation in patients with obstructive sleep apnea. Sleep Breath. 2022 Jun;26(2):707-715. doi: 10.1007/s11325-021-02441-w. Epub 2021 Jul 28. PMID: 34319499; PMCID: PMC8316890.

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 three 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.
6/8/2020	**Scheduled Review:** **Sleep Testing** Witnessed apnea as standalone risk condition for OSA Updated LVEF from 45 % to 40% for moderate to severe CHF OHS moved from sleep disordered breathing to comorbid condition list Align definition of PAP compliance with CMS Increase timeframe from 90 days to 1 year for allowance of HSAT Include implantation of hypoglossal nerve stimulator for testing reassessment of efficacy of device **Treatment of OSA and Other Sleep Disordered Breathing** Indication of bi-level therapy for non-OSA conditions Continued use criteria for bi-level therapy for non-OSA conditions Remove HNS from list of E/I **Updated definitions** **Updated references**
5/24/2021	**Scheduled Review:** Further defined the evidence supporting conditions requiring a lab based sleep study pertaining to: • COPD • Asthma • Refractory cardiac arrhythmia • Chronic opioid medication use • Significant oxygen desaturations during diagnostic testing • Update for requirements for replacement positive airway pressure devices (PAP) when broken and patient has been previously diagnosed with OSA and doing well on therapy. • Streamline and clarify sleep study re-testing for adults and children • Parasomnias in children Updated references Updated definitions
5/31/2022	Annual review, retitled policy to Diagnostic Testing Management with PAP removed to its own policy Add testing information pre and post hypoglossal nerve stimulation Update repeat criteria Removed APAP section and updated Full Night, Attended PAP Titration Study re: APAP Expanded pediatric indications for testing Updated references

06/20/23	Annual review Added statement regarding ordering and interpreting diagnostic testing. Updated Comorbid medical conditions Updated Secondary concomitant or associated sleep disorders Updated Repeat in-lab PAP Titration Updates to Post Diagnostic Testing following Hypoglossal Nerve Stimulation Implantation • Polysomnography done at 2 to 6 months post-implantation Updated references