



**2020 MAGELLAN CLINICAL GUIDELINES
FOR
MEDICAL NECESSITY REVIEW**

SLEEP STUDY GUIDELINES

Effective: January 2020

Guidelines for Clinical Review Determination

Preamble

Magellan is committed to the philosophy of supporting safe and effective treatment for patients. The medical necessity criteria that follow are guidelines for the provision of diagnostic imaging. These criteria are designed to guide both providers and reviewers to the most appropriate diagnostic tests based on a patient's unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice will be used when applying the guidelines. *Determinations are made based on both the guideline and clinical information provided at the time of the request.* It is expected that medical necessity decisions may change as new *evidence-based* information is provided or based on unique aspects of the patient's condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient.

Guideline Development Process

These medical necessity criteria were developed by Magellan Healthcare for the purpose of making clinical review determinations for requests for therapies and diagnostic procedures. The developers of the criteria sets included representatives from the disciplines of radiology, internal medicine, nursing, cardiology, and other specialty groups. *Magellan's guidelines are reviewed yearly and modified when necessary following a literature search of pertinent and established clinical guidelines and accepted diagnostic imaging practices.*

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All guidelines were reviewed between January 1, 2019 and September 15, 2019.

Prepared September 27, 2019

SLEEP STUDY GUIDELINES**94660 – Sleep Disorder Treatment Initiation and Management**

CPT Codes: 94660

INDICATIONS FOR SLEEP DISORDER TREATMENT INITIATION AND MANAGEMENT:

(ATS 2010, Epstein 2009, Kushida 2006, Kushida 2008)

- The patient has been diagnosed with sleep disordered breathing that would benefit from treatment using a positive airway pressure (PAP) device, AND all of the following:
 - The chief purpose of the office visit with the physician is to initiate PAP device treatment or address issues related to the PAP device
 - The patient requires education or problem solution related to the PAP device
 - The visit does not include discussion of other health issues beyond initiation and management of a PAP device.

NOTE: This service should not occur for the same patient on the same date as an evaluation and management service.

BACKGROUND:

Treatment of sleep disorders is often managed during standard evaluation and management services. The “Sleep Disorder Treatment Initiation and Management” service can be used when the only purpose for the office visit is for the implementation of, or issue resolution related to, a PAP device. Devices include Continuous Positive Airway Pressure (CPAP), Bi-Positive Airway Pressure (BiPAP), Auto-Adjusting Positive Airway Pressure (APAP), and Variable Positive Airway Pressure (VPAP).

Kapur, et al (2017) reported on an updated clinical practice guideline from the American Academy of Sleep Medicine. This updated guideline is based on a systematic review evaluated by a sleep medicine expert task force.

Based on expert consensus, implementation of the following is necessary for appropriate and effective management of patients with OSA treated with positive airway pressure: 1. Treatment of OSA with PAP therapy should be based on a diagnosis of OSA established using objective sleep apnea testing. 2. Adequate follow-up, including troubleshooting and monitoring of objective efficacy and usage data to ensure adequate treatment and adherence, should occur following PAP therapy initiation and during treatment of OSA. (Patil, 2019)

POLICY HISTORY:

Review Date: July 14, 2019

Review Summary:

- Additional background information has been added.

REFERENCES:

- American Thoracic Society (ATS). ATS: Coding & Billing Quarterly. Changes in Medicare Sleep Reimbursement. December 2010. Retrieved from <http://www.thoracic.org/clinical/coding-and-billing/resources/2010/december-2010.pdf>.
- 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; 5(3):263-276.
- Kapur VK, Auckley DH, Chowdhuri S, et al. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: An American Academy of Sleep Medicine Clinical Practice Guideline. *J Clin Sleep Med*. 2017; 13(3): 479-504.
- Kushida CA, Chediak A, Berry RB, et al. Positive pressure titration task force of the American Academy of Sleep Medicine. Clinical Guidelines for the manual titration of positive airway pressure in patients with obstructive sleep apnea. *J Clin Sleep Med*. 2008; 4(2):157-171.
- Kushida CA, Littner MR, Hirshkowitz M, et al. Practice parameters for the use of continuous and bilevel positive airway pressure devices to treat adult patients with sleep - related breathing disorders. *Sleep*. March 2006; 29(3):375-380.
- Patil SP, Ayappa IA, Caples SM, et al. 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.

95811 – Sleep Study, attended

CPT Codes: 95805, 95807, 95808, 95810, 95811

INDICATIONS FOR SLEEP STUDY, ATTENDED – ADULTS:

Evaluation of suspected sleep-related breathing disorders with an increased risk of moderate to severe obstructive sleep apnea (OSA) (Kapur, 2017; Collop, 2012)

Signs and symptoms including:

- Excessive daytime sleepiness
- **AND** any **TWO** of the following (AASM, 2017):
 - Habitual loud snoring
 - Witnessed apneas or gasping and choking
 - Diagnosed hypertension
 - BMI > 30 or large neck circumference (> 17 inches in men, > 16 inches in women)
- **AND** there is a contraindication for an unattended sleep study (Collop, 2007)

OR

- A member of a high-risk population, including: (Epstein, 2009)
 - Obesity (BMI > 35)
 - Congestive heart failure
 - Atrial fibrillation
 - Chronic kidney disease
 - Treatment refractory hypertension
 - Type 2 diabetes
 - Nocturnal dysrhythmias
 - Stroke
 - Pulmonary hypertension
 - High-risk driving populations
 - Preoperative for bariatric surgery
 - Craniofacial or upper airway soft tissue abnormalities, including:
 - Adenotonsillar enlargement
 - Modified Mallampati score of 3 or 4
 - Retrognathia
 - Lateral peritonsillar narrowing
 - Elongated/enlarged uvula
 - High arched/narrow hard palate
 - Nasal abnormalities (polyps, deviation, valve abnormalities, turbinate hypertrophy)
- **AND** any **TWO** of the following
 - Excessive daytime sleepiness (with Epworth Sleepiness Scale (ESS) score > 10) (Johns, 1991; Johns, 1997)
 - Habitual loud snoring

- Witnessed apneas or gasping and choking
- **AND** there is a contraindication for an unattended sleep study (Collop, 2007)

CONTRAINDICATIONS FOR A HOME SLEEP STUDY, UNATTENDED - ADULTS

Comorbid Medical Conditions
<ul style="list-style-type: none"> ● Moderate to severe pulmonary disease with: FEV1/FVC 0.7 and FEV1 less than 80% predicted, oxygen use, daytime hypercapnia or hypoxemia.
<ul style="list-style-type: none"> ● Obesity hypoventilation syndrome: BMI > 35 plus arterial blood gas with PCO₂ > 45, BMI > 35 plus inability to lie flat in bed, or BMI > 45
<ul style="list-style-type: none"> ● Chronic opiate medication use
<ul style="list-style-type: none"> ● Neuromuscular disease (e.g. Parkinson's disease, ALS, myotonic dystrophy, spina bifida)
<ul style="list-style-type: none"> ● Congestive Heart Failure: NYHA class III or IV, or LVEF less than 45%
<ul style="list-style-type: none"> ● Stroke
Comorbid Sleep Disorders, suspected
<ul style="list-style-type: none"> ● Periodic Limb Movement Disorder
<ul style="list-style-type: none"> ● Parasomnia
<ul style="list-style-type: none"> ● REM Behavior Disorder
<ul style="list-style-type: none"> ● Nocturnal seizures
<ul style="list-style-type: none"> ● Narcolepsy or idiopathic hypersomnia
<ul style="list-style-type: none"> ● Circadian Rhythm Disorder
<ul style="list-style-type: none"> ● Central sleep apnea or complex sleep apnea
<ul style="list-style-type: none"> ● Hypoventilation
<ul style="list-style-type: none"> ● Sleep-related hypoxemia
<ul style="list-style-type: none"> ● Severe insomnia
Technical Contraindications
<ul style="list-style-type: none"> ● Inability to follow instructions or lack of mobility or dexterity to use portable equipment and the absence of a competent caregiver
<ul style="list-style-type: none"> ● Previous negative or technically inadequate home sleep study*
Other
<ul style="list-style-type: none"> ● Low pre-test probability of sleep apnea**
<ul style="list-style-type: none"> ● Screening for asymptomatic individuals in high risk populations

* If a single home sleep study is inconclusive or technically inadequate or negative with continued clinical suspicion of OSA, an attended polysomnography (PSG) is recommended (Kapur, 2017).

** If there is a low pre-test probability of sleep apnea, but well documented ongoing concern for a sleep disorder causing functional impairment (i.e. upper airway resistance syndrome or mild OSA), PSG may be indicated.

Evaluation of suspected narcolepsy/idiopathic hypersomnia (Dauvillers, 2004; Guilleminault, 1998)

- A multiple sleep latency test (MSLT) is indicated in the evaluation of hypersomnia including narcolepsy and idiopathic hypersomnia (Aurora, 2012; Duvallier, 2004; Littner, 2005; Thorpy, 1992).

- PSG must be done on the night preceding MSLT to rule out other sleep disorders and to document adequate nocturnal sleep time (6 hours).
 - Narcolepsy is characterized by:
 - Excessive daytime sleepiness
 - Cataplexy
 - Hypnagogic hallucinations
 - Sleep paralysis
 - Idiopathic hypersomnia is characterized by:
 - Excessive daytime sleepiness despite adequate sleep in the absence of another sleep disorder
- All other indications for an MSLT are considered experimental and investigational since effectiveness for other indications has not been established.

Evaluation of suspected parasomnias and seizure disorders:

(Cao, 2010; Guilleminault, 2005; Kushida, 2005)

- Polysomnography with expanded bilateral montage and video recording is indicated for evaluation of patients with:
 - Suspected nocturnal seizures based on clinical history with abnormal or inconclusive EEG findings
 - Suspected REM sleep behavior disorder
 - Sleep behaviors suggestive of parasomnias (paroxysmal arousals and other sleep disruptions) that are unusual or atypical because of:
 - Patient's age at onset
 - Time, duration or frequency of occurrence
 - Behaviors that are violent or otherwise potentially injurious to the patient or others
 - Features of the motor patterns in question (e.g. stereotypical, repetitive, or focal)
 - Lack of response to conventional therapy

Evaluation of suspected periodic limb movement disorder:

(Martin, 2008; Montgomery-Downs, 2005; Montplaisir, 1997; ICSD, 2014; Kushida, 2005)

- Polysomnography is indicated when patient or an observer report repetitive limb movements during sleep with the following:
 - Frequent awakenings; **OR**
 - Difficulty maintaining sleep; **OR**
 - Excessive daytime sleepiness **AND**
 - No known concurrent untreated sleep disorder
- PSG is not indicated in other sleep related movement disorders (restless leg syndrome, bruxism, sleep related leg cramps, rhythmic movement disorder or sleep related myoclonus) unless another underlying sleep disorder is suspected.

INDICATIONS FOR CPAP TITRATION STUDIES AND FOLLOW-UP STUDIES:

Split night sleep study: (Kawaja, 2010; Kushida, 2008)

- In a split night study, the initial 2 or more hours of the PSG are used to diagnose OSA and the final portion is used to titrate continuous positive airway pressure (CPAP)

- A split-night study PSG is indicated when criteria for attended PSG is met and
 - The Apnea Hypopnea Index (AHI) is ≥ 15 in first 2 hours
 - There are 3 hours available to perform the CPAP titration (Kapur, 2017)

Indications for a follow-up attended CPAP/BiPAP titration study:

- Diagnostic portion of the split night study does not demonstrate an AHI of ≥ 15 , but the overall study reaches this threshold due to events occurring later in the night; **OR**
- AHI is between 5 and 15, and there is significant daytime sleepiness; **OR**
- During the titration portion of the split night the titration is not successful (there are residual apneas or hypopneas)

Indication for an attended sleep study following a home sleep test (HST):

- An attended sleep study following a HST is considered medically necessary if:
 - HST is technically inadequate (e.g. loss of signal through the night, bad recording due to patient device interface problem, etc.); **OR**
 - A single HST is inconclusive or negative with continued clinical suspicion of OSA, (Kapur, 2017); **OR**
 - HST is positive (AHI > 15) and an attended sleep study is needed for CPAP/BiPAP titration; **OR**
 - HST shows prolonged hypoxemia or central apnea

Indications for repeat sleep studies in patients with diagnosed OSA:

- A repeat attended study is considered medically necessary if there is an indication for an attended sleep study (above); otherwise, unattended (home) sleep studies are indicated
- Repeat sleep studies may be performed up to twice a year for:
 - Patients continuing to report symptoms (e.g. daytime sleepiness or snoring) despite adequate adherence (4 hours a night for 70 percent of nights over a 30 day period); **OR**
 - Patients requiring a change of device due to intolerance of current device; **OR**
 - Determining if positive airway pressure treatment settings need to be changed; **OR**
 - Determining if continued treatment with positive airway pressure treatment is necessary, such as following a significant weight loss or recurrent symptoms; **OR**
 - Assessing treatment response after upper airway surgical procedures, or initial treatment with oral appliances

INDICATIONS FOR SLEEP STUDY, ATTENDED – PEDIATRIC PATIENTS (< 18):

(Aurora, 2011; Aurora, 2012)

- Habitual snoring to differentiate primary snoring from obstructive sleep apnea syndrome (OSAS)
- Suspected congenital central alveolar hypoventilation syndrome
- Suspected sleep related hypoventilation due to neuromuscular disorders or chest wall deformities
- Following an apparent life-threatening event (ALTE) where there is clinical evidence of sleep-related breathing disorder
- In the following respiratory disorders only if there is a clinical suspicion for an accompanying sleep related breathing disorder: chronic asthma, cystic fibrosis, pulmonary hypertension, bronchopulmonary dysplasia, or chest wall abnormality such as kyphoscoliosis
- Neurological disorders (e.g., Down syndrome, Prader-Willi syndrome, and myelomeningocele)
- Children being considered for adenotonsillectomy to treat OSAS.
- Hypersomnia

- Suspected narcolepsy as suggested by the presence of:
 - Excessive daytime sleepiness
 - Cataplexy
 - Hypnagogic hallucinations
 - Sleep paralysis
- Suspected parasomnia or seizure disorders:
 - NREM parasomnias, epilepsy, or nocturnal enuresis when there is suspicion for co-morbid sleep disorder such as sleep-disordered breathing or PLMD
 - To confirm the diagnosis of an atypical or potentially injurious parasomnia or differentiate a parasomnia from sleep-related epilepsy
- Suspected restless leg syndrome or periodic limb movement disorder
 - When patient or an observer report repetitive limb movements during sleep along with: frequent awakenings, fragmented sleep, difficulty maintaining sleep, or excessive daytime sleepiness; or
 - To document periodic limb movements when PLMD or RLS is suspected

The following is not indicated:

- Polysomnography for management of oxygen therapy
- Nap (abbreviated) polysomnography
- Home (unattended) sleep studies
- PSG for sleep-related bruxism

INDICATIONS FOR TITRATION AND FOLLOW-UP STUDIES (Aurora, 2011)

- Positive airway pressure (PAP) titration in children with obstructive sleep apnea syndrome
- Children with OSAS treated with an oral appliance to assess response to treatment
- Following an adenotonsillectomy or other pharyngeal surgery for OSAS when **ANY** of the following is met (study should be delayed 6 to 8 weeks postoperatively):
 - Age younger than 3 years
 - Cardiac complications of OSAS (e.g., right ventricular hypertrophy)
 - Craniofacial anomalies
 - Failure to thrive
 - Neurological disorders; (e.g., Down syndrome, Prader-Willi syndrome, and myelomeningocele)
 - Obesity
 - Prematurity
 - Recent respiratory infection
 - Moderate to severe OSAS was present on preoperative PSG
 - Presence of symptoms of OSAS persisting after treatment
 - After rapid maxillary expansion
- Noninvasive positive pressure ventilation (NIPPV) titration in children with other sleep related breathing disorders
- Follow-up PSG in children on chronic PAP support to determine whether pressure requirements have changed due to
 - The child's growth and development (weight or craniofacial)
 - Recurrent symptoms while on PAP
 - Or if additional or alternate treatment is instituted

- Children treated with mechanical ventilation to adjust ventilator settings
- Children treated with tracheostomy for sleep related breathing disorders as part of the evaluation prior to decannulation

BACKGROUND:

Attended sleep studies or nocturnal polysomnography (PSG) are indicated to assess the following sleep related disorders:

- Sleep related breathing disorders (obstructive sleep apnea and central sleep apnea)
- Narcolepsy and idiopathic hypersomnia
- Parasomnias and seizure disorders
- Periodic limb movement disorder

Polysomnography requires a minimum of the following channels: Electroencephalogram (EEG), Electrooculogram (EOG), chin Electromyogram (EMG), air-flow, oxygen saturation, respiratory effort and heart rate, and are attended by a technologist (AASM, 2017). They are used for initial, repeat diagnosis as well as follow-up of therapeutic interventions for these conditions in the adult pediatric patients.

PAP titration (CPAP/BIPAP/APAP) - A cardiorespiratory sleep study without EEG recording is not recommended for PAP titration. PAP titration should include sleep staging and the ability to identify arousals to appropriately titrate PAP with a goal of the elimination or near elimination of apneas, hypopneas and respiratory related arousals in REM and NREM sleep, including REM sleep with the patient in the supine position (Epstein, 2009). Automatically titrating positive airway pressure (APAP) supplies variable pressure in response to acute or chronic changes (body position, sleep stage or weight changes) (Patil, 2019).

Daytime nap polysomnography (sometimes referred to as “PAP-nap”) is not considered medically necessary.

Maintenance of wakefulness test is considered investigational for members with symptoms suggestive of OSA because its effectiveness for this indication has not been established.

Epworth sleepiness scale: The Epworth sleepiness scale can be found at http://www.narcolepsynetwork.org/wp-content/uploads/2010/05/ESS_Form-052210.pdf.

Home sleep test (HST): Unattended (home) sleep studies are considered medically necessary for patients with symptoms suggestive of OSA when the home sleep study is used as part of a comprehensive sleep evaluation, using a Type II, Type III, or Type IV device measuring airflow. Home sleep tests are considered inappropriate for testing people with co-morbid conditions, people who are suspected of having sleep disorders other than obstructive sleep apnea (OSA), and those who are not in the category of high risk for moderate to severe OSA. There may be some situations in which home sleep test may require follow-up with an attended test when the home test is negative or there are other factors that contribute to a technical

failure. (See separate clinical guideline for “Sleep Study, Unattended” when that procedure requires authorization.)

Narcolepsy: For Narcolepsy, PSG must be done on the night preceding MSLT to rule out other sleep disorders and to document adequate nocturnal sleep time prior to daytime MSLT to help confirm diagnosis of narcolepsy and determine severity of daytime sleepiness

- Multiple Sleep Latency Testing (MSLT) includes minimum channels of EEG, EOG, chin EMG and ECG)
- The use of MSLT to support a diagnosis of narcolepsy is suspect if total sleep time on prior night sleep study is less than 6 hours
- MSLT should not be performed after a split night sleep study

OSA: Obstructive sleep apnea is characterized by recurrent episodes of upper airway obstruction and is linked with reductions in ventilation, resulting in repeated arousals and episodic oxyhemoglobin desaturations during sleep.

Central Sleep Apnea (CSA): The central sleep apnea syndrome is characterized by a lack of drive to breathe during sleep and there is a diminished or absent respiratory effort during cessation of airflow (Eckert, 2007).

Parasomnias and seizure disorders: Polysomnography for evaluation of parasomnias and seizure disorders includes minimum channels of EEG, EOG, chin EMG; (EEG using an expanded bilateral montage; and anterior tibialis or extensor digitorum EMG for body movements) and video with documented technologist observations.

- PSG is used to assist in the diagnosis of paroxysmal arousals or other sleep disruptions that are thought to be sleep related seizures when initial clinical evaluation and standard EEG are inconclusive.
- PSG is not routinely indicated in cases of typical, uncomplicated, non-injurious parasomnias when the diagnosis is clearly delineated.
- For pediatric patients, studies have indicated that there is a significant prevalence of sleep disordered breathing, ranging from 58% to 100% on PSG in children with chronic NREM parasomnias.

Periodic limb movement disorder: Polysomnography for the evaluation of periodic limb movement disorder includes minimum channels of EEG, EOG, chin EMG, and left and right anterior tibialis EMG AND respiratory effort, airflow and oximetry.

Split-night study: A split-night study must be used unless criteria are met for a second night titration study (see above in “split night study” section). A split night study is expected for most attended PSGs. In a split night sleep study, the diagnosis of OSA is established in the first half of the night and the optimal CPAP pressure is determined during the second half of the night, if the Apnea+ Hypopnea Index (AHI) is > 15 in the first 2 hours of the diagnostic portion of the study.

Types/Levels: Sleep studies refer to the continuous and simultaneous recording of various physiological parameters of sleep followed by physician review and interpretation, performed in the diagnosis and management of sleep disorders. Sleep studies have been classified based on the number and type of

physiologic variables recorded and whether or not the study is attended by a technologist or performed with portable equipment in the home or some other unattended setting

The types of sleep studies are as follows:

Type(Level)	Description
I	Standard polysomnography (PSG) with a minimum of 7 parameters measured, including EEG, EOG, chin EMG, and ECG, as well as monitors for airflow, respiratory effort, and oxygen saturation. A sleep technician is in constant attendance.
II	Comprehensive portable PSG studies that measure the same channels as type I testing, except that a heart rate monitor can replace the ECG and a sleep technician is not necessarily in attendance.
III	Monitor and record a minimum of 4 channels and must record ventilation (at least two channels of respiratory movement, or respiratory movement and airflow), heart rate or ECG, and oxygen saturation. A sleep technician is not necessarily in constant attendance but is needed for preparation.
IV	Three or more channels, one of which is airflow. Other measurements include oximetry and at least 2 other parameters (e.g. body position, EOG, peripheral arterial tonometry (PAT) snoring, actigraphy, airflow). A sleep technician is not necessarily in attendance but is needed for preparation.

Type II, Type III and Type IV devices are used for unattended home sleep studies. Type III and Type IV devices do not include sleep EEG recording channels and do not measure sleep. Therefore, when Type III and Type IV devices are used, AHI is calculated by dividing the total number of apneas + hypopneas by the total recording time.

- **Treatment of OSA:** Treatment of OSA requires the use of positive airway pressure devices to provide a pneumatic splint to maintain upper airway patency during sleep. PAP devices can deliver continuous positive airway pressure (CPAP), bi-level positive airway pressure (BPAP), where there is a difference in inspiratory and expiratory positive pressure, or automatically titrating positive pressure (APAP). Prior to the initiation of PAP therapy with CPAP or BPAP, pressure levels must be titrated in an attended setting, either at the time of a diagnostic attended sleep study (so called Split night testing) or on a separate PAP titration study.
- **Consequences of OSA:** The most significant consequences of sleep apnea include neurocognitive and cardiovascular effects. Excessive daytime sleepiness, difficulties with concentration and memory, decreased libido, and irritability result from OSA and sleep fragmentation. Motor vehicle accidents are more common among patients with sleep apnea compared with normal controls and the degree of driving impairment is similar to what is seen in drivers who are impaired by alcohol consumption (Tragear, 2009). Patients with OSA are at increased risk for cardiovascular consequences including hypertension, coronary artery disease and heart failure, nocturnal cardiac arrhythmias, stroke, and death (Shahar, 2001).

- **AHI/RDI:** After physician review and interpretation of the data recorded in sleep studies, the total number, type, and rate of occurrence of apneas (cessation of breathing for at least 10 seconds) and hypopneas (reduction, but not cessation of airflow with an associated fall in oxygen saturation of 3 to 4% or an arousal) are reported and the number of events per hour, the Apnea/Hypopnea Index (AHI) or respiratory disturbance index (RDI) is calculated to classify the severity of OSA:

Severity of OSA in adults > 18 years old	
AHI= 5-15/hr	Mild OSA
AHI= 15-30/hr	Moderate OSA
AHI= > 30/hr	Severe OSA

An AHI of 15 or more/hr of sleep even in the absence of sleep related symptoms is sufficient for the diagnosis of sleep apnea and warrants treatment due to a greater association of this level of sleep disordered breathing with consequences such as increased cardiovascular risk (Epstein, 2009).

New York Heart Association (NYHA) Functional Classes (Dolgin, 1994)

Class	Patient Symptoms
Class I (Mild)	Cardiac disease, but no symptoms and no limitation in ordinary physical activity, e.g. shortness of breath when walking, climbing stairs, etc.
Class II (Mild)	Mild symptoms (mild shortness of breath and/or angina) and slight limitation during ordinary activity.
Class III (Moderate)	Marked limitation in activity due to symptoms, even during less-than-ordinary activity, e.g. walking short distances (20–100 m). Comfortable only at rest.
Class IV (Severe)	Severe limitations. Experiences symptoms even while <i>at rest</i> . Mostly bedbound patients.

POLICY HISTORY:

Review Date: July 12, 2019

Review Summary:

- Revised the criteria for sleep apnea to correspond to a high pre-test probability population
- Changes to contraindication table to assure accord between attended and unattended sleep study guidelines
- EEG being required before parasomnias removed
- REM sleep behavior disorder added as an indication
- Revised the criteria for attended sleep study following a home sleep study
- Pediatric indications added respiratory disorders with suspicion for sleep apnea, neurologic disorders such as Prader Willi
- Deleted section identifying experimental and investigational indications.

REFERENCES:

American Academy of Sleep Medicine (AASM). AASM Manual for the Scoring of Sleep and Associated Events v2.4. Published 2017. Retrieved from: <https://aasm.org/clinical-resources/scoring-manual/>. Accessed March 16, 2018.

Agency for Healthcare Policy and Research (AHCPR). Systematic review of the literature regarding the diagnosis of sleep apnea. Evidence Report/Technology Assessment No. 1. AHCPR No. 99E002; Bethesda, MD. Published December 1998.

Agency for Healthcare Research and Quality (AHRQ). Technology Assessment Program. Effectiveness of portable monitoring devices for diagnosing obstructive sleep apnea: Update of a systematic review. Technology Assessment: Final Report. Rockville, MD; RTI International for AHRQ. Published September 2004. Retrieved from: <https://www.cms.hhs.gov/mcd/viewtrackingsheet.asp?id=110>.

American Academy of Pediatrics (AAP). Clinical practice guideline: Diagnosis and management of Obstructive Sleep Apnea in Adults. *Pediatrics*. 2002; 109(4):124-145.

American Sleep Disorders Association (ASDA). Standards of Practice Committee, Polysomnography Task Force. Practice parameters for the indications for polysomnography and related procedures. *Sleep*. 1997; 20(6): 406-422.

Aurora RN, Lamm CI, Zak RS, et al. Practice parameters for the non-respiratory indications for polysomnography and multiple sleep latency testing for children. *Sleep*. 2012; 35(11):1467-1473.

Aurora RN, Zak RS, Karippot A, et al. Practice parameters for the respiratory indications for polysomnography in children. *Sleep*. 2011; 34(3):379-388.

Cao M, Guilleminault C. Families with sleepwalking. *Sleep Med*. 2010; 11:726-34.

Centers for Medicare & Medicaid Services (CMS). Continuous positive airway pressure (CPAP). Medicare Coverage Issues Manual §6017. Baltimore, MD; 2002.

Chesson AL Jr, Berry RB, Pack A. Practice parameters for the use of portable monitoring devices in the investigation of suspected obstructive sleep apnea in adults. *Sleep*. 2003; 26(7).

Chesson AL, Ferber RA, Fry JM, et al. Practice parameters for the indications for polysomnography and related procedures. *Sleep*. 1997; 20:406-422.

Collop NA, Anderson WM, Boehlecke B, et al. Clinical guidelines for the use of unattended portable monitors in the diagnosis of obstructive sleep apnea in adult patients. *J Clin Sleep Med*. 2007; 3(7):737-47.

Dauvillers Y, Gosselin A, Paquet J, et al. Effect of age on MSLT results in patients with narcolepsy-cataplexy. *Neurology*. January 2004; 62(1):46-50.

Epstein LJ, Kristo D, Strollo PJ Jr, et al. Clinical guideline for the evaluation, management and long term care of obstructive sleep apnea in adults. Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. *J Clin Sleep Med*. 2009; 5(3):263-276.

Eckert DJ, Jordan AS, Merchia P, Malhotra A. Central sleep apnea: Pathophysiology and treatment. *Chest*. 2007; 131(2):595–607.

Guilleminault C, Lee JH, Chan A, et al. Non-REM-sleep instability in recurrent sleepwalking in pre-pubertal children. *Sleep Med*. 2005; 6:515-521.

Guilleminault C, Pelayo R. Narcolepsy in prepubertal children. *Ann Neurol*. 1998; 43:135-142.

Johns MW. A new method for measuring daytime sleepiness: The Epworth sleepiness scale. *Sleep*. 1991; 14(6):540-545.

Kapur VK, Auckley DH, Chowdhuri S, et al. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: An American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med*. 2017; 13:479-504.

Khawaja IS, Olson EJ, Van Der Walt C, et al. Diagnostic accuracy of split-night polysomnograms. *J Clin Sleep Med*. 2010; 6(4):357-362.

Kundel V, Shah N. Impact of Portable Sleep Testing. *Sleep Med Clin*. 2017; 12(1):137–147.

Kushida CA, Chediak A, Berry RB, et al. Clinical guidelines for the manual titration of positive airway pressure in patients with obstructive sleep apnea. Positive Pressure Titration Task Force of the American Academy of Sleep Medicine. *J Clin Sleep Med*. 2008; 4(2):157-171.

Kushida CA, Littner MR, Hirshkowitz M, et al. Practice parameters for the use of continuous and bilevel positive airway pressure devices to treat adult patients with sleep - related breathing disorders. *Sleep*. 2006; 29(3):375-380.

Kushida CA, Littner M, Morgenthaler TI, et al. Practice parameters for the indications for polysomnography and related procedures: An update for 2005. *Sleep*. 2005; 28(4):499-521.

Littner M, Kushida CA, Wise M, et al. Practice parameters for the clinical use of multiple sleep latency test and the maintenance of wakefulness test. *Sleep*. 2005; 28(1):113-121.

Loube DI, Gay PC, Strohl KP, et al. Indications for positive airway pressure treatment of adult obstructive sleep apnea patients: A consensus statement. *Chest*. 1999; 115(3):863-866.

Martin BT, Williamson BD, Edwards N, et al. Parental symptom report and periodic limb movements of sleep in children. *J Clin Sleep Med*. 2008; 4:57-61.

Montgomery-Downs HE, Crabtree VM, Gozal D. Actigraphic recordings in quantification of periodic leg movements during sleep in children. *Sleep Med.* 2005; 6:325-332.

Montplaisir J, Boucher S, Poirier G, et al. Clinical, polysomnographic, and genetic characteristics of restless legs syndrome: A study of 133 patients diagnosed with new standard criteria. *Mov Disord.* 1997; 12(1):61-65.

Patil SP, Schneider H, Schwartz AR. Adult obstructive sleep apnea pathophysiology and diagnosis. *Chest.* 2007; 132:325–337.

Patil SP, Ayappa IA, Caples SM, et al. 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.

Qaseem A, Dallas P, Owens DK, et al. Diagnosis of obstructive sleep apnea in adults: A clinical practice guideline from the American College of Physicians. *Ann Intern Med.* 2014; 161:210-220.

Ramar K, Dort LC, Katz SG, et al. Clinical practice guideline for the treatment of obstructive sleep apnea and snoring with oral appliance therapy: An update for 2015. *J Clin Sleep Med.* 2015; 11(7):773–827.

Thorpy MJ. The clinical use of the multiple sleep latency test. Standards of Practice Committee of the American Sleep Disorders Association Report. *Sleep.* 1992; 15(3):268-276.

Sateia MJ. International classification of sleep disorders-third edition: highlights and modifications. *Chest.* 2014 Nov; 146(5):1387-1394.

95806 – Sleep Study, Unattended

CPT Codes: 95800, 95801, 95806, G0398, G0399, G0400

INDICATIONS FOR HOME SLEEP STUDY, UNATTENDED - ADULTS (Collop, 2007; Kapur, 2017)

- Home sleep testing (HST) for obstructive sleep apnea (OSA) should be performed in conjunction with a comprehensive sleep evaluation and adequate follow-up. A comprehensive sleep evaluation should include a sleep history (snoring, apneas, daytime sleepiness), BMI, neck circumference, cardiopulmonary examination, and identification of comorbid sleep disorders and medical conditions.

Suspected Obstructive Sleep Apnea in adults >18 years old

For evaluation of suspected sleep-related breathing disorders with an increased risk of moderate to severe obstructive sleep apnea (Kapur, 2017; Collop, 2012):

Signs and symptoms including:

- Excessive daytime sleepiness
- **AND** any **TWO** of the following:
 - Habitual loud snoring
 - Witnessed apneas or gasping and choking
 - Diagnosed hypertension
 - BMI > 30 or large neck circumference (> 17 inches in men, > 16 inches in women)
- **AND** there are no contraindications to a home sleep study (Collop, 2007)

OR

- A member of a high-risk population, including (Epstein, 2009):
 - Obesity (BMI > 35)
 - Congestive heart failure, Class I or II
 - Atrial fibrillation
 - Chronic kidney disease
 - Treatment refractory hypertension
 - Type 2 diabetes
 - Nocturnal dysrhythmias
 - Pulmonary hypertension
 - High-risk driving populations
 - Preoperative for bariatric surgery
 - Craniofacial or upper airway soft tissue abnormalities, including:
 - Adenotonsillar enlargement
 - Modified Mallampati score of 3 or 4
 - Retrognathia
 - Lateral peritonsillar narrowing

- Elongated/enlarged uvula
- High arched/narrow hard palate
- Nasal abnormalities (polyps, deviation, valve abnormalities, turbinate hypertrophy)
- **AND** any **TWO** of the following
 - Excessive daytime sleepiness (with Epworth Sleepiness Scale (ESS) score > 10) (Johns, 1991, 1997)
 - Habitual loud snoring
 - Witnessed apneas or gasping and choking
- **AND** there are no contraindications to a home sleep study (Collop, 2007)

CONTRAINDICATIONS FOR HOME SLEEP STUDY, UNATTENDED - ADULTS

Comorbid Medical Conditions
• Moderate to severe pulmonary disease with: FEV1/FVC 0.7 and FEV1 less than 80% predicted, oxygen use, daytime hypercapnia or hypoxemia
• Obesity hypoventilation syndrome: BMI > 35 plus arterial blood gas with PCO ₂ > 45, BMI > 35 plus inability to lie flat in bed, or BMI > 45
• Chronic opiate medication use
• Neuromuscular disease (e.g. Parkinson's disease, ALS, myotonic dystrophy, spina bifida)
• Congestive Heart Failure: NYHA class III or IV, or LVEF less than 45%
• Stroke
Comorbid Sleep Disorders Suspected
• Periodic limb movement disorder
• Parasomnia
• REM behavior disorder
• Nocturnal seizures
• Narcolepsy or idiopathic hypersomnia
• Circadian rhythm disorder
• Central sleep apnea or complex sleep apnea
• Hypoventilation
• Sleep-related hypoxemia
• Severe insomnia
Technical Contraindications
• Inability to follow instructions or lack of mobility or dexterity to use portable equipment and the absence of a competent caregiver
• Previous negative or technically inadequate home sleep study*
Other
• Low pre-test probability of sleep apnea
• Screening for asymptomatic individuals in high risk populations

* If a single home sleep study is inconclusive or technically inadequate or negative with continued clinical suspicion of OSA, an attended polysomnography (PSG) is recommended (Kapur, 2017)

- HST may be indicated for the diagnosis of OSA in patients for whom in-laboratory PSG is not possible due to immobility, safety, or critical illness (Collop, 2007)

INDICATIONS FOR REPEAT HOME SLEEP STUDY

Previously diagnosed OSA and a re-evaluation is required for the following:

- Response to upper airway surgical procedures **OR**
- Response after initial treatment with oral appliances **OR**
- Appropriateness of PAP after either gain or loss of $\geq 10\%$ of body weight

A technically adequate home sleep apnea testing device incorporates a minimum of the following sensors: nasal pressure, chest and abdominal respiratory inductance plethysmography, and oximetry; or else PAT with oximetry and actigraphy.

A technically adequate diagnostic test includes a minimum of 4 hours of technically adequate oximetry and flow data obtained during a recording attempt that encompasses the habitual sleep period.

A single home sleep study recording is conducted over at least one night (Kapur, 2017).

BACKGROUND:

OSA is a common disorder and is associated with significant morbidity and mortality. Recent epidemiologic data have demonstrated that the prevalence of moderate to severe sleep-disordered breathing is 10% among 30-49-year-old men, 17% among 50-70-year-old men, 3% among 30-49-year-old women, and 9% among 50-70 year-old women. These percentages are substantially increased from previously reported studies (Young, 1993; Peppard, 2013). OSA is caused by recurrent complete or partial upper airway obstruction during sleep, resulting in loud snoring or apnea frequently reported by a bed partner, episodes of gasping or choking, and associated frequent awakenings from sleep. The increase in prevalence of OSA is likely largely attributable to the rising rates of obesity in the United States, as obesity is often associated with a narrowed upper airway. There are several neurocognitive and cardiovascular effects of untreated sleep apnea.

The diagnosis of OSA is made by clinical evaluation and confirmed by sleep testing. Unattended home sleep studies are indicated to confirm the diagnosis of sleep apnea as part of a comprehensive sleep evaluation. This guideline outlines the indications and contra-indications for unattended home sleep studies in adults with suspected OSA.

Types/Levels: Sleep studies refer to the continuous and simultaneous recording of various physiological parameters of sleep and breathing. Sleep studies have been classified based on the number and type of physiologic variables recorded and whether or not the study is attended by a technologist or performed using portable equipment in the home or some other unattended setting.

The types of sleep studies are as follows:

Type(Level)	Description
I	Standard PSG with a minimum of 7 parameters measured, including electroencephalogram (EEG), electroculogram (EOG), electromyogram (EMG),

	and electrocardiogram (ECG), as well as monitors for airflow, respiratory effort, and oxygen saturation. A sleep technician is in constant attendance.
II	Comprehensive portable PSG studies that measure the same channels as type I testing, except that a heart rate monitor can replace the ECG and a sleep technician is not necessarily in attendance.
III	Monitor and record a minimum of 4 channels and must record ventilation (at least two channels of respiratory movement, or respiratory movement and airflow), heart rate or ECG, and oxygen saturation. A sleep technician is not necessarily in constant attendance but is needed for preparation.
IV	Three or more channels, one of which is airflow. Other measurements include oximetry and at least 2 other parameters (e.g. body position, EOG, peripheral arterial tonometry (PAT) snoring, actigraphy, airflow). A sleep technician is not necessarily in attendance but is needed for preparation.

Type II, Type III, and Type IV devices are used for unattended home sleep studies. Type III and Type IV devices do not include sleep EEG recording channels and do not measure sleep. Therefore, when Type III and Type IV devices are used, AHI is calculated by dividing the total number of apneas + hypopneas by the total recording time.

- **Continuous Positive Airway Pressure (CPAP) Titration:** A cardiorespiratory sleep study without EEG recording is not recommended for CPAP titration. CPAP titration should include sleep staging and the ability to identify arousals to appropriately titrate CPAP with a goal of the elimination or near elimination of apneas, hypopneas and respiratory related arousals in REM and NREM sleep, including REM sleep with the patient in the supine position (Epstein, 2009).

New York Heart Association (NYHA) Functional Classes (Dolgin 1994)

Class	Patient Symptoms
Class I (Mild)	Cardiac disease, but no symptoms and no limitation in ordinary physical activity, e.g. shortness of breath when walking, climbing stairs, etc.
Class II (Mild)	Mild symptoms (mild shortness of breath and/or angina) and slight limitation during ordinary activity.
Class III (Moderate)	Marked limitation in activity due to symptoms, even during less-than-ordinary activity, e.g. walking short distances (20–100 m). Comfortable only at rest.
Class IV (Severe)	Severe limitations. Experiences symptoms even while <i>at rest</i> . Mostly bedbound patients.

- **Unattended Sleep Study - Home Sleep Test (HST) vs. Attended Sleep Study:** When a Sleep Study, Unattended (i.e. HST) is a covered benefit, the health plan may require use of the unattended study unless the patient has contraindications or co-morbidities that would require an attended sleep study. Home Sleep Tests are considered inappropriate for testing people with co-morbid conditions, people

who are suspected of having sleep disorders other than OSA, and those who are not in the category of high risk for moderate to severe OSA. There may be some situations in which a home sleep test may require follow-up with an attended test when the home test is negative or there are other factors that contribute to a HST failure.

- **AHI/RDI:** After physician review and interpretation of the data recorded in sleep studies, the total number, type, and rate of occurrence of apneas (cessation of breathing for at least 10 seconds) and hypopneas (reduction, but not cessation of airflow with an associated fall in oxygen saturation of 3 to 4% or an arousal) are reported and the number of events per hour, the Apnea/Hypopnea Index (AHI) or respiratory disturbance index (RDI) is calculated to classify the severity of OSA:

Severity of OSA in adults > 18 years old	
AHI= 5-15/hr	Mild OSA
AHI= 15-30/hr	Moderate OSA
AHI= >30/hr	Severe OSA

An AHI of 15 or more/hr of sleep even in the absence of sleep related symptoms is sufficient for the diagnosis of sleep apnea and warrants treatment due to a greater association of this level of sleep disordered breathing with consequences such as increased cardiovascular risk (Epstein, 2009).

The terms RDI/AHI have been defined differently when used with Home Sleep Testing than when used with PSG. RDI/AHI is the number of apneas + hypopneas/total recording time, rather than the total sleep time since sleep parameters are not recorded with type III and IV devices. As a result, home sleep testing is more likely to underestimate the severity of events compared to the RDI/AHI by PSG. Due to this risk of false negative HST tests, in laboratory PSG should be performed in cases where HST is technically inadequate or fails to establish the diagnosis of OSA in patients with a high pre-test probability.

- **Treatment of OSA:** Treatment of OSA requires the use of positive airway pressure devices to provide a pneumatic splint to maintain upper airway patency during sleep. PAP devices can deliver continuous positive airway pressure (CPAP), bi-level positive airway pressure (BPAP), where there is a difference in inspiratory and expiratory positive pressure, or automatically titrating positive pressure (APAP). Prior to the initiation of PAP therapy with CPAP or BPAP, pressure levels must be titrated in an attended setting, either at the time of a diagnostic attended sleep study (so called Split night testing) or on a separate PAP titration study.
- **Consequences of OSA:** The most significant consequences of sleep apnea include neurocognitive and cardiovascular effects. Excessive daytime sleepiness, difficulties with concentration and memory, decreased libido, and irritability result from OSA and sleep fragmentation. Motor vehicle accidents are more common among patients with sleep apnea compared with normal controls and the degree of driving impairment is similar to what is seen in drivers who are impaired by alcohol consumption (Tragear, 2009). Patients with OSA are at increased risk for cardiovascular consequences including hypertension, coronary artery disease and heart failure, nocturnal cardiac arrhythmias, stroke, and death (Shahar, 2001).

POLICY HISTORY:

Review Date: July 12, 2019

Review Summary:

- Revised the criteria for sleep apnea to correspond to a high pre-test probability population
- Changes to contraindication table to assure accord between attended and unattended sleep study guidelines]
- Clarified that HST should be performed in conjunction with a comprehensive sleep evaluation and adequate follow-up
- Revised the indications for a repeat HST to remove indication for pressure setting evaluation

REFERENCES:

- Collop NA, Anderson WM, Boehlecke B, et al. Clinical guidelines for the use of unattended portable monitors in the diagnosis of obstructive sleep apnea in adult patients. *J Clin Sleep Med*. 2007; 3(7):737-747.
- Collop N. Home sleep testing: appropriate screening is the key. *Sleep*. 2012; 35(11):1445–1446.
- Dolgin, M. *Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels*. 9th ed. Boston, Massachusetts: Little, Brown & Co.; 1994:253-256.
- Epstein LJ, Kristo D, Strollo PJ, et al. Clinical guideline for the evaluation, management and long term care of obstructive sleep apnea in adults. *J Clin Sleep Med*. 2009; 5(3):263-276.
- Kapur VK, Auckley DH, Chowdhuri S, et al. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med*. 2017; 13:479-504.
- Kirk V, Baughn J, D'Andrea L, 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; 13(10):1199–1203.
- Kundel V, Shah N. Impact of Portable Sleep Testing. *Sleep Med Clin*. 2017; 12(1):137–147.
- Peppard PE, Young T, Barnet JH, et al. Increased prevalence of sleep-disordered breathing in adults. *Am J Epidemiol*. 2013; 177:1006-1014.
- Shahar E, Whitney CW, Redline S, et al. Sleep-disordered breathing and cardiovascular disease: Cross-sectional results of the Sleep Heart Health Study. *Am J Respir Crit Care Med*. 2001; 163:12-25.
- Tragear S, Reston J, Schoelles K, et al. Obstructive sleep apnea and risk of motor vehicle crash: Systematic review and meta-analysis. *J Clin Sleep Med*. 2009; 5:573-581.
- Young T, Palta M, Dempsey J, et al. The occurrence of sleep disordered breathing among middle aged adults. *N Engl J Med*. 1993; 328:1230-1235.

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