

Medical Policy

Polysomnography (PSG) (Sleep Studies), Sleep Center

Policy Number: 1036

Policy History

Approve Date:	07/09/2018	Effective Date:	07/09/2018
Reviewed/Revised Dates:	07/15/2019, 06/23/2020		

Preauthorization

All Plans	Benefit plans vary in coverage and some plans may not provide coverage for certain service(s) listed in this policy. Decisions for authorization are subject to all terms and conditions of the applicable benefit plan, including specific exclusions and limitations as well as applicable state and/or federal laws. Please review the benefit plan descriptions for details.
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Policy

Indications of Coverage

- I. In lab sleep studies may be indicated for one or more of the following:
 - A. Adult with obstructive sleep apnea, suspected, as indicated by ALL of the following (i and ii):
 - i. Portable or home sleep study is not appropriate, as indicated by one or more of the following:
 1. Complex Sleep Disorder, suspected (e.g., narcolepsy, cataplexy, periodic limb movement disorder)
 2. Home sleep study services are not available
 3. Patient is unable to properly operate or tolerate home study equipment
 4. Previous home sleep study results were negative or inadequate for suspected obstructive sleep apnea or upper airway resistance syndrome
 5. Significant chronic obstructive pulmonary disease or other lung disease
 6. Significant heart failure
 7. Significant neurologic or neuromuscular disease
 - ii. Signs or symptoms suggestive of moderate-risk to high-risk obstructive sleep apnea, including one or more of the following:
 1. Epworth sleepiness score of 10 or greater
 2. Excessive daytime sleepiness, fatigue, or awakening with gasping or choking, and high risk for injury, as indicate by one or more of the following:
 - a. Falling asleep while driving
 - b. Patient is a commercial vehicle driver
 3. Excessive daytime sleepiness, fatigue, or awakening with gasping or choking, and significant risk factor for sleep apnea as indicated by one or more of the following:
 - a. BMI greater than 30
 - b. Hypertension
 4. Hypertension that is uncontrolled despite three drug regimen that includes diuretic
 5. Observed apnea or choking episodes
 6. Significant oxygen desaturation on overnight pulse oximetry
 7. Snoring
 - B. Adult with obesity hypoventilation syndrome, suspected, as indicated by ALL of the following (i – v):
 - i. BMI greater than 30

- ii. Daytime hypercapnia with PaCo₂ of 45 mm Hg (6.0 kPa) or greater
 - iii. Daytime hypoxemia with PaO₂ of 70 mm Hg (9.3 kPa) or less
 - iv. Normal TSH level
 - v. No evidence of chronic obstructive pulmonary disease by pulmonary function tests (e.g., normal FEV₁/FVC ratio)
- C. Child, infant, or neonate with obstructive sleep apnea, suspected, and one or more of the following:
- i. Adenoid or tonsillar enlargement and adenotonsillectomy is being considered for treatment
 - ii. Craniofacial malformation
 - iii. Down Syndrome
 - iv. Neuromuscular disorder
 - v. Signs and symptoms consistent with obstructive sleep apnea, including one or more of the following:
 - 1. Daytime sleepiness
 - 2. Enuresis
 - 3. Failure to thrive (weight less than fifth percentile for age)
 - 4. Hypo nasal speech
 - 5. Mouth breathing
 - 6. Nonspecific behavioral problems (e.g., hyperactivity, developmental delay, aggression, poor school performance)
 - 7. Nocturnal pauses in breathing
 - 8. Pulmonary hypertension
 - 9. Signs of increased respiratory effort (e.g., nasal flaring)
 - 10. Snoring
- D. Insomnia and one or more of the following:
- i. Inadequate response to treatment of insomnia by neurologist or sleep specialist
 - ii. Periodic limb movement disorder
 - iii. Precipitous arousals with injurious behavior
 - iv. Sleep related breathing disorder, suspected, as indicated by one or more of the following:
 - 1. Excessive daytime sleepiness
 - 2. Observed apnea or choking episodes
 - 3. Snoring
- E. Narcolepsy, suspected, as indicated by ALL of the following (i and ii):
- i. Signs or symptoms suggestive of narcolepsy, as indicated by one or more of the following:
 - 1. Cataplexy (e.g., episode of sudden bilateral loss of postural tone associated with intense emotion)
 - 2. Excessive daytime sleepiness
 - 3. Hallucinations with sleep onset (hypnagogic) or upon awakening (hypnopompic)
 - 4. Recurrent daytime naps or lapses into sleep for over three month period
 - 5. Sleep paralysis (e.g., brief episodic loss of voluntary movement that occurs during period of falling asleep or when awakening)
 - ii. Sleep study precedes multiple sleep latency test (MSLT)
- F. Parasomnia as indicated by one or more of the following:
- i. Confusional arousal
 - ii. Inadequate response to treatment
 - iii. New onset in an adult
 - iv. Sleep related eating disorder
 - v. Sleep terrors (severe)
- G. Periodic limb movement disorder and one or more of the following:
- i. Excessive daytime sleepiness
 - ii. Observed apnea or choking episodes
 - iii. Patient or bed partner notes limb movements during sleep
 - iv. Snoring
- H. Postoperative assessment needed after performance of surgery to treat sleep apnea in a child, as indicated by one or more of the following:

- i. Apnea-hypopnea index (AHI) or respiratory disturbance index (RDI) 20 or greater on preoperative sleep study
 - ii. BMI greater than 95th percentile for age
 - iii. Craniofacial anomalies that obstruct upper airway
 - iv. Neurologic disorder (e.g., Down syndrome, Prader-Willi syndrome, myelomeningocele)
 - v. Persistent apnea witnessed after surgery
 - vi. Rapid maxillary expansion
- I. Restless leg syndrome and one or more of the following:
- i. Excessive daytime sleepiness
 - ii. Inadequate response to treatment
 - iii. Observed apnea or choking episodes
 - iv. Snoring

Note: If the member meets all of the criteria for an in lab sleep study, it is standard practice and thought to be the most economical, to approve the in lab titration portion also. These tests should be performed on the same night, as an in lab split-night study.

- II. In lab titration studies may be indicated for one or more of the following:
- A. An adult with central sleep apnea syndrome due to congestive heart failure
 - B. An adult with obesity hypoventilation syndrome, as indicated by ALL of the following (i - vi):
 - i. BMI greater than 30
 - ii. Daytime hypercapnia with PaCO₂ of 45 mm Hg (6.0 kPa) or greater
 - iii. Daytime hypoxemia with PaO₂ of 70 mm Hg (9.3 kPa) or less
 - iv. No evidence of chronic obstructive pulmonary disease by pulmonary function tests (e.g., normal FEV₁/FVC ration)
 - v. Sleep disordered breathing or hypoventilation on sleep study, as indicated by one or more of the following:
 1. Apnea-hypopnea index (AHI) of 5 or greater
 2. Increase in PaCO₂ during sleep by more than 10 mm Hg (1.3 kPa) above value while awake
 3. Significant oxygen desaturation not explained by obstructive apneas or hypopneas
 - vi. TSH level normal
 - C. Adult with obstructive sleep apnea, as indicated by ALL of the following (i and ii):
 - i. Obstructive sleep apnea, as indicated by one or more of the following:
 1. Mild obstructive sleep apnea (e.g. AHI or RDI between 5 & 15, determined by a sleep study) and one or more of the following:
 - a. Cardiovascular disease documented (e.g., hypertension, ischemic heart disease, heart failure, stroke)
 - b. Excessive daytime sleepiness
 - c. Fibromyalgia like symptoms
 - d. Headaches upon awakening
 - e. Heartburn and reflux
 - f. Impaired cognition
 - g. Mood disorder
 - h. Night sweats
 - i. Nocturia or nocturnal enuresis
 - j. Observed apnea or choking episodes
 - k. Patient is a commercial vehicle driver
 - l. Snoring
 2. Moderate or severe obstructive sleep apnea (e.g., AHI or RDI 15 or greater, determined by a sleep study)
 3. Upper airway resistance syndrome associated with unexplained excessive daytime sleepiness
 - ii. Home CPAP titration is not an option, as indicated by one or more of the following:
 1. Chronic obstructive pulmonary disease or other lung disease
 2. Heart failure

3. No well supported home CPAP titration services available
 4. Obesity hypoventilation syndrome
 5. Patient does not have the ability to manage the equipment
- D. Child, infant, or adolescent with obstructive sleep apnea and ALL of the following (i - iii):
- i. Sleep Study indicates sleep apnea is present
 - ii. Signs and symptoms consistent with obstructive sleep apnea, including one or more of the following:
 1. Daytime Sleepiness
 2. Enuresis
 3. Failure to thrive (weight less than fifth percentile for age)
 4. Hyponasal speech
 5. Mouth breathing
 6. Nonspecific behavioral problems (e.g. hyperactivity, developmental delay, aggression, poor school performance)
 7. Nocturnal pauses in breathing
 8. Pulmonary hypertension
 9. Signs of increased respiratory effort (e.g. nasal flaring)
 10. Snoring
 - iii. No tonsillar or adenoid enlargement or failure of tonsil or adenoid removal to change symptoms

Note: If the patient has also met all of the required in lab sleep study criteria then it is appropriate to also approve the in lab titration portion. This should be performed as a split-night sleep study (on the same day).

- III. Follow-up or Repeat Sleep Studies may be indicated when a person has been diagnosed with OSA, a home sleep study is not appropriate (see criteria in section I part I A), and meets one or more of the following:
- A. After good clinical response to an oral appliance treatment in a person with moderate to severe OSA, to ensure therapeutic benefit
 - B. After surgical treatment of a person diagnosed with moderate to severe OSA, to ensure a satisfactory response
 - C. After surgical or dental treatment of a person that has been diagnosed with OSA whose symptoms return despite a good initial response to treatment
 - D. After substantial weight loss (e.g., 10% of body weight) has occurred in a person on CPAP for treatment of OSA to evaluate whether CPAP is still required at the previously titrated pressure
 - E. After substantial weight gain (e.g. 10% of body weight) has occurred in a person on CPAP for treatment of OSA to evaluate whether pressure adjustments are needed
 - F. When clinical response is insufficient or when symptoms return despite a good initial response to treatment with CPAP
- IV. Multiple Sleep Latency Test (MSLT) or Maintenance of Wakefulness Test (MWT) may be indicated for one or more of the following:
- A. MSLT assessment of suspected narcolepsy and other disorders of excessive daytime sleepiness, as indicated by one or more of the following:
 - i. Initial test needed, as indicated by one or more of the following:
 1. Cataplexy (e.g., sudden weakness or loss of muscle tone not accompanied by loss of consciousness)
 2. Disturbed or fragmented sleep
 3. Excessive daytime sleepiness
 4. Hallucinations with sleep onset (hypnagogic) or upon awakening (hypnopompic)
 5. Sleep paralysis
 - ii. Repeat test needed, as indicated by one or more of the following:
 1. Initial MSLT results indeterminate
 2. Initial MSLT results negative, but strong clinical suspicion of narcolepsy
 - B. MWT assessment of sleep disorders, as indicated by one or more of the following:

- i. Assessment of patient for whom inability to remain awake constitutes safety issue (e.g., patient is an airplane pilot)
- ii. Assessment of patient with narcolepsy or idiopathic hypersomnia to assess response to treatment

Note: Both the MSLT and MWT are required to be performed in a sleep laboratory.

Background

Sleep-disordered breathing is a common disorder affecting both children and adults. Sleep-disorder breathing is characterized by periods of breathing cessation, known as apnea, and reduced breathing, known as hypopnea. The most common form of sleep apnea is called obstructive sleep apnea (OSA). OSA is caused by the partial or complete collapse of the upper airway during sleep.

Various scoring systems, such as the Epworth Sleepiness Scale and the Berlin Questionnaire, have been used clinically to screen for obstructive sleep apnea. The gold standard for diagnosis of obstructive sleep apnea is nocturnal (overnight) PSG in a sleep center laboratory that uses multiple channels to record a wide range of physiologic information, including electroencephalography, electrooculography, electromyography, electrocardiography, oronasal airflow, oxygen saturation, and esophageal pressure monitoring; the apnea-hypopnea index and the respiratory disturbance index are also measured. The apnea-hypopnea index is defined as the number of obstructive apneas and hypopneas per hour of recorded sleep; the respiratory disturbance index is the total number of breathing disturbances per hour of monitoring time (i.e. the number of apneas, hypopneas, and respiratory event-related arousals, the last being characterized by increased respiratory efforts leading to arousals from sleep that do not fulfill the criteria for apnea or hypopnea). Mild obstructive sleep apnea is defined as apnea-hypopnea index or respiratory disturbance index of 5 to 15, moderate as 15 to 30, and severe as greater than 30. A sleep technician typically monitors the progress and quality of the sleep center study.

MSLT: The MSLT is thought to measure physiologic sleep tendency in the absence of arousal factors and is based on the assumption that physiologic sleepiness decreases sleep latency. During a routine MSLT, a patient is given 5 nap trials that are separated by 2-hour intervals; each trial consists of a 20-minute session in which the patient attempts to fall asleep, and both onset of sleep and rapid eye movement sleep are measured. Findings of a mean sleep latency of less than 8 minutes and 2 or more sleep-onset rapid eye movement periods support the diagnosis of narcolepsy. However, other causes of abnormal sleep-onset rapid eye movement periods include sleep deprivation, shift work, or obstructive sleep apnea. Therefore, the MSLT is typically performed the night following a polysomnogram, during which at least 6 hours of sleep was achieved, to rule out other sleep disorders or sleep deprivation as a cause of a false-positive result.

MWT: The MWT measures the ability to stay awake for a defined period of time; in certain cases, volitional ability to stay awake is more important to monitor than is the tendency to fall asleep, particularly when measuring response to therapy for sleep disturbance disorders. MWT sleep latencies were found to have a low but statistically significant correlation with the mean sleep latency on the MSLT.

Both the MSLT and MWT must be performed in a sleep laboratory.

The American Academy of Sleep Medicine states that, "OSA is a common disorder affecting at least 2%-4% of the adult population and is increasingly recognized by the public. Clinically, OSA is defined by the occurrence of daytime sleepiness, loud snoring, witnessed breathing interruptions, or awakenings due to gasping or choking in the presence of at least 5 obstructive respiratory events per hour of sleep. The presence of 15 or more obstructive respiratory events per hour of sleep in the absence of sleep related symptoms is also sufficient for the diagnosis of OSA." The American Academy of Sleep Medicine recommends that, "diagnostic criteria for OSA are based on clinical signs and symptoms determined during a comprehensive sleep evaluation, which includes a sleep oriented history and physical

examination, and finding identified by sleep testing.” They also state that, “a diagnosis of OSA must be established by an acceptable method. The two accepted methods are: in lab polysomnography (AKA in lab sleep study) and home testing with portable monitors (AKA home sleep study). Home sleep studies may be used to diagnose OSA when utilized as part of a comprehensive sleep evaluation in patients with a high pretest likelihood of moderate to severe OSA. Home sleep study testing is not indicated in patients with major comorbid conditions or those suspected of having a comorbid sleep disorder.”

References

The above policy is based on the following references:

1. 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. Journal of Clinical Sleep Medicine, Vol 5, No3, 2009. Accessed 05/05/2015. Available at: http://www.aasmnet.org/Resources/ClinicalGuidelines/OSA_Adults.pdf
2. Kushida C. Littner, MD, PhD, et al. Practice Parameters for the Indications for Polysomnography and Related Procedures: An update for 2005. Accessed 05/19/2015. Available at: http://www.aasmnet.org/resources/practiceparameters/pp_polysomnography.pdf
3. MCG 19th edition. Polysomnography (PSG), Sleep Center ACG: A-0145 (AC).
4. MCG 19th edition. CPAP Titration, Sleep Center ACG: A-0338 (AC).
MCG 19th edition. Multiple Sleep Latency Test (MSLT) and Maintenance of Wakefulness Test (MWT) ACG: A-0146 (AC).