Corporate Medical Policy
Obstructive Sleep Apnea Sleep Testing

Description of Service
There are multiple methods of testing available to diagnose obstructive sleep apnea (OSA). The method used is influenced by symptom severity, comorbid condition status and other patient-centric factors.

Policy Statement
GEHA will provide coverage for the diagnosis and medical management of obstructive sleep apnea in members with symptoms suggestive of OSA when it is determined to be medically necessary because the medical criteria and guidelines as documented below have been demonstrated.

When Testing for Obstructive Sleep Apnea (OSA) is covered
A: Home sleep testing (HST): no preauthorization required

B: Attended sleep study (polysomnography) exams are considered medically necessary in adult patients (18 years or older) who are at moderately high risk for obstructive sleep apnea (OSA), with the following:
1. Evidence of daytime sleepiness (not explained by other factors) and
2. Witnessed apneas,

AND

The presence of any one of the following conditions that inhibit the accuracy of an HST (home sleep study):

1. Underlying neuromuscular disease such as myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy, or CVA with residual respiratory impairment
2. Severe pulmonary disease such as COPD or asthma demonstrated by an FEV1 < 40% and P02 < 60 on room air or a PCO2 > 45
3. Severe congestive heart failure manifested by a LVEF < 40% or moderately severe diastolic failure on echocardiogram
4. Periodic limb movements (PLM) associated with injurious events to the patient
5. Central apneas previously diagnosed and documented on prior sleep study demonstrating 50% of total respiratory events are central in nature.
6. Documentation/indication that the patient is mentally or physically impaired to an extent that they, nor their capable aide/caregiver, are capable of operating the HST equipment.
7. The patient is < 18 years old
8. Postoperative hypoglossal nerve stimulator insertion
Multiple sleep latency testing (MSLT) is considered medically necessary for the evaluation of suspected narcolepsy when other sleep disorders have been ruled out by PSG. The MSLT should be performed when an individual is in a fully rested state, during their normal wake hours, and not experiencing sleepiness due to inadequate prior sleep. The MSLT always follows a facility-based PSG (95810) or full night titration (95811) during which the individual’s sleep adequacy is objectively measured. The MSLT should not be performed after a split night study (CPT code 95811).

MSLT is considered medically necessary for the evaluation of narcolepsy when pharmacotherapy is initiated or continued and a previous MSLT is not available.

C: Split-night study:

Split-night study is appropriate if the following 3 criteria are met:

1. An AHI of ≥ 15 is documented during a ≥ 2 hours of diagnostic sleep study. Split-night studies may sometimes be considered at an AHI of ≥ 15 to ≤ 40, based on clinical judgment if there are also repetitive long obstructions and major desaturations and
2. CPAP titration will be carried out for ≥ 3 hours and
3. Criteria is met for an in-lab study

**When Obstructive Sleep Apnea (OSA) Testing is Not Covered**

Diagnostic or Therapeutic Procedures not covered include:

1. PAP-NAP (95807-52)
2. MSLT and MWT for OSA not meeting criteria for narcolepsy
3. CPAP initiation and management (94660)

**Policy Guidelines**

According to the American Sleep Disorders Association (ASDA) (1997), split-night study NPSG is indicated for patients with an AHI greater than 40 events/hour during the first 2 hours of a diagnostic NPSG. Split-night studies may also be considered for patients with an AHI of 20 to 40 events/hour, based on clinical observations, such as the occurrence of obstructive respiratory events with a prolonged duration or in association with severe oxygen desaturation. Split-night studies require the recording and analysis of the same parameters as a standard diagnostic NPSG. Accepted guidelines provide that the diagnostic portion of a split-night study should be at least 2 hours duration. A minimum of 3 hours sleep is preferred to adequately titrate CPAP after this treatment is initiated.

Following a standard diagnostic NPSG, the available literature indicates that OSA patients should receive CPAP titration to specify the lowest CPAP level, which abolishes obstructive apneas, hypopneas, and snoring in all sleep positions and sleep stages. On occasion, an additional full-night CPAP titration NPSG may also be required following split-night study if the split-night NPSG did not allow for the abolishment of the vast majority of obstructive respiratory events or prescribed CPAP treatment does not control clinical symptoms. Alternatively, persons diagnosed with portable monitoring may be prescribed an auto-titrating positive airway pressure device (APAP) that does not require attended titration.
According to guidelines from the American Academy of Sleep Medicine (Chesson et al, 1997), polysomnography with video recording and additional EEG channels in an extended bilateral montage may be indicated to assist with the diagnosis of paroxysmal arousals or other sleep disruptions that are thought to be seizure related when the initial clinical evaluation and results of a standard EEG are inconclusive.

Accepted guidelines indicate that nocturnal pulse oximetry alone is not appropriately used as a case finding or screening method to rule out OSA. Pulse oximetry, when used alone, has not been shown to have an adequate negative predictive value to rule out OSA i.e., all patients with symptoms suggestive of OSA would require polysomnography regardless of whether the pulse oximetry was positive or negative.

CMS finds that the evidence is sufficient to determine that the results of the sleep tests identified below can be used by a beneficiary’s treating physician to diagnose OSA:

1. Type I PSG is covered when used to aid the diagnosis of OSA in beneficiaries who have clinical signs and symptoms indicative of OSA if performed attended in a sleep lab facility.

2. A type II or type III sleep testing device is covered when used to aid the diagnosis of OSA in beneficiaries who have clinical signs and symptoms indicative of OSA if performed unattended in or out of a sleep lab facility, or attended in a sleep lab facility.

3. A type IV sleep testing device measuring 3 or more channels, one of which is airflow, is covered when used to aid the diagnosis of OSA in beneficiaries who have signs and symptoms indicative of OSA if performed unattended in or out of a sleep lab facility, or attended in a sleep lab facility.

**Background**

Obstructive sleep apnea is a disorder that is characterized by obstructive apneas and hypopneas caused by repetitive collapse of the upper airway during sleep. Risk factors for OSA include patients with all 4 of the following symptoms and are considered to be at high risk for OSA: habitual snoring; observed apneas; excessive daytime sleepiness; and a body mass index (BMI) > 35. If there is no sleep partner to determine witnessed apneas, then factors such as age, neck size, and gender can be considered.

Excessive daytime sleepiness and other factors suggestive of sleep apnea may be subjective and are assessed by questionnaires such as the Epworth Sleepiness Scale (ESS). The sleep fragmentation associated with repeated sleep disruption can lead to impairment of daytime activity. Adult patients with OSA associated daytime somnolence are thought to be at higher risk for vehicular accidents while OSA in children may result in neurocognitive impairment and behavioral problems.

OSA can also affect the cardiovascular and pulmonary systems. OSA can lead to episodic hypoxemia, alveolar hypoventilation, hypercapnia, and acidosis. This is associated with hypertension, cardiac arrhythmias, pulmonary hypertension, and systolic hypertension.
In 2012 Rosen et al published results from the Home PAP study, reported that a home-based strategy for diagnosis and treatment of OSA was non-inferior to in-laboratory PSG. Home PAP was an independently funded multicenter trial of 373 patients with a high pretest probability of moderate severe OSA. Patients were randomized to diagnosis with limited channel portable sleep studies (airflow, respiratory effort, oxygen saturation, electrocardiogram, and body position) and titration with APAP, or to laboratory-based PSG with CPAP titration. Repeat in-lab PSG was required in 11.1% of patients while the technical failure rate in the home arm, requiring in-lab PSG, was 21.4%. The 2 strategies were similar for acceptance of CPAP therapy, titration pressures, effective titrations, time to treatment, and improvement in ESS scores. Kuna et al conducted a non-inferiority trial that compared home testing with a type 3 portable monitor followed by at least 3 nights of APAP versus in-laboratory titration and testing in 296 patients. Patients with an AHI of 15 or more on home monitoring were scheduled for 4- to 5-day APAP titration, while patients with an AHI of less than 15 per hour on home monitoring underwent in-laboratory PSG. Improvement in ESS, Center for Epidemiologic Studies Depression Scale, Mental Component Summary of the 12-Item Short-Form Health (SF-12), and Functional Outcomes of Sleep Questionnaire (FOSQ) was similar for home-based and hospital based treatment, meeting non-inferiority parameters. Bruyneel and Skomro have also found outcomes to be similar between home diagnosis and treatment in comparison with hospital-based diagnosis (HST) and treatment titration when both strategies are supervised by a sleep medicine specialist. In addition, use of unattended home PSG has also been reported as an alternative to in-lab PSG for patients with comorbidities.

Stepnowsky et al. (2004) examined the nightly variability of AHI in a retrospective comparison of 3 sequential nights of testing performed in the home in 1091 patients who were referred for diagnostic testing of sleep-disordered breathing (SDB). Based on night 1, approximately 90% of patients were classified consistently with "AHI-high" (the highest AHI measured across the 3 nights) using an AHI threshold of 5. However, 10% were misclassified on night 1 relative to the highest AHI level. The authors concluded that there is little, if any, significant nightly change in SDB in the home environment.

The results of these clinical studies demonstrate, that night-to-night variability in home sleep testing is comparable to laboratory-based PSG and that a single night testing can correctly diagnose OSA in the majority of patients with a high pretest-probability of OSA.

In a randomized controlled study involving 102 patients with suspected OSA, Skomro et al. (2010) compared a home-based diagnostic and therapeutic strategy for OSA with in-laboratory PSG and CPAP titration (using mostly split-night protocol). Subjects in the home monitoring arm underwent 1 night of level three testing followed by 1 week of auto-CPAP therapy (Auto-Set) and 3 weeks of fixed-pressure CPAP based on the 95% pressure derived from the auto-CPAP device. After 4 weeks of CPAP therapy, there were no significant differences in daytime sleepiness (ESS), sleep quality, quality of life, blood pressure and CPAP adherence.

Prescribed split-night studies with those in full-night patients, matched 1:2 using an AHI of +/-15% and Epworth score of +/-3 units. There were no differences between the groups in long-term CPAP use, median nightly CPAP use, post-treatment Epworth scores and frequency of nursing interventions/clinic visits required. The median time from referral to treatment was less for the split-night patients than for full-night patients.

Khawaja et al. (2010) reviewed 114 consecutive full-night PSGs (FN-PSG) on subjects with OSA and compared the AHI from the first 2 hours (2 hr-AHI) and 3 hours (3 hr-AHI) of sleep with the "gold
standard" AHI from FN-PSG (FN-AHI), considering OSA present if FN-AHI > or = 5. The authors found that the AHI derived from the first 2 or 3 hours of sleep is of sufficient diagnostic accuracy to rule-in OSA at an AHI threshold of 5 in patients suspected of having OSA. This study

Attended Polysomnography for Evaluation of Sleep Disorders: Medical Policy (Effective 04/01/2016) suggests that the current recommended threshold for split-night studies (AHI > or = 20 to 40) may be revised to a lower number, allowing for more efficient use of resources.

Collen et al. (2010) evaluated 400 consecutive patients presenting for follow-up 4-6 weeks after initiating CPAP therapy. Among the patients, 267 and 133 underwent split- and dual-night studies, respectively. The mean number of days between diagnosis and titration in the dual-night group was 80.5 days. There was no difference in therapeutic adherence between groups as measured by percentage of nights used (78.7% vs 77.5%; p = 0.42), hours per night used (3.9 vs 3.9; p = 0.95), or percentage of patients using CPAP for >4 hours per night for >70% of nights (52.9% vs 51.8%; p = 0.81). There was no difference in use after adjusting for severity of disease. The authors concluded that split-night PSG does not adversely affect short-term CPAP adherence in patients with OSA.

The following codes are for reference purposes only and do not imply that the service is covered or non-covered under the member’s benefit policy. Applicable codes may include but are not limited to:

<table>
<thead>
<tr>
<th>CPT/ HCPCS Codes</th>
<th>Definitions</th>
</tr>
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<tbody>
<tr>
<td>95805</td>
<td><strong>Considered not medically necessary for OSA.</strong> Multiple sleep latency or maintenance of wakefulness testing, recording, analysis and interpretation of physiological measurements of sleep during multiple trials to assess sleepiness</td>
</tr>
<tr>
<td>95806</td>
<td>Unattended Sleep study, unattended, simultaneous recording of, heart rate, oxygen saturation, respiratory airflow, and respiratory effort (eg, thoracoabdominal movement)</td>
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<tr>
<td>95807</td>
<td><strong>NONCOVERED</strong> Sleep study, simultaneous recording of ventilation, respiratory effort, ECG or heart rate, and oxygen saturation, attended by a technologist (monitored for at least six hours)</td>
</tr>
<tr>
<td>95806-95807 modifier 52 PAP-NAP</td>
<td><strong>Considered Investigational/Experimental</strong> due to insufficient evidence of safety and efficacy</td>
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<tr>
<td>95808</td>
<td>Polysomnography; any age, sleep staging with 1-3 additional parameters of sleep, attended by a technologist</td>
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<tr>
<td>95810</td>
<td>Polysomnography; age 6 years or older, sleep staging with 4 or more additional parameters of sleep, attended by a technologist</td>
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<tr>
<td>95811</td>
<td>Polysomnography; age 6 years 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 a technologist</td>
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<tr>
<td>94660</td>
<td><strong>Considered Not Medically Necessary</strong> Continuous positive airway pressure ventilation (CPAP), initiation and management</td>
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</table>

**Acronym Legend:**

Origination Date: Dec 2016 Peer Reviewed: June 2020 Next Review Date: June 2021
AASM – American Academy of Sleep Medicine
AHI – Apnea/Hypopnea Index
APAP – Automatic Positive Air Pressure
BMI – Body Mass Index
CPAP – Continuous Positive Air Pressure
CSA – Central Sleep Apnea
ECG – Electro Cardio Gram
ESS – Epworth Sleepiness Scale
HST – Home Sleep Test
MSLT – Multiple Sleep Latency Test
MWT – Maintenance of Wakefulness Test
NREM – Non Rapid Eye Movement
OSA – Obstructive Sleep Apnea
PAP-NAP – Positive Air Pressure - NAP
PLM – Periodic Limb Movement
PSG – Polysomnography (Sleep exam)
RCT – Randomized Clinical Trials
RDI – Respiratory Disturbance Index
REI – Respiratory Event Index
REM – Rapid Eye Movement
RERA – Respiratory Effort-Related Arousal
STOP-BANG -- Snoring, Tired, Observed, Pressure, Body Mass Index, Age, Neck Size, Gender

Scientific References


Origination Date: Dec 2016 Peer Reviewed: June 2020 Next Review Date: June 2021


Epstein LJ; Kristo D; Strollo PJ; Friedman N; Malhotra A; Patil SP; Ramar K; Rogers R; Schwab RJ; Weaver EM; Weinstein MD. 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


Kotecha, Bhik T., and Andy C. Hall. Role of surgery in adult obstructive sleep apnea. Sleep medicine reviews 18.5 (2014): 405-413.


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**Policy implementation and updates**

Dec 2019  Background with supporting evidence added. Updated referencing. Clarification of benefit application language. No changes in benefit coverage.

June 2020  Updated references and medical coding. No change in benefit coverage.