2.01.99 Polysomnography for Non‒Respiratory Sleep Disorders

Summary
Polysomnography (PSG) is a recording of multiple physiologic parameters relevant to sleep. Videorecording may also be performed during PSG to assess parasomnias such as rapid eye movement (REM) sleep behavior disorder (RBD). This document addresses PSG for non‒respiratory sleep disorders, which include the hypersomnias (eg, narcolepsy), parasomnias, and movement disorders (eg, restless legs syndrome [RLS] and periodic limb movement disorder [PLMD]).

FDA REGULATORY STATUS
A large number of polysomnography devices have been approved since 1986. U.S. Food and Drug Administration product code: OLV.

POLICY STATEMENT
Polysomnography (PSG) and a multiple sleep latency test performed on the day after the PSG may be considered medically necessary in the evaluation of suspected narcolepsy or idiopathic hypersomnia.

PSG may be medically necessary when evaluating patients with parasomnias when there is a history of sleep related injurious or potentially injurious disruptive behaviors.

PSG may be medically necessary when a diagnosis of periodic limb movement disorder (PLMD) is considered when there is:

A complaint of repetitive limb movement during sleep by the patient or an observer; AND
• No other concurrent sleep disorder; AND
• At least one of the following is present:
  o Frequent awakenings; OR
  o Fragmented sleep; OR
  o Difficulty maintaining sleep; OR
  o Excessive daytime sleepiness

PSG for the diagnosis of PLMD is considered not medically necessary when there is concurrent untreated obstructive sleep apnea, restless legs syndrome, narcolepsy, or REM sleep behavior disorder.
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PSG is considered investigational for the diagnosis of non‒respiratory sleep disorders not meeting the criteria above, including but not limited to nightmare disorder, depression, sleep-related bruxism, or noninjurious disorders of arousal.

**BENEFIT APPLICATION**

Experimental or investigational procedures, treatments, drugs, or devices are not covered (See General Exclusion Section of brochure).

**RATIONALE**

**Summary of Evidence**

The evidence for polysomnography (PSG) in patients suspected of having a benign parasomnia or restless legs syndrome (RLS) includes systematic reviews of studies on diagnostic accuracy, case series, and controlled cohort studies. Relevant outcomes are test accuracy, symptoms, functional outcomes, and quality of life. The evidence indicates that typical and benign parasomnias such as sleepwalking or sleep terrors may be diagnosed on the basis of their clinical features and do not require PSG. RLS also does not require PSG because RLS is a sensorimotor disorder, the symptoms of which occur predominantly during wake. Therefore, PSG results are generally not useful. The evidence is sufficient to determine qualitatively that the technology is unlikely to improve the net health outcome.

The evidence for PSG in patients suspected of having narcolepsy, a violent or potentially injurious parasomnia, or periodic limb movement disorder (PLMD) includes systematic reviews of studies on diagnostic accuracy, case series, and controlled cohort studies. Relevant outcomes are test accuracy, symptoms, functional outcomes, and quality of life. Evidence indicates that PSG followed by the multiple sleep latency test (MSLT) is associated with moderate sensitivity and high specificity in support of the diagnosis of narcolepsy. For the diagnosis of RBD, combined use of clinical history and PSG to document loss of muscle atonia during REM sleep increases diagnostic accuracy and is considered the criterion standard for diagnosis. PSG with electromyography (EMG) of the anterior tibialis is the only method available to diagnose PLMD, but this sleep-related movement disorder is rare and should only be evaluated by PSG in the absence of symptoms of other disorders. The evidence is sufficient to determine qualitatively that the technology results in a meaningful improvement in the net health outcome.

**SUPPLEMENTAL INFORMATION**

**Practice Guidelines and Position Statements**

In 2005, the American Academy of Sleep Medicine (AASM) published practice parameters for the indications for polysomnography and related procedures. AASM made the following recommendations on the use of PSG for nonrespiratory indications:

- PSG and a MSLT performed on the day after the PSG are routinely indicated in the evaluation of suspected narcolepsy. (STANDARD)
- Common, uncomplicated, noninjurious parasomnias, such as typical disorders of arousal, nightmares, enuresis, sleeptalking, and bruxism, can usually be diagnosed by clinical evaluation alone. (STANDARD)
- PSG is not routinely indicated in cases of typical, uncomplicated, and non-injurious parasomnias when the diagnosis is clearly delineated. (OPTION)
- A clinical history, neurologic examination, and a routine EEG obtained while the patients is awake
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and asleep are often sufficient to establish the diagnosis and permit the appropriate treatment of a sleep related seizure disorder. The need for a routine EEG should be based on clinical judgment and the likelihood that the patient has a sleep relate seizure disorder. (OPTION)

• PSG is not routinely indicated for patients with a seizure disorder who have no specific complaints consistent with a sleep disorder. (OPTION)
• PSG is indicated when evaluating patients with sleep behaviors suggestive of parasomnias that are unusual or atypical because of the patient's age at onset; the time, duration or frequency of occurrence of the behavior; or the specifics of the particular motor patterns in question. (GUIDELINE)

• PSG is indicated as an OPTION in the following situations:
  o Evaluating sleep related behaviors that are violent or otherwise potentially injurious to the patient or others.
  o In situations with forensic considerations (e.g., if onset follows trauma or if the events themselves have been associated with personal injury).
  o When the presumed parasomnia or sleep related seizure disorder does not respond to conventional therapy.

• PSG is indicated when a diagnosis of PLMD is considered because of complaints by the patient or an observer of repetitive limb movement during sleep and frequent awakenings, fragmented sleep, difficulty maintaining sleep, or excessive daytime sleepiness. (STANDARD)
• Intra-individual night-to-night variability exists in patients with periodic limb movement sleep disorder, and a single study might not be adequate to establish this diagnosis. (OPTION)
• PSG is not routinely indicated to diagnose or treat restless legs syndrome, except where uncertainty exists in the diagnosis. (STANDARD)
• PSG is not routinely indicated for the diagnosis of circadian rhythm sleep disorders. (STANDARD)

In 2012, AASM published practice parameters for the nonrespiratory indications for PSG and multiple sleep latency testing in children. The following recommendations for PSG and MSLT were made:

• PSG is indicated for children suspected of having periodic limb movement disorder (PLMD) for diagnosing PLMD. (STANDARD)
• The MSLT, preceded by nocturnal PSG, is indicated in children as part of the evaluation for suspected narcolepsy. (STANDARD)
• Children with frequent NREM [non–rapid eye movement] parasomnias, epilepsy, or nocturnal enuresis should be clinically screened for the presence of comorbid sleep disorders and polysomnography should be performed if there is a suspicion for sleep-disordered breathing or periodic limb movement disorder. (GUIDELINE)
• The MSLT, preceded by nocturnal PSG, is indicated in children suspected of having hypersomnia from causes other than narcolepsy to assess excessive sleepiness and to aid in differentiation from narcolepsy. (OPTION)
• The polysomnogram using an expanded EEG montage is indicated in children to confirm the diagnosis of an atypical or potentially injurious parasomnia or differentiate a parasomnia from sleep-related epilepsy. (OPTION)
• Polysomnography is indicated in children suspected of having restless legs syndrome (RLS) who require supportive data for diagnosing RLS. (OPTION)

Recommendations against PSG use:
• Polysomnography is not routinely indicated for evaluation of children with sleep-related bruxism.
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AASM issued a 2012 practice parameter on the treatment of RLS and PLMD in adults. The practice parameter states many different treatment efficacy measures are used to assess RLS due to the multifaceted nature of RLS. Measures include both subjective and objective assessments including a number of various subjective scales. The only objective measurements are sleep-related parameters by PSG or actigraphy.

AASM issued a 2010 Best Practice Guide on the treatment of nightmare disorders in adults (classified as a parasomnia). AASM states the overnight PSG is not routinely used to assess nightmare disorder but may be used to exclude other parasomnias or sleep-disordered breathing. PSG may underestimate the incidence and frequency of posttraumatic stress disorder–associated nightmares.

AASM issued a 2010 Best Practice Guide on the treatment of RBD. Minimal diagnostic criteria for RBD are the following:

A) Presence of REM sleep without atonia, defined as sustained or intermittent elevation of submental EMG tone or excessive phasic muscle activity in the limb EMG

B) At least 1 of the following:
   1) Sleep related injurious or potentially injurious disruptive behaviors by history;
   2) Abnormal behaviors documented on polysomnogram (PSG);

C) Absence of epileptiform activity during REM sleep unless RBD can be clearly distinguished from any concurrent R sleep-related seizure disorder

D) Sleep disturbance not better explained by another sleep disorder, medical or neurological disorder, mental disorder, medication use, or substance use disorder

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination (NCD). In the absence of an NCD, coverage decisions are left to the discretion of local Medicare carriers.

REFERENCES

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POLICY HISTORY

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<tr>
<th>Date</th>
<th>Action</th>
<th>Description</th>
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<tr>
<td>December 2015</td>
<td>New Policy</td>
<td>Policy created with literature review through July 7, 2015; considered</td>
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<td>December 2016</td>
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Signature on File

Deborah M. Smith, MD, MPH