Polysomnography and Home Sleep Apnea Testing

I. Description

In-laboratory, attended polysomnography (PSG) is a diagnostic test for sleep-related breathing disorders. Patients are connected to a variety of monitoring devices, such as electroencephalography (EEG) electrodes, electro-oculography (EOG) electrodes, electromyography (EMG) electrodes, electrocardiography (ECG) electrodes, respiratory flow sensors, SaO2 sensors, and respiratory effort sensors. A technologist documents relevant information as the study proceeds. Physiologic variables are recorded digitally while the patient sleeps and during any intervening wakefulness. Synchronized digital video allows parasomnias and other movement disorders to be detected. If PAP titration is undertaken, the technologist documents the interfaces used, pressure changes, etc. Advantages include the widely accepted notion that PSG is the gold standard diagnostic test for diagnosis of OSA and that it can identify coexisting or alternative sleep disorders. Disadvantages include potential increased inconvenience and cost, as well as potential decreased access to diagnosis/treatment.

Home sleep apnea testing (HSAT), also referred to as unattended sleep testing or portable monitoring, is a test used to diagnose obstructive sleep apnea (OSA). The American Academy of Sleep Medicine (AASM) considers an adequate device as one that incorporates a minimum of the following sensors: nasal pressure, chest and abdominal respiratory inductance plethysmography, and oximetry. Type 3 devices are recommended. These typically measure between four and seven physiologic variables, including two respiratory variables (eg, respiratory effort and airflow), a cardiac variable (eg, heart rate or an electrocardiogram), and arterial oxyhemoglobin saturation via pulse oximetry. A technologist is typically not present during the recording and real-time visualization of the signals is usually not available. Advantages include increased comfort, convenience, and access to diagnosis/treatment. Disadvantages include the decreased number of physiologic variables measured, compared with PSG, and the potential for decreased diagnostic accuracy and/or need for additional diagnostic testing. HSAT is not indicated for the diagnosis of other sleep-related breathing disorders. Comprehensive sleep evaluation, careful patient selection, adequate patient education/instruction, and proper use of equipment are key components of this diagnostic pathway.

The American Academy of Sleep Medicine recommends HSAT for the diagnosis of OSA in uncomplicated adult patients. Based on evidence from twenty-six validation studies that evaluated the diagnostic accuracy of HSAT against PSG, as well as seven RCTs that compared clinical outcomes, AASM concluded: “The use of HSAT has not been demonstrated to provide inferior clinical benefit, compared to PSG, when used in the appropriate context.”
HMSA requires HSAT as the preferred method of diagnosing OSA in adults. In-facility PSG is reserved for patients who require in-laboratory monitoring or in whom a home/portable sleep study is contraindicated.

Diagnostic testing for sleep-disordered breathing is best carried out after a comprehensive sleep evaluation. A thorough sleep history and a physical examination should be performed. Medical conditions associated with an increased risk for sleep-related breathing disorder should be identified.

II. Criteria/Guidelines

HMSA requires home sleep apnea testing (HSAT) as the preferred method of diagnosing OSA in an uncomplicated clinical population. In-facility PSG is reserved for patients who require in-laboratory monitoring or in whom a home/portable sleep study is contraindicated.

A. Home sleep apnea testing (HSAT) is covered when the following criteria are met (subject to Limitations and Administrative Guidelines):

1. Patient is 18 years of age or older.
2. The patient has had a face-to-face clinical evaluation by the treating physician prior to the study to assess for sleep-related breathing disorders. The evaluation should include, at a minimum, the following:
   a. A thorough sleep history (e.g., signs and symptoms of sleep-disordered breathing); AND
   b. A physical examination that includes the respiratory, cardiovascular, and neurologic systems; AND
   c. Assessment for medical conditions associated with sleep-disordered breathing; AND
3. The patient is at increased risk of moderate to severe OSA as indicated by the presence of excessive daytime sleepiness and at least two of the following three criteria:
   a. Habitual loud snoring.
   b. Witnessed apnea or gasping or choking.
   c. Diagnosed hypertension; OR
4. The patient has observed apneas during sleep or has at least two of the following indications:
   a. Habitual loud snoring.
   b. Witnessed apnea or gasping or choking.
   c. Unexplained excessive daytime sleepiness and/or nonrestorative sleep.
   d. Obesity with BMI of 30 or more.
   e. Craniofacial abnormality or upper airway soft tissue abnormalities, e.g., adenotonsillar hypertrophy, lateral peritonsillar narrowing, high arched/narrow hard palate, retrognathia, macroglossia, increased neck circumference (17 inches in men, 16 inches in women), modified Mallampati score of 3 or 4, nasal abnormalities, e.g., polyps, deviation, valve abnormalities, turbinate hypertrophy.
   f. At least two or more of the following:
      i. Stroke
      ii. Coronary artery disease
      iii. Congestive heart failure
      iv. Unexplained cor pulmonale
      v. Unexplained pulmonary hypertension
      vi. Polycythemia
vii. Hypertension
viii. Hypothyroidism

5. There is no evidence by history or physical examination of a health condition that might alter ventilation or require alternative treatment, including the following:
   a. Congestive heart failure Class III or IV; or LVEF less than 45%.
   b. Chronic obstructive pulmonary Disease (COPD) GOLD stage 2 (Moderate severity, FEV1 50-79%) or higher.
   c. BMI greater than or equal to 40.
   d. Neuromuscular conditions causing restrictive lung disease or respiratory muscle weakness. For example, kyphoscoliosis, Myasthenia Gravis, amyotrophic lateral sclerosis (ALS), polymyositis, Guillian Barre syndrome, Parkinson’s disease, and myotonic dystrophy.
   e. Chronic opioid medication use.
   f. History of stroke.
   g. Sleep-related cardiac dysrhythmia.
   h. Environmental or personal factors that preclude the adequate acquisition and interpretation of data from HSAT. For example:
      i. Severe mental illness.
      ii. Intellectual disability
      iii. Lack of an appropriate living situation
      iv. Alcohol abuse
   i. A sleep disorder other than obstructive sleep apnea is suspected. For example, central sleep apnea, obesity hypoventilation syndrome, periodic limb movement disorder, parasomnias, severe chronic insomnia (see definition, VIII. Appendix 2), narcolepsy, REM behavior sleep disorder; OR

6. Patient has one of the above contraindications for home sleep apnea testing but a facility-based PSG is not possible because of immobility, critical illness, or inability to achieve adequate sleep time during a facility-based PSG.

7. At a minimum, the home monitoring device must measure two respiratory variables (i.e., respiratory effort and airflow), a cardiac variable (i.e., heart rate or electrocardiogram), and pulse oximetry.

8. Diagnostic testing for OSA should be performed in conjunction with a comprehensive sleep evaluation and adequate follow-up. HSAT must be performed under the supervision of a board certified sleep specialist who is associated with the AASM-accredited or Joint-Commission-accredited sleep center located in the same state where the member is being tested. While HSAT is best carried out after a comprehensive sleep evaluation, there may be specific contexts (e.g., preoperative evaluation) in which evaluation of OSA needs to occur in an expedited manner, when it may not be practical to perform a comprehensive sleep evaluation prior to diagnostic testing. In such situations, an alternative clinical pathway is acceptable. This pathway should include the following elements:
   a. A focused evaluation of sleep apnea performed by a clinical provider.
   b. The use of tools or questionnaires that capture clinically important information that is reviewed by a board-certified sleep medicine physician prior to testing.
   c. Following testing, a comprehensive sleep evaluation and follow-up under the supervision of a board-certified sleep medicine physician should be completed.
9. HSAT is provided by a facility that meets the following requirements:
   a. Hospital-based sleep laboratory falls within the purview of The Joint Commission accreditation for its institution;
   b. Free-standing sleep laboratory is accredited by the American Association of Sleep Medicine (AASM) (http://www.aasmnet.org). With regard to accreditation, HMSA requires the following:
      i. If a provider is in the process of seeking accreditation, HMSA requires a letter of acknowledgement of payment from the AASM written to the sleep laboratory under consideration for accreditation.
      ii. To continue servicing HMSA members, the sleep laboratory must complete the process of accreditation within one year.
      iii. Re-accreditation is required according to the standards of the AASM. Providers are responsible for keeping their accreditation current.
10. HSAT is interpreted by a board certified sleep specialist located in the same state where the member is being tested.
11. PAP titration will be done using auto-titrating PAP in the home setting when the diagnostic study demonstrates OSA and there are no contraindications to home titration as noted in II.A.5. Home titration using auto-titrating PAP is appropriate when the following criteria are met:
   a. A facility-based PSG demonstrates an Apnea Hypopnea Index (AHI) or Respiratory Disturbance Index (RDI) greater than or equal to 5 per hour; or HSAT demonstrates an Apnea Hypopnea Index (AHI) or Respiratory Event Index (REI) greater than or equal to 5 per hour and less than 30 per hour.
   b. There is no evidence of central sleep apnea syndrome or other sleep disorder.
   c. There is no evidence of significant nocturnal hypoxemia as indicated by ANY of the following results of the initial sleep study:
      i. SaO2 < 90% for >= 12% of recording time
      ii. Mean nocturnal SaO2 93%
      iii. Lowest SaO2 <= 78%
B. A facility-based PSG is covered (subject to Limitations and Administrative Guidelines) when the following criteria are met:
1. Criteria II.B.2 and II.B.3 or Criteria II.B2 and II.B.4 are met; and a HSAT is contraindicated as listed in II.A.5; AND
2. The patient has had a face-to-face clinical evaluation by the treating physician prior to the study to assess for sleep-related breathing disorders. The evaluation should include, at a minimum, the following:
   a. A thorough sleep history (e.g., signs and symptoms of sleep-disordered breathing); AND
   b. A physical examination that includes the respiratory, cardiovascular, and neurologic systems; AND
   c. Assessment for medical conditions associated with sleep-disordered breathing; AND
3. The patient is at increased risk of moderate to severe OSA as indicated by the presence of excessive daytime sleepiness and at least two of the following three criteria:
   a. Habitual and loud snoring.
   b. Witnessed apnea or gasping or choking.
   c. Diagnosed hypertension; OR
4. The patient has observed apneas during sleep or has at least two of the following indications:
   a. Habitual and disruptive snoring.
   b. Gasping or choking episodes while sleeping.
   c. Unexplained pathological daytime sleepiness and/or nonrestorative sleep.
   d. Obesity with BMI of 30 or more.
   e. Craniofacial abnormality or upper airway soft tissue abnormalities, e.g., adenotonsilar hypertrophy, lateral peritonsillar narrowing, high arched/narrow hard palate, retrognathia, macroglossia, increased neck circumference (17 inches in men, 16 inches in women), modified Mallampati score of 3 or 4, nasal abnormalities, e.g., polyps, deviation, valve abnormalities, turbinate hypertrophy.
   f. At least two or more of the following:
      i. Stroke
      ii. Coronary artery disease
      iii. Congestive heart failure
      iv. Coronary artery disease
      v. Congestive heart failure
      vi. Unexplained cor pulmonale
      vii. Unexplained pulmonary hypertension
      viii. Polycythemia
      ix. Hypertension
      x. Hypothyroidism

5. A sleep disorder other than obstructive sleep apnea is suspected. For example, central sleep apnea, obesity hypoventilation syndrome, periodic limb movement disorder, parasomnias, narcolepsy, and REM behavior sleep disorder.

6. For children (age less than 18 years old) who do not meet the criteria in II.A.3 or II.A.4, one of the following indications is present in addition to criterion II.A.3 or II.A.4.
   a. Attention deficit disorder with hyperactivity.
   b. Nocturnal enuresis.
   c. Hypertrophy of tonsils and/or adenoids.
   d. Down syndrome.
   e. Prader-Willi syndrome.
   f. Neuromuscular disorders.
   g. Duchenne Muscular Dystrophy.
   h. Chiari malformations.
   i. Myelomeningocele.
   j. Craniofacial abnormality or upper airway, soft tissue abnormalities, e.g., Pierre Robin, Treacher-Collins, Goldenhar.

7. PSG is performed in a hospital-based sleep laboratory or free-standing sleep laboratory meeting must meet the following requirements:
   a. Hospital-based sleep laboratory falls within the purview of The Joint Commission accreditation for its institution;
   b. Free-standing sleep laboratory is accredited by the American Association of Sleep Medicine (AASM) (http://www.aasmnet.org). With regard to accreditation, HMSA requires the following:
i. If a provider is in the process of seeking accreditation, HMSA requires a letter of acknowledgement of payment from the AASM written to the sleep laboratory under consideration for accreditation.

ii. To continue servicing HMSA members, the sleep laboratory must complete the process of accreditation within one year.

iii. Re-accreditation is required according to the standards of the AASM. Providers are responsible for keeping their accreditation current.

8. PSG is interpreted by a sleep medicine specialist who is board certified by American Board of Sleep Medicine (ABSM) or the American Board of Medical Specialties (ABMS).

9. For adults, PSG is performed with the intent to complete the study with titration of positive airway pressure (PAP), i.e., CPT code 95811. CPT code 95810 is only allowable when the sleep study does not demonstrate events consistent with sleep apnea or PAP titration cannot be completed for unforeseen reasons as documented in the PSG report. Examples include, but are not limited to, the following:
   a. Insufficient total sleep time;
   b. Criteria for obstructive sleep apnea met late in study with insufficient sleep time left for positive airway pressure (PAP) titration;
   c. PAP trial attempted but not tolerated by patient.

10. A facility-based PSG for PAP titration following a home study that is diagnostic for OSA is covered for any of the following indications:
   a. There is significant nocturnal oxygen desaturation during a home diagnostic sleep study as indicated by ANY of the following results of the initial sleep study:
      i. \( \text{SaO}_2 < 90\% \) for \( \geq 12\% \) of recording time.
      ii. Mean nocturnal \( \text{SaO}_2 \) 93%.
      iii. Lowest \( \text{SaO}_2 \) \( \leq 78\% \).
   b. A comorbid or alternative sleep disorder is suspected. For example, central sleep apnea or obesity hypoventilation syndrome (OHS).
   c. Respiratory Event Index (REI) or Apnea Hypopnea Index (AHI) is greater than or equal to 30 per hour.
   d. There is lack of resolution of sleep-related symptoms after a 12-week trial of auto-titrating CPAP.

11. Follow-up in-facility PSG will be covered in cases when a single HSAT is technically inadequate (e.g., less than 4 hours of technically adequate data obtained during habitual sleep period); or, if technically adequate and fails to establish the diagnosis of OSA in patients for whom a suspicion for OSA persists. Performing a repeat HSAT in the above circumstances is not recommended unless the clinician documents there is a high likelihood of successful recording on a second attempt, and the patient expresses a preference for this approach.

12. A facility-based PSG is covered for patients who meet criteria for a home sleep study, but whose occupation is “mission-critical” (e.g., commercial truck driver, mass transit operator).
C. One facility-based PSG or HSAT will be covered every five years. A repeat sleep study before five years will be covered for one or more of the following indications:
1. PSG is covered if there is weight loss of at least ten percent of body weight and there is a clinical indication for a repeat study, such as to ascertain whether PAP is still needed at the previously titrated pressure or if a sleep related breathing disorder persists.
2. PSG is covered if there is weight gain of at least ten percent of body weight and there is a clinical indication for a repeat study, such as the patient is again symptomatic despite continued use of PAP, to ascertain whether pressure adjustments are needed.
3. HSAT is covered if there is weight gain of at least ten percent of body weight and there is clinical indication for a repeat study, such as the patient is suspected to have moderate to severe OSA and prior sleep study was negative for OSA.
4. PSG is covered after upper airway surgery to ensure therapeutic benefit.
5. PSG is covered after a good clinical response to oral appliance treatment, to ensure therapeutic benefit.
6. PSG is covered after surgical or dental treatment of patients with a sleep-related breathing disorder whose symptoms return despite a good initial response to treatment.
7. PSG is covered when clinical response is insufficient or when symptoms return despite a good initial response to treatment with PAP device, in the context of current compliant PAP usage.
8. PSG is covered when PAP titration study is indicated and split-night sleep study could not be completed as noted in II.B.9.
   a. If PAP titration was not tolerated, any problems related to use of the device and interface must be resolved prior to repeat testing.
   b. If there are no contraindications, PAP titration in the home setting with auto-titrating PAP is an option.
D. A facility-based PSG (95811; or if OSA has already been ruled out, 95810) is covered when performed in conjunction with multiple sleep latency test (MSLT) (95805) for the evaluation of patients with a suspected diagnosis of narcolepsy to confirm the diagnosis. Clear documentation of the following must be submitted:
1. Signs and symptoms consistent with cataplexy; AND/OR
2. Chronic daytime sleepiness; AND
3. Signs/symptoms typically associated with narcolepsy. For example:
   a. Fragmented sleep and prone to fall asleep throughout the day, but do not sleep more than a healthy individual per 24-hour period.
   b. Rapidly doses off without any warning (“sleep attacks”).
   c. Restorative sleep.
   d. Epworth Sleepiness Scale score > 15.
   e. Hypnagogic hallucinations.
   f. Sleep paralysis.
E. A facility-based PSG (95811; or if OSA has already been ruled out, 95810) is covered when performed in conjunction with multiple sleep latency test (MSLT) (95805) for the evaluation of patients with a suspected diagnosis of idiopathic hypersomnia to confirm the diagnosis. Clear documentation of the following must be submitted:
1. Chronic and disabling excessive daytime sleepiness; AND
2. Signs/symptoms typically associated with idiopathic hypersomnia. For example:
a. Unable to maintain wakefulness and alertness during the major waking episodes of the
day, with sleep occurring unintentionally or at inappropriate times and interfering with
function.
b. Long and unrefreshing daytime naps.
c. Difficulty arousing from nocturnal sleep periods or daytime naps.
d. Absence of symptoms suggestive of other common causes of EDS such as insufficient
sleep, depression, sedating medications, and sleep-related breathing disorders.

III. Limitations
A. HSAT is not covered for children under the age of 18.
B. HSAT is considered to be one study, whether performed during a single night or during two or
more consecutive nights.
C. Polysomnography and daytime multiple sleep latency testing (MSLT) are not indicated in the
routine evaluation of chronic insomnia as it is not known to be effective in improving health
outcomes.
D. The use of SleepStrip or actigraphy for the diagnosis of OSA or other sleep disorders in an adult
or child is not covered as it is not known to be effective in improving health outcomes.
E. A split-night study (CPT 95811), in which obstructive sleep apnea (OSA) is diagnosed and
followed by PAP eliminates the need for a second PSG to titrate PAP. A split-night study would
be appropriate for patients with a baseline apnea index or AHI of at least 15 events per hour or
from 5 to 14 events per hour with documented symptoms of excessive daytime sleepiness,
impaired cognition, mood disorders, or insomnia; or hypertension, ischemic heart disease, or
history of stroke. Because CPT code 95811 includes the initiation of CPAP therapy, CPT code
94660 will not be paid separately.
F. The Epworth sleepiness scale is considered medically appropriate as part of the evaluation of
OSA, but is performed as part of the evaluation and management of the patient and will not be
paid separately.
G. HMSA's global payment for facility-based PSG includes payment for the EEG, EOG and EMG.
These services will not be paid separately.
H. Other measurements performed during a facility-based PSG (e.g., vital signs, muscular activity,
oximetry, airflow, blood gases, penile tumescence) are also integral to the service and will not
be paid separately.
I. CPT code 95805 is only covered as noted in II.D. 95805 is not covered for maintenance of
wakefulness testing (MWT) to assess response to therapy for employment purposes as its use is
not for the purpose of diagnosing or treating a medical condition.
J. Facility-based PSG and HSAT are covered only once every five years except as noted in II.C.
K. Facility-based PSG or HSAT performed as part of the routine evaluation of patients prior to
bariatric surgery is not covered as it is not known to be effective in improving health outcomes.
A facility-based PSG or home sleep study is covered when criteria in II.A or II.B are met.
L. PAP-NAP (daytime session for patients who are resistant to PAP therapy) is not covered as it is
not known to be effective in improving health outcomes.
IV. Administrative Guidelines

**A.** Precertification is not required for an initial study. Documentation, including the physician's clinical notes that supports medical necessity should be legible, maintained in the patient's medical record and must be made available to HMSA upon request. HMSA reserves the right to perform retrospective review using the above criteria to validate if services rendered met payment determination criteria.

**B.** Precertification is required for any subsequent study performed within five years of previous study. The following documentation must be submitted:

1. Previous study report;
2. Documentation supporting the reason why another study is needed.

**C.** Only CPT code 95811 will be approved. CPT code 95810 will not be approved.

1. If the study does not demonstrate events consistent with OSA and the study is terminated without PAP titration, a claim for CPT code 95810, with supporting documentation, should be submitted.
2. If the study demonstrates OSA and PAP titration is not completed, a precertification request should be submitted for a PAP titration study. The following documentation must be submitted:
   a. PSG Initial study report(s);
   b. Documentation supporting the reason why PAP titration could not be performed or completed at the time of initial study.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>95800</td>
<td>Sleep study, unattended, simultaneous recording; heart rate, oxygen saturation, respiratory analysis (e.g., by airflow or peripheral arterial tone), and sleep time</td>
</tr>
<tr>
<td>95801</td>
<td>Sleep study, unattended, simultaneous recording; minimum of heart rate, oxygen saturation, and respiratory analysis (e.g., by airflow or peripheral arterial tone)</td>
</tr>
<tr>
<td>95806</td>
<td>Sleep study, simultaneous recording of ventilation, respiratory effort, ECG or heart rate, and oxygen saturation, unattended by a technologist</td>
</tr>
<tr>
<td>G0398</td>
<td>Home sleep study test (HST) with type II portable monitor, unattended; minimum of 7 channels: EEG, EOG, EMG, ECG/heart rate, airflow, respiratory effort and oxygen saturation</td>
</tr>
<tr>
<td>G0399</td>
<td>Home sleep test (HST) with type III portable monitor, unattended; minimum of 4 channels: 2 respiratory movement/airflow, 1 ECG/heart rate and 1 oxygen saturation</td>
</tr>
<tr>
<td>G0400</td>
<td>Home sleep test (HST) with type IV portable monitor, unattended; minimum of 3 channels</td>
</tr>
<tr>
<td>95805</td>
<td>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>
</tbody>
</table>
### V. Important Reminder

The purpose of this Medical Policy is to provide a guide to coverage. This Medical Policy is not intended to dictate to providers how to practice medicine. Nothing in this Medical Policy is intended to discourage or prohibit providing other medical advice or treatment deemed appropriate by the treating physician.

Benefit determinations are subject to applicable member contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control.

This Medical Policy has been developed through consideration of the medical necessity criteria under Hawaii’s Patients’ Bill of Rights and Responsibilities Act (Hawaii Revised Statutes §432E-1.4), generally accepted standards of medical practice and review of medical literature and government approval status. HMSA has determined that services not covered under this Medical Policy will not be medically necessary under Hawaii law in most cases. If a treating physician disagrees with HMSA’s determination as to medical necessity in a given case, the physician may request that HMSA reconsider the application of the medical necessity criteria to the case at issue in light of any supporting documentation.

### VI. References

3. American Association on Intellectual and Developmental Disabilities (AAIDD). 2013. [https://aaidd.org/intellectual-disability/definition/faqs-on-intellectual-disability#V1DAntUrKig](https://aaidd.org/intellectual-disability/definition/faqs-on-intellectual-disability#V1DAntUrKig)
8. CMS National Coverage Determination (NCD) for Continuous positive airway pressure (CPAP) therapy for obstructive sleep apnea (OSA) (240.4). August 4, 2008.

VII. Appendices

**Appendix 1**
According to The American Psychological Association and American Association on Intellectual and Developmental Disabilities, Intellectual Disability is characterized by significant limitations in both of the following:
1. Adaptive functioning (e.g., home, community, and school).
2. Intellectual functioning (e.g., learning, reasoning, problem solving, and judgment)

**Appendix 2**
According to the International Classification of Sleep Disorders, Third Edition (ICSD-3), chronic insomnia is confirmed when all five of the following criteria are met:
1. The patient reports difficulty initiating asleep, difficulty maintaining asleep, or waking up too early.
2. Sleep difficulties occur despite adequate opportunity and circumstances for sleep.
3. The patient describes daytime impairment that is attributable to the sleep difficulties. This may include fatigue or malaise; attention, concentration, or memory impairment; social dysfunction, vocational dysfunction, or poor school performance; mood disturbance or irritability; daytime sleepiness; motivation, energy, or initiative reduction; errors or accidents at work or while driving; and concerns or worries about sleep.
4. The sleep-wake difficulty is not better explained by another sleep disorder.
5. The sleep disturbance and the associated daytime dysfunction has existed for three months or longer and occurs at least three nights per week; or repeated occurrence for weeks at a time over several years.

**Appendix 3**
According to the National Institute of Mental Health, a mental illness is considered severe when the following are present:
1. Severe symptoms and behavioral impairment.
2. Pronounced disability in basic life skills.

**Appendix 4**
Definitions of sleep-disordered breathing events.
1. Apnea-hypopnea index: The apnea-hypopnea index (AHI) is calculated by adding together the number of apneas and hypopneas and dividing the sum by the total sleep time in hours.
2. Respiratory disturbance index: Derived by adding the number of apneas, hypopneas, and RERAs, then dividing the sum by the total sleep time in hours.
3. Apnea: The cessation, or near cessation, of airflow. Scoring an apnea on PSG requires documentation of a 90 percent or greater decrease in airflow, compared with preceding signals, for a minimum of 10 seconds.
4. Hypopnea: A reduction of airflow to a degree that is insufficient to meet the criteria for an apnea. Airflow decreases at least 30 percent compared with the pre-event baseline.
The diminished airflow lasts at least 10 seconds. The event is associated with either a 3 percent oxygen desaturation from baseline or an EEG arousal.

5. Respiratory effort-related arousals: Arousals that are associated with a change in airflow that does not meet the criteria for apnea or hypopnea. Formally defined as events lasting at least 10 seconds associated with flattening of the nasal pressure waveform (suggesting flow limitation) and/or evidence of increasing respiratory effort, terminating in an arousal but not otherwise meeting criteria for apnea or hypopnea.

6. Reading and interpreting HSAT data. HSAT reports should include a respiratory event index (REI), which is the number of respiratory events/monitoring time (rather than sleep time) in hours, or an apnea hypopnea index (AHI) if the device records sleep with EEG. When using devices that measure airflow and effort, the scoring of events (i.e., apnea and hypopnea) is the same as for PSG.