

## Obstructive Sleep Apnea Physician Performance Measurement Set

### *DRAFT-FOR PUBLIC COMMENT*

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#### Purpose of Measures:

These clinical performance measures, developed by the American Academy of Sleep Medicine/Physician Consortium for Performance Improvement® (Consortium)/National Committee for Quality Assurance (NCQA), are designed for individual quality improvement. Unless otherwise indicated, the measures are also appropriate for accountability if appropriate methodological, statistical, and implementation rules are achieved.

#### Measures:

Measure # 1: Severity Assessment

Measure #2: Positive Airway Pressure Therapy Prescribed

Measure # 3: Adherence to Positive Airway Pressure Therapy

Measure #4: Assessment of Sleep Symptoms

#### Intended Audience and Patient Population:

These measures are designed for use by physicians and for calculating reporting or performance measurement at the individual clinician level. When existing hospital-level or plan-level measures are available for the same measurement topics, the Consortium attempts to harmonize the measures to the extent feasible.

Measures 1 through 4 are designed for any clinician caring for patients aged 18 years and older diagnosed with obstructive sleep apnea.

#### Measure Specifications

The Consortium seeks to specify measures for implementation using multiple data sources, including paper medical record, administrative (claims) data, and particular emphasis on Electronic Health Record Systems (EHRS). Draft specifications to report on these measures for Obstructive Sleep Apnea using administrative (claims) data are included in this document. We have identified codes for these measures, including ICD-9 and CPT (Evaluation & Management Codes, Category I and where Category II codes would apply). Specifications for additional data sources, including EHRS, will be fully developed at a later date. We welcome comments on the draft specifications included in addition to the measure language.

#### Measure Exclusions:

For process measures, the Consortium provides three categories of reasons for which a patient may be excluded from the denominator of an individual measure:

- Medical reasons  
Includes:
  - not indicated (absence of organ/limb, already received/performed, other)
  - contraindicated (patient allergic history, potential adverse drug interaction, other)
  
- Patient reasons  
Includes:
  - patient declined
  - economic, social, or religious reasons
  - other patient reasons
  
- System reasons  
Includes:
  - resources to perform the services not available
  - insurance coverage/payor-related limitations
  - other reasons attributable to health care delivery system

These measure exclusion categories are not available uniformly across all measures; for each measure, there must be a clear rationale to permit an exclusion for a medical, patient, or system reason. The exclusion of a patient may be reported by appending the appropriate modifier to the CPT Category II code designated for the measure:

- Medical reasons: modifier 1P
- Patient reasons: modifier 2P
- System reasons: modifier 3P

Although this methodology does not require the external reporting of more detailed exclusion data, the Consortium recommends that clinicians document the *specific* reasons for exclusion in patients' medical records for purposes of optimal patient management and audit-readiness. The Consortium also advocates the systematic review and analysis of each physician's exclusions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exclusion.

Please refer to documentation for each individual measure for information on the acceptable exclusion categories and the codes and modifiers to be used for reporting.

Measures #1-4 in the Obstructive Sleep Apnea measurement set are process measures.

For outcome measures, the Consortium specifically identifies all acceptable reasons for which a patient may be excluded from the denominator. Each specified reason is reportable with a CPT Category II code designated for that purpose.

There are no outcome measures in the Obstructive Sleep Apnea measurement set.

The Consortium continues to evaluate and likely will evolve its methodology for handling exclusions as it gains experience in the use of the measures. The Consortium welcomes comments on its exclusions methodology.

#### Data Capture and Measure Calculation

The Consortium intends for clinicians to collect data on each patient eligible for a measure. Feedback on measures should be available to clinicians by patient to facilitate patient management and in aggregate to identify opportunities for improvement across a clinician's patient population.

Measure calculations will differ depending on whether a rate is being calculated for performance or reporting purposes.

The method of calculation for performance follows these steps: first, identify the patients (or reports) who meet the eligibility criteria for the denominator (PD); second, identify which of those patients (or reports) meet the numerator criteria (A); and third, for those patients (or reports) who do not meet the numerator criteria, determine whether an appropriate exclusion applies and subtract those patients from the denominator (C). (see examples below)

The methodology also enables implementers to calculate the rates of exclusions and to further analyze both low and high rates, as appropriate (see examples below).

The method of calculation for reporting differs. One program which currently focuses on reporting rates is the Centers for Medicare and Medicaid Services (CMS) Physician Quality Reporting Initiative (PQRI). Currently, under that program design, there will be a reporting denominator determined solely from claims data (CPT and ICD-9), which in some cases result in a reporting denominator that is much larger than the eligible population for the performance denominator. Additional components of the reporting denominator are explained below.

The components that make up the numerator for reporting include all patients/reports from the eligible population for which the physician has reported, including: the number of patients/reports who meet the numerator criteria (A), the number of patients/reports for whom valid exclusions apply (C) and also the number of patients/reports who do not meet the numerator criteria (D). These components, where applicable, are summed together to make up the inclusive reporting numerator. The calculation for reporting will be the reporting numerator divided by the reporting denominator. (see examples below).

Examples of calculations for reporting and performance are provided for each measure.

#### Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

#### **Numerator (A) Includes:**

Number of patients meeting numerator criteria

**Performance Denominator (PD) Includes:**

Number of patients meeting criteria for denominator inclusion

Denominator Exclusions (C) Include:

Number of patients with valid medical, patient or system exclusions (where applicable; will differ by measure)

Performance Calculation

$$\frac{A \text{ (# of patients meeting numerator criteria)}}{PD \text{ (# patients in denominator)} - C \text{ (# patients with valid denominator exclusions)}}$$

It is also possible to calculate the percentage of patients excluded overall, or excluded by medical, patient, or system reason where applicable:

Overall Exclusion Calculation

$$\frac{C \text{ (# of patients with any valid exclusion)}}{PD \text{ (# patients in denominator)}}$$

OR

Exclusion Calculation by Type

$$\frac{C_1 \text{ (# patients with medical reason)}}{PD \text{ (# patients in denominator)}}$$

$$\frac{C_2 \text{ (# patients with patient reason)}}{PD \text{ (# patients in denominator)}}$$

$$\frac{C_3 \text{ (# patients with system reason)}}{PD \text{ (# patients in denominator)}}$$

**Calculation for Reporting**

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following components, where applicable. (There may be instances where there are no patients to include in A, C, D, or E).

A. Number of patients meeting additional denominator criteria (for measures where true denominator cannot be determined through ICD-9 and CPT Category I coding alone) AND numerator criteria

C. Number of patients with valid medical, patient or system exclusions (where applicable; will differ by measure)

D. Number of patients not meeting numerator criteria and without a valid exclusion

E. All other patients not meeting additional denominator criteria (for measures where true denominator cannot be determined through ICD-9 and CPT Category I coding alone)

Reporting Denominator (RD) Includes:

RD. Denominator criteria (identifiable through ICD-9 and CPT Category I coding)

$$\frac{A \text{ (# of patients meeting additional denominator criteria AND numerator criteria)} + C \text{ (# of patients with valid exclusions)} + D \text{ (# of patients NOT meeting numerator criteria)} + E \text{ (# of patients not meeting additional denominator criteria)}}{RD \text{ (# of patients in denominator)}}$$

**DRAFT-FOR PUBLIC COMMENT**  
**Obstructive Sleep Apnea**

**Measure #1: Severity Assessment**

This measure may be used as an Accountability measure

Clinical Performance Measure
<p><b>Numerator:</b> Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured</p> <p><b>Denominator:</b> All patients aged 18 years and older with a diagnosis of obstructive sleep apnea</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"><li>• Documentation of medical reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, psychiatric disease, dementia)</li><li>• Documentation of patient reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, patient declined)</li><li>• Documentation of system reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, financial, insurance coverage, test ordered but not yet completed)</li></ul> <p><b>Measure:</b> All patients aged 18 years and older with a diagnosis of obstructive sleep apnea who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured</p>
<p>The following clinical recommendation statements are quoted <u>verbatim</u> from the referenced clinical guidelines and represent the evidence base for the measure:</p> <p>Moderate sleep apnea is defined as having an RDI of equal to or greater than 15, but less than 30 episodes per hour of sleep; severe sleep apnea is defined as having an RDI equal to or greater than 30 episodes per hour of sleep. These patients are at higher risk for severe cardiovascular diseases and other co-morbid conditions (Kushida et al, 2006). Polysomnography is indicated for positive airway pressure (PAP) titration in patients with sleep related breathing disorders (Level 1). PSG with CPAP titration is appropriate for patients with any of the following results: a) an RDI of at least 15 per hour, regardless of the patient's symptoms; b) an RDI of at least 5 per hour in a patient with excessive daytime sleepiness (Kushida et al, 2005).</p>
<p><b>Rationale for the measure:</b></p> <p>For patients with obstructive sleep apnea (OSA), the desired outcome of treatment includes the resolution of the clinical signs and symptoms of OSA and the normalization of the AHI and oxyhemoglobin saturation. Physicians treating patients with sleep apnea should calculate the patient's level of severity, which informs risk for other co-morbid conditions and complications. Numerous Level 1 and Level 2 studies have shown that the risk of cardiovascular complications is established for patients with an AHI over 15 (Kushida et al, 2005). Patients with an RDI equal to or greater than 15 are considered to have moderate to severe sleep apnea and should be treated with positive airway pressure therapy.</p>

**Data capture and calculations:**

**Calculation for *Performance***

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Performance Numerator (A) Includes:

- Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured

Performance Denominator (PD) Includes:

- All patients aged 18 years and older with a diagnosis of obstructive sleep apnea

Performance Denominator Exclusions (C) Include:

**Performance Calculation**

$$\frac{A \text{ (\# of patients meeting measure criteria)}}{PD \text{ (\# of patients in denominator)} - C \text{ (\# of patients with valid denominator exclusions)}}$$

Components for this measure are defined as:

A	Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured
PD	# of patients aged 18 years and older with a diagnosis of obstructive sleep apnea
C	# of patients with documentation of medical, patient, or system reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI)

**Calculation for *Reporting***

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured
- C. Patients with documentation of a medical, patient, or system reason for not calculating an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI)
- D. Patients who did not have an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured

Reporting Denominator (RD) Includes:

**Reporting Calculation**

$$\frac{A(\text{\# of patients meeting numerator criteria}) + C(\text{\# of patients with valid exclusions}) + D(\text{\# of patients NOT meeting numerator criteria})}{RD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured
C	# of patients with documentation of a medical, patient, or system reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI)
D	# of patients who did not have an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured
RD	# of patients aged 18 years and older with a diagnosis of obstructive sleep apnea

**Measure Specifications – Measure #1: Severity Assessment**

Measure specifications for data sources other than administrative claims will be developed upon approval of the measures by the PCPI.

**A. Administrative claims data**

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation. Additional CPT Category II codes may be required based on measure implementation [i.e., if measure is utilized in a reporting program]).

Denominator (Eligible Population):

All patients aged 18 years and older with a diagnosis of obstructive sleep apnea

- ICD-9 diagnosis codes:  
327.23 (Obstructive Sleep Apnea)  
780.53 (Hypersomnia with sleep apnea, unspecified)

AND

- CPT E/M Service Code:  
99201, 99202, 99203, 99204, 99205 (Office/other outpatient services-new patient)  
99212, 99213, 99214, 99215 (Office/other outpatient services-established patient)  
99241, 99242, 99243, 99244, 99245 (Office consultations)

Numerator:

Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured

- CPT Category II code (*in development*):  
3XXXF: Apnea hypopnea index (AHI) or respiratory disturbance index (RDI) measured

Denominator Exclusion:

- Documentation of medical reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, abnormal anatomy)  
Append modifier to CPT Category II code (*in development*): 3XXXF-1P
- Documentation of patient reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, patient declined)  
Append modifier to CPT Category II code (*in development*): 3XXXF-2P
- Documentation of system reason for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) (eg, financial, insurance coverage)  
Append modifier to CPT Category II code (*in development*): 3XXXF-3P

**B. Electronic Health Record System (*in development*)**

**C. Paper Medical Record (*in development*)**

**DRAFT-FOR PUBLIC COMMENT**  
**Obstructive Sleep Apnea**

**Measure #2: Positive Airway Pressure Therapy Prescribed**

This measure may be used as an Accountability measure

Clinical Performance Measure
<p><b>Numerator:</b> Patients who were prescribed positive airway pressure therapy</p> <p><b>Denominator:</b> All patients aged 18 years and older with a diagnosis of with moderate or severe obstructive sleep apnea *</p> <p><i>*moderate or severe sleep apnea is defined as apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) greater than or equal to 15 episodes per hour of sleep</i></p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Medical reason(s) for not prescribing positive airway pressure therapy (eg, patient unable, alternative therapies used)</li> <li>• Patient reason(s) for not prescribing positive airway pressure therapy (eg, patient declined)</li> <li>• System reason(s) for not prescribing positive airway pressure therapy (eg, financial, insurance coverage)</li> </ul> <p><b>Measure:</b> Percentage of patients aged 18 years and older with a diagnosis of moderate or severe obstructive sleep apnea who were prescribed positive airway pressure therapy</p>
<p>The following clinical recommendation statements are quoted <u>verbatim</u> from the referenced clinical guidelines and represent the evidence base for the measure:</p> <p>CPAP is indicated for the treatment of moderate to severe OSA (Level 1). CPAP is recommended for the treatment of mild OSA (Level 2). CPAP is indicated for improving self-reported sleepiness in patients with OSA (Level 1). This recommendation is based on 10 randomized controlled trials in which CPAP reduced sleepiness more than control procedures in patients with OSA. CPAP is recommended for improving quality of life in patients with OSA (Kushida et al, 2006) (Level 1 and Level 2 studies).</p>
<p><b>Rationale for the measure:</b></p> <p>All patients with moderate to severe obstructive sleep apnea (OSA) should have an initial trial of nasal CPAP; Level 1 evidence also recommends that patients with severe OSA should have an initial trial of nasal CPAP because greater effectiveness has been shown with this intervention than with the use of other treatments (Kushida et al, 2006). Level 1 studies also show that CPAP eliminates respiratory disturbances, reducing the AHI. All of the 11 clinical trials that studied this outcome demonstrated that CPAP was superior to placebo, conservative management, and positional therapy. This effect was demonstrated during follow-up polysomnography (Gay et al, 2006). Treatment with CPAP must be based on a prior diagnosis of OSA established using an acceptable method of diagnosis.</p>

**Data capture and calculations:**

**Calculation for Performance**

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

**Performance Numerator (A) Includes:**

Patients who were prescribed positive airway pressure therapy

**Performance Denominator (PD) Includes:**

All patients aged 18 years and older with a diagnosis of moderate or severe obstructive sleep apnea

**Performance Denominator Exclusions (C) Include:**

Documentation of medical, patient or system reason(s) for not prescribing positive airway pressure therapy

**Performance Calculation**

$$\frac{A \text{ (# of patients meeting measure criteria)}}{PD \text{ (# of patients in denominator)} - C \text{ (# of patients with valid exclusions)}}$$

Components for this measure are defined as:

<b>A</b>	# of patients who were prescribed positive airway pressure therapy
<b>PD</b>	# of patients aged 18 years and older with a diagnosis of moderate or severe obstructive sleep apnea
<b>C</b>	# of patients with medical, patient or system reason(s) for not prescribing positive airway pressure therapy

**Calculation for Reporting**

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Patients with moderate or severe obstructive sleep apnea who were prescribed positive airway pressure therapy
- C. Patients with medical, patient or system reason(s) for not prescribing positive airway pressure therapy
- D. Patients aged 18 years and older with a diagnosis of moderate or severe obstructive sleep apnea
- E. Patients with mild obstructive sleep apnea

Reporting Denominator (RD) Includes:

**Reporting Calculation**

$$\frac{A(\text{\# of patients meeting additional denominator criteria AND numerator criteria}) + C \text{ (\# of patients with valid exclusions)} + D(\text{\# of patients NOT meeting numerator criteria}) + E(\text{\# of patients not meeting additional denominator criteria})}{RD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patients with moderate or severe obstructive sleep apnea who were prescribed positive airway pressure therapy
C	# of patients with medical, patient or system reason(s) for not prescribing positive airway pressure therapy
D	# of patients with moderate or severe obstructive sleep apnea who were not prescribed positive airway pressure therapy (and there is no documented reason for not doing so)
E	# of patients with mild obstructive sleep apnea
RD	# of patients aged 18 years and older with a diagnosis obstructive sleep apnea

**Measure Specifications – Measure #2: Positive Airway Pressure Therapy Prescribed**

Measure specifications for data sources other than administrative claims will be developed upon approval of the measures by the PCPI.

**A. Administrative claims data**

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation. Additional CPT Category II codes may be required based on measure implementation [i.e., if measure is utilized in a reporting program]).

**Denominator (Eligible Population):**

All patients aged 18 years and older with a diagnosis of moderate or severe obstructive sleep apnea

*\*moderate or severe sleep apnea is defined as apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) of 15 or greater episodes per hour of sleep*

- ICD-9 diagnosis codes:  
327.23 (Obstructive Sleep Apnea)  
780.53 (Hypersomnia with sleep apnea, unspecified)

AND

- CPT E/M Service Code:  
99201, 99202, 99203, 99204, 99205 (Office/other outpatient services-new patient)  
99212, 99213, 99214, 99215 (Office/other outpatient services-established patient)  
99241, 99242, 99243, 99244, 99245 (Office consultations)

AND

- CPT Category II Code (in development):  
3XXXF- Moderate or severe obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of 15 or greater)  
OR  
3XXXF-Mild obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of less than 15)

Only patients with moderate or severe obstructive sleep apnea will be included in the denominator of the measure.

**Numerator:**

Patients who were prescribed positive airway pressure therapy

- CPT Category II code (*in development*):  
4XXXF: Positive airway pressure therapy prescribed

**Denominator Exclusion:**

- Documentation of medical reason for not prescribing positive airway pressure therapy  
Append modifier to CPT Category II code (*in development*): 4XXXF-1P
- Documentation of patient reason for not prescribing positive airway pressure therapy (eg, patient declined)  
Append modifier to CPT Category II code (*in development*): 4XXXF-2P
- Documentation of system reason for not prescribing positive airway pressure therapy (eg, financial, insurance coverage)  
Append modifier to CPT Category II code (*in development*): 4XXXF-3P

**B. Electronic Health Record System (*in development*)**

**C. Paper Medical Record (*in development*)**

**DRAFT-FOR PUBLIC COMMENT**  
**Obstructive Sleep Apnea**

**Measure #3: Assessment of Adherence to Positive Airway Pressure Therapy**

This measure may be used as an Accountability measure

Clinical Performance Measure
<p><b>Numerator:</b> Patient visits with documentation that adherence to positive airway pressure therapy was objectively measured*</p> <p><i>*Objectively measured is defined as: CPAP machine generated measurement of hours of use.</i></p> <p><b>Denominator:</b> All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea who were prescribed positive airway pressure therapy</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Documentation of a patient reason(s) for not documenting adherence to positive airway pressure therapy (eg, patient didn't bring data from card)</li> <li>• Documentation of a system reason(s) for not documenting adherence to positive airway pressure therapy (eg, therapy not yet initiated, not available on machine)</li> </ul> <p><b>Measure:</b> All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea who were prescribed positive airway pressure therapy who had documentation that adherence to positive airway pressure therapy was objectively measured</p>
<p>The following clinical recommendation statements are quoted <u>verbatim</u> from the referenced clinical guidelines and represent the evidence base for the measure:</p> <p>CPAP usage should be objectively monitored to help assure utilization (Level 1). Close follow-up for PAP usage and problems in patients with obstructive sleep apnea (OSA) by appropriately trained health care providers is indicated to establish effective utilization patterns and remediate problems, if needed. This recommendation is based on 61 studies that examined management paradigms and collected acceptance, utilization, and adverse events; 17 of these studies qualified as Level I. This is especially important during the first few weeks of PAP use and can prove to be beneficial for the longitudinal care of the patient (Kushida et al, 2006)</p>
<p><b>Rationale for the measure:</b></p> <p>This recommendation is based on overwhelming evidence at all levels indicating patients with obstructive sleep apnea overestimate their positive airway pressure. Level I and Level II studies indicate that objectively-measured nightly CPAP "time on" ranges from 3.5 hours/night in minimally symptomatic new patients to 7.1 hours/night in established users (Kushida et al, 2006). The success of any positive airway pressure device therapy depends primarily on patient adherence, which can be enhanced by education, proper mask/interface fit, frequent follow-up by the clinician and durable medical equipment (DME) provider, and finally, A.W.A.K.E. (Alert Well And Keeping Energetic) meetings (ICSI, 2007). When objective adherence is assessed and an intervention is employed—either in the clinic or via the telephone, use is increased. Meter reads (on the machines) or card reads provide a longitudinal assessment of use and prevent the potential for overuse of stimulant therapy and daytime testing of sleepiness with multiple sleep latency tests (MSLTs).</p> <p>Numerous studies have shown that patient adherence to CPAP is low or over estimated by patients. A 2006 study assessed obstructive sleep apnea (OSA) severity, continuous positive airway pressure (CPAP) adherence, and factors associated with CPAP adherence among a group of patients with OSA receiving care at a publicly funded county hospital. The findings indicated that CPAP adherence was low, with women having a higher likelihood of non-adherence than men. When individuals without follow-up were assumed to be non-adherent, the overall compliance rate was 30.4%, and women were 1.72 (95% CI, 1.03-2.88) times more likely to be noncompliant than men, adjusting for race, marital status, and age (Joo et al, 2007).</p> <p>Another study by Kribbs et al (Level I) found that subjective and covertly monitored objective CPAP adherence were discordant and that OSA patients in the aggregate overestimate subjective CPAP adherence compared with objective adherence measurements obtained by microprocessor. Adherence was arbitrarily defined as ≥ 4 hours of CPAP usage for ≥ 70% of the nights monitored. Although 60% of patients subjectively reported nightly use of CPAP for a mean of 106.9 days, only 16 of 35</p>

(46%) were objectively using CPAP at least 4 hours per night on 70% of the nights. Patients over-estimated actual CPAP use by 69 ± 110 min (Gay et al, 2005)

Data capture and calculations:

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator and Denominator.

Performance Numerator (A) Includes:

Patient visits with documentation that adherence to positive airway pressure therapy was objectively measured\*

Performance Denominator (PD) Includes:

Performance Calculation

$$\frac{A \text{ (\# of patients meeting numerator criteria)}}{PD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patient visits with documentation that adherence to positive airway pressure therapy was objectively measured*
PD	# of visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea who were prescribed positive airway pressure therapy

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator.

Reporting Numerator includes each of the following instances:

A. Patients who were prescribed positive airway pressure therapy who have documentation that adherence to positive airway pressure therapy was objectively measured\*

D. Patients who were prescribed positive airway pressure therapy for whom positive airway pressure therapy was not objectively measured

E. Patients who have not been prescribed positive airway pressure therapy

Reporting Denominator (RD) Includes:

RD. Patients aged 18 years and older with a diagnosis of obstructive sleep apnea

Reporting Calculation

$$\frac{A(\text{\# of patient visits meeting numerator criteria}) + D(\text{\# of patient visits NOT meeting numerator criteria}) + E(\text{\# of patient visits not meeting additional denominator criteria})}{RD \text{ (\# of patient visits in denominator)}}$$

Components for this measure are defined as:

A	# of patient visits with documentation that adherence to positive airway pressure therapy was objectively measured*
D	# of patient visits who were prescribed positive airway pressure therapy for whom positive airway pressure therapy was not objectively measured
E	# of patient visits who have not been prescribed positive airway pressure therapy
RD	# of patient visits aged 18 years and older with a diagnosis of obstructive sleep apnea

Measure Specifications – Measure #3: Assessment of adherence to positive airway pressure therapy

Measure specifications for data sources other than administrative claims will be developed upon approval of the measures by the PCPI.

**A. Administrative claims data**

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation. Additional CPT Category II codes may be required based on measure implementation [i.e., if measure is utilized in a reporting program]).

**Denominator (Eligible Population):**

All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea who were prescribed positive airway pressure therapy

- ICD-9 diagnosis codes:  
327.23 (Obstructive Sleep Apnea)  
780.53 (Hypersomnia with sleep apnea, unspecified)

AND

- CPT E/M Service Code:  
99201, 99202, 99203, 99204, 99205 (Office/other outpatient services-new patient)  
99212, 99213, 99214, 99215 (Office/other outpatient services-established patient)  
99241, 99242, 99243, 99244, 99245 (Office consultations)

AND

- CPT Category II code (*in development*):  
4XXXF: Positive airway pressure therapy prescribed  
OR  
4XXXF: Positive airway pressure therapy not prescribed  
Only patients who have been prescribed positive airway pressure therapy will be included in the denominator of the measure.

**Numerator:**

- Patient visits with documentation that adherence to positive airway pressure therapy was objectively measured\*  
CPT Category II code (in development) designated for this numerator:  
3XXXF- Objective measurement of adherence to positive airway pressure therapy, documented

**Denominator Exclusion:**

Documentation of a patient reason(s) for not documenting adherence to positive airway pressure therapy (eg, patient didn't bring data from continuous positive airway pressure CPAP)

- Append modifier to CPT Category II code (*in development*): 3XXXF-2P

Documentation of a system reason(s) for not documenting adherence to positive airway pressure therapy (eg, therapy not yet initiated, not available on machine)

- Append modifier to CPT Category II code (*in development*): 3XXXF-3P

**B. Electronic Health Record System (*in development*)**

**C. Paper Medical Record (*in development*)**

**DRAFT-FOR PUBLIC COMMENT**  
**Obstructive Sleep Apnea**

**Measure #4: Assessment of Sleep Symptoms**

This measure may be used as an Accountability measure

Clinical Performance Measure
<p><b>Numerator:</b> Patients visits with an assessment of sleep symptoms documented, including presence or absence of snoring and daytime sleepiness</p> <p><b>Denominator:</b> All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Documentation of a medical reason(s) for not documenting an assessment of sleep symptoms (e.g., patient didn't have initial daytime sleepiness)</li> <li>• Documentation of a system reason(s) for not documenting an assessment of sleep symptoms (e.g., therapy not yet initiated)</li> </ul> <p><b>Measure:</b> All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea that includes documentation of an assessment of symptoms, including presence or absence of snoring and daytime sleepiness</p>
<p>The following clinical recommendation statements are quoted <u>verbatim</u> from the referenced clinical guidelines and represent the evidence base for the measure:</p> <p>CPAP is indicated for improving self-reported sleepiness in patients with obstructive sleep apnea (Level 1). This recommendation is based on 10 randomized controlled trials in which CPAP reduced sleepiness more than control procedures in patients with obstructive sleep apnea. The Epworth Sleepiness Scale was used in the vast majority of trials to assess subjective sleepiness (Kushida et al, 2006).</p>
<p><b>Rationale for the measure:</b></p> <p>Snoring occurs in up to 30-50% of adults over the age of 50, and subjective sleepiness occurs in more than 30% of adults (Kushida et al, 2005). Patients diagnosed with obstructive sleep apnea should be regularly assessed for changes in symptoms, such as snoring and daytime sleepiness. Sleepiness can be quantified with validated tools such as the Epworth Sleepiness Scale. Increases in either of these conditions can be signs of poor adherence to treatment, improper mask fit, or indications that additional treatment, such as surgery or medication, is needed. Furthermore, the lack of improvement in sleepiness or snoring may be a reason to discontinue positive pressure in follow-up after a therapeutic trial. Alternatively, an increase in CPAP pressure, may be implemented to improve snoring or daytime sleepiness. In evaluating daytime sleepiness, it is important to rule out sleep deprivation. Daytime sleepiness, especially with impairment of driving can be a sign of untreated obstructive sleep apnea.</p> <p>There has been considerable research on the impact of CPAP on subjective and objective daytime sleepiness. The majority of these studies have evaluated subjective sleepiness, principally using the Epworth Sleepiness Scale (ESS). Of the placebo-controlled trials employing the ESS, most found that CPAP reduced subjective daytime sleepiness (Gay et al, 2005).</p>
<p><b>Data capture and calculations:</b></p> <p><u>Calculation for Performance</u></p> <p>For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.</p> <p><b>Performance Numerator (A) Includes:</b>            Patients visits with an assessment of sleep symptoms documented, including presence or absence of snoring and daytime sleepiness</p> <p><b>Performance Denominator (PD) Includes:</b>            All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea</p> <p><b>Denominator Exclusions (C) Include:</b>            Documentation of a medical reason(s) (e.g., patient didn't have initial daytime sleepiness) or system reason(s) for not documenting an assessment of sleep symptoms (e.g., therapy not yet initiated)</p>

Performance Calculation

$$\frac{A \text{ (\# of patient visits meeting measure criteria)}}{PD \text{ (\# of patient visits in denominator)} - C \text{ (\# of patient visits with valid exclusions)}}$$

Components for this measure are defined as:

A	# of patient visits with an assessment of sleep symptoms documented, including presence or absence of snoring and daytime sleepiness
PD	# of patient visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea
C	# of patient visits with valid medical or system reason for not documenting an assessment of symptoms, including presence or absence of snoring and daytime sleepiness

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator.

Reporting Numerator includes each of the following instances:

- A. Patients visits with an assessment of sleep symptoms documented, including presence or absence of snoring and daytime sleepiness
- D. All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea
- C. Visits with documentation of a medical reason(s) (e.g., patient didn't have initial daytime sleepiness) or system reason(s) for not documenting an assessment of sleep symptoms (e.g., therapy not yet initiated)

Reporting Denominator (RD) Includes:

All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea

Reporting Calculation

$$\frac{A(\text{\# of patient visits meeting numerator criteria}) + D(\text{\# of patient visits NOT meeting numerator criteria}) + C \text{ (\# of patient visits with valid exclusions)}}{RD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patient visits with an assessment of sleep symptoms documented, including presence or absence of snoring and daytime sleepiness
D	# of patient visits without documentation of sleep symptoms, including presence or absence of snoring and daytime sleepiness
C	# of patient visits with documentation of medical or system reason for not documenting assessment of sleep symptoms, including presence or absence of snoring and daytime sleepiness
RD	# of patient visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea

**Measure Specifications – Measure #4: Assessment of Sleep Symptoms**

Measure specifications for data sources other than administrative claims will be developed upon approval of the measures by the PCPI.

**A. Administrative claims data**

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper).

(Note: The specifications listed below are those needed for performance calculation. Additional CPT Category II codes may be required based on measure implementation [i.e., if measure is utilized in a reporting program]).

**Denominator (Eligible Population):**

All visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea

- ICD-9 Diagnosis Codes:  
327.23 (Obstructive Sleep Apnea)  
780.53 (Hypersomnia with sleep apnea, unspecified)

AND

- CPT E/M Service Code:  
99201, 99202, 99203, 99204, 99205 (Office/other outpatient services-new patient)  
99212, 99213, 99214, 99215 (Office/other outpatient services-established patient)  
99241, 99242, 99243, 99244, 99245 (Office consultations)

**Numerator:**

Patients visits with an objective assessment of symptoms documented, including presence or absence of snoring and daytime sleepiness

- CPT Category II Code (in development):  
1XXXF-Sleep apnea symptoms assessed, including presence or absence of snoring and daytime sleepiness

**Denominator Exclusion:**

Documentation of a patient not documenting an assessment of sleep symptoms (eg, patient didn't have initial daytime sleepiness)

- Append modifier to CPT Category II code (*in development*): 1XXXF-1P
- Documentation of a system reason(s) for not documenting an assessment of sleep symptoms (eg, therapy not yet initiated)
- Append modifier to CPT Category II code (*in development*): 1XXXF-3P

**B. Electronic Health Record System (*in development*)**

**C. Paper Medical Record (*in development*)**

EVIDENCE CLASSIFICATIONS / RATING SCHEMES

**Table 1—AASM classification of evidence, with subscript:**

- Recommendation Grades Evidence Levels Study Design**  
 A: I Randomized well-designed trials with low alpha and beta error\*  
 B: II Randomized trials with high alpha and beta error\*  
 C: III Nonrandomized concurrently controlled studies  
 C: IV Nonrandomized historically controlled studies  
 C :V Case series

Adapted from Sackett

\*Alpha error refers to the probability (generally set at 95% or greater) that a significant outcome (e.g.,  $p < 0.05$ ) is not a result of chance occurrence. Beta

error refers to the probability (generally set at 80% to 90% or greater) that a non-significant result (e.g.,  $p > 0.05$ ) is the correct conclusion of the study or studies.

The estimation of beta error is generally the result of a power analysis. The power analysis includes a sample size analysis to project the size of the study

population necessary to ensure that significant differences will be observed if actually present.

<b>Term</b>	<b>Definition</b>
Standard	This is a generally accepted patient-care strategy, which reflects a high degree of clinical certainty. The term standard generally implies the use of Level I Evidence, which directly addresses the clinical issue, or overwhelming Level II Evidence.
Guideline	This is a patient-care strategy, which reflects a moderate degree of clinical certainty. The term guideline implies the use of Level II Evidence or a consensus of Level III Evidence.
Option	This is a patient-care strategy, which reflects uncertain clinical use. The term option implies either inconclusive or conflicting evidence or conflicting expert opinion.

Adapted from Eddy.<sup>4</sup> Reprinted with permission from the American College of Physicians.

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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):375-80.

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