

## SLEEP APNEA MEASURES GROUP OVERVIEW

### 2016 PQRS OPTIONS FOR MEASURES GROUP:

#### 2016 PQRS MEASURES IN SLEEP APNEA MEASURES GROUP:

- #128 Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan
- #130 Documentation of Current Medications in the Medical Record
- #226 Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention
- #276 Sleep Apnea: Assessment of Sleep Symptoms
- #277 Sleep Apnea: Severity Assessment at Initial Diagnosis
- #278 Sleep Apnea: Positive Airway Pressure Therapy Prescribed
- #279 Sleep Apnea: Assessment of Adherence to Positive Airway Pressure Therapy

#### INSTRUCTIONS FOR REPORTING:

- It is not necessary to submit the measures group-specific intent G-code for registry-based submissions. However, the measures group-specific intent G-code has been created for registry only measures groups for use by registries that utilize claims data.

**G8900:** I intend to report the Sleep Apnea Measures Group

- Report the patient sample method:  
**20 Patient Sample Method via registries:** 20 unique patients (a majority of which must be Medicare Part B FFS patients) meeting patient sample criteria for the measures group during the reporting period (January 1 through December 31, 2016).
- Patient sample criteria for the Sleep Apnea Measures Group are patients aged 18 years and older with a specific diagnosis of Sleep Apnea accompanied by a specific patient encounter:

**One of the following diagnosis codes indicating Sleep Apnea:**

**ICD-10-CM:** G47.30, G47.33

**Accompanied by:**

**One of the following patient encounter codes:** 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99304, 99305, 99306, 99307, 99308, 99309, 99310, 99324, 99325, 99326, 99327, 99328, 99334, 99335, 99336, 99337, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350

- To satisfactorily report the Sleep Apnea Measures Group requires reporting a numerator option on **all applicable** measures, for each patient within the eligible professional's patient sample, a minimum of once during the reporting period.
- Measure #128 does not need to be reported (is not applicable) if the patient is considered not eligible for BMI calculation or follow-up plan – A patient is not eligible if one or more of the following reasons are documented:
  - Patient is receiving palliative care
  - Patient is pregnant
  - Patient refuses BMI measurement (refuses height and/or weight)
  - Any other reason documented in the medical record by the provider why BMI measurement was not appropriate
  - Patient is in an urgent or emergent medical situation where time is of the essence, and to delay treatment would jeopardize the patient's health status

- Instructions for qualifying numerator option reporting for each of the measures within the Sleep Apnea Measures Group are displayed on the next several pages. The following composite Quality Data Code (QDC) has been created for registries that utilize claims data. This QDC may be reported in lieu of individual QDCs when all quality clinical actions for all applicable measures within the group have been performed.

**Composite QDC G8759:** All quality actions for the applicable measures in the Sleep Apnea Measures Group have been performed for this patient

- Measure Group Reporting Calculations:

Measures groups containing a measure with a 0% performance rate will not be counted as satisfactorily reporting the measures group. The recommended clinical quality action must be performed on at least one patient for each applicable measure within the measures group reported by the eligible professional.

Performance exclusion QDCs are not counted in the performance denominator. If the eligible professional submits all performance exclusion QDCs, the performance rate would be 0/0 (null) and would be considered satisfactorily reporting.

If a measure within a measures group is not applicable to a patient, the patient would not be counted in the performance denominator for that measure (e.g., Preventive Care Measures Group - Measure #39: Screening for Osteoporosis for Women Aged 65-85 Years of Age would not be applicable to male patients according to the patient sample criteria). If the measure is not applicable for all patients within the sample, the performance rate would be 0/0 (null) and would be considered satisfactorily reporting

- **NOTE:** The detailed instructions in this specification apply exclusively to the reporting and analysis of the included measures under the measures group option.

**Measure #128 (NQF 0421): Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan -- National Quality Strategy Domain: Community/Population Health**

**DESCRIPTION:**

Percentage of patients aged 18 years and older with a BMI documented during the current encounter or during the previous six months AND with a BMI outside of normal parameters, a follow-up plan is documented during the encounter or during the previous six months of the current encounter

**Normal Parameters:** Age 65 years and older BMI  $\geq 23$  and  $< 30$  kg/m<sup>2</sup>

Age 18 – 64 years BMI  $\geq 18.5$  and  $< 25$  kg/m<sup>2</sup>

**NUMERATOR:**

Patients with a documented BMI during the encounter or during the previous six months, AND when the BMI is outside of normal parameters, a follow-up plan is documented during the encounter or during the previous six months of the current encounter

**Numerator Instructions:**

- **Height and Weight** – An eligible professional or their staff is required to measure both height and weight. Both height and weight must be measured within six months of the current encounter and may be obtained from separate encounters. Self-reported values cannot be used.
- **Follow-Up Plan** – If the most recent documented BMI is outside of normal parameters, then a follow-up plan is documented during the encounter or during the previous six months of the current encounter. The documented follow-up plan must be based on the most recent documented BMI outside of normal parameters, example: “Patient referred to nutrition counseling for BMI above normal parameters.” (See Definitions for examples of a follow-up plan treatments)
- **Performance Met for G8417 & G8418**
  - If the provider documents a BMI and a follow-up plan at the current visit **OR**
  - If the patient has a documented BMI within the previous six months of the current encounter, the provider documents a follow-up plan at the current visit **OR**
  - If the patient has a documented BMI within the previous six months of the current encounter **AND** the patient has a documented follow-up plan for a BMI outside normal parameters within the previous six months of the current visit

**Definitions:**

**BMI** – Body mass index (BMI), is a number calculated using the Quetelet index: weight divided by height squared (W/H<sup>2</sup>) and is commonly used to classify weight categories. BMI can be calculated using:

Metric Units: BMI = Weight (kg) / (Height (m) x Height (m))

**OR**

English Units: BMI = Weight (lbs) / (Height (in) x Height (in)) x 703

**Follow-Up Plan** – Proposed outline of treatment to be conducted as a result of a BMI out of normal parameters. A follow-up plan may include but is not limited to:

- Documentation of education
- Referral (e.g., a registered dietitian/nutritionist, occupational therapist, physical therapist, primary care provider, exercise physiologist, mental health professional, or surgeon)
- Pharmacological interventions
- Dietary supplements

- Exercise counseling
- Nutrition counseling

**Not Eligible for BMI Calculation or Follow-Up Plan** – A patient is not eligible if one or more of the following reasons are documented:

- Patient is receiving palliative care
- Patient is pregnant
- Patient refuses BMI measurement (refuses height and/or weight)
- Any other reason documented in the medical record by the provider why BMI measurement was not appropriate
- Patient is in an urgent or emergent medical situation where time is of the essence, and to delay treatment would jeopardize the patient's health status

**Numerator Options:**

***Performance Met:***

BMI is documented within normal parameters and no follow-up plan is required (**G8420**)

**OR**

***Performance Met:***

BMI is documented above normal parameters and a follow-up plan is documented (**G8417**)

**OR**

***Performance Met:***

BMI is documented below normal parameters and a follow-up plan is documented (**G8418**)

**OR**

***Performance Not Met:***

BMI not documented and no reason is given (**G8421**)

**OR**

***Performance Not Met:***

BMI documented outside normal parameters, no follow-up plan documented, no reason given (**G8419**)

**Measure #130 (NQF 0419): Documentation of Current Medications in the Medical Record --  
National Quality Strategy Domain: Patient Safety**

**DESCRIPTION:**

Percentage of visits for patients aged 18 years and older for which the eligible professional attests to documenting a list of current medications using all immediate resources available on the date of the encounter. This list **must** include ALL known prescriptions, over-the-counters, herbals, and vitamin/mineral/dietary (nutritional) supplements AND **must** contain the medications' name, dosage, frequency and route of administration

**NUMERATOR:**

Eligible professional attests to documenting, updating or reviewing a patient's current medications using all immediate resources available on the date of encounter. This list **must** include ALL known prescriptions, over-the-counters, herbals, and vitamin/mineral/dietary (nutritional) supplements AND **must** contain the medications' name, dosages, frequency and route of administration

**Definitions:**

**Current Medications** – Medications the patient is presently taking including all prescriptions, over-the-counters, herbals and vitamin/mineral/dietary (nutritional) supplements with each medication's name, dosage, frequency and administered route.

**Route** - Documentation of the way the medication enters the body (some examples include but are not limited to: oral, sublingual, subcutaneous injections, and/or topical).

**Not Eligible** - A patient is not eligible if the following reason is documented:

- Patient is in an urgent or emergent medical situation where time is of the essence and to delay treatment would jeopardize the patient's health status.

**NUMERATOR NOTE:** *The eligible professional must document in the medical record they obtained, updated, or reviewed a medication list on the date of the encounter. Eligible professionals reporting this measure may document medication information received from the patient, authorized representative(s), caregiver(s) or other available healthcare resources. G8427 should be reported if the eligible professional documented that the patient is not currently taking any medications.*

**Numerator Options:**

<b><u>Performance Met:</u></b>	Eligible professional attests to documenting in the medical record they obtained, updated, or reviewed the patient's current medications <b>(G8427)</b>
<b><u>OR</u></b>	
<b><u>Other Performance Exclusion:</u></b>	Eligible professional attests to documenting in the medical record the patient is not eligible for a current list of medications being obtained, updated, or reviewed by the eligible professional <b>(G8430)</b>
<b><u>OR</u></b>	
<b><u>Performance Not Met:</u></b>	Current list of medications not documented as obtained, updated, or reviewed by the eligible professional, reason not given <b>(G8428)</b>

**▲ Measure #226 (NQF 0028): Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention -- National Quality Strategy Domain: Community/Population Health**

**DESCRIPTION:**

Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months **AND** who received cessation counseling intervention if identified as a tobacco user

**NUMERATOR:**

Patients who were screened for tobacco use at least once within 24 months **AND** who received tobacco cessation intervention if identified as a tobacco user

**Definitions:**

**Tobacco Use** – Includes use of any type of tobacco.

**Tobacco Cessation Intervention** – Includes brief counseling (3 minutes or less), and/or pharmacotherapy.

**NUMERATOR NOTE:** *In the event that a patient is screened for tobacco use and identified as a user but did not receive tobacco cessation intervention report **4004F with 8P**.*

**Numerator Options:**

<b><u>Performance Met:</u></b>	Patient screened for tobacco use AND received tobacco cessation intervention (counseling, pharmacotherapy, or both), if identified as a tobacco user <b>(4004F)</b>
<b><u>OR</u></b>	
<b><u>Performance Met:</u></b>	Current tobacco non-user <b>(1036F)</b>
<b><u>OR</u></b>	
<b><u>Medical Performance Exclusion:</u></b>	Documentation of medical reason(s) for not screening for tobacco use (eg, limited life expectancy, other medical reasons) <b>(4004F with 1P)</b>
<b><u>OR</u></b>	
<b><u>Performance Not Met:</u></b>	Tobacco screening OR tobacco cessation intervention not performed, reason not otherwise specified <b>(4004F with 8P)</b>

**Measure #276: Sleep Apnea: Assessment of Sleep Symptoms -- National Quality Strategy**  
**Domain: Effective Clinical Care**

**DESCRIPTION:**

Percentage of visits for patients aged 18 years and older with a diagnosis of obstructive sleep apnea that includes documentation of an assessment of sleep symptoms, including presence or absence of snoring and daytime sleepiness

**NUMERATOR:**

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

**Numerator Options:**

***Performance Met:***

Sleep apnea symptoms assessed, including presence or absence of snoring and daytime sleepiness **(G8839)**

**OR**

***Other Performance Exclusion:***

Documentation of reason(s) for not documenting an assessment of sleep symptoms (e.g., patient didn't have initial daytime sleepiness, patient visited between initial testing and initiation of therapy) **(G8840)**

**OR**

***Performance Not Met:***

Sleep apnea symptoms not assessed, reason not given **(G8841)**

**Measure #277: Sleep Apnea: Severity Assessment at Initial Diagnosis -- National Quality Strategy**  
**Domain: Effective Clinical Care**

**DESCRIPTION:**

Percentage of 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 at the time of initial diagnosis

**NUMERATOR:**

Patients who had an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) measured at the time of initial diagnosis

**Definitions:**

**Apnea-Hypopnea Index (AHI)** for polysomnography performed in a sleep lab is defined as (Total Apneas + Hypopneas per hour of sleep); Apnea-Hypopnea Index (AHI) for a home sleep study is defined as (Total Apneas + Hypopneas per hour of monitoring).

**Respiratory Disturbance Index (RDI)** - is defined as (Total Apneas + Hypopneas + Respiratory Effort Related Arousals per hour of sleep).

**Numerator Options:**

***Performance Met:***

Apnea hypopnea index (AHI) or respiratory disturbance index (RDI) measured at the time of initial diagnosis  
**(G8842)**

**OR**

***Other Performance Exclusion:***

Documentation of reason(s) for not measuring an apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) at the time of initial diagnosis (e.g., psychiatric disease, dementia, patient declined, financial, insurance coverage, test ordered but not yet completed) **(G8843)**

**OR**

***Performance Not Met:***

Apnea hypopnea index (AHI) or respiratory disturbance index (RDI) not measured at the time of initial diagnosis, reason not given **(G8844)**



**Measure #278: Sleep Apnea: Positive Airway Pressure Therapy Prescribed -- National Quality Strategy Domain: Effective Clinical Care**

**DESCRIPTION:**

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

**NUMERATOR:**

Patients who were prescribed positive airway pressure therapy

**Definition:**

**Moderate or severe sleep apnea** - apnea hypopnea index (AHI) or a respiratory disturbance index (RDI) greater than or equal to 15 episodes per hour of sleep

**Numerator Options:**

**Performance Met:**

Positive airway pressure therapy prescribed (**G8845**)

**AND**

Moderate or severe obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of 15 or greater) (**G8846**)

**OR**

***Other Performance Exclusion:***

Mild obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of less than 15) (**G8848**)

**OR**

***Other Performance Exclusion:***

Documentation of reason(s) for not prescribing positive airway pressure therapy (e.g., patient unable to tolerate, alternative therapies used, patient declined, financial, insurance coverage) (**G8849**)

**AND**

Moderate or severe obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of 15 or greater) (**G8846**)

**OR**

***Performance Not Met:***

Positive airway pressure therapy not prescribed, reason not given (**G8850**)

**AND**

Moderate or severe obstructive sleep apnea (apnea hypopnea index (AHI) or respiratory disturbance index (RDI) of 15 or greater) (**G8846**)

**Measure #279: Sleep Apnea: Assessment of Adherence to Positive Airway Pressure Therapy --  
National Quality Strategy Domain: Effective Clinical Care**

**DESCRIPTION:**

Percentage of 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

**NUMERATOR:**

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

**Definition:**

**Objectively measured is defined as** – positive airway pressure machine-generated measurement of hours of use.

**Numerator Options:**

***Performance Met:***

Objective measurement of adherence to positive airway pressure therapy, documented (**G8851**)

**AND**

Positive airway pressure therapy was prescribed (**G8852**)

**OR**

***Other Performance Exclusion:***

Positive airway pressure therapy not prescribed (**G8853**)

**OR**

***Other Performance Exclusion:***

Documentation of reason(s) for not objectively measuring adherence to positive airway pressure therapy (e.g., patient didn't bring data from continuous positive airway pressure [CPAP], therapy not yet initiated, not available on machine) (**G8854**)

**AND**

Positive airway pressure therapy was prescribed (**G8852**)

**OR**

***Performance Not Met:***

Objective measurement of adherence to positive airway pressure therapy not performed, reason not given (**G8855**)

**AND**

Positive airway pressure therapy was prescribed (**G8852**)

## SLEEP APNEA MEASURES GROUP RATIONALE AND CLINICAL RECOMMENDATION STATEMENTS

### **MEASURE #128 - PREVENTIVE CARE AND SCREENING: BODY MASS INDEX (BMI) SCREENING AND FOLLOW-UP PLAN**

#### **RATIONALE:**

##### **Normal Parameters for Age 65 Years and Older**

Winter et al. (2014) performed a meta-analysis looking at the relationship between BMI and all-cause mortality among adults 65 and older. They identified a higher risk of mortality among those with a BMI <23 kg/m<sup>2</sup> and recommended monitoring weight status in this group to address any modifiable causes of weight loss promptly with due consideration of individual comorbidities. Dahl et al. (2013) reported that old persons (70-79) who were overweight had a lower mortality risk than old persons who were of normal weight, even after controlling for weight change and multimorbidity. The study also shows that persons who increased or decreased in BMI had a greater mortality risk than those who had a stable BMI, particularly those aged 70 to 79. Their results provide support to the belief that the World Health Organization guidelines for BMI are overly restrictive in old age.

##### **BMI Above Upper Parameters**

Obesity continues to be a costly public health concern in the United States. The Centers for Disease Control and Prevention (CDC, 2010) reported in 2009, no state met the Healthy People 2010 obesity target of 15 percent and the self-reported overall prevalence of obesity among adults had increased 1.1 percentage points in 2007 to 26.7 percent (2010). Ogden, Carroll, Kit and Flegal (2013) reported the prevalence of BMI-defined obesity in adults is high and continues to exceed 30% in most sex-age groups (34.9% overall). They also stated the overall prevalence of obesity did not differ between men and women in 2011–2012; however, among non-Hispanic black adults, 56.6% of women were obese compared with 37.1% of men. In addition to the continued high prevalence rate for adults in general, Flegal, Carroll & Kit (2012) report a significant increase for men and for non-Hispanic black and Mexican American women over the 12-year period from 1999 through 2010 (2012). Moyer (2012) reported: Obesity is associated with such health problems as an increased risk for coronary artery disease, type 2 diabetes, various types of cancer, gallstones and disability. These comorbid medical conditions are associated with higher use of health care services and costs among obese patients (p. 373).

Obesity is also associated with an increased risk of death, particularly in adults younger than age 65 years and has been shown to reduce life expectancy by 6 to 20 years depending on age and race (LeBlanc et al., 2011). Masters, et al. (2013) also showed mortality due to obesity varied by race and gender. They estimated adult deaths between 1986 and 2006 associated with overweight and obesity was 5.0% and 15.6% for Black and White men, and 26.8% and 21.7% for Black and White women, respectively. They also found a stronger association than previous research demonstrated between obesity and mortality risk at older ages.

Finkelstein, Trogdon, Cohen and Dietz (2009) found that in 2006, across all payers, per capita medical spending for the obese is \$1,429 higher per year, (42 percent) than for someone of normal weight. Using 2008 dollars, this was estimated to be equivalent to \$147 billion dollars in medical care costs related to obesity.

Padula, Allen and Nair (2014) examined data from a commercial claims and encounters database to estimate the cost for obesity and associated comorbidities among working-age adults who had a claim with a primary or secondary diagnosis of obesity in 2006-2007. The mean net expenditure for inpatient and outpatient claims was \$1,907 per patient per visit. The increases in cost for comorbidities ranged from \$527 for obesity with CHF to \$15,733 for the combination of obesity, diabetes mellitus, hypertension and depression.

In addition to a high prevalence rate of obesity, less than 50% of obese adults in 2010 received advice to exercise or perform physical activity (Barnes & Schoenborn, 2012).

##### **BMI Below Normal Parameters**

In the National Center for Health Statistics (NCHS) Health E-Stat, Fryer and Ogden (2012) reported that poor nutrition or underlying health conditions can result in underweight. Results from the 2007-2010 National Health and

Nutrition Examination Survey (NHANES), using measured heights and weights, indicate an estimated 1.7% of U.S. adults are underweight with women more likely to be underweight than men (2012).

In a cohort study conducted by Borrell and Lalitha (2014), data from NHANES III (1988-1994) was linked to the National Death Index mortality file with follow-up to 2006, and showed that when compared to their normal weight counterparts (BMI 18.5-25 kg/m<sup>2</sup>), underweight (BMI <18.5 kg/m<sup>2</sup>) had significantly higher death rates (Hazard Ratio= 2.27; 95% confidence interval (CI) = 1.78, 2.90).

Ranhoff, Gjoen and Mowe (2005) recommended using BMI < 23 kg/m<sup>2</sup> for the elderly to identify positive results with malnutrition screens and poor nutritional status.

### **CLINICAL RECOMMENDATION STATEMENTS:**

Although multiple clinical recommendations addressing obesity have been developed by professional organizations, societies and associations, two recommendations have been identified which exemplify the intent of the measure and address the numerator and denominator.

The US Preventive Health Services Task Force (USPSTF) recommends screening all adults (aged 18 years and older) for obesity. Clinicians should offer or refer patients with a BMI of 30 or higher to intensive, multicomponent behavioral interventions. This is a B recommendation (Moyer, 2012).

As cited in Wilkinson et al. (2013), Institute for Clinical Systems Improvement (ICSI) Preventive Services for Adults, Obesity Screening (Level II) Recommendation provides the following guidance:

- Record height, weight and calculate body mass index at least annually
  - Clinicians should consider waist circumference measurement to estimate disease risk for patients who have BMI scores indicative of overweight or obesity class I. For adult patients with a BMI of specific waist circumference cutoffs should be used in conjunction with BMI to identify increased disease risk.
- A BMI greater or equal to 30 is defined as obese
- A BMI of 25-29 is defined as overweight
- Intensive intervention for obese individuals, based on BMI, is recommended by the U.S. Preventive Services to help control weight.

Similarly, the 2013 joint report/guideline from the American Heart Association, American College of Cardiology and The Obesity Society also recommend measuring height and weight and calculating BMI at annual visits or more frequently, using the current cutpoints for overweight (BMI>25.0-29.9 kg/m<sup>2</sup>) and obesity (BMI ≥30 kg/m<sup>2</sup>) to identify adults who may be at elevated risk of CVD and the current cutpoints for obesity to identify adults who may be at elevated risk of mortality from all causes. They also recommend counseling overweight and obese individuals on their increased risk for CVD, type 2 diabetes, all-cause mortality and need for lifestyle changes.

### **MEASURE #130 – DOCUMENTATION OF CURRENT MEDICATIONS IN THE MEDICAL RECORD**

#### **RATIONALE:**

In the American Medical Association's (AMA) Physician's Role in Medication Reconciliation (2007), critical patient information, including medical and medication histories, current medications the patient is receiving and taking, and sources of medications, is essential to the delivery of safe medical care. However, interruptions in the continuity of care and information gaps in patient health records are common and significantly affect patient outcomes. Consequently, clinical judgments may be based on incomplete, inaccurate, poorly documented or unavailable information about the patient and his or her medication.

As identified by The Agency for Healthcare Research and Quality in the National Healthcare Disparities report (2013), "different providers may prescribe medications for the same patient. Patients are responsible for keeping

track of all their medications, but medication information can be confusing, especially for patients on multiple medications. When care is not well coordinated and some providers do not know about all of a patient's medications, patients are at greater risk for adverse events related to drug interactions, overdosing, or underdosing."

In addition, providers need to periodically review all of a patient's medications to ensure that they are taking what is needed and only what is needed. Medication reconciliation has been shown to reduce both medication errors and adverse drug events (Whittington & Cohen, 2004).

Medication safety efforts have primarily focused on hospitals; however, the majority of health care services are provided in the outpatient setting where two-thirds of physician visits result in writing at least one prescription (Stock et al., 2009). Chronically ill patients are increasingly being treated as outpatients, many of whom take multiple medications requiring close monitoring (Nassaralla et al., 2007).

Adverse drug events (ADE) prove to be more fatal in outpatient settings (1 of 131 outpatient deaths) than in hospitals (1 of 854 inpatient deaths) (Nassaralla et al., 2007). According to the first study to utilize nationally-representative data to examine annual rates of ADEs in the ambulatory care setting "Adverse Drug events in U.S. Adult Ambulatory Medical Care," ADE rates increase with age, adults 25-44 years old had a rate of 1.3 per 10,000 person per year, those 45-64 had a rate of 2.2 per 10,000 per year, and those 65 years and older had the highest rate, at 3.8 ADEs per 10,000 persons per year. This study estimates that 13.5 million ADE related visits occurred between 2005-2007, estimating that approximately 4.5 million ambulatory ADE visits occur each year. These 4.5 million visits are associated with approximately 400,000 hospitalizations annually. According to the Institute of Medicine (IOM), in the US, as many as 98,000 deaths per year are attributable to preventable adverse events that occur in the hospitals setting with annual costs of between \$17 billion and \$29 billion. (Sarkar et al., 2011)

Additionally, findings of The Commonwealth Fund (2010) studies identified 11% to 28% of the 4.3 million visit related ADEs (VADE) in 2001 might have been prevented with improved systems of care and better patient education, yielding an estimate of 473,000 to 1.2 million potentially preventable VADEs annually and potential cost-savings of \$946 million to \$2.4 billion.

According to the AMA's published report, *The Physician's Role in Medication Reconciliation*, the rate of medication errors during hospitalization was estimated to be 52 per 100 admissions, or 70 per 1,000 patient days in 2005. Emerging research suggests the scope of medication-related errors in ambulatory settings is as extensive as or more extensive than during hospitalization. Ambulatory visits result in a prescription for medication 50 to 70% of the time. One study estimated the rate of ADEs in the ambulatory setting to be 27 per 100 patients. It is estimated that between 2004 and 2005, in the United States 701,547 patients were treated for ADEs in emergency departments and 117,318 patients were hospitalized for injuries caused by an ADE. Individuals aged 65 years and older are more likely than any other population group to require treatment in the emergency department for ADEs. (AMA, 2007).

A Systematic Review on "Prevalence of Adverse Drug Events in Ambulatory Care" finds that "In the ambulatory care setting, adverse drug events (ADEs) have been reported to occur at a rate of 25%. Approximately 39% of these ADEs were preventable. Since many ADEs are associated with medication errors, and thus potentially preventable, understanding the nature of medication errors in ambulatory care settings can direct attention toward improvement of medication safety in ambulatory care." Data extracted and synthesized across studies indicated the median preventable ADE rates in ambulatory care-based studies were 16.5%. (Tache et al., 2011).

The Agency for Healthcare Research and Quality's (AHRQ) National's Healthcare Disparities Report (2011) identified the rate of adverse drug events (ADE) among Medicare beneficiaries in ambulatory settings 50 per 1,000 person-years. In 2005, AHRQ reported data on adults age 65 and over who received potentially inappropriate prescription medicines in the calendar year, by race, ethnicity, income, education, insurance status, and sex. The disparities were identified as follows: older Asians were more likely than older Whites to have inappropriate drug use (20.3% compared with 17.3%); Older Hispanics were less likely than older non-Hispanic Whites to have inappropriate drug

use (13.5% compared with 17.6%); Older women were more likely than older men to have inappropriate drug use (20.2% compared with 14.3%); there were no statistically significant differences by income or education.

Weeks et al. (2010) noted fragmented medication records across the health care continuum, inaccurate reporting of medication regimens by patients, and provider failure to acquire all of the necessary elements of medication information from the patient or record, present significant obstacles to obtaining an accurate medication list in the ambulatory care setting. Because these obstacles require solutions demonstrating improvements in access to information and communication, the Institute of Medicine and others have encouraged the incorporation of IT solutions in the medication reconciliation process. In a survey administered to office-based physicians with high rates of EMR use, Weeks et al. found there is an opportunity for universal medication lists utilizing health IT.

#### **CLINICAL RECOMMENDATION STATEMENTS:**

The Joint Commission's 2015 Ambulatory Care National Patient Safety Goals guide providers to maintain and communicate accurate patient medication information. Specifically, the section "Use Medicines Safely NPSG.03.06.01" states the following: "Maintain and communicate accurate patient medication information. The types of information that clinicians use to reconcile medications include (among others) medication name, dose, frequency, route, and purpose. Organizations should identify the information that needs to be collected to reconcile current and newly ordered medications and to safely prescribe medications in the future." (Joint Commission, 2015, retrieved at: [Joint Commission's 2015 Ambulatory Care National Patient Safety Goals guide](#)).

The National Quality Forum's 2010 update of the Safe Practices for Better Healthcare, states healthcare organizations must develop, reconcile, and communicate an accurate patient medication list throughout the continuum of care. Improving the safety of healthcare delivery saves lives, helps avoid unnecessary complications, and increases the confidence that receiving medical care actually makes patients better, not worse. Every healthcare stakeholder group should insist that provider organizations demonstrate their commitment to reducing healthcare error and improving safety by putting into place evidence-based safe practices.

The AMA's published report, *The Physician's Role in Medication Reconciliation*, identified the best practice medication reconciliation team as one that is multidisciplinary and--in all settings of care--will include physicians, pharmacists, nurses, ancillary health care professionals and clerical staff. The team's variable requisite knowledge, skills, experiences, and perspectives are needed to make medication reconciliation work as safely and smoothly as possible. Team members may have access to vital information or data needed to optimize medication safety. Because physicians are ultimately responsible for the medication reconciliation process and subsequently accountable for medication management, physician leadership and involvement in all phases of developing and initiating a medication reconciliation process or model is important to its success.

#### **MEASURE #226 – PREVENTIVE CARE AND SCREENING: TOBACCO USE: SCREENING AND CESSATION INTERVENTION**

##### **RATIONALE:**

This measure is intended to promote adult tobacco screening and tobacco cessation interventions for those who use tobacco products. There is good evidence that tobacco screening and brief cessation intervention (including counseling and/or pharmacotherapy) is successful in helping tobacco users quit. Tobacco users who are able to stop smoking lower their risk for heart disease, lung disease, and stroke.

#### **CLINICAL RECOMMENDATION STATEMENTS:**

The following evidence statements are quoted verbatim from the referenced clinical guidelines:

All patients should be asked if they use tobacco and should have their tobacco use status documented on a regular basis. Evidence has shown that clinic screening systems, such as expanding the vital signs to include tobacco use status or the use of other reminder systems such as chart stickers or computer prompts, significantly increase rates of clinician intervention. (Strength of Evidence = A) (U.S. Department of Health and Human Services. Public Health Service, 2008)

All physicians should strongly advise every patient who smokes to quit because evidence shows that physician advice to quit smoking increases abstinence rates. (Strength of Evidence = A) (U.S. Department of Health and Human Services. Public Health Service, 2008)

Minimal interventions lasting less than 3 minutes increase overall tobacco abstinence rates. Every tobacco user should be offered at least a minimal intervention, whether or not he or she is referred to an intensive intervention. (Strength of Evidence = A) (U.S. Department of Health and Human Services. Public Health Service, 2008)

The combination of counseling and medication is more effective for smoking cessation than either medication or counseling alone. Therefore, whenever feasible and appropriate, both counseling and medication should be provided to patients trying to quit smoking. (Strength of Evidence = A) (U.S. Department of Health and Human Services. Public Health Service, 2008)

Clinicians should encourage all patients attempting to quit to use effective medications for tobacco dependence treatment, except where contraindicated or for specific populations for which there is insufficient evidence of effectiveness (ie, pregnant women, smokeless tobacco users, light smokers, and adolescents). (Strength of Evidence = A) (U.S. Department of Health and Human Services. Public Health Service, 2008)

The USPSTF recommends that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products. (A Recommendation) (U.S. Preventive Services Task Force, 2009)

#### **MEASURE #276 - SLEEP APNEA: ASSESSMENT OF SLEEP SYMPTOMS**

##### **RATIONALE:**

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 (OSA) 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 (ESS). 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 continuous positive airway pressure (CPAP) in follow-up after a therapeutic trial. Alternatively, an increase in CPAP 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 OSA.

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 (ESS). Of the placebo-controlled trials employing the ESS, most found that CPAP reduced subjective daytime sleepiness. (Gay et al, 2005)

##### **CLINICAL RECOMMENDATION STATEMENTS:**

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)

#### **MEASURE #277 - SLEEP APNEA: SEVERITY ASSESSMENT AT INITIAL DIAGNOSIS**

##### **RATIONALE:**

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 apnea hypopnea index (AHI) and oxyhemoglobin saturation. Physicians treating patients with OSA 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 a respiratory disturbance index equal to or greater than 15 are considered to have moderate to severe OSA and should be treated with positive airway pressure therapy.

### **CLINICAL RECOMMENDATION STATEMENTS:**

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)

### **MEASURE #278 - SLEEP APNEA: POSITIVE AIRWAY PRESSURE THERAPY PRESCRIBED**

#### **RATIONALE:**

All patients with moderate to severe obstructive sleep apnea (OSA) should have an initial trial of nasal continuous positive air pressure (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 apnea hypopnea index (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.

### **CLINICAL RECOMMENDATION STATEMENTS:**

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)

### **MEASURE #279 - SLEEP APNEA: ASSESSMENT OF ADHERENCE TO POSITIVE AIRWAY PRESSURE THERAPY**

#### **RATIONALE:**

This recommendation is based on overwhelming evidence at all levels indicating patients with obstructive sleep apnea (OSA) overestimate their positive airway pressure use time. Level I and Level II studies indicate that objectively-measured nightly continuous positive airway pressure (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 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.

Numerous studies have shown that patient adherence to CPAP is low or over-estimated by patients. A 2006 study assessed OSA severity, continuous positive airway pressure 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). 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  $\geq 4$  hours of CPAP usage for  $\geq 70\%$  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 (46%) were objectively using CPAP at least 4 hours per night on 70% of the nights. Patients over-estimated actual CPAP use by  $69 \pm 110$  min. (Gay et al, 2005)

**CLINICAL RECOMMENDATION STATEMENTS:**

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)