



## Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to subcriterion 1b).

### Brief Measure Information

**NQF #:** 2467

**De.2. Measure Title:** Adherence to ACEIs/ARBs for Individuals with Diabetes Mellitus

**Co.1.1. Measure Steward:** Centers for Medicare & Medicaid Services

**De.3. Brief Description of Measure:** The measure addresses adherence to angiotensin converting enzyme inhibitors (ACEIs)/angiotensin receptor blockers (ARBs). The measure is reported as the percentage of eligible individuals with diabetes mellitus who had at least two prescriptions for ACEIs/ARBs and who have a Proportion of Days Covered (PDC) of at least 0.8 during the measurement period (12 consecutive months).

**1b.1. Developer Rationale:** Several important benefits related to quality improvement are envisioned with the implementation of this measure. Specifically, the measure will help providers to identify individuals with diabetes mellitus who are not adherent (at a critical threshold of a PDC of 0.8 or greater) to angiotensin converting enzyme inhibitors (ACEIs)/angiotensin receptor blockers (ARBs). Furthermore, this measure will encourage providers to develop communication and education tools and processes to improve adherence in their patients with diabetes mellitus. Higher ACEI/ARB adherence rates are expected to result in lower rates of elevated blood pressure, cardiovascular events, and mortality. Adoption of this performance measure has the potential to improve quality of care for individuals with diabetes mellitus and, therefore, advance quality of care by engaging patients as partners in their care, a priority area identified in the National Quality Strategy.

**S.4. Numerator Statement:** Individuals in the denominator with at least two prescriptions for ACEIs/ARBs with a PDC of at least 0.8 for ACEIs/ARBs.

**S.7. Denominator Statement:** Individuals at least 18 years of age as of the beginning of the measurement period with diabetes mellitus and at least two prescriptions for ACEIs/ARBs during the measurement period (12 consecutive months).

**S.10. Denominator Exclusions:** We excluded the following individuals from the denominator:

Individuals with polycystic ovaries, gestational diabetes, or steroid-induced diabetes who do not have a face-to-face visit with a diagnosis of diabetes in any setting during the measurement period.

Exclusion 1

Individuals with a diagnosis of polycystic ovaries who do not have a visit with a diagnosis of diabetes in any setting during the measurement period\*; and,

Exclusion 2

Individuals with a diagnosis of gestational diabetes or steroid-induced diabetes who do not have a visit with a diagnosis of diabetes mellitus in any setting during the measurement period.

\*Adapted from NCQA HEDIS 2013 (2013). Note: HEDIS uses a look-back period of one year prior to the measurement period for both the prescription data and diagnosis.

**De.1. Measure Type:** Process

**S.23. Data Source:** Administrative claims, Electronic Clinical Data : Pharmacy, Other

**S.26. Level of Analysis:** Clinician : Group/Practice, Health Plan, Integrated Delivery System, Population : State

**IF Endorsement Maintenance – Original Endorsement Date:** Sep 02, 2014 **Most Recent Endorsement Date:** Sep 02, 2014

**IF this measure is included in a composite, NQF Composite#/title:**

**IF this measure is paired/grouped, NQF#/title:**

**De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? IF this measure is paired/grouped, NQF#/title:**

NQF 545 – Adherence to Statins for Individuals with Diabetes Mellitus

NQF 2468 – Adherence to Oral Diabetes Agents for Individuals with Diabetes Mellitus

Diabetic patients often require chronic treatment with oral diabetes agents, statins, and/or ACEIs/ARBs to lower their risk of diabetic complications, adverse cardiovascular disease outcomes, and mortality. Adherence to chronic medication regimens has been documented in the literature to be less than optimal. In addition, the testing result from the 2011 and 2012 10-state Medicare claim data demonstrated substantial room for improvement. Poor adherence can reduce the effectiveness of treatment, and interventions to improve adherence can provide an opportunity for quality improvement.

## 1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all subcriteria to pass this criterion and be evaluated against the remaining criteria.**

### 1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[NQF2467\\_Evidence\\_Form\\_ACEIs-ARBs.docx](#)

### 1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- disparities in care across population groups.

#### 1b.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in quality envisioned by use of this measure)

Several important benefits related to quality improvement are envisioned with the implementation of this measure. Specifically, the measure will help providers to identify individuals with diabetes mellitus who are not adherent (at a critical threshold of a PDC of 0.8 or greater) to angiotensin converting enzyme inhibitors (ACEIs)/angiotensin receptor blockers (ARBs). Furthermore, this measure will encourage providers to develop communication and education tools and processes to improve adherence in their patients with diabetes mellitus. Higher ACEI/ARB adherence rates are expected to result in lower rates of elevated blood pressure, cardiovascular events, and mortality. Adoption of this performance measure has the potential to improve quality of care for individuals with diabetes mellitus and, therefore, advance quality of care by engaging patients as partners in their care, a priority area identified in the National Quality Strategy.

**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for endorsement maintenance. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.**

Following is an overview of the testing results based on Medicare data.

#### State, Plan, and Physician Group Analysis

Sample Characteristics: 2007-2008 100% of all Medicare Parts A, B, and D claims data during calendar years 2007 and 2008 from eight states (Arizona, Delaware, Florida, Iowa, Indiana, Mississippi, Rhode Island, and Washington); the sample consisted of 4,789,034 Medicare beneficiaries, 13,023 Physician Groups, and 93 Part D plans.

2011-2012 100% of all Medicare Parts A, B, and D claims data during calendar years 2011 and 2012 from ten states (Arizona, Delaware, Florida, Iowa, Indiana, Mississippi, Missouri, Rhode Island, Texas, and Washington); the sample consisted of 14,162,440 Medicare beneficiaries, 26,181 Physician Groups, and 83 Part D plans.

#### State

Year/ n / Mean / Median / Min / Max / STD / IQR / P10 / P25 / P50 / P75 / P90

2008/ 8 / 70.9% / 71.8% / 64.8% / 78.1% / 4.4% / 6.2% / 64.8% / 67.1% / 71.8% / 73.3% / 78.1%

2012/ 10 / 75.7% / 76.7% / 70.0% / 81.9% / 3.8% / 6.7% / 70.4% / 71.5% / 76.7% / 78.2% / 80.1%

#### Prescription Drug Plans

Year/ n / Mean / Median / Min / Max / STD / IQR / P10 / P25 / P50 / P75 / P90

Plans with at least 150 eligible individuals (minimum denominator for reliability > 0.7):

2008/ 36 / 71.0% / 71.4% / 51.9% / 82.1% / 6.5% / 7.6% / 64.5% / 67.4% / 71.4% / 75.0% / 80.3%

Plans with at least 150 eligible individuals (minimum denominator for reliability > 0.7):

2012/ 41 / 76.1% / 76.8% / 63.1% / 87.4% / 5.6% / 6.8% / 67.9% / 73.1% / 76.8% / 79.9% / 81.5%

#### Physician Groups

Year/ n / Mean / Median / Min / Max / STD / IQR / P10 / P25 / P50 / P75 / P90

Physician groups with at least 170 eligible individuals (minimum denominator for reliability > 0.7):

2008/ 218 / 71.7% / 72.3% / 36.1% / 84.2% / 6.2% / 7.5% / 64.8% / 68.4% / 72.3% / 75.9% / 78.8%

Physician groups with at least 150 eligible individuals (minimum denominator for reliability > 0.7):

2012/ 581 / 74.1% / 74.7% / 41.6% / 88.4% / 6.5% / 8.1% / 66.3% / 70.5% / 74.7% / 78.6% / 81.2%

#### ACO

Sample Characteristics: Parts A, B, and D data for 682,036 beneficiaries (204,075 who met the denominator criteria) attributed to 31 ACOs from calendar year 2011

Year/ n / Mean / Median / Min / Max / STD / IQR / P10 / P25 / P50 / P75 / P90

2011/ 31 / 75.7% / 75.7% / 68.4% / 84.8% / 4.2% / 7.6% / 70.0% / 71.6% / 75.7% / 79.2% / 80.9%

**1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**

Following is an overview of the data from published studies demonstrating the performance gap/variation related to this measure on adherence to ACEIs/ARBs for diabetes mellitus:

#### Overview of the Performance Gap and Details on Variation

Five recent studies (Asghari et al., 2010; Pladevall et al., 2004; Ratanawongsa et al., 2013; Vink et al., 2009; Yang et al., 2009) report a substantial percentage of patients with diabetes mellitus have adherence <80% for ACEIs/ARBs. Three of the studies (Asghari et al., 2010; Pladevall et al., 2004; Yang et al., 2009) reported rates of adherence ≥80% for ACEIs/ARBs to be 72%, 77%, and 58%, respectively. Another two studies (Ratanawongsa et al., 2013; Vink et al., 2009) reported adherence ≥80% for all antihypertensives (i.e., not restricted to ACEIs/ARBs) to be 79% and 77%, respectively.

#### Summary of Published Studies on Variation in Adherence Rates to ACEIs/ARBs among Patients with Diabetes Mellitus

Asghari et al. (2010): Using the medication possession ratio, this retrospective database study estimated the adherence to vascular protection medications in diabetic patients ages 30 or older who were covered by the public drug insurance plan in Quebec from 1999 to 2002. A total of 170,381 subjects' data were included in the study. Of those with at least one prescription for ACEI/ARBs (N=76,482), 72.0% (N=55,053) were classified as regular users, meaning they had drug claims covering at least 80% of the time in the year following the index data (date of claim first reporting diabetes diagnosis).

Pladevall et al. (2004): In this retrospective study of 677 patients with diabetes 18 years of age and older (mean age of 64 years), the association between rates of medication adherence and clinical outcomes were measured. Patients with a diagnosis of diabetes, hypertension, and dyslipidemia during the period of 1999 to 2001 and at least one prescription drug claim for an anti-diabetic, lipid-lowering, or antihypertensive drug in each of those years were included. Health plan, administrative, and clinical data were used to identify patients. Non-adherence was measured for three classes of drugs: metformin, statins, and ACE inhibitors. Patients were classified as non-adherent when the percentage of the continuous measure of medication gaps (CMG) was 20% or higher. The rate

of non-adherence for ACE inhibitors was 23%.

Ratanawongsa et al. (2013): In this study, poor communication between patients and healthcare providers was associated with inadequate refill adherence for cardiometabolic medications. Patients were chosen from the Diabetes Study of Northern California (DISTANCE) survey collected from May 2005 to December 2006. Patients were between the ages of 30 to 75 (mean age of 60 years), had diabetes, indicated having a primary care provider, and were dispensed one or more oral hypoglycemic agents, antihypertensive, or lipid-lowering medication in the 12 months before the survey. Patients were considered to be poorly adherent if they had no medication supply for more than 20% of the observation time (CMG >20%) and were considered adherent when medications were available for 80% or more of the time. There were a total of 9,377 eligible respondents, of which 7,967 were prescribed antihypertensive medications (i.e., ACE inhibitors, alpha blockers, alpha adrenergic agonists, angiotension antagonists, beta adrenergic blockers, carbonic anhydrase inhibitors, calcium channel blockers, thiazides/related diuretics, potassium sparing diuretics, loop diuretics, osmotic diuretics, and vasodilators). Overall, 30% of the respondents were poorly adherent for at least one medication. The rate of poor adherence for antihypertensives was 20%.

Vink et al. (2009): In this observational study of 3,877 patients with type 2 diabetes (mean age of 66 years), differences in medication adherence were observed based on drug class. Patients who were participating in the Groningen Initiative to Analyze Type 2 Diabetes Treatment study and were diagnosed and managed for diabetes in January 2005 were selected for inclusion in this study. Refill adherence was assessed for the year 2004 for oral glucose-lowering medications (including biguanides, SU-derivates, acarbose, glitazones, and glinides), antihypertensives (including diuretics, beta-blocking agents, calcium-antagonists, and RAS-inhibitors), and lipid-lowering medications (including statins, fibrates, bile acid sequestrants, nicotinic acid derivates, and other lipid modifying drugs). Defining poor adherence as medication possession ratio (MPR) <80%, overall rates of poor adherence were 35% for antihypertensives.

Yang et al. (2009): In this retrospective study of 1,888,682 Medicare Part D enrollees with diabetes (mean age of 71.6 years), adherence to medications varied across subgroups. Data from this study were obtained from administrative claims from October 2005 to June 2006. Patients were included if they had at least one diabetes diagnosis in inpatient or outpatient data during the time period, at least one claim for insulin in the first six months of 2006, at least two claims for an oral hypoglycemic agent, or at least one claim for more than a >30 day supply of any oral hypoglycemic agent from January 2006 to June 2006. Medication adherence was calculated as the proportion of days covered (PDC), defined as the proportion of the actual number of days with medication available divided by the maximum possible number of days of therapy for those with at least one claim within the class. Non-adherence was defined as a PDC of less than 80%. The estimated rate of non-adherence was 41.8% for ACEIs/ARBs.

#### Conclusion

Estimates of adherence rates for ACEIs/ARBs in individuals with diabetes mellitus from recently published studies suggest a clear performance gap. Among those with diabetes, adherence of 0.8 or higher ranged from 58% to 77% for ACEIs/ARBs. These rates represent performance gaps and opportunities for improvement in the management of ACEIs/ARBs in individuals with diabetes mellitus.

#### Citations for Data on Performance Gap

- Asghari, S., Courteau, J., Drouin, C., Gregoire, J., Carpentier, A., Paquet, M., & Vanasse, A. (2010). Adherence to vascular protection drugs in diabetic patients in Quebec: A population-based analysis. *Diabetes & Vascular Disease Research*, 7(2), 167-171.
- Pladevall, M., Williams, L., Potts, L., Divine, G., Xi, H., & Lafata, J. (2004). Clinical outcomes and adherence to medications measured by claims data in patients with diabetes. *Diabetes Care*, 27(12), 2800-2906.
- Ratanawongsa, N., Karter, A., Parker, M., Lyles, C., Heisler, M., Moffet, H. H., . . . Schillinger, D. (2013). Communication and medication refill adherence: The Diabetes Study of Northern California. *JAMA Internal Medicine*, 173(3), 210-218.
- Vink, N., Klungel, O., Stolk, R., & Denig, P. (2009). Comparison of various measures for assessing medication refill adherence using prescription data. *Pharmacoepidemiology and Drug Safety*, 18, 159-165.
- Yang, Y., Thumula, V., Pace, P., Banahan, B., Wilkin, N., & Lobb, W. (2009). Predictors of medication nonadherence among patients with diabetes in Medicare Part D programs: A retrospective cohort study. *Clinical Therapeutics*, 31(10), 2178-2188.

**1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.** *(This is required for endorsement maintenance. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.*  
The summary of data on disparities by population group is discussed in the overview of disparities by population group, summary of

published studies on disparities by population group, and testing results based on Medicare data.

This measure was stratified for disparities by age, race/ethnicity, and dual-eligibility (beneficiaries covered by both Medicare and Medicaid). The results/scores are presented for these categories/cohorts.

Rates by age and race/ethnicity for the entire 10-state sample:  
Category or Cohort / Denominator / Numerator / Measure Rate

All Ages/ 649,577 / 481,891 / 74.2%  
White / 487,594 / 372,640 / 76.4%  
African American / 94,468 / 62,081 / 65.7%  
Hispanic / 40,928 / 28,145 / 68.8%  
Other / 26,587 / 19,025 / 71.6%

18 – 24 / 259 / 132 / 51.0%  
White / 108 / 68 / 63.0%  
African American / 77 / 29 / 37.7%  
Hispanic / 47 / 26 / 55.3%  
Other / 27 / 9 / 33.3%

25 – 44 / 16,443 / 9,296 / 56.5%  
White / 9,425 / 5,712 / 60.6%  
African American / 4,841 / 2,416 / 49.9%  
Hispanic / 1,538 / 801 / 52.1%  
Other / 639 / 367 / 57.4%

45 – 64 / 123,198 / 82,646 / 67.1%  
White / 78,540 / 55,054 / 70.1%  
African American / 32,099 / 19,658 / 61.2%  
Hispanic / 8,147 / 5,134 / 63.0%  
Other / 4,412 / 2,800 / 63.5%

65 – 74 / 288,249 / 220,460 / 76.5%  
White / 227,846 / 178,083 / 78.2%  
African American / 33,656 / 23,226 / 69.0%  
Hispanic / 14,460 / 10,129 / 70.0%  
Other / 12,287 / 9,022 / 73.4%

75 – 84 / 171,550 / 131,377 / 76.6%  
White / 133,608 / 104,296 / 78.1%  
African American / 18,447 / 12,965 / 70.3%  
Hispanic / 11,964 / 8,577 / 71.7%  
Other / 7,531 / 5,539 / 73.5%

85 + / 49,878 / 37,980 / 76.1%  
White / 38,067 / 29,427 / 77.3%  
African American / 5,348 / 3,787 / 70.8%  
Hispanic / 4,772 / 3,478 / 72.9%  
Other / 1,691 / 1,288 / 76.2%

Rates by age and dual-eligible status for the entire 10-state sample:  
Category or Cohort / Denominator / Numerator / Measure Rate

Dual-Eligible / 251,403 / 177,173 / 70.5%  
18 – 24 / 233 / 119 / 51.1%

25 – 44 / 13,169 / 7,535 / 57.2%  
 45 – 64 / 78,779 / 52,659 / 66.8%  
 65 – 74 / 83,704 / 60,932 / 72.8%  
 75 – 84 / 57,466 / 42,435 / 73.8%  
 85 + / 18,052 / 13,493 / 74.7%

Not Dual-Eligible / 398,174 / 304,718 / 76.5%  
 18 – 24 / 26 / 13 / 50.0%  
 25 – 44 / 3,274 / 1,761 / 53.8%  
 45 – 64 / 44,419 / 29,987 / 67.5%  
 65 – 74 / 204,545 / 159,528 / 78.0%  
 75 – 84 / 114,084 / 88,942 / 78.0%  
 85 + / 31,826 / 24,487 / 76.9%

In general, younger individuals had lower rates of adherence. Measure rates did not differ among age groups greater than 65 or younger than 44 years of age. Comparisons were statistically significant (p-value<0.0001) across all other age groups. For race-ethnicity, rates were statistically different between all race groups (p-value<0.0001). Of note, in the younger age groups (18-64), African Americans had noticeably lower adherence. In age groups >=45 years of age, non-dual-eligible individuals had higher rates of adherence than those who are dual eligible.

These results indicate considerable variation by race-ethnicity and dual-eligible status, which presents opportunities for quality improvement within these subgroups. In particular, younger (< 65 years of age), African Americans, and dually eligible individuals >=45 years of age had rates lower than other groups.

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.**

#### Overview of Disparities by Population Group

Disparities in rates of adherence to ACEIs/ARBs have been observed by age, gender, and race/ethnicity among patients with diabetes in published studies.

#### Summary of Published Studies on Disparities by Population Group

In regard to disparities related to age, gender, and race/ethnicity in patients with diabetes, two studies are included here that report lower adherence to ACEIs/ARBs among younger patients compared to older patients, male patients compared to female patients, and black and Hispanic patients compared to white and "other" patients.

Asghari et al. (2010): In this study of 170,381 patients with diabetes age 30 years and older, disparities in adherence >=80% to ACEIs/ARBs were evident between female and male users, and younger and older users. Adherence to ACEI/ARB medications was measured using the medication possession ratio. Regular users were defined as individuals who had drug claims for ACEI/ARBs covering at least 80% of the time in the year following the index data (date of claim first reporting diabetes diagnosis). In this sample, those aged 65 and older were more likely to be regular users of these medications when compared to persons younger than 65 (75% vs. 68%) (calculated based on data in article).

Yang et al. (2009): In this retrospective cohort study of 1,888,682 Medicare Part D enrollees with diabetes, enrollees younger than age 65, females, and those who were black or Hispanic were more likely to be non-adherent to ACEI/ARBs. Non-adherence was defined as a PDC of less than 80%. Patients under 65 years were 28% more likely to be non-adherent to ACEIs/ARBs (OR 1.28; 95% CI 1.27-1.30, p<0.001) compared to patients aged 65-74 years. Female patients were 8% more likely to be non-adherent to ACEIs/ARBs (OR 1.08; 95% CI 1.07-1.09, p<0.001) compared to male patients. Black patients were 38% (OR 1.38; 95% CI 1.36-1.39; p<0.001) more likely than whites to be non-adherent to ACEIs/ARBs. Hispanic patients were also 45% (OR 1.45; 95% CI 1.43-1.47, p<0.001) more likely to be non-adherent to ACEIs/ARBs compared to white patients.

#### Conclusion

Among patients with diabetes, lower adherence to ACEIs/ARBs was observed among female patients compared to male patients; among those less than 65 years of age compared to those 65-74; and among Hispanic and African-American patients compared to White and "other" patients.

#### Citations for Data on Disparities

Asghari, S., Courteau, J., Drouin, C., Gregoire, J., Carpentier, A., Paquet, M., & Vanasse, A. (2010). Adherence to vascular protection drugs in diabetic patients in Quebec: A population-based analysis. *Diabetes & Vascular Disease Research*, 7(2), 167-171.

Yang, Y., Thumula, V., Pace, P., Banahan, B., Wilkin, N., & Lobb, W. (2009). Predictors of medication nonadherence among patients with diabetes in Medicare Part D programs: A retrospective cohort study. *Clinical Therapeutics*, 31(10), 2178-2188.

#### **1c. High Priority** (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

##### **1c.1. Demonstrated high priority aspect of healthcare**

Affects large numbers, A leading cause of morbidity/mortality, High resource use, Other

##### **1c.2. If Other: Related to national priorities**

##### **1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.**

##### **List citations in 1c.4.**

Regarding the summary of evidence of high impact, an overview is presented below, together with information from the literature on the number of individuals affected, the relationship between diabetes, morbidity, and mortality, efficacy of ACEIs/ARBs in preventing adverse outcomes, and the resource use associated with diabetes:

##### **Overview**

More than 11% of individuals 20 years of age and older in the United States, which is approximately 25.6 million people, have diagnosed or undiagnosed diabetes (Centers for Disease Control and Prevention, 2011c). Patients with diabetes are at higher risk of developing hypertension, and often require long-term treatment with ACEI/ARBs to lower their risk of diabetic complications, adverse cardiovascular disease outcomes and mortality.

##### **Efficacy of ACEIs/ARBs for Individuals with Diabetes**

Results from several trials have demonstrated that ACEI/ARB therapy improved outcomes by reducing cardiovascular events in individuals with diabetes, as described in the "Standards of Medical Care in Diabetes—2013" guidelines (American Diabetes Association, 2013b) and numerous reports from individual trials cited in the guidelines (Heart Outcomes Prevention Evaluation (HOPE) Study Investigators, 2000; Granger et al., 2003; Lindholm et al., 2002; McMurray et al., 2003; Pfeffer et al., 2003; Berl et al., 2003; Psaty et al., 1997; UK Prospective Diabetes Study (UKPDS) Group, 1998c; Chobanian et al., 2003).

##### **Affects Large Numbers**

In 2010, an estimated 11.3% of individuals 20 years of age and older in the United States had diagnosed or undiagnosed diabetes (Centers for Disease Control and Prevention, 2011c). Among those 65 years and older, the rate was more than twice as high – 26.9% or 10.9 million people (Centers for Disease Control and Prevention, 2011c). According to the Centers for Disease Control and Prevention National Diabetes Surveillance System, the prevalence of diagnosed diabetes in 2011 among people ages 65-74 (21.8%) was nearly 14 times that of people less than 45 years of age (1.6%) (Centers for Disease Control and Prevention, 2013). The incidence of new cases of diabetes among those 18-44 years, 45-64 years, and 65-79 years were 4.6, 13.5, and 12.4 per 1,000 population in 2010 (Centers for Disease Control and Prevention, 2012a). Age-adjusted incidence of diabetes was similar among men and women in 2010 (9.7 vs. 7.3 per 1,000 population respectively) (Centers for Disease Control and Prevention, 2011b). Incidence of newly diagnosed diabetes in adults ages 18 to 79 years is higher among blacks (13.0 per 1,000) and Hispanics (12.9 per 1,000) when compared to whites (7.7 per 1,000 population) (Centers for Disease Control and Prevention, 2011a).

##### **A Leading Cause of Morbidity and Mortality**

In 2007, diabetes was the seventh leading cause of death in the U.S. based on death certificates, and the overall risk of mortality among persons with diabetes is about twice that of similarly aged persons without diabetes (Centers for Disease Control and Prevention, 2011c). Among adults with diabetes mellitus, hypertension was the most common comorbid conditions in 2009, with a prevalence of 45%, 69%, 76%, and 74% among those 18-44, 45-64, 65-74, and ≥75 years of age, respectively (Centers for Disease Control and Prevention, 2009). Among adults with diabetes, heart disease mortality rates and stroke rates are two to four times higher than among those without diabetes (Centers for Disease Control and Prevention, 2011c).

### High Resource Use

The total costs (direct and indirect) of diabetes were \$174 billion in 2007 according to the CDC (Centers for Disease Control and Prevention, 2011c). Direct medical costs accounted for \$116 billion and after adjusting for age and sex differences, medical expenditures for those with diabetes were 2.3 times higher than estimated expenditures in the absence of diabetes (Centers for Disease Control and Prevention, 2011c). The remaining \$58 billion in costs were indirect and associated with disability, work loss, and premature mortality (Centers for Disease Control and Prevention, 2011c). The estimated economic costs of undiagnosed diabetes in 2007 were \$18 billion which included \$11 billion in direct medical costs and \$7 billion in indirect costs (Zhang et al., 2009). In 2008, there were over 7.7 million hospital stays for which diabetes was listed as a principal or secondary diagnosis or co-existing condition (Frazee et al., 2010). Of those, 540,000 stays (7.0%) had diabetes listed as the primary diagnosis. In that year, the mean cost for hospitalization was \$10,937 for patients with diabetes compared to \$8,746 in patients without diabetes (Frazee et al., 2010). Average length of stay for patients with diabetes was longer than for patients without diabetes (5.3 vs. 4.4 days). Hospital stays involving diabetes (primary or secondary diagnosis) accounted for 23% (\$83 billion) of total U.S. hospital costs (Frazee et al., 2010). According to the American Diabetes Association, the estimated cost of diabetes in the U. S. in 2012 was \$245 billion which was a 41% increase from the previous estimate of \$174 billion (2007 dollars) (American Diabetes Association, 2013a). Of that estimated amount, \$176 billion were due to direct medical costs (\$76 billion or 43% attributed to inpatient hospital care and \$15 billion or 9% attributed to physician office visits) and \$69 billion attributed to reduced work-related productivity (\$5 billion or 7% attributed to absenteeism and \$20.8 million or 30% attributed to reduced productivity while at work) (American Diabetes Association, 2013a).

### Related to National Priorities

This measure (NQF 2467) relates to adherence to chronic medications (ACEI/ARBs) among individuals with diabetes mellitus. The National Quality Forum's Measure Prioritization Advisory Committee ranked diabetes fourth in a list of the top 20 high-impact Medicare conditions identified on the basis of cost, prevalence, variability, improvability, and disparities (National Quality Forum, 2010). In addition, a recent study of gaps in diabetes measures identified "Access to care and medications" as a high priority for measure development. In fact, this report suggested that it would be important to understand why a measure of chronic medication adherence for individuals with diabetes was not already in use (National Quality Forum, 2013). Furthermore, the National Quality Strategy has identified engaging patients as partners in their care as one of six major priorities for quality improvement in the nation's healthcare system (U.S. Department of Health and Human Services, 2012). Therefore, national priorities support the potential high impact of this measure.

### 1c.4. Citations for data demonstrating high priority provided in 1a.3

American Diabetes Association. (2013a, March 13). Economic costs of diabetes in the U.S. in 2012. *Diabetes Care*, online, 1-14. doi: 10.2337/dc12-2625

American Diabetes Association. (2013b). Standards of Medical Care in Diabetes. IX. Diabetes care in specific settings. *Diabetes Care*, 36(Supplement 1), S11-S66.

Berl, T., Hunsicker, L., Lewis, J., Pfeffer, M., Porush, J., Roleau, J., . . . Lewis, E. (2003). Cardiovascular outcomes in the Irbesartan Diabetic Nephropathy Trial of patients with type 2 diabetes and overt nephropathy. *Annals of Internal Medicine*, 138, 542-549.

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Centers for Disease Control and Prevention. (2011a, January 5). Age-Adjusted Incidence of Diagnosed Diabetes per 1,000 Population Aged 18–79 Years, by Race/Ethnicity, United States, 1997–2010. Retrieved June 18, 2013, from <http://www.cdc.gov/diabetes/statistics/incidence/fig6.htm>

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**1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)**

Not applicable

## 2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the subcriteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

**2a.1. Specifications** The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

**De.5. Subject/Topic Area** (check all the areas that apply):

Endocrine, Endocrine : Diabetes

**De.6. Cross Cutting Areas** (check all the areas that apply):

Disparities, Safety : Medication Safety

**S.1. Measure-specific Web Page** (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

Not applicable

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

No HQMF specs Attachment:

**S.2b. Data Dictionary, Code Table, or Value Sets** (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: NQF2467\_-\_Codes\_Table\_-\_ACEIs\_ARBs.xls

**S.3. For endorsement maintenance**, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

The age requirement for the target population was changed from 18 years or older at the end of the measurement period to 18 years or older at the beginning of the measurement period to harmonize with other measures in the portfolio. ICD-9-CM, ICD-10-CM, and National Drug Codes have been updated annually. Optional criteria to stratify the measure between new and continuous users were removed to harmonize with other NQF-endorsed measure. The new drugs on the market that are applicable to the measure have been added to the medication list, and agents that have been discontinued for more than three years have been removed.

**S.4. Numerator Statement** (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome)

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

Individuals in the denominator with at least two prescriptions for ACEIs/ARBs with a PDC of at least 0.8 for ACEIs/ARBs.

**S.5. Time Period for Data** (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

The time period for data is defined as any time during the measurement period (12 consecutive months).

**S.6. Numerator Details** (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

The numerator is defined as individuals with a PDC of 0.8 or greater.

The PDC is calculated as follows:

- PDC Numerator: The PDC numerator is the sum of the days covered by the days' supply of all drug claims in each respective drug class. The period covered by the PDC starts on the day the first prescription is filled (index date) and lasts through the end of the measurement period, or death, whichever comes first. For prescriptions with a days' supply that extends beyond the end of the measurement period, count only the days for which the drug was available to the individual during the measurement period. If there are prescriptions for the same drug (generic name) on the same date of service, keep the prescription with the largest days' supply. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended.
- PDC Denominator: The PDC denominator is the number of days from the first prescription date through the end of the measurement period, or death date, whichever comes first.

**S.7. Denominator Statement** (Brief, narrative description of the target population being measured)

Individuals at least 18 years of age as of the beginning of the measurement period with diabetes mellitus and at least two prescriptions for ACEIs/ARBs during the measurement period (12 consecutive months).

**S.8. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

Populations at Risk, Populations at Risk : Dual eligible beneficiaries, Senior Care

**S.9. Denominator Details** (All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses , code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

Target population meets the following conditions:

1. Continuously enrolled in Part D with no more than a one-month gap in enrollment during the measurement year;
2. Continuously enrolled in Part A and Part B with no more than a one-month gap in Part A enrollment and no more than a one-month gap in Part B enrollment during the measurement year; and,
3. No more than one month of HMO enrollment during the measurement year.

**IDENTIFICATION OF DIABETES MELLITUS**

Individuals with diabetes mellitus are identified using diagnosis codes and/or drug proxy to identify diabetes mellitus within the inpatient or outpatient claims data.\*

Individuals must have:

At least two encounters with a principal or secondary diagnosis of diabetes with different dates of service in an outpatient setting or non-acute inpatient setting during the measurement period;

OR

At least one encounter with a principal or secondary diagnosis of diabetes in an acute inpatient or emergency department setting during the measurement period;

OR

At least one ambulatory prescription claim for insulin or other oral diabetes medication dispensed during the measurement period.

\*Adapted from NCQA HEDIS 2012 (2012). Note: HEDIS uses a look-back period of one year for both the prescription data and diagnosis.

**Table 1. Codes Used to Identify Diabetes Mellitus Diagnosis**

ICD-9-CM: 250.xx, 357.2, 362.01, 362.02, 362.03, 362.04, 362.05, 362.06, 362.07, 366.41, 648.00, 648.01, 648.02, 648.03, 648.04  
 ICD-10-CM: E08.311, E08.319, E08.321, E08.329, E08.331, E08.339, E08.341, E08.349, E08.351, E08.359, E08.40, E08.42, E09.311, E09.319, E09.321, E09.329, E09.331, E09.339, E09.341, E09.349, E09.351, E09.359, E09.36, E09.40, E09.42, E10.10, E10.11, E10.21, E10.22, E10.29, E10.311, E10.319, E10.321, E10.329, E10.331, E10.339, E10.341, E10.349, E10.351, E10.359, E10.36, E10.39, E10.40, E10.41, E10.42, E10.43, E10.44, E10.49, E10.51, E10.52, E10.59, E10.610, E10.618, E10.620, E10.621, E10.622, E10.628, E10.630, E10.638, E10.641, E10.649, E10.65, E10.69, E10.8, E10.9, E11.00, E11.01, E11.21, E11.22, E11.29, E11.311, E11.319, E11.321, E11.329, E11.331, E11.339, E11.341, E11.349, E11.351, E11.359, E11.36, E11.39, E11.40, E11.41, E11.42, E11.43, E11.44, E11.49, E11.51, E11.52, E11.59, E11.610, E11.618, E11.620, E11.621, E11.622, E11.628, E11.630, E11.638, E11.641, E11.649, E11.65, E11.69, E11.8, E11.9, E13.00, E13.01, E13.10, E13.11, E13.21, E13.22, E13.29, E13.311, E13.319, E13.321, E13.329, E13.331, E13.339, E13.341, E13.349, E13.351, E13.359, E13.36, E13.39, E13.40, E13.41, E13.42, E13.43, E13.44, E13.49, E13.51, E13.52, E13.59, E13.610, E13.618, E13.620, E13.621, E13.622, E13.628, E13.630, E13.638, E13.641, E13.649, E13.65, E13.69, E13.8, E13.9, O24.011, O24.012, O24.013, O24.019, O24.02, O24.03, O24.111, O24.112, O24.113, O24.119, O24.12, O24.13, O24.311, O24.312, O24.313, O24.319, O24.32, O24.33, O24.811, O24.812, O24.813, O24.819, O24.82, O24.83, O24.911, O24.912, O24.913, O24.919, O24.92, O24.93  
 DRG: 637,638

**Codes Used to Identify Encounter Type**

**Table 2.1. Outpatient Setting**

CPT: 92002, 92004, 92012, 92014, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456  
 UB-92 revenue: 051x, 0520-0523, 0526-0529, 057x-059x, 077x, 082x-085x, 088x, 0982, 0983

Table 2.2 Non-Acute Inpatient

CPT: 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337

UB-92 revenue: 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x

Table 2.3 Acute Inpatient

CPT: 99221-99223, 99224-99226, 99231-99233, 99238, 99239, 99251-99255, 99291

UB-92 revenue: 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x-022x, 072x, 080x, 0987

Table 2.4 Emergency Department

CPT: 99281-99285

UB-92 revenue: 045x, 0981

The following are the diabetic medications by class for the denominator. The route of administration includes all oral and injectable formulations of the medications listed below.

Table 3. Codes Used to Identify Diabetic Individuals

Alpha-glucosidase inhibitors:

acarbose

miglitol

Anti-diabetic amylin analogs:

pramlintide

Anti-diabetic combinations:

alogliptin-metformin

alogliptin-pioglitazone

glipizide-metformin

glyburide-metformin

pioglitazone-glimepiride

pioglitazone-metformin

rosiglitazone-glimepiride

rosiglitazone-metformin

saxagliptin-metformin

sitagliptin-metformin

repaglinide-metformin

sitagliptin-simvastatin

linagliptin- metformin

Dipeptidyl peptidase-4 (dpp-4) inhibitors:

alogliptin

sitagliptin,

saxagliptin,

linagliptin

Incretin mimetics:

exenatide

liraglutide

Insulin:

insulin aspart

insulin aspart

protamine & aspart (human)

insulin detemir

insulin glargine

insulin glulisine  
insulin isophane & reg (human)  
insulin isophane (human)  
insulin lispro (human)  
insulin lispro protamine & lispro (human)  
insulin regular (human)

**Meglitinides:**

nateglinide  
repaglinide

**Sodium-glucose cotransporter 2 Inhibitors:**

canagliflozin

**Sulfonylureas:**

chlorpropamide  
glimepiride  
glipizide  
glyburide  
tolazamide  
tolbutamide  
glyburide micronized

**Thiazolidinediones:**

pioglitazone  
rosiglitazone

The following are the ACEI/ARB medications by class for the denominator. The route of administration includes all oral formulations of the medications listed below.

**Table 4. ACEI/ARB Medications**

**Angiotensin-converting enzyme inhibitors (ACEIs):**

benazepril  
captopril  
enalapril  
fosinopril  
lisinopril  
moexipril  
perindopril  
quinapril  
ramipril  
trandolapril

**Angiotensin II receptor blockers (ARBs):**

candesartan  
eprosartan  
irbesartan  
losartan  
olmesartan  
telmisartan  
valsartan  
azilsartan

**Antihypertensive combinations:**

aliskiren-valsartan

amlodipine-benazepril  
 amlodipine-olmesartan  
 amlodipine -valsartan  
 amlodipine-valsartan-hydrochlorothiazide  
 benazepril-hydrochlorothiazide  
 candesartan-hydrochlorothiazide  
 captopril-hydrochlorothiazide  
 enalapril maleate-hydrochlorothiazide  
 eprosartan-hydrochlorothiazide  
 fosinopril-hydrochlorothiazide  
 irbesartan-hydrochlorothiazide  
 lisinopril- hydrochlorothiazide  
 lisinopril-dietary management product  
 losartan-hydrochlorothiazide  
 moexipril-hydrochlorothiazide  
 olmesartan-hydrochlorothiazide  
 olmesartan medoxomil-amlodipine-hydrochlorothiazide  
 quinapril-hydrochlorothiazide  
 telmisartan-amlodipine  
 telmisartan-hydrochlorothiazide  
 trandolapril-verapamil  
 valsartan-hydrochlorothiazide  
 amlodipine-olmesartan-hydrochlorothiazide  
 azilsartan medoxomil-chlorthalidone

**S.10. Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*

We excluded the following individuals from the denominator:

Individuals with polycystic ovaries, gestational diabetes, or steroid-induced diabetes who do not have a face-to-face visit with a diagnosis of diabetes in any setting during the measurement period.

**Exclusion 1**

Individuals with a diagnosis of polycystic ovaries who do not have a visit with a diagnosis of diabetes in any setting during the measurement period\*; and,

**Exclusion 2**

Individuals with a diagnosis of gestational diabetes or steroid-induced diabetes who do not have a visit with a diagnosis of diabetes mellitus in any setting during the measurement period.

\*Adapted from NCQA HEDIS 2013 (2013). Note: HEDIS uses a look-back period of one year prior to the measurement period for both the prescription data and diagnosis.

**S.11. Denominator Exclusion Details** *(All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*

**Table 5. Diagnostic Exclusions for Diabetes Denominator**

**Exclusion 1**

Polycystic Ovaries

ICD-9-CM: 256.4

ICD-10-CM: E28.2

**Exclusion 2**

Steroid-Induced Diabetes

ICD-9-CM: 249.xx, 251.8, 962.0

ICD-10-CM: E08.00, E08.01, E08.10, E08.11, E08.21, E08.22, E08.29, E08.311, E08.319, E08.321, E08.329, E08.331, E08.339, E08.341, E08.349, E08.351, E08.359, E08.36, E08.39, E08.40, E08.41, E08.42, E08.43, E08.44, E08.49, E08.51, E08.52, E08.59, E08.610, E08.618, E08.620, E08.621, E08.622, E08.628, E08.630, E08.638, E08.641, E08.649, E08.65, E08.69, E08.8, E08.9, E09.00, E09.01,

E09.10, E09.11, E09.21, E09.22, E09.29, E09.311, E09.319, E09.321, E09.329, E09.331, E09.339, E09.341, E09.349, E09.351, E09.359, E09.36, E09.39, E09.40, E09.41, E09.42, E09.43, E09.44, E09.49, E09.51, E09.52, E09.59, E09.610, E09.618, E09.620, E09.621, E09.622, E09.628, E09.630, E09.638, E09.641, E09.649, E09.65, E09.69, E09.8, E09.9, E16.8, T38.0X1A, T38.0X2A, T38.0X3A, T38.0X4A, T50.0X1A, T50.0X2A, T50.0X3A, T50.0X4A

#### Gestational Diabetes

ICD-9-CM: 648.80, 648.81, 648.82, 648.83, 648.84

ICD-10-CM: O24.410, O24.414, O24.419, O24.420, O24.424, O24.429, O24.430, O24.434, O24.439, O99.810, O99.814, O99.815

**S.12. Stratification Details/Variables** (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)

Depending on the operational use of the measure, measure results may be stratified by:

- State
- Accountable Care Organizations (ACOs)\*
- Plan
- Physician Group\*\*
- Age - Divided into 6 categories: 18-24, 25-44, 45-64, 65-74, 75-84, and 85+ years
- Race/Ethnicity
- Dual Eligibility

\*ACO attribution methodology is based on where the beneficiary is receiving the plurality of his/her primary care services and subsequently assigned to the participating providers.

**S.13. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)

No risk adjustment or risk stratification

If other:

**S.14. Identify the statistical risk model method and variables** (Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)

Not applicable

**S.15. Detailed risk model specifications** (must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)

Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.

**S.15a. Detailed risk model specifications** (if not provided in excel or csv file at S.2b)

Not applicable

**S.16. Type of score:**

Rate/proportion

If other:

**S.17. Interpretation of Score** (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

Better quality = Higher score

**S.18. Calculation Algorithm/Measure Logic** (Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.)

To calculate Adherence to ACEIs/ARBs for Individuals with Diabetes Mellitus, Medicare administrative claims data and related files, as described in detail in Section S.24, will be required.

Denominator: Individuals at least 18 years of age as of the beginning of the measurement period with diabetes mellitus and at least

two prescriptions for ACEIs/ARBs during the measurement period (12 consecutive months).

Create Denominator

1. Pull individuals who are 18 years of age or older as of the beginning of the measurement period.
2. Include individuals who were continuously enrolled in Part D coverage during the measurement year, with no more than a one-month gap in enrollment during the measurement year, or up until their death date if they died during the measurement period.
3. Include individuals who had no more than a one-month gap in Part A enrollment, no more than a one-month gap in Part B enrollment, and no more than one month of HMO enrollment during the current measurement period (FFS individuals only).
4. Of those individuals identified in Step 3, keep those who had:  
At least two face-to-face encounters with a principal or secondary diagnosis of diabetes with different dates of service in an outpatient setting or non-acute inpatient setting during the measurement period;  
OR  
At least one face-to-face encounter with a principal or secondary diagnosis of diabetes in an acute inpatient setting or emergency department setting during the measurement period;  
OR  
At least one ambulatory prescription claim for insulin or other oral diabetes medication dispensed during the measurement period.
5. Of the individuals identified in Step 4, exclude those with a diagnosis of polycystic ovaries, gestational diabetes, or steroid-induced diabetes who do not have at least one face-to-face visit with a diagnosis of diabetes in any setting during the measurement period.
6. Pull all Part D claims for ACEIs and ARBs. Attach generic name and drug ID to the dataset.
- 7a. Keep individuals with at least two claims for ACEIs/ARBs on different dates of service during the measurement period.
- 7b. Of the individuals in Step 5, include those that are also in the ACEIs/ARBs class dataset created in Step 7a. This is the denominator.
- 7c. For each individual in the dataset created in Step 7b, identify the date of the first prescription in the measurement period as the index event.

Numerator: Individuals in the denominator with at least two prescriptions for ACEIs/ARBs with a PDC of at least 0.8 for ACEIs/ARBs.

Create Numerator

For the individuals in the denominator, calculate the PDC for each individual according to the following methods:

1. Determine the individual's measurement period, defined as the number of days from the index prescription date through the end of the measurement year, or death, whichever comes first. Index date is the date of the first ACEIs/ARBs prescription in the measurement period.
2. Within the measurement period, count the days the individual was covered by at least one drug in the class based on the prescription fill date and days of supply.
  - a. Pull Part D claims for drugs in the respective drug class for individuals in the denominators. Attach drug ID and generic name to the datasets.
  - b. Sort and de-duplicate claims by beneficiary ID, service date, generic name, and descending days' supply. If prescriptions for the same drug (generic name) are dispensed on the same date of service for an individual, keep the dispensing with the largest days' supply.
  - c. Calculate the number of days covered per individual for each drug class.
    - i. For prescriptions with a days' supply that extends beyond the end of the measurement period, count only the days for which the drug was available to the individual during the measurement period.
    - ii. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended.
    - iii. If prescriptions for different drugs (different generic names) overlap, do not adjust the prescription start date.
3. Calculate the PDC for each individual. Divide the number of covered days found in Step 2 by the number of days in the individual's measurement period found in Step 1.

An example of SAS code for Steps 1-3 was adapted from PQA and is also available at the URL:

<http://www2.sas.com/proceedings/forum2007/043-2007.pdf>.

4. Of the individuals identified in Numerator Step 3, count the number of individuals with a calculated PDC of at least 0.8 for the ACEIs/ARBs class. This is the numerator.

**S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment** (You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

Available in attached appendix at A.1

**S.20. Sampling** (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

Not applicable

**S.21. Survey/Patient-reported data** (If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

Not applicable

**S.22. Missing data** (specify how missing data are handled, e.g., imputation, delete case.)

Required for Composites and PRO-PMs.

We have identified two potential scenarios where measure results could be biased by missing data:

1. Missing days' supply within the prescription drug event data, which is a required data element to calculate medication adherence; and,
2. Missing drug claims due to individuals using alternative payment sources for prescription drugs (e.g., \$4 commercial discount prescription programs), and other alternative drug benefits, such as the Veterans Administration (VA).

Days' Supply

For missing days' supply, the number (%) of beneficiaries in the measure denominator with one or more claims that had missing days' supply was analyzed. Beneficiaries missing days' supply are excluded from the analysis.

Cash Prescriptions

For bias from cash prescriptions or alternative sources, we conducted a limited sensitivity analysis using a two-state sample (FL and RI) to estimate the potential impact of a commercial cash discount program on measure rates. Specifically, we created a National Drug Code (NDC) list from the formulary of a leading cash discount program to identify those individuals with at least one claim for an ACEI/ARB and no claims for any other Part D drugs on the formulary as a proxy to potentially indicate the individual was filling medications through the cash discount program. We then simulated the effect on measure rates, if each of these individuals' ACEI/ARB medication use extended from the last consecutive claim to the end of the measurement period, assuming that individuals had switched to the cash program. We simulated two scenarios: including complete coverage of all remaining days until the end of the measurement period was 100% or extrapolating the average proportion of days covered from the first prescription in the measurement period to the last prescription in the measurement period.

Results from the analyses were discussed in Section 2b2.4 of the Measure Testing Submission Form. The findings suggest that very little impact on measure rates would be expected from missing days' supply and utilization of the cash discount program. In addition, CMS issued a memo in May 2012 to incentivize network pharmacies to submit claims directly to the plan for drugs dispensed outside the Part D benefit unless the member refuses; we anticipate that this would result in additional claims being captured from cash discount programs.

**S.23. Data Source** (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.24.

Administrative claims, Electronic Clinical Data : Pharmacy, Other

**S.24. Data Source or Collection Instrument** (Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

For measure calculation, the following Medicare files were required:

- Denominator tables
- Prescription drug benefit (Part D) coverage tables
- Beneficiary file
- Institutional claims (Part A)
- Non-institutional claims (Part B)—physician carrier/non-DME
- Prescription drug benefit (Part D) claims

For ACO attribution, the following were required:

- Denominator tables for Parts A and B enrollment
- Prescription drug benefit (Part D) coverage tables
- Beneficiary file
- Institutional claims (Part A)
- Non-institutional claims (Part B)—physician carrier/non-DME
- Prescription drug benefit (Part D) claims

For physician group attribution, the following were required:

- Non-institutional claims (Part B)—physician carrier/non-DME
- Denominator tables to determine individual enrollment
- Beneficiary file or coverage table to determine hospice benefit and Medicare as secondary payor status
- CMS physician and physician specialty tables
- National Plan & Provider Enumeration System (NPPES) database

**S.25. Data Source or Collection Instrument** (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

No data collection instrument provided

**S.26. Level of Analysis** (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Clinician : Group/Practice, Health Plan, Integrated Delivery System, Population : State

**S.27. Care Setting** (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Ambulatory Care : Clinician Office/Clinic

If other:

**S.28. COMPOSITE Performance Measure** - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)

Not applicable

**2a. Reliability** – See attached Measure Testing Submission Form

**2b. Validity** – See attached Measure Testing Submission Form

NQF2467\_Measure\_Testing\_Form\_ACEIs\_ARBs.docx

### 3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

#### 3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

##### 3a.1. Data Elements Generated as Byproduct of Care Processes.

Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)

If other:

#### 3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

**3b.1. To what extent are the specified data elements available electronically in defined fields?** (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields)

ALL data elements are in defined fields in electronic claims

**3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a**

credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.

**3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL.**

[No feasibility assessment](#) Attachment:

### 3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

**3c.1. Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.**

**IF a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.**

Testing demonstrated that the measure was feasible to specify and calculate using CMS administrative claims data. Data sources needed to implement the measure are readily available, accessible, and timely. No threats to the validity of this measure were identified using a limited analysis designed to address missing data.

**3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).**

The administrative data (collected by CMS primarily for billing purposes) are used as the data source for this measure. Therefore, the cost of data collection is negligible.

## 4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

### 4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

#### 4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Planned	Current Use (for current use provide URL)
Public Reporting	
Quality Improvement with Benchmarking (external benchmarking to multiple organizations)	
Quality Improvement (Internal to the specific organization)	
Not in use	

**4a.1. For each CURRENT use, checked above, provide:**

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included

Not applicable

**4a.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)**

The measure was not previously submitted to the MAP list for inclusion in a reporting program.

**4a.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)**

The measure has been submitted through the Measures Under Consideration process for the CMS ACO Shared Savings program.

**4b. Improvement**

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)**

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (trends in performance results, number and percentage of people receiving high-quality healthcare)
- Geographic area and number and percentage of accountable entities and patients included

Not applicable; the measure has not been used in a public reporting or quality improvement program.

**4b.2. If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.**

Diabetic patients often require chronic treatment with oral diabetes agents, statins, and/or ACEIs/ARBs to lower their risk of diabetic complications, adverse cardiovascular disease outcomes, and mortality. Adherence to chronic medication regimens has been documented in the literature to be less than optimal. In addition, the testing result from the 2011 and 2012 10-state Medicare claim data demonstrated substantial room for improvement. Poor adherence can reduce the effectiveness of treatment, and interventions to improve adherence can provide an opportunity for quality improvement.

Although this measure is not currently in use in any reporting programs, related measures assessing medication adherence with the PDC methodology have been used in multiple demonstration projects coordinated by PQA, Inc. These projects involved multiple health plans and community pharmacies across five states (in PA, IA, IN, WI and NC). As part of the first phase of the demonstration, health plans provided data for calculation of the PDC and other performance measures related to medications. The performance results were made available to the plans and to hundreds of community pharmacies in the demonstration states. Two evaluations of the first phase were conducted. One of the evaluations involved academic investigators from multiple universities as well as PQA staff, while the second evaluation was conducted by an AHRQ-selected contractor (CNA in partnership with Thomas Jefferson University). Both evaluations gathered feedback on the feasibility and usability of the PDC and other performance metrics. The report funded by AHRQ was presented at the 2010 AHRQ Conference (<http://www.ahrq.gov/about/annualconf10/conf10trackb.htm>).

The PQA-funded evaluation by academic investigators has recently been accepted for publication by a scientific journal and is also available from PQA upon request. The evaluations determined that the health plan leadership and the community pharmacists found the PDC measure to be easy to understand and potentially helpful for performance improvement. PQA is currently engaged in the second phase of the demonstrations wherein performance improvement interventions have been implemented to spur improvements in PDC scores. A new initiative is about to begin in the state of California wherein the Integrated Healthcare Association (IHA) is pilot-testing the PDC measures for a physician pay-for-performance (P4P) program. The technical advisory panel

for IHA felt that physicians and plans would likely be able to understand the PDC metric, but are conducting a pilot test to assess the usefulness of this metric in public reporting and P4P for physicians.

#### 4c. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

**4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.**

The measure has not been implemented in any reporting programs, and no unintended negative consequences were identified during testing.

### 5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

#### 5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

##### 5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0055 : Comprehensive Diabetes Care: Eye Exam (retinal) performed  
 0056 : Diabetes: Foot Exam  
 0057 : Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) testing  
 0059 : Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%)  
 0061 : Comprehensive Diabetes Care: Blood Pressure Control (<140/90 mm Hg)  
 0062 : Comprehensive Diabetes Care: Medical Attention for Nephropathy  
 0063 : Comprehensive Diabetes Care: LDL-C Screening  
 0064 : Comprehensive Diabetes Care: LDL-C Control <100 mg/dL  
 0416 : Diabetic Foot & Ankle Care, Ulcer Prevention – Evaluation of Footwear  
 0417 : Diabetic Foot & Ankle Care, Peripheral Neuropathy – Neurological Evaluation  
 0541 : Proportion of Days Covered (PDC): 3 Rates by Therapeutic Category  
 0542 : Adherence to Chronic Medications  
 0543 : Adherence to Statin Therapy for Individuals with Cardiovascular Disease  
 0575 : Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Control (<8.0%)  
 0604 : Adult(s) with diabetes mellitus that had a serum creatinine in last 12 reported months.  
 0619 : Diabetes with Hypertension or Proteinuria - Use of an ACE Inhibitor or ARB  
 0630 : Diabetes and Elevated HbA1C – Use of Diabetes Medications  
 1879 : Adherence to Antipsychotic Medications for Individuals with Schizophrenia

##### 5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

None identified

#### 5a. Harmonization

The measure specifications are harmonized with related measures;

**OR**

The differences in specifications are justified

**5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):**

**Are the measure specifications completely harmonized?**

No

**5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.**

NQF 2467 is related to and completely harmonized with the four NQF-endorsed measure that use the Proportion of Days Covered (PDC) method of calculating adherence. These four measures include one NQF-endorsed measure by PQA (NQF 0541) and three NQF-endorsed measures by CMS (NQF 0542, 0543, and 1879). For the related measures that are not completely harmonized with NQF 2467, the following sections identify differences between these measures and NQF 2467, rationale, and impact on interpretability and data collection burden.

**Diabetes Measures by National Committee for Quality Assurance (NCQA) and Optum -** NQF 2467 has the same target population (i.e., individuals with diabetes mellitus) as the nine Diabetes Measures developed by the National Committee for Quality Assurance (NCQA) and one measure developed by Optum. The nine NCQA measures (NQF 0055, 0056, 0057, 0059, 0061, 0062, 0063, 0064, and 0075) and the Optum measure (NQF 0604) are related to, but are not completely harmonized with, NQF 2467. **Differences Between NQF 2467 and NCQA and Optum Diabetes Measures - Identification of Individuals with Diabetes Mellitus:** NQF 2467 uses the same algorithm for identifying individuals with diabetes as the NCQA and Optum Diabetes Measures, which entails using diagnosis codes and/or drug proxy to identify diabetes mellitus within the inpatient or outpatient claims data. However, NQF 2467 uses only claims for the 12-month measurement period, whereas the NCQA and Optum Diabetes Measures use a look-back period of one year for both the prescription data and diagnosis data. In addition, the Optum measure (NQF 0604) also uses a Disease Registry Input File, if available, to identify patients with diabetes mellitus. **Age of Individuals Included in the Measure:** NQF 2467 includes individuals who are at least 18 years of age and older as of the beginning of the measurement year, whereas the NCQA and Optum Diabetes Measures include individuals who are 18-75 years as of December 31st of the measurement year. **Rationale -** NQF 2467 uses a one-year time frame, rather than two years for the NCQA Diabetes measures, which allows more individuals (i.e., those with one year of data) to be included. NQF 2467 includes individuals 18 years and older, rather than 18-75 years for the NCQA and Optum measures, because many Medicare beneficiaries are over 75 years of age, and the guideline recommendations for the medication therapies do not restrict to the 18-75 age group. **Impact on interpretability -** NQF 2467 is easier to interpret than the NCQA and Optum Diabetes measures because it focuses on a single year and includes all adults 18 years and older. **Data collection burden -** The target populations of NQF 2467 and the NCQA Diabetes measures are identified using administrative claims or encounter data, so the data collection burden should be similar. The Optum Diabetes measure uses a Disease Registry Input File, if available, and therefore, may require more time and resources than administrative data to identify patients with diabetes mellitus.

**Diabetes Measures by American Podiatric Medical Association (APMA) -** NQF 2467 has the same target population (i.e., individuals with diabetes mellitus) as the two Diabetes Measures by the APMA (NQF 416 and 417). These two APMA measures are related to, but are not completely harmonized with NQF 2467. **Differences Between NQF 2467 and APMA Diabetes Measures - Identification of Individuals with Diabetes Mellitus:** NQF 2467 uses a different algorithm for identifying individuals with diabetes than the APMA Diabetes Measures. NQF 2467 requires two outpatient or nonacute inpatient visits or one acute inpatient or emergency department visit or a prescription claim for insulin or other anti-diabetic medication. However, the APMA Diabetes Measures require only one claim for an outpatient visit or a nonacute inpatient visit or a selected procedure with a diagnosis of diabetes mellitus, but they do not use acute inpatient data or pharmacy data for identifying individuals with diabetes. **Rationale -** NQF 2467 requires two claims so the coded outpatient or nonacute inpatient diagnosis is confirmed. Using only one outpatient diagnosis could lead to including individuals who do not actually have diabetes. NQF 2467 uses acute inpatient and pharmacy data in the definition of diabetes, in addition to outpatient and nonacute inpatient data, to capture as many individuals with a diagnosis of diabetes as possible. **Impact on interpretability -** Requiring two claims for an outpatient or nonacute inpatient diagnosis of diabetes will eliminate individuals who received a diagnosis of diabetes in error, or if it was coded as a rule-out diagnosis. If the additional data sources (i.e., acute inpatient data and pharmacy data) are not used, only individuals who have an outpatient or nonacute inpatient diagnosis of diabetes would be included in the denominator; those with only an inpatient admission or a prescription for diabetes would not be included. This might result in missing individuals with diabetes. **Data collection burden -** The target populations of NQF 2467 and the APMA Diabetes measures both are identified using administrative claims or encounter data, so the data collection burden should be similar.

**Diabetes Measures by ActiveHealth Management -** NQF 2467 has the same target population (i.e., individuals with diabetes mellitus) as two Diabetes Measures by ActiveHealth Management, NQF 0619 and 0630. These two ActiveHealth Management measures are related to, but are not completely harmonized with, NQF 2467. **Differences Between NQF 2467 and ActiveHealth Management Diabetes Measures - Identification of Individuals with Diabetes Mellitus:** NQF 2467 uses an algorithm for identifying individuals with diabetes, which entails using diagnosis codes and/or drug proxy to identify diabetes mellitus within the inpatient or outpatient claims data during the 12-month measurement period. The two ActiveHealth Management Diabetes Measures require four diabetes mellitus diagnoses from administrative claims in the past 12 months, one diabetes mellitus diagnosis from electronic clinical data anytime in the past, one diabetes mellitus diagnosis in the electronic personal health record, or one diabetes mellitus diagnosis from administrative claims in the past five years plus filled prescriptions for diabetes medications, insulin, or a HbA1C value in the past 12 months. In

addition, the target populations in the two ActiveHealth Management Diabetes Measures are further restricted either to those with diabetes mellitus and hypertension or proteinuria (NQF 0619), or to those with diabetes mellitus and at least one elevated HbA1C in the past six months (NQF 0630). Age of Individuals Included in the Measure: NQF 2467 includes individuals who are at least 18 years of age as of the beginning of the measurement year, whereas the ActiveHealth Management Diabetes Measures include individuals who are 18-75 years of age. Rationale - The target population of NQF 2467 is defined on the basis of a diagnosis of diabetes mellitus and at least two prescriptions of ACEI/ARBs (Measure B). This denominator definition of NQF 2467 limits the measure to those individuals who have been on the medication long enough for the prescribing provider to determine that ACEI/ARB therapy is appropriate for the patient and is tolerated. NQF 2467 includes individuals 18 years and older, rather than 18-75 years for the ActiveHealth Management Diabetes measures, because many Medicare beneficiaries are over 75 years of age, and the guideline recommendations do not restrict to the 18-75 age group. Impact on interpretability - NQF 2467 is easier to interpret than the ActiveHealth Management Diabetes measures because it estimates adherence to medications among individuals with diabetes mellitus who have had at least two prescriptions, and it includes all adults 18 years and older. Data collection burden - NQF 2467 is based on administrative claims data. The ActiveHealth Management Diabetes measures are based on multiple data sources (e.g., administrative claims, electronic clinical data, patient data from electronic personal health records and feedback, provider survey). Therefore, NQF 2467 presents less of a data collection burden.

#### 5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

**OR**

Multiple measures are justified.

**5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):**

**Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)**

Not applicable

## Appendix

**A.1 Supplemental materials may be provided in an appendix.** All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

**Attachment Attachment:** [NQF\\_2467\\_Measure\\_Logic\\_Diagram.pdf](#)

## Contact Information

**Co.1 Measure Steward (Intellectual Property Owner):** Centers for Medicare & Medicaid Services

**Co.2 Point of Contact:** Corette, Byrd, [MMSSupport@Battelle.org](mailto:MMSSupport@Battelle.org), 202-786-1158-

**Co.3 Measure Developer if different from Measure Steward:** Centers for Medicare & Medicaid Services

**Co.4 Point of Contact:** Elizabeth, Ricksecker, [Elizabeth.Ricksecker@cms.hhs.gov](mailto:Elizabeth.Ricksecker@cms.hhs.gov), 410-786-6723-

## Additional Information

**Ad.1 Workgroup/Expert Panel involved in measure development**

**Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.**

Original Technical Expert Panel (TEP) Members

Douglas Bell, MD, PHD, Associate Professor in Residence, UCLA Department of Medicine, Division of General Internal Medicine and Health Services Research

Jill S. Borchert, PharmD, BCPS, FCCD, Professor, Pharmacy Practice & PGY1 Residency Program Director, Midwestern University, Chicago College of Pharmacy

Anne Burns, RPH, Vice President, Professional Affairs, American Pharmacists Association

Jannet Carmichael, PharmD, BCPS, FCCP, FAPHA, VISN 21 Pharmacy Executive, VA Sierra Pacific Network

Marshall H. Chin, MD, MPH, Professor of Medicine, University of Chicago

Edward S. Eisenberg, MD, Vice President and Chief Medical Officer, Medicare, Medco Health Solutions

Jay A. Gold, MD, JD, MPH, Senior Vice President and Medicare Chief Medical Officer, MetaStar, Inc.  
David Nau, PHD, MS, Senior Director of Research & Performance Measurement, PQA, Inc.  
N. Lee Rucker, PHD, MS, Senior Strategic Policy Advisor, AARP - Public Policy Institute  
Marissa Schlaifer, RPH, MS, Director of Pharmacy Affairs Academy of Managed Care Pharmacy  
Brad Tice, PharmD, Chief Clinical Officer, PharmMD Solutions, LLC  
Jennifer K. Thomas, PharmD, Manager, Pharmacy Services, Delmarva Foundation for Medical Care/Delmarva Foundation of the District of Columbia  
Darren M. Triller, PharmD, Director, Pharmacy Services, IPRO  
Neil Wenger, MD, MPH, Professor of Medicine, UCLA Department of Medicine, Division of General Internal Medicine and Health Services Research

The TEP evaluated proposed medication measures drafted by FMQAI in regard to the four primary measure evaluation criteria used in the NQF consensus endorsement process (importance, scientific acceptability, feasibility, and usability). The TEP discussed the strengths and weaknesses of the proposed measures and make recommendations regarding measure specifications, inclusion and exclusion criteria, and appropriate risk adjustment as applicable.

#### Current Technical Expert Panel (TEP) Members

Dale W. Bratzler DO, MPH, TEP Chair, Professor and Associate Dean, College of Public Health, University of Oklahoma Health Sciences Center  
Mary Brennan-Taylor, Adjunct Research Instructor of Family Medicine, School of Medicine and Biomedical Sciences, University of Buffalo  
Frank E. Briggs III, PharmD, MPH, Vice President, Quality and Patient Safety, West Virginia University Healthcare  
Daniel Castillo, MD, MBA, Medical Director, Healthcare Quality Evaluation, The Joint Commission  
Joan Ching, RN, MN, CPHQ, Administrative Director, Hospital Quality & Safety, Virginia Mason Medical Center  
Edward S. Eisenberg, MD, FACP, Senior Vice President, Performance Measurement and Strategic Alliances, Pharmacy Quality Alliance  
Floyd Eisenberg, MD, MPH, FACP, President, iParsimony, LLC  
Marybeth Farquhar, PhD, MSN, RN, Vice President of Research & Measurement, URAC  
Frank Federico, BS, RPH, Executive Director for Strategic Partners, Institute for Healthcare Improvement  
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Tejal Gandhi, MD, MPH, President, National Patient Safety Foundation  
P. Michael Ho, MD, PhD, FACC, Staff Cardiologist, VA Eastern Colorado Health Care System  
Mark L. Holtsman, PharmD, Co-Director, Inpatient Pain Service and Pain Management Service Pharmacist, UC Davis Medical Center  
Clifford Ko, MD, MS, MSHS, FACS, Director, ACS Division of Research and Optimal Patient Care  
Janet Maurer, MD, MBA, FCCP, Operations Medical Director, National Imaging Associates, Health Dialog  
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Nathan Spell, MD, FACP, Chief Quality Officer, Emory University Hospital  
Stephen J. Traub, MD, FACEP, Chair, Department of Emergency Medicine, Mayo Clinic  
Darren M. Triller, PharmD, TEP Co-Chair, Senior Director, Quality Improvement, IPRO QIO

#### Federal Guests on TEP

Mary Andrawis, PharmD, MPH, Contract Officer Representative & Medication Safety Co-Lead, Centers for Medicare & Medicaid Services, Center for Medicare & Medicaid Innovation  
Andrew Geller, MD, LCDR, USPHS, Epidemic Intelligence Service Officer, Medication Safety Program, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention  
Sherriann Moore, MS, Deputy Director, U.S. Department of Health and Human Services, Indian Health Service, Office of Urban Indian Health Programs  
Nadine Shehab, PharmD, MPH, Senior Service Fellow, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention

The current TEP evaluated the updated measure testing results and evaluated face validity of the measure.

#### Measure Developer/Steward Updates and Ongoing Maintenance

**Ad.2 Year the measure was first released: 2009**

**Ad.3 Month and Year of most recent revision:** 01, 2013

**Ad.4 What is your frequency for review/update of this measure?** Annually

**Ad.5 When is the next scheduled review/update for this measure?** 12, 2014

**Ad.6 Copyright statement:** Limited proprietary coding is contained in the measure specifications for user convenience. Use of these codes may require permission from the code owner or agreement to a license.

ICD-10 codes are copyright © World Health Organization (WHO), Fourth Edition, 2010. CPT® 2010 American Medical Association; CPT is a registered trademark of the American Medical Association. All rights reserved.

**Ad.7 Disclaimers:** This performance measure does not establish a standard of medical care and has not been tested for all potential applications.

**Ad.8 Additional Information/Comments:** Not applicable