



## 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 sub criterion 1b).

### Brief Measure Information

**NQF #:** 0272

**Corresponding Measures:**

**De.2. Measure Title:** Diabetes Short-Term Complications Admission Rate (PQI 01)

**Co.1.1. Measure Steward:** Agency for Healthcare Research and Quality

**De.3. Brief Description of Measure:** Admissions for a principal diagnosis of diabetes with short-term complications (ketoacidosis, hyperosmolarity, or coma) per 100,000 population, ages 18 years and older. Excludes obstetric admissions and transfers from other institutions.

[NOTE: The software provides the rate per population. However, common practice reports the measure as per 100,000 population. The user must multiply the rate obtained from the software by 100,000 to report admissions per 100,000 population.]

**1b.1. Developer Rationale:** This measure is an avoidable hospitalization/ambulatory care sensitive condition (ACSC) type indicator. ACSC type indicators are not measures of hospital quality, but rather measures of potentially avoidable hospitalization if appropriate outpatient care, other healthcare services or community services were accessed and obtained (i.e., measures of the health care system broadly defined). These measures are designed to assess population access to timely, high quality outpatient and public health services in a particular geographic area, for the purpose of managing chronic disease or diagnosing acute illnesses before progressing to inpatient treatment. These measures are of most interest to comprehensive health care delivery systems, such as some health maintenance organizations (HMOs), accountable care organizations (ACOs) or public health agencies. ACSC indicators correlate with each other and they may be used in conjunction as an overall examination of outpatient care and access to care at a national, regional or county level.

**S.4. Numerator Statement:** Discharges, for patients ages 18 years and older, with a principal ICD-9-CM diagnosis code for diabetes short-term complications (ketoacidosis, hyperosmolarity, or coma).

[NOTE: By definition, discharges with a principal diagnosis of diabetes with short-term complications are precluded from an assignment of MDC 14 by grouper software. Thus, obstetric discharges should not be considered in the PQI rate, though the AHRQ QITM software does not explicitly exclude obstetric cases.]

**S.6. Denominator Statement:** Population ages 18 years and older in the metropolitan area<sup>†</sup> or county. Discharges in the numerator are assigned to the denominator based on the metropolitan area or county of the patient residence, not the metropolitan area or county of the hospital where the discharge occurred.<sup>‡</sup>

May be combined with uncontrolled diabetes as a single indicator as a simple sum of the rates to form the Healthy People 2010 indicator (note that the AHRQ QITM excludes transfers to avoid double-counting cases).

**S.8. Denominator Exclusions:** Not applicable

**De.1. Measure Type:** Outcome

**S.17. Data Source:** Claims

**S.20. Level of Analysis:** Other, Population : Community, County or City, Population : Regional and State

**IF Endorsement Maintenance – Original Endorsement Date:** Nov 06, 2007 **Most Recent Endorsement Date:** Sep 18, 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?** Could be paired with PQI 14 Uncontrolled Diabetes Admission Rate to get a more complete assessment. All measure testing conducted as a single measure.

## 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 sub criteria to pass this criterion and be evaluated against the remaining criteria.**

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

#### 1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?

Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

### 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., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

*If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.*

This measure is an avoidable hospitalization/ambulatory care sensitive condition (ACSC) type indicator. ACSC type indicators are not measures of hospital quality, but rather measures of potentially avoidable hospitalization if appropriate outpatient care, other healthcare services or community services were accessed and obtained (i.e., measures of the health care system broadly defined). These measures are designed to assess population access to timely, high quality outpatient and public health services in a particular geographic area, for the purpose of managing chronic disease or diagnosing acute illnesses before progressing to inpatient treatment. These measures are of most interest to comprehensive health care delivery systems, such as some health maintenance organizations (HMOs), accountable care organizations (ACOs) or public health agencies. ACSC indicators correlate with each other and they may be used in conjunction as an overall examination of outpatient care and access to care at a national, regional or county level.

**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.** (*This is required for maintenance of endorsement. 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 include.*) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.

All analyses were completed using data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID), 2007-2011. HCUP is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, private data organizations, and the Federal government to create a national information resource of encounter-level health care data. The HCUP SID contain the universe of the inpatient discharge abstracts in participating States, translated into a uniform format to facilitate multi-State comparisons and analyses. Together, the SID encompass about 97 percent of all U.S. community hospital discharges (in 2011, 46 states participated for a total of more than 38.5 million hospital discharges). As defined by the American Hospital Association, community hospitals are all non-Federal, short-term, general or other specialty hospitals, excluding hospital units of institutions. Veterans hospitals and other Federal facilities are excluded. Taken from the Uniform Bill-04 (UB-04), the SID data elements include ICD-9-CM coded principal and secondary diagnoses and procedures, additional detailed clinical and service information based on revenue codes, admission and discharge status, patient demographics, expected payment source (Medicare, Medicaid, private insurance as well as the uninsured), total charges and length of stay ([www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov)).

Table 1. Reference Population

Year	Areas(nbr)	Outcome	Pop at Risk	Obs Rate
2011	3,112	153,410	236,853,390	64.770
2010	3,111	142,019	234,354,341	60.600
2009	3,112	131,916	231,837,944	56.900
2008	3,111	125,493	229,336,422	54.720
2007	3,107	112,232	226,778,104	49.490

## Performance Score Distribution 2011 (Rate per 100,000 population)

5th	25th	Median	75th	95th
20.261	39.542	58.795	83.531	129.686

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. [www.hcup-us.ahrq.gov/sidoverview.jsp](http://www.hcup-us.ahrq.gov/sidoverview.jsp). (AHRQ QI Software Version 4.5)

**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.**

Not applicable

**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 maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.*) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.**

Same data as described in 1b.2

Admissions with diabetes with short-term complicationsa per 100,000 population, age 18 and over (PQI 1)  
Adjusted rates by patient and hospital characteristics, 2011 (from HCUPnet)

## 2011 Adjusted Rateb

Characteristic	Estimate	Standard error	P-value (ref noted by *)
Total U.S.	71.688	1.732	
Patient characteristic:			
Age groups for			
18-44*	85.031	2.240	
45-64	67.931	1.847	0.000
65 and over	41.512	1.185	0.000
Age groups for conditions affecting primarily elderly			
65-69*	44.315	1.697	
70-74	42.933	1.878	0.585
75-79	43.027	2.028	0.626
80-84	37.538	2.058	0.011
85 and over	35.005	2.060	0.000
Gender:			
Male*	74.662	1.884	
Female	68.899	1.817	0.028
Median income of patient's ZIP Code:			
1st (lowest income)	109.925	4.996	0.000
Second quartile	81.022	3.185	0.000
Third quartile	59.144	2.450	0.000
4th quartile (highest)*	38.854	2.361	
Location of patient residence (NCHS):			

Large central metro	78.638	5.384	0.037
Large fringe metro*	63.789	4.659	
Medium metropolitan	62.608	6.338	0.881
Small metropolitan	77.418	9.039	0.180
Micropolitan	80.512	6.192	0.031
Noncore	83.635	5.145	0.004

## Hospital characteristic:

## Location of inpatient treatment:

Northeast*	69.636	3.757	
Midwest	70.449	3.652	0.877
South	78.526	3.172	0.071
West	63.501	3.141	0.210

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2011, and AHRQ Quality Indicators, version 4.4.

a Consistent with the AHRQ PQI software, diabetes must be the principal diagnosis and short-term complications include ketoacidosis, hyperosmolarity, or coma. Transfers from other institutions are excluded.

b Rates are adjusted by age and gender using the total U.S. resident population for 2010 as the standard population; when reporting is by age, the adjustment is by gender only; when reporting is by gender, the adjustment is by age only.

\*Reference for p-value test statistics.

NCHS - National Center for Health Statistics designation for urban-rural locations.

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**

Hospitalization rates for complications associated with diabetes vary substantially by race. Socioeconomic factors account for some but not all of these disparities (1,2). Disadvantaged patients are more likely to be admitted for acute complications of their diabetes (which are more easily preventable), as opposed to chronic complications (3) and to be admitted through the ED (1,2). Once admitted, minorities have been shown to have longer average lengths of stays and incur higher costs. Blacks and Hispanics have been shown to less likely have coverage of Part B services (physician services) compared to Whites, and Medicare patients without private insurance coverage of Part B services were less likely to self-monitor their blood glucose, have regular checkups, or receive treatment for hypertension or dyslipidemia (4). Persons with intellectual disabilities and mental health disorders have been shown to have an increased risk for hospitalization for diabetic related complications (5,6), however not all studies are consistent (7).

Among minority patients admitted with diabetic ketoacidosis (DKA), Hispanic patients were particularly likely to be readmitted (58% versus 27% of African Americans). Lower family income, younger age at diagnoses, recreational drug abuse, behavioral problems, insurance type, elevated hemoglobin A1c and being from a family with less than a high school education have increased odds ratios to present with DKA at diagnosis when first diagnosed, as well as recurrent admissions (8-11). One study targeting DKA hospitalizations found females, aged 15-34, had an adjusted rate ratio of 15.21 compared to those over 65 (12), while another reported a potential benefit by introducing earlier insulin therapy to women with poorly controlled type 2 diabetes mellitus receiving oral hypoglycemic therapy (13). Older adults admitted with diabetic complications are more likely to have more comorbid condition and more insidious presentation. Approximately 40% of older patients presenting with severe hyperglycemia do not have a known history of diabetes.

In addition, other socioeconomic status (SES) factors related to disparities in avoidable hospitalization rates have been reported. Avoidable hospitalization rates for diabetes were inversely related to income level in a population-based cohort of persons with diabetes studied between 1992 and 1999 in Canada.

Individuals in the lowest income quintile were 44 percent more likely to have an event than those in the highest quintile (16.4 percent vs. 11.4 percent,  $p < 0.001$ ). The gradient was most marked in 45- to 64-year-olds (OR = 1.76; 95 percent CI, 1.69-1.82). The relationship between SES and hospitalization rates persisted after adjusting for age, sex, urban vs. rural residence, comorbidity, frequency of physician visits, continuity of care, physician specialty, and geographic region (14). Billings et al. (15) found that low-income ZIP codes in New York City (where at least 60 percent of households earned less than \$15,000 in 1988, based on adjusted 1980 Census data) had 6.3 times more acute diabetes hospitalizations per capita than high-income ZIP codes (where less than 17.5 percent of households earned less than \$15,000). This disparity by income persisted across all age groups, including those over 65.

Additional information on disparities in care along socioeconomic dimensions may be obtained from the National Healthcare Disparities Report, 2012 (15) and HCUPnet ([www.hcupnet.ahrq.gov](http://www.hcupnet.ahrq.gov)). The NHDR notes that disparities related to admissions for diabetes with short-term complications, per 100,000 population between high income and low income individuals have increased over time; with individuals from poorer communities having higher rates of admissions for diabetes with short-term complications than individuals from higher income communities

#### References:

1. Kim H, Ross JS, Melkus GD, Zhao Z, Boockvar K. Scheduled and unscheduled hospital readmissions among patients with diabetes. *The American journal of managed care*. 2010;16(10):760-7. PMID: 20964472;
2. Shen JJ, Washington EL. Identification of diabetic complications among minority populations. *Ethnicity & disease*. 2008;18(2):136-40. PMID: 18507263.
3. Jiang HJ, Andrews R, Stryer D, Friedman B. Racial/ethnic disparities in potentially preventable readmissions: the case of diabetes. *American journal of public health*. 2005;95(9):1561-7. PMID: 16118367; PubMed Central PMCID: PMC1449398.
4. Harris MI. Racial and ethnic differences in health insurance coverage for adults with diabetes. *Diabetes care*. 1999;22(10):1679-82. PMID: 10526734.
5. Becker T, Hux J. Risk of acute complications of diabetes among people with schizophrenia in Ontario, Canada. *Diabetes care*. 2011;34(2):398-402. PMID: 20978096
6. Druss BG, Zhao L, Cummings JR, Shim RS, Rust GS, Marcus SC. Mental comorbidity and quality of diabetes care under Medicaid: a 50-state analysis. *Medical care*. 2012;50(5):428-33 PMID: 22228248
7. Leung G, Zhang J, Lin WC, Clark RE. Behavioral disorders and diabetes-related outcomes among Massachusetts Medicare and Medicaid beneficiaries. *Psychiatric services (Washington, DC)*. 2011;62(6):659-65. PMID: 21632736.
8. Van Ness-Otunnu R, Hack JB. Hyperglycemic Crisis. *The Journal of emergency medicine*. 2013. PMID: 23786780.
9. Rewers A, Klingensmith G, Davis C, Pettitt DB, Pihoker C, Rodriguez B, et al. Presence of diabetic ketoacidosis at diagnosis of diabetes mellitus in youth: the Search for Diabetes in Youth Study. *Pediatrics*. 2008;121(5):e1258-66. PMID: 18450868.
10. Lopez-de-Andres A, Hernandez-Barrera V, Carrasco-Garrido P, Esteban-Hernandez J, Gil-de-Miguel A, Jimenez-Garcia R. Trends of hospitalizations, fatality rate and costs for acute myocardial infarction among Spanish diabetic adults, 2001-2006. *BMC health services research*. 2010;10:59. PMID: 20205960.
11. Dungan KM. The effect of diabetes on hospital readmissions. *Journal of diabetes science and technology*. 2012;6(5):1045-52. PMID: 23063030.
12. Liu CC, Chen KR, Chen HF, Huang HL, Ko MC, Li CY. Trends in hospitalization for diabetic ketoacidosis in diabetic patients in Taiwan: analysis of national claims data, 1997-2005. *Journal of the Formosan Medical Association = Taiwan yi zhi*. 2010;109(10):725-34. PMID: 20970069.
13. Cook CB, Hentz JG, Miller WJ, Tsui C, Naylor DB, Ziemer DC, et al. Relationship of diabetes with cardiovascular disease-related hospitalization rates, length of stay, and charges: analysis by race/ethnicity, age, and sex. *Ethnicity & disease*. 2007;17(4):714-20. PMID: 18072384.
14. Booth GL, Hux JE. Relationship between avoidable hospitalizations for diabetes mellitus and income level. *Arch Intern Med*. 2003;163:101-106. PMID: 12523923
15. Billings J, Zeitel Lukomnik J, Carey TS, Blank AE, Newman L. Impact of socioeconomic status on hospital use in New York City. *Health Aff* 1993; 12:162-173. PMID: 8509018.
15. US Department of Health and Human Services. National Healthcare Disparities Report, 2012. Rockville, MD: Agency for Healthcare Research and Quality. May 2013. AHRQ Publication No. 13-0003. Available at: [http://www.ahrq.gov/research/findings/nhqrdr/nhdr12/nhdr12\\_prov.pdf](http://www.ahrq.gov/research/findings/nhqrdr/nhdr12/nhdr12_prov.pdf)

## 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 sub criteria 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. Non-Condition Specific**(check all the areas that apply):

Primary Prevention

**De.7. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

Populations at Risk, Populations at Risk : Individuals with multiple chronic conditions

**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.)

[http://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V50/TechSpecs/PQI\\_01\\_Diabetes\\_Short-term\\_Complications\\_Admission\\_Rate.pdf](http://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V50/TechSpecs/PQI_01_Diabetes_Short-term_Complications_Admission_Rate.pdf)

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped 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)

This is not an eMeasure 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: PQI01\_Technical\_Specifications.xlsx

**S.2c.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Attachment:

**S.2d.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

**S.3.1. For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

**S.3.2. For maintenance of endorsement**, please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

As standard protocol, the AHRQ QI program annually updates all measures with Fiscal Year coding changes, refinements based on stakeholder input, refinements to improve specificity and sensitivity based on additional analyses, and necessary software changes. In addition, approximately every two years, AHRQ updates the risk adjustment parameter estimates and composite weights based on the most recent year of data (i.e., the most current reference population possible). The refined measures are tested and confirmed to be valid and reliable prior to release of the updated software.

Since the last update, the following changes have been made to the indicator:

- The data upon which to base the reference population was updated. V4.4 uses a 2008 reference population; v4.5 uses a 2010 reference population.
- Updated with 2012 US Census population estimates
- Fiscal Year coding updates

For additional information, see Prevention Quality Indicator (PQI) Log of ICD-9-CM and DRG Coding Updates and Revisions to PQI Documentation and Software in the supplemental materials and available online at:

[http://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V45/PQI\\_Changes\\_4.5.pdf](http://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V45/PQI_Changes_4.5.pdf) and in the supporting information.

**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) DO NOT include the rationale for the measure.



*IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).*

Discharges, for patients ages 18 years and older, with a principal ICD-9-CM diagnosis code for diabetes short-term complications (ketoacidosis, hyperosmolarity, or coma).

[NOTE: By definition, discharges with a principal diagnosis of diabetes with short-term complications are precluded from an assignment of MDC 14 by grouper software. Thus, obstetric discharges should not be considered in the PQI rate, though the AHRQ QITM software does not explicitly exclude obstetric cases.]

**S.5. 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, time period for data collection, 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 (S.14).*

ICD-9-CM Diabetes short-term complications diagnosis codes:

25010 DM KETO T2, DM CONT  
25011 DM KETO T1, DM CONT  
25012 DM KETO T2, DM UNCONT  
25013 DM KETO T1, DM UNCONT  
25020 DM W/ HYPROSM T2, DM CONT  
25021 DM W/ HYPROSM T1, DM CONT  
25022 DM W/ HYPROSM T2, DM UNCONT  
25023 DM W/ HYPROSM T1, DM UNCONT  
25030 DM COMA NEC TYP II, DM CONT  
25031 DM COMA NEC T1, DM CONT  
25032 DM COMA NEC T2, DM UNCONT  
25033 DM COMA NEC T1, DM UNCONT

Exclude cases:

- transfer from a hospital (different facility)
- transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)
- transfer from another health care facility
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), principal diagnosis (DX1=missing), or county (PSTCO=missing)

See Prevention Quality Indicators Appendices:

- Appendix A – Admission Codes for Transfers

**S.6. Denominator Statement** *(Brief, narrative description of the target population being measured)*

Population ages 18 years and older in the metropolitan area<sup>†</sup> or county. Discharges in the numerator are assigned to the denominator based on the metropolitan area or county of the patient residence, not the metropolitan area or county of the hospital where the discharge occurred.<sup>‡</sup>

May be combined with uncontrolled diabetes as a single indicator as a simple sum of the rates to form the Healthy People 2010 indicator (note that the AHRQ QITM excludes transfers to avoid double-counting cases).

**S.7. Denominator Details** *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, 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 target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).*

<sup>†</sup> The term “metropolitan area” (MA) was adopted by the U.S. Census in 1990 and referred collectively to metropolitan statistical areas (MSAs), consolidated metropolitan statistical areas (CMSAs), and primary metropolitan statistical areas (PMSAs). In addition, “area” could refer to either 1) FIPS county, 2) modified FIPS county, 3) 1999 OMB Metropolitan Statistical Area, or 4) 2003 OMB

Metropolitan Statistical Area. Micropolitan Statistical Areas are not used in the QI software.

‡ The denominator can be specified with the diabetic population only and calculated with the SAS QI software through the condition-specific denominator at the state-level feature.

**S.8. Denominator Exclusions** (Brief narrative description of exclusions from the target population)

Not applicable

**S.9. Denominator Exclusion Details** (All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, 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.)

Not applicable

**S.10. Stratification Information** (Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – 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.)

Not applicable

**S.11. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)

Statistical risk model

If other:

**S.12. Type of score:**

Rate/proportion

If other:

**S.13. 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 = Lower score

**S.14. Calculation Algorithm/Measure Logic** (Diagram or 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; time period for data, aggregating data; risk adjustment; etc.)

The observed rate is the number of discharges flagged with the outcome of interest divided by the number of persons in the population at risk. The predicted rate is estimated for each person based on a logistic regression model. The expected rate is the average predicted rate for the unit of interest (i.e. the county of residence). The risk-adjusted rate is calculated using the indirect method as observed rate divided by expected rate multiplied by the reference population rate. The performance score is a weighted average of the risk-adjusted rate and the reference population rate, where the weight is the signal-to-noise ratio.

For additional information, please see supporting information in the Quality Indicator Empirical Methods. Information is also available on the AHRQ Quality Indicator website: [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov)

**S.15. Sampling** (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

If an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.

**S.16. Survey/Patient-reported data** (If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)

Specify calculation of response rates to be reported with performance measure results.

**S.17. Data Source** (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.18.

Claims

**S.18. Data Source or Collection Instrument** (Identify the specific data source/data collection instrument (e.g. name of database,



*clinical registry, collection instrument, etc., and describe how data are collected.)*

If instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

All analyses were completed using data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID), 2007-2011. HCUP is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, private data organizations, and the Federal government to create a national information resource of encounter-level health care data. The HCUP SID contain the universe of the inpatient discharge abstracts in participating States, translated into a uniform format to facilitate multi-State comparisons and analyses. Together, the SID encompass about 97 percent of all U.S. community hospital discharges (in 2011, 46 states participated for a total of more than 38.5 million hospital discharges). As defined by the American Hospital Association, community hospitals are all non-Federal, short-term, general or other specialty hospitals, excluding hospital units of institutions. Veterans hospitals and other Federal facilities are excluded. Taken from the Uniform Bill-04 (UB-04), the SID data elements include ICD-9-CM coded principal and secondary diagnoses and procedures, additional detailed clinical and service information based on revenue codes, admission and discharge status, patient demographics, expected payment source (Medicare, Medicaid, private insurance as well as the uninsured), total charges and length of stay ([www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov)).

HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. [www.hcup-us.ahrq.gov/sidoverview.jsp](http://www.hcup-us.ahrq.gov/sidoverview.jsp). (AHRQ QI Software Version 4.5)

**S.19. Data Source or Collection Instrument** *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*

Available at measure-specific web page URL identified in S.1

**S.20. Level of Analysis** *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*

Other, Population : Community, County or City, Population : Regional and State

**S.21. Care Setting** *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*

Inpatient/Hospital

If other:

**S.22. 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.)*

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

### **2.1 For maintenance of endorsement**

*Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### **2.2 For maintenance of endorsement**

*Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### **2.3 For maintenance of endorsement**

*Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1, 2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.*

### 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)** Update this field for maintenance of endorsement.

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. For maintenance of endorsement,** if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

**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. Please also complete and attach the NQF Feasibility Score Card.**

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. Required for maintenance of endorsement.** Describe difficulties (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 instrument-based,** consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

Because the indicator is based on readily available administrative data and U.S. Census data, feasibility is not an issue

**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).**

Public use SAS and Windows software available on the URL provided in S.1

### 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.*

Specific Plan for Use	Current Use (for current use provide URL)

**4a1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

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

Centers for Medicare & Medicaid Services (CMS) Initial Core Set of Health Care Quality Measures for Medicaid-Eligible Adults  
As required by section 2701 of the Affordable Care Act, for voluntary use by State programs administered under (Medicaid) title XIX of the Social Security Act, health insurance issuers and managed care entities that enter into contracts with Medicaid, and providers of items and services under these programs.

<http://www.gpo.gov/fdsys/pkg/FR-2012-01-04/pdf/2011-33756.pdf>

Centers for Medicare & Medicaid Services (CMS), Medicare FFS Physician Feedback Program/Value-Based Payment Modifiers and Quality and Resource Use Reports (QRUR)

Program includes measures of Ambulatory Care Sensitive Conditions (ACSC), used by Physicians receiving Medicare FFS payment modifiers

<http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2011-ACSC-Outcomes-Measures.pdf>

Agency for Healthcare Research and Quality (AHRQ), National Healthcare Quality Report & National Healthcare Disparities Reports  
2010 data are from 45 participating states in the Healthcare Cost and Utilization Project (HCUP) database

<http://www.hcup-us.ahrq.gov/reports/methods/2012-02.pdf>

Agency for Healthcare Research and Quality (AHRQ), MONAHRQ Software

Used by many states and other health research organizations; My Own Network, Powered by AHRQ (MONAHRQ) generates interactive, data-driven querying website from state-input hospital administrative data

[http://monahrq.ahrq.gov/monahrq\\_resources.shtml](http://monahrq.ahrq.gov/monahrq_resources.shtml);

[http://monahrq.ahrq.gov/MONAHRQ\\_41\\_Measure\\_List.xls](http://monahrq.ahrq.gov/MONAHRQ_41_Measure_List.xls)

Arizona Department of Health Services, Arizona Hospital Compare (MONAHRQ-generated)

County-level hospital admission rate data from all hospitals in Arizona

<http://pub.azdhs.gov/hospital-discharge-stats/2011/Methodology.html>

Arkansas Department of Health, Arkansas Hospital Discharge Health Data Site (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Arkansas

<http://healthdata.ar.gov/Methodology.html>

California Office of Statewide Health Planning and Development, Healthcare Information Division

Area-Level Quality Indicators (Preventable Hospitalizations) for California; Racial & Ethnic Disparities in Healthcare in California Report

1999-2011 OSHPD Patient Discharge Data from all hospitals in California, totaling over 4 million records annually

[http://www.oshpd.ca.gov/HID/Products/PatDischargeData/AHRQ/pqi\\_overview.html](http://www.oshpd.ca.gov/HID/Products/PatDischargeData/AHRQ/pqi_overview.html)

Connecticut Office of Health Care Access

Preventable Hospitalizations in Connecticut: A Current Assessment of Access to Community Health Services

2004-2009 state- and county-level hospital admission rate data from most hospitals in CT

[http://www.ct.gov/dph/lib/dph/ohca/publications/2010/prev\\_hosp\\_report01-2010.pdf](http://www.ct.gov/dph/lib/dph/ohca/publications/2010/prev_hosp_report01-2010.pdf)

Hawaii Health Information Corporation (HHIC), Hawaii Health Information Corporation Public Reports (MONAHRQ-generated)

County-level hospital admission rate data from all hospitals in Hawaii

<http://www.hhicpublicreports.org/Methodology.html>

Iowa Department of Human Services, Iowa Medicaid Enterprise

Iowa Medicaid Value Management (MVM) Program

Quality measures used to evaluate the alignment of outpatient care received by Iowa's adult Medicaid members with best practice standards; analyzes demographic and claim data for members who are dually eligible for both Medicare and Medicaid benefits.

<http://www.dhs.state.ia.us/uploads/PQI%20MVM%20Report4.pdf>;

<http://www.dhs.state.ia.us/uploads/Dual%20Eligible%20for%20publication.pdf>

Commonwealth of Kentucky, Office of Health Policy, Kentucky Health Care Information Center (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Kentucky

<https://prd.chfs.ky.gov/MONAHRQ/2011/Methodology.html>

Maine Health Data Organization, Maine Health Data Website (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Maine

<http://gateway.maine.gov/mhdo/monahrq/Methodology.html>

Nevada Division of Health Care Financing and Policy, Nevada Compare Care (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Nevada

<http://nevadacomparecare.net/Monahrq/AboutQualityRatings.html>

New York State Office of Mental Health

Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES) Medicaid Program

The PQI-based PSYCKES indicators were developed to identify New York State Medicaid enrollees who may benefit from better coordinated care in the community.

[http://www.omh.ny.gov/omhweb/psyckes\\_medicare/quality\\_concerns/technical\\_specifications/preventable\\_hospitalizations.pdf](http://www.omh.ny.gov/omhweb/psyckes_medicare/quality_concerns/technical_specifications/preventable_hospitalizations.pdf)

Niagara Health Quality Coalition

New York State Hospital Report Card; New York State Preventable Hospitalizations Report

County-level hospital admission rate data from most hospitals in New York

<http://www.myhealthfinder.com/newyork13/prevs.html>

Utah Department of Health, Utah Hospital Comparison Reports, (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Utah

<https://health.utah.gov/myhealthcare/monahrq/AboutQualityRatings.html>

Virginia Health Information (VHI) Organization, Virginia Health Information Website (MONAHRQ-generated)

County-level hospital admission rate data from most hospitals in Virginia

[http://www.vhi.org/monahrq2/qual/PHC/maps/s\\_All.html](http://www.vhi.org/monahrq2/qual/PHC/maps/s_All.html)

Texas Department of State Health Services, Center for Health Statistics

Texas Health Care Information Collection (THCIC)

State and county-level data on hospitalizations

<http://www.dshs.state.tx.us/ph/default.shtm>

Texas Hospital Association (THA)

Texas Health Care Transformation and Quality Improvement Program, Delivery System Reform Incentive Payment (DSRIP)

The THA DSRIP pool established under Texas Medicaid reform in 2011 seeks to improve patient care for low-income populations by

incentivizing delivery system reforms that increase access to health care and improve the quality of care. The QIs used are aligned with the low-income, Medicaid, and uninsured populations

<https://www.tha.org/HealthCareProviders/Issues/FinanceandReimburse098F/MedicaidBBBFWaiver/>;

<https://www.tha.org/HealthCareProviders/Issues/FinanceandReimburse098F/MedicaidBBBFWaiver/Category-3-RHP.pdf>;

<https://www.tha.org/HealthCareProviders/Issues/FinanceandReimburse098F/MedicaidBBBFWaiver/Category-4-RHP.pdf>

The Commonwealth Fund, Why Not the Best

Prevention Quality Indicators Region Report

State- and county-level hospital admission rate data from most hospitals in 16 states (various dates, data sources are individual contributing state departments of health and hospital associations); allows quality comparisons using several quality indicators; resource for health care professionals to track performance and compare their performance against that of peer organizations, against a range of benchmarks, and over time.

<http://www.whynotthebest.org/methodology#iqi>

**4a1.2. 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?)**

Not applicable

**4a1.3. 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.)**

Not applicable

**4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**

**How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.**

**4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**

**4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**

**Describe how feedback was obtained.**

**4a2.2.2. Summarize the feedback obtained from those being measured.**

**4a2.2.3. Summarize the feedback obtained from other users**

**4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**

#### **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.

**4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (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.)**

**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.**

Diabetes is continuing to increase at an exponential rate and is occurring at a younger ages. The increase in short-term complications is in large due to the increasing burden of disease in the population and lack of primary care access.

**4b2. 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).

**4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**

None identified

**4b2.2. Please explain any unexpected benefits from implementation of this measure.**

## 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)**

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

**5a. Harmonization of Related Measures**

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 harmonized to the extent possible?**

**5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and 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:** [PQI\\_01\\_Supporting\\_Documents.pdf](#)

## Contact Information

**Co.1 Measure Steward (Intellectual Property Owner):** [Agency for Healthcare Research and Quality](#)

**Co.2 Point of Contact:** [Pamela, Owens](#), [Pam.Owens@ahrq.hhs.gov](mailto:Pam.Owens@ahrq.hhs.gov), 301-427-1412-

**Co.3 Measure Developer if different from Measure Steward:**

**Co.4 Point of Contact:**

## 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.**

[AHRQ established an AHRQ QI time-limited workgroup focused on prevention quality indicators in September of 2013; the workgroup has not yet address the prevention quality indicators related to diabetes. Names and organizations will be provided at the time of the workgroup becomes involved in refinement of the measures.](#)

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

**Ad.2 Year the measure was first released:** [2002](#)

**Ad.3 Month and Year of most recent revision:** [05, 2013](#)

**Ad.4 What is your frequency for review/update of this measure?** [Annual](#)

**Ad.5 When is the next scheduled review/update for this measure?** [08, 2014](#)

**Ad.6 Copyright statement:**

**Ad.7 Disclaimers:**

**Ad.8 Additional Information/Comments:**