AHRQ Quality Indicators™

Quality Indicator User Guide: Prevention Quality Indicators (PQI) Composite Measures, v2022

Prepared for:

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1.0 Overview

The goal in developing the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) composite measures was to provide a measure that could be used to monitor performance over time or across regions and populations using a method that applied at the national, regional, state or provider/area level. Potential benefits of composite measures are to: summarize quality across multiple indicators, improve the ability to detect differences, identify important domains and drivers of quality, prioritize action for quality improvement, make current decisions about future (unknown) health care needs and avoid cognitive "shortcuts". Despite these potential advantages there are concerns with composite measures, such as: masking important differences and relations among components, not being actionable, not being representative of parts of the health care system that contribute most to quality or detracting from the impact and credibility of reports. In weighing the benefits and concerns of composite measures there are also a number of potential uses to consider, such as: consumer use for selecting a hospital or health plan, provider use for identifying domains and drivers of quality, purchaser use for selection of hospitals or health plans to improve employee health and policymaker use for setting policy priorities to improve the health of a population. This document provides a technical overview for AHRQ QI users.

2.0 What Are the Composites?

The Prevention Quality Indicators (PQI) are measures of potentially avoidable hospitalizations for Ambulatory Care Sensitive Conditions (ACSCs), which, though they rely on hospital discharge data, are intended to reflect issues of access to, and quality of, ambulatory care in a given geographic area.[1] The PQI composites are intended to improve the statistical precision of the individual PQI, allowing for greater discrimination in performance among areas and improved ability to identify potentially determining factors in performance.

An overall composite captures the general concept of potentially avoidable hospitalization connecting the individual PQI measures, which are all rates at the area level. Separate composite measures were created for acute and chronic conditions to investigate different factors influencing hospitalization rates for each condition. See Table 1 for the measures that comprise each of the four PQI composites. The PQI composites provide the following advantages:

- Provide assessment of quality and disparity
- Provide baselines to track progress
- Identify information gaps
- Emphasize interdependence of quality and disparities
- Promote awareness and change

[1] The individual PQI measures—and, subsequently, these composite measures—are specified for an adult population (i.e., hospitalizations for patients aged 18 years and older). Counterpart measures—both individual and composite—for a pediatric population are specified in the Pediatric Quality Indicators (PDI) module.

Table 1. AHRQ PQI Composite Measures, v2022

PQI 90 PREVENTION QUALITY OVERALL COMPOSITE
PQI 01 Diabetes Short-Term Complications Admission Rate
PQI 03 Diabetes Long-Term Complications Admission Rate
PQI 05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
PQI 07 Hypertension Admission Rate
PQI 08 Heart Failure Admission Rate
PQI 11 Community Acquired Pneumonia Admission Rate
PQI 12 Urinary Tract Infection Admission Rate
PQI 14 Uncontrolled Diabetes Admission Rate
PQI 15 Asthma in Younger Adults Admission Rate
PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate
PQI 91 PREVENTION QUALITY ACUTE COMPOSITE
PQI 11 Bacterial Pneumonia Admission Rate
PQI 12 Urinary Tract Infection Admission Rate
PQI 92 PREVENTION QUALITY CHRONIC COMPOSITE
PQI 01 Diabetes Short-Term Complications Admission Rate
PQI 03 Diabetes Long-Term Complications Admission Rate
PQI 05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
PQI 07 Hypertension Admission Rate
PQI 08 Heart Failure Admission Rate
PQI 14 Uncontrolled Diabetes Admission Rate
PQI 15 Asthma in Younger Adults Admission Rate
PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate
PQI 93 PREVENTION QUALITY DIABETES COMPOSITE
PQI 01 Diabetes Short-Term Complications Admission Rate
PQI 03 Diabetes Long-Term Complications Admission Rate
PQI 14 Uncontrolled Diabetes Admission Rate
PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate

3.0 How Are the Composites Created?

The composites were created through a workgroup[2] that included discussion of conceptual issues related to the composite (e.g., single composite vs. separate composites) and analyses using 2003 State Inpatient Databases (SID) from the AHRQ Healthcare Cost and Utilization Project (HCUP).

The PQI composites are calculated by summing the number of discharges that meet the inclusion and exclusion rules for the numerator in any of a composite's component measures (i.e., a hospitalization for any of the component PQIs), because the components have a common denominator. Beginning in Version 4.3, PQI 05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate and PQI 15 Asthma in Younger Adults Admission Rate have complementary denominators (age greater than or equal to 40; age less than 40) so the rationale still applies.

Descriptive statistics for the PQIs were calculated as hospitalizations per 100,000 persons for the entire dataset and by county. Correlations and factor loadings for the county level rates (adjusted for age and gender) were examined. The relation between the composite and other area measures potentially related to access to care (e.g., hospital beds per population and primary care physician density) were examined.

4.0 Steps for Creating the Composite

The composites are constructed by summing the hospitalizations across the component conditions and dividing by the population. Rates can optionally be adjusted for age, sex and socio-economic status when comparing across regions or demographic groups.

5.0 How Have the Composites Changed?

The specifications of the PQI composite measures have changed in two ways since the initial release. First, PQI 10 Dehydration Admission Rate and PQI 13 Angina Without Procedure Admission Rate measures were retired in Version 2019 and removed from the composites containing them.[3] Second, a fourth PQI composite measure, PQI 93 Prevention Quality Diabetes Composite, was added. There have also been changes to the specifications of component PQIs that constitute the composites, which can be found on the AHRQ QI website in the Log of Coding Updates and Revisions (https://qualityindicators.ahrq.gov/Downloads/Modules/PQI/v2022/ChangeLog_PQI_v2022.pdf).

6.0 What Are the Current Uses of the Composites?

The PQI composites are intended to be used to provide national estimates that can be tracked over time and to provide State and county level estimates that can be compared with the national estimate and to each other. The following two questions were examined in the initial creation of the composite:

[2] Agency for Healthcare Research and Quality (2006). *Prevention Quality Indicators (PQI) Composite Measure Workgroup Final Report*. The report is available at https://qualityindicators.ahrq.gov/Downloads/Modules/PQI/PQI_Composite_Development.pdf

[3] PQI 10 was removed from PQI composites 90 and 91. PQI 13 was removed from PQI composites 90 and 92.

1. *Does disease prevalence impact variability?*

   As anticipated, areas with higher rates of diabetes and hypertension show higher hospitalizations, particularly in the chronic composite. However, for asthma the contrary relation is true suggesting other confounding factors.

2. *Is variability driven by poverty status?*

   Areas with low levels of poverty also show lower hospitalization rates for each of the PQI composites, which is independent of access to care.

7.0 Additional Resources

See the AHRQ QI website for additional PQI resources and downloads
https://qualityindicators.ahrq.gov/modules/pqi_resources.aspx

Agency for Healthcare Research and Quality (2006). *Prevention Quality Indicators (PQI) Composite Measure Workgroup Final Report*. The report is available at
https://qualityindicators.ahrq.gov/Downloads/Modules/PQI/PQI_Composite_Development.pdf