



**QUALITY INDICATORS SOFTWARE
INSTRUCTIONS, WINDOWS APPLICATION
(WinQI)
Version 4.5**

Prepared for:

Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
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Rockville, MD 20850
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Prepared by:

Battelle
505 King Avenue
Columbus, OH 43201

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Abstract

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) were developed specifically to meet the short-term needs for information on healthcare quality using standardized, user-friendly methods and existing sources of data. The AHRQ QI program is unique in that it provides free, publicly-available software tools that calculate the AHRQ QI rates. The software allows users to calculate QI rates based on their own administrative data using a standard desktop computer. Each version of the QIs is released with software in two different platforms: a SAS®† application and a Windows application. The SAS software was first released in the late 1990s. It consists of several modules of SAS code and requires a SAS license to run. The Windows-based software, known as WinQI, was first released in 2005. It was created in order to provide an easy-to-use, low-cost option for calculating the QIs that was not dependent on licensed software. Developed on Microsoft® Visual Studio using C# and .NET, AHRQ WinQI runs on Windows operating systems and requires only freely available software components: AHRQ-produced software, Microsoft .NET (for runtime environment and core software libraries), and Microsoft SQL Server Express (for data storage and manipulation). Table 1 lists the differences between SAS QI v4.5 and WinQI v4.5. Both the SAS and WinQI software are available in Version 4.5 as either 32-bit or 64-bit applications. The 32-bit applications are targeted for Windows XP operating systems, and the 64-bit applications are targeted for Windows 7 operating systems.

Table 1. Differences between SAS QI v4.5 and WinQI v4.5

SAS QI v4.5	WinQI v4.5
Requires licensed SAS software	Requires free downloadable software
User can modify the software	User is unable to modify the software
Data load and error checking at the discretion of the user	Includes data load and error checking functions
User must run a set of programs for each module, and all indicators in a module are displayed in output	All indicators calculated in a single program, and user can select which indicators to output
Area-level indicator denominators are adjusted based on the combination of county, age, gender and race in the numerator (adjustments are generally small (<.01%) in absolute terms)	Area-level indicators denominators are not adjusted
	Suppresses expected rate, risk-adjusted rate, and smoothed rate of PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate
Condition-specific denominators can be used in place of overall population denominators for diabetes-related PQIs using data from the CDC National Diabetes Surveillance System	Condition-specific denominators are not available for any of the PQIs

Both versions of the QI software are updated on an annual basis to reflect changes in the AHRQ QI technical specifications. New software versions and updated technical specifications are released simultaneously. Routine annual updates include yearly International Classification

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of Diseases, 9th revision, Clinical Modification (ICD-9-CM), Medicare severity-Diagnostic Related Groups (MS-DRG), Major Diagnostic Categories (MDC), updated version of the 3M™ APR-DRG grouper, new Census population files, and newly derived risk adjustment parameters.

The AHRQ QI are organized around four collections (modules) of indicators: Inpatient Quality Indicators (IQI), Pediatric Quality Indicators (PDI), Prevention Quality Indicators (PQI), and Patient Safety Indicators (PSI). Data captured by and characteristics of each of the modules are shown in Table 2. Detailed definitions of each indicator, with complete listings of ICD-9-CM and MS-DRG codes specifically included or excluded, are contained in the AHRQ QI *Technical Specifications*. Additional data on the magnitude of each indicator across an aggregation of State Inpatient Databases (SID) files can be found in the *Inpatient Quality Indicator v4.5 Benchmark Data Tables*, *Pediatric Quality Indicator v4.5 Benchmark Data Tables*, *Prevention Quality Indicator v4.5 Benchmark Data Tables*, and *Patient Safety Indicator v4.5 Benchmark Data Tables* documents. See Appendix A for links to these documents as well as additional documentation on the AHRQ QI.

Table 2. Characteristics of AHRQ QI Modules

IQI	PDI	PQI	PSI
<ul style="list-style-type: none"> • volume of certain intensive, high-technology, or highly complex procedures for which evidence suggests that institutions performing more of these procedures may have better outcomes; • mortality for inpatient procedures and for inpatient conditions; and • utilization indicators which examine procedures whose use varies significantly across hospitals and for which questions have been raised about overuse, underuse, or misuse. 	<ul style="list-style-type: none"> • use indicators from the other three modules with adaptations for use among children and neonates to reflect quality of care inside hospitals, as well as geographic areas, and identify potentially avoidable hospitalizations. 	<ul style="list-style-type: none"> • potential health care quality problem areas that might need further investigation. • measure of primary care access or outpatient services in a community by using patient data found in a typical hospital discharge abstract. 	<ul style="list-style-type: none"> • potentially preventable complications and iatrogenic events for patients treated in hospitals. • screening tool for problems that patients experience as a result of exposure to the healthcare system and that are likely amenable to prevention by changes at the system or provider level.

This document contains instructions for the WinQI v4.5 application, which is provided for download on the AHRQ QI website (<http://www.qualityindicators.ahrq.gov>). The software calculates results for all indicators (IQIs, PDIs, PQIs, and PSIs) in a single program, and the user can select which indicators to show in the output. The application is targeted for and tested on personal computers running the Microsoft Windows XP operating system, with some limited testing under Windows 7. By making this tool available, we hope to assist others in producing healthcare quality information cost-effectively.

The AHRQ QI software is intended to be used with data that cover an entire patient population (e.g., all discharges from a hospital in a year) or that were sampled from a patient

population using simple random sampling. The WinQI application does not support weighted QI estimates or standard errors for weighted estimates. Thus, analyses using data obtained from a complex sampling design will not produce accurate estimates for the population from which the data were sampled. For a more thorough description of weighted AHRQ QI analyses, see *Guidance for Using the AHRQ Quality Indicators with the Nationwide Inpatient Sample and Other Complex Sampling Designs*, available on the AHRQ QI website.

Acknowledgments

The AHRQ QI program uses the Healthcare Cost and Utilization Project (HCUP) 2010 State Inpatient Databases (SID) to compute reference population data. 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. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels. The HCUP databases represent 97 percent of all annual discharges in the U.S.

The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID:

Alaska State Hospital and Nursing Home Association
Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Health Information Corporation
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Louisiana Department of Health and Hospitals
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Center for Health Information and Analysis
Michigan Health & Hospital Association
Minnesota Hospital Association (provides data for Minnesota and North Dakota)
Mississippi Department of Health
Missouri Hospital Industry Data Institute
Montana MHA - An Association of Montana Health Care Providers
Nebraska Hospital Association
Nevada Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health
New Mexico Department of Health
New York State Department of Health
North Carolina Department of Health and Human Services

North Dakota (data provided by the Minnesota Hospital Association)
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Association of Hospitals and Health Systems
Oregon Health Policy and Research
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina Budget & Control Board
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health Services
Wyoming Hospital Association

For more information on HCUP, visit <http://www.hcup-us.ahrq.gov>.

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