

Quarterly Newsletter

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1. Feature Story

Release of AHRQ Quality Indicators™ Software for Windows and SAS Version 4.5

The Agency for Healthcare Research and Quality (AHRQ) announces the release of the AHRQ Quality Indicators™ (QI) software for Windows (WinQI) and SAS Version 4.5 for the Prevention Quality Indicators (PQI), Inpatient Quality Indicators (IQI), Patient Safety Indicators (PSI) and Pediatric Quality Indicators (PDI) modules.

All of the relevant AHRQ QI™ software, documentation and testing regarding Version 4.5 can be found on the AHRQ QI website at: <http://www.qualityindicators.ahrq.gov>.

The following sections summarize the major changes from Version 4.4 to 4.5. For reference, tables with the calculated rates of each of the AHRQ QI based on Version 4.4 compared to Version 4.5 are posted on the AHRQ QI website.

FY 2013 Coding Updates

There were no coding changes implemented in Version 4.5 of the AHRQ QI software based solely on FY 2013 coding updates to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM), Medicare severity-Diagnostic Related Groups (MS-DRG) or Major Diagnostic Categories (MDC).

Specification Changes

Version 4.5 of the QI software does implement a series of specification and programming changes that were developed through a detailed deliberation and assessment process at AHRQ and with several AHRQ stakeholders. These specification changes are detailed in the Log of Coding Updates and Revisions for each AHRQ QI module. See the specific changes at: <http://www.qualityindicators.ahrq.gov/modules/Default.aspx>.

Limited License Edition of the 3M™ APR DRG Grouper

The Limited License edition of the 3M™ APR DRG Grouper was updated from Version 29 to Version 30. In addition, the APR DRG Grouper software embedded in Version 4.5 of the AHRQ

QI software is compatible with AHRQ QI software designed for the 32-bit and 64-bit environment.

Population Files, and Risk Adjustment Coefficient Tables

Updated population data (i.e., through 2013) were derived for Version 4.5 of the QI software. The population data, which are based on the 2010 Census, are used to calculate the denominators for the area-level QI. For additional information on the population file, see *2013 Population File for Use with AHRQ Quality Indicators™*. New risk adjustment models were derived for Version 4.5 of the QI software, based on the universe of discharges from 44 state files from the 2010 State Inpatient Databases (SID). These coefficients are embedded in the Prediction Module, and the user does not need to manipulate them. The risk adjustment tables are provided for reference only and can be found at the following websites:

- For PQIs, http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx
- For PSIs, http://www.qualityindicators.ahrq.gov/modules/psi_resources.aspx
- For PDIs, http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx
- For IQIs, http://www.qualityindicators.ahrq.gov/modules/iqi_resources.aspx

V4.5 Benchmark Data Tables

V4.5 Benchmark Data Tables, formerly called Comparison Data Tables, are available based on the universe of discharges from an aggregation of state files from the 2010 SID. Users can refer to these tables to determine if their rates approximate the population rate and how their case-mix compares to the population rate. The population rate refers to the overall rate for the reference population. If the population rate is higher than the expected rate, then the provider's case-mix is less severe than the overall population. If the population rate is lower than the expected rate, then the provider's case-mix is more severe than the overall population. V4.5 Benchmark Data Tables can be found at the following websites:

- For PQIs, http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx
- For PSIs, http://www.qualityindicators.ahrq.gov/modules/psi_resources.aspx
- For PDIs, http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx
- For IQIs, http://www.qualityindicators.ahrq.gov/modules/iqi_resources.aspx

Reporting of Rates for Specific Measures

The AHRQ QI SAS and WinQI software are no longer reporting expected rates, risk-adjusted rates and smoothed rates for the following measures:

- IQI #21 Cesarean Delivery Rate, Uncomplicated
- IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated
- IQI #24 Incidental Appendectomy in the Elderly Rate
- IQI #25 Bilateral Cardiac Catheterization Rate
- IQI #33 Primary Cesarean Delivery Rate, Uncomplicated
- IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All
- PSI #17 Birth Trauma Rate – Injury to Neonate
- PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument
- PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument

These measures are not risk-adjusted and so only the numerators, denominators and observed rates are reported.

The AHRQ QI WinQI software suppresses reporting of the expected rate, risk-adjusted rate, and smoothed rate for PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate due to an unresolved issue in WinQI that introduces an error in the calculations. Users are still able to reports these rates using AHRQ QI SAS software.

Improved Installation Packages for SAS and WinQI

The installation packages have been improved for Version 4.5 of the SAS and WinQI software, including the Prediction Module and 3M™ APR DRG software.

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.

New AHRQ QI SAS Software Standalone Modules: PQI #9, PSI #17

In response to user requests, AHRQ is making available two new standalone SAS modules in Version 4.5. These include the PQI #9 Standalone Module and the PSI #17 Standalone Module. These new modules allow users to compute results for PQI #9 Low Birth Weight Rate and PSI #17 Birth Trauma Rate – Injury to Neonate without the need to run the entire PDI module.

Weighting in AHRQ QI SAS Software Version 4.5

In the SAS Version 4.5 software, the weighting functionality has been discontinued (i.e., DISCWT=1 and DISCWT removed from the input files) to make it clear to users that the SAS programs do not appropriately account for complex sampling design in the weighting and standard error calculations. The AHRQ QI SAS software prior to Version 4.1 supported weighted analyses with appropriate standard errors using discharge-level weights (supplied by the user). Beginning with Version 4.1 and the introduction of the Prediction Module that handles missing POA, the AHRQ QI SAS software retained the weighting procedures in the SAS programs but did not account for complex sampling design and weighting without further manipulation of the SAS programs by users.

AHRQ WinQI software, regardless of the version, does not provide weighted estimates.

For a more thorough description of weighted AHRQ QI SAS analyses and guidance on manipulating the programs, see the technical documentation on the AHRQ QI website.

Fixes to Software Bugs Found in Version 4.4

Version 4.5 corrects the following issues found in Version 4.4 of the software:

- *Decimal separators for international users.* When the WinQI software was run under operating systems that use commas as decimal separators in data files, the software would throw an exception during the risk-adjustment step when a comma-delimited (CSV) file is passed to the Prediction Module. This issue has been included in the software documentation.
- *Sampling Wizard Report.* In WinQI, on Step 2 of the Sampling Wizard dialog, the Sample Data File text box was not working correctly. Users were not able to save the file specified using the Browse explorer function. This issue has been fixed in WinQI Version 4.5.

- *Rate truncation.* In WinQI, denominators were not being adjusted (i.e., dividing by the number of discharge quarters) when the calculations were being stratified by quarter. This issue has been fixed in WinQI Version 4.5.
- *Provider/Area Report, Reference Population Rate.* On the WinQI Additional Options for Data Analysis screen of the Report Wizard, if the “*Ref. Pop. Rate*” is deselected, then the expected rate and O/E ratio are reported incorrectly. These rates should be disabled on this screen if “*Ref. Pop. Rate*” is not selected. This issue has been included in the software documentation.
- *Conflict in Executable Names.* In WinQI, the compiled C# program was named AHRQ.exe, and this was the same name used for the compiled Prediction Module C++ program. This potential conflict has been fixed in WinQI Version 4.5.
- *Update input file data types in Load Data Wizard.* In WinQI, Excel files with an .xlsx extension were not recognized. MS Access file types also needed to be updated. These issues were fixed in WinQI Version 4.5.
- *Provide users with the ability to extend the SQL connection timeout limit.* A user requested that an option be added in the WinQI Program Options dialog to increase and parameterize the connection string value. This change was not made to the software, but this issue has been added to the software documentation.
- *Myotonic codes.* In both SAS and WinQI, two missing exclusion codes were added to Version 4.5 of the software. These codes affect PSI #11 Postoperative Respiratory Failure Rate and PDI #9 Postoperative Respiratory Failure Rate.
- *Respiratory complications diagnosis codes.* Corrections were made to assure that three specific diagnosis codes were present in both the SAS and WinQI software.
- *Title changes to IQI #21 and IQI #33.* The labeling of these two indicators was standardized and made consistent in the SAS and WinQI software.
- *Phlebitis and related codes.* The processing of code 4512 was corrected to be consistent in the SAS and WinQI software.
- *Smoothed rate calculation.* In WinQI there was an error in the smoothed rate calculation involving the noise variance and signal variance. This error was not previously observed because it only became significant in particular cases with relatively unusual variances. This issue was fixed in WinQI Version 4.5.
- *IQI #4 Technical Specification and SAS syntax.* An error was corrected in the Technical Specification and SAS syntax for IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume related to the handling of missing discharge disposition (DISP) codes.
- *IQI #25 missing code.* SAS Version 4.4 is missing the right heart catheterization diagnosis code 41512. This code has been added to SAS Version 4.5.
- *Newborn and Outborn specifications.* The definitions of Newborn and Outborn were revised in WinQI to better align them with SAS. The differences affected cases where discharge records have some combinations of missing values for one or more of the required data fields (e.g., Age, Age in Days). This issue affected NQI #2 Neonatal Mortality Rate and NQI #3 Neonatal Blood Stream Infection Rate during testing, but could potentially affect other PDIs, PSI #17, and PQI #9.
- *NQI #3 and PDI #8 procedure code.* WinQI was mistakenly including the operating room procedure code 640 which only applies to adults. SAS was not consistently excluding this code for all pediatric indicators and cases. This issue was fixed in SAS and WinQI Version 4.5.

NQI #3 exclusion of some adult cases. WinQI was mistakenly allowing some adult discharges to be included in the QI calculations in cases where the discharge record presents contradictory information about patient age and admission type. Specifically, software testing found that some adult discharge records include the Newborn admission type. WinQI was fixed to make sure these adult cases are properly excluded from any pediatric indicator calculations.

For questions, please contact support@qualityindicators.ahrq.gov or (888) 512-6090.

2. User Spotlight

Use of AHRQ Quality Indicators Improves Care of Mechanically Ventilated Patients

Problem Statement/Goal

At University of Arkansas for Medical Sciences (UAMS) Medical Center, performance on the Agency for Healthcare Research and Quality's (AHRQ's) Patient Safety Indicator #4 (death rate among surgical inpatients with serious treatable complications) was an outlier. Data from the University Health System Consortium (UHC) Clinical Data Base/Resource Manager™ revealed a higher-than-expected rate of postoperative respiratory complications. By reducing those complications, UAMS aimed to improve patient outcomes, shorten length of stay in the intensive care unit (ICU), and reduce costs.

Background

UHC was part of a task force that developed the [AHRQ Quality Indicators Toolkit](#), which is designed to help hospitals understand the AHRQ Quality Indicators and use them to improve quality and patient safety. The toolkit is a general guide to improvement methods, with a particular focus on the 17 Patient Safety Indicators and 28 Inpatient Quality Indicators.

Interventions

In September, 2010, UAMS formed a multidisciplinary work group to improve the care of mechanically ventilated patients, using the AHRQ Quality Indicators Toolkit as a resource. At UAMS, ventilators are located almost exclusively in the ICU, so the group decided to monitor compliance with elements of the best-practice ventilator bundle order set in two adult ICUs to decrease episodes of ventilator associated pneumonia. The group also implemented several strategies during this field test:

- Conducted mandatory education about ventilator-associated pneumonia (with an emphasis on oral hygiene) for the ICU and respiratory therapy staff
- Developed and implemented a standard for the correct use of appropriate oral care kits
- Revised the ventilator bundle order set to include Chlorhexidine Gluconate (CHG) with oral care twice per day
- Initiated ICU safety rounds with a multidisciplinary team three times per week to identify problems and jump-start solutions
- Posted "Head of bed elevated to 30°" signs outside the rooms of mechanically ventilated patients

After two months of progressive improvement, UAMS changed the frequency of safety rounds to once per week and added an executive-level hospital administrator to the rounding team.

Results

By using the AHRQ Quality Indicators Toolkit to focus on Patient Safety Indicator #4, UAMS decreased the rate for PSI #4 from 131.87 per 1000 cases in quarter 3, 2009 to 58.14 per 1000 cases in quarter 1, 2011.

UAMS' focus during the AHRQ field study was on ventilator associated pneumonia. In the period following the field trial, only one case attributed to PSI #4 was due to ventilator associated pneumonia and that did not occur until quarter 4, 2012.

Analysis of cases, pre- and post-phase of the AHRQ field test, depicted a shift in patient mix within this metric, i.e., a greater proportion of more acutely ill patients (sepsis and shock versus pneumonia) coming in after the study interventions.

This impact was also reflected in UHC's expected mortality for the PSI #4 patient population at Arkansas, which doubled between the pre- and post-intervention periods.

UAMS also improved the PSI #4 UHC length of stay observed to expected ratio from 1.07 to 1.02, and the direct cost observed to expected ratio from 1.51 to 1.17.

Lessons Learned

The presence of an executive-level hospital administrator on the safety rounds team was a critical success factor for both the staff and hospital administration. Executive participation was so instrumental in improving compliance with the ventilator bundle order set that UAMS continues to conduct safety rounds and has expanded the focus to the central line and Foley catheter bundle order sets.

Also, communication of compliance results by the ICU staff to the hospital board created an atmosphere of striving for 100% compliance and recognizing a job well done.

3. Contact Information

To remove your e-mail address from this list, send a message from the respective e-mail account to: LISTSERV@QUALITYINDICATORS.AHRQ.GOV

In the subject line place the following: SIGNOFF QUALITY_INDICATORS-L

Also - In the body of the message put: SIGNOFF QUALITY_INDICATORS-L

Thank you.

If you have any questions you may contact support via email at:

support@qualityindicators.ahrq.gov

or call toll free (US only) 1-888-512-6090