AHRQ Quality Indicators™

Release of AHRQ Quality Indicators™ Software for SAS QI, v2021

Prepared for:

Agency for Healthcare Research and Quality
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1.0 Introduction

The Agency for Healthcare Research and Quality (AHRQ) announces the release of the AHRQ Quality Indicators™ (QI) software for SAS QI Version 2021. This software applies to all four modules: Prevention Quality Indicators (PQI), Inpatient Quality Indicators (IQI), Patient Safety Indicators (PSI), and Pediatric Quality Indicators (PDI).

All of the relevant AHRQ QI software and documentation regarding v2021 can be found on the AHRQ QI website at http://www.qualityindicators.ahrq.gov. The following sections summarize the major changes from Technical Specifications and QI Software v2020 to v2021.

2.0 Fiscal Year 2021 Coding Updates

The AHRQ QI software v2021 reflects coding changes based on fiscal year 2021 coding updates to the *International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System* (ICD-10-CM/PCS). These coding changes impact all software modules.

3.0 Specification Changes

The AHRQ SAS QI v2021 software implements specification and programming changes that were developed through a detailed deliberation and assessment process with AHRQ staff and other AHRQ stakeholders.

The fiscal year coding updates and specification changes were implemented across all modules and are detailed in the Log of Coding Updates and Revisions for each AHRQ QI module. These are available at the following URLs:

- PQI: https://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/v2021/ChangeLog_PQI_v2021.pdf
- IQI: https://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/v2021/ChangeLog_IQI_v2021.pdf
- PSI: https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/v2021/ChangeLog_PSI_v2021.pdf
- PDI: https://www.qualityindicators.ahrq.gov/Downloads/Modules/PDI/V2021/ChangeLog_PDI_v2021.pdf

4.0 Population Files

The updated QI population file contains intercensal and postcensal estimates of county-level population by single-year age group, sex, race, and Hispanic origin covering the years 2000 through 2020 from the United States (U.S.) Census Bureau. The population file uses Census estimates for single year age population to create AHRQ age bands. Please see the details around the population file methodology at: http://www.qualityindicators.ahrq.gov/Downloads/Software/SAS/V2021/AHRQ_QI_v2021_ICD10_Population_File.pdf.

5.0 Reporting Rates for Specific Measures

The AHRQ SAS QI v2021 software includes risk-adjustment, signal variance, reference population rates, and composite weights for PSI, IQI, PDI, and PQI modules using the 2018 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID). The non-risk adjusted numerators, denominators, and observed rates are also reported.

5.1 Risk-Adjustment Factors by Module

AHRQ SAS QI v2021 includes new and updated risk factors in the risk-adjustment models across modules.

In the IQI module,

- *Updated.* All Patient Refined Diagnosis Related Groups (APR-DRGs) in the risk-adjustment models are based on the patient's admission diagnoses and use present on admission (POA) information on the patient's discharge record.
- *New in v2021.* A subset of the IQIs use Clinical Classifications Software Refined (CCSR) in the risk-adjustment models are based on the patient's admission diagnoses and use POA information in the patient's discharge record.

For hospital-level indicators in the PDI module,

- *Updated.* CCSR in the risk-adjustment models are based on the patient's admission diagnoses and use POA information on the patient's discharge record.
- *New in v2021.* Count of comorbidities from the Elixhauser Comorbidity Software Refined is included in certain risk-adjustment models.
- *New in v2021.* A risk factor indicating whether a discharge is medical or surgical is used in risk-adjustment models for certain indicators that include both medical and surgical discharges.

In the PSI module,

- *Updated.* Elixhauser Comorbidity Software Refined identifies specific comorbidities included in certain risk-adjustment models.
- *New in v2021.* Count of comorbidities from the Elixhauser Comorbidity Software Refined is included in certain risk-adjustment models.
- *New in v2021.* Do Not Resuscitate (DNR) indicated as POA is included in the risk-adjustment model for mortality indicators.
- *New in v2021.* A risk factor indicating whether a discharge is medical or surgical is used in risk-adjustment models for certain indicators that include both medical and surgical discharges.

5.2 Major Diagnostic Category (MDC) Requirements

Starting with AHRQ SAS QI v2021, the software will suppress expected rates, risk-adjusted rates, smoothed rates, and composites for hospital-level indicators for PSI and IQI modules when major

diagnostic categories (MDC) are missing or incomplete. Users should set the MDC_PROVIDED macro variable to 0' in the CONTROL program when MDC is missing or incomplete on the input data.

Users interested in calculating expected, risk-adjusted, smoothed, or composite values for hospital-level indicators must have MDCs assigned for each discharge on their input file. MDCs are used in measure specifications and risk adjustment, and although the AHRQ SAS QI v2021 software includes a macro to calculate MDC, it does not account for assignments for pre-MDC Diagnostic Related Groups (DRGs) or multiple trauma cases (MDC 24). Different versions of the Medicare Severity-Diagnostic Related Group (MS-DRG) grouper produce slightly different results with respect to certain high resource intensity MS-DRGs. Specifically, MS-DRGs 001-019 and 981-989 are classified as "pre-MDC" MS-DRGs, which means that they are associated with such high length of stay and/or cost that they supersede the usual assignment of MS-DRGs within body system or MDC categories. For records assigned to these MS-DRGs, some versions of the grouper software retain the MDC that would be assigned based on the principal diagnosis and procedure codes, whereas other versions of the grouper software overwrite the MDC assignment with a blank, missing, or nonnumeric value such as "PRE." For those users who need to construct MDC, please view the documentation and software available here: https://www.cms.gov/files/zip/icd-10-ms-drgs-v381-effective-january-1-2021.zip.

5.3 Procedure Day (PRDAY) Requirements

Starting with AHRQ SAS QI v2021, the PSI and PDI modules will suppress expected rates, risk-adjusted rates, smoothed rates, and composites for measures that use PRDAYn information (PSI 04, 09, 10, 11, 12, 14, 15, and PDI 08 and 09) when PRDAYn is missing or incomplete. Users should set the PRDAY macro variable to '0' in the PSI and PDI CONTROL programs when PRDAYn is missing or incomplete on the input data. Note that input data with missing or incomplete PRDAYn may impact numerators, denominators, and observed rates for these PSIs and PDIs that use PRDAYn information.

5.4 Calibration Options

In the AHRQ SAS QI v2021, the user has two options to calibrate smoothed rates and composite values using observed to expected ratio:

- Option 1: Set Calibration_OE_to_ref_pop to 1 in SAS QI control programs to calibrate using the 2018 HCUP reference population observed-to-expected (O-E) ratio. This is recommended and is therefore the default choice.
- Option 2: Set Calibration_OE_to_ref_pop to 0 in SAS QI control programs to calibrate to the O-E ratio of the user's input data. This option is provided to large health care systems or states who want to calibrate the predicted QI rates within the system. Starting with AHRQ SAS QI v2021, there is a new step in the software to rescale the predicted probabilities if the O/E calibration pushes them above 1.0. The caveat is that the interpretation of the rates may be different since the software would still use 2018 HCUP reference population rate as multiplier for risk adjustment rates.

For more details about the O-E ratio adjustment, please refer to the Empirical Methods document available at: https://www.qualityindicators.ahrq.gov/Downloads/Resources/Publications/2021/Empirical_Methods_2021.pdf.

4.5 COVID-19 Options

The AHRQ SAS QI v2021 now includes methodology to account for COVID-19 discharges for hospital-level indicators. Starting with AHRQ SAS QI v2021 in modules that include hospital-level indicators (IQI, PDI, PSI), the user has the following options to specify how to handle COVID discharges in the CONTROL program for each module:

- Option 1: The user can exclude COVID discharges. This is recommended and is therefore the default choice. The software will calculate risk-adjusted rates, smoothed rates, and composites.
- Option 2: The user can include all discharges, with and without COVID. The software will only calculate numerators, denominators, and observed rates.
- Option 3: The user can include only COVID discharges. The software will only calculate numerators, denominators, and observed rates.

Because the 2018 HCUP reference population pre-dates the public health emergency, the software will suppress expected rates, risk-adjusted rates, smoothed rates, and composites for hospital indicators when a user includes COVID-19 discharges. In other words, users can only calculate expected, risk-adjusted, smoothed rates, or composites when they select the default to exclude COVID-19 discharges. This approach is consistent with the previously published user guidance. We will continue to monitor the published evidence on COVID and update user guidance as necessary.

See previously released COVID-19 User Guidance, available here: https://qualityindicators.ahrq.gov/Downloads/Resources/User_note_COVID.pdf.

5.6 Stratification Options

AHRQ SAS QI software users continue to have the option to produce stratified rates. Starting in AHRQ SAS QI v2021, expected rates, risk-adjusted rates, smoothed rates, and composites will be suppressed in certain situations for hospital level indicators, including all PSIs, IQIs, and hospital level PDIs. Because age, gender, age in days, and birth weight are used in risk adjustment models, it is inappropriate to produce risk-adjusted rates for any stratum that includes these variables.

6.0 Retired Area-Level Indicators

No area-level indicators were retired in the AHRQ SAS QI v2021 software.

7.0 Retired Hospital-Level Indicators

The AHRQ SAS QI v2021 ICD-10-CM/PCS software does not include the following measures because they were retired:

- IQI 32 Acute Myocardial Infarction (AMI) Mortality Rate, without Transfer Cases
- IQI 34 Vaginal Birth After Cesarean (VBAC) Rate
- NQI 02 Neonatal Mortality Rate

To learn more about the retirement of certain QIs, access the QI retirement announcement available here: https://www.qualityindicators.ahrq.gov/News/AHRQ QI v2021 Retirement Announcement.pdf.

8.0 Enhancements and Fixes

The AHRQ SAS QI v2021 software includes enhancements and issue resolution from the v2020 ICD-10-CM/PCS software. To learn more about changes made to the QI software, access the module-specific Log of Changes documents are available on the AHRQ QI website and links can be found in Section 2 above.

For questions, please contact the QI Technical Support Team at QISupport@ahrq.hhs.gov or (301) 427-1949. Messages are responded to within three business days.