



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



AHRQ Quality Indicators Software: v2021 ICD-10-CM/PCS

August 2021

Announcements



- This webinar will be recorded and available on the AHRQ QI website - <http://www.qualityindicators.ahrq.gov/>.
- Due to the large number of attendees, all participant lines will remain in listen-only mode.
- You may submit questions via the ***chat feature*** at any time; however, questions will be answered only during the Q&A session. Your questions will only be visible to the moderators.
- For any **technical difficulties**, please contact **Megan Lee** at mlee@panth.com.

Agenda



- Overview of the AHRQ QIs
- Overview of v2021 Software and Improvements
- Usability/Software Improvements
- Highlights of Indicator Changes
- v2021 SAS and WinQI software resources

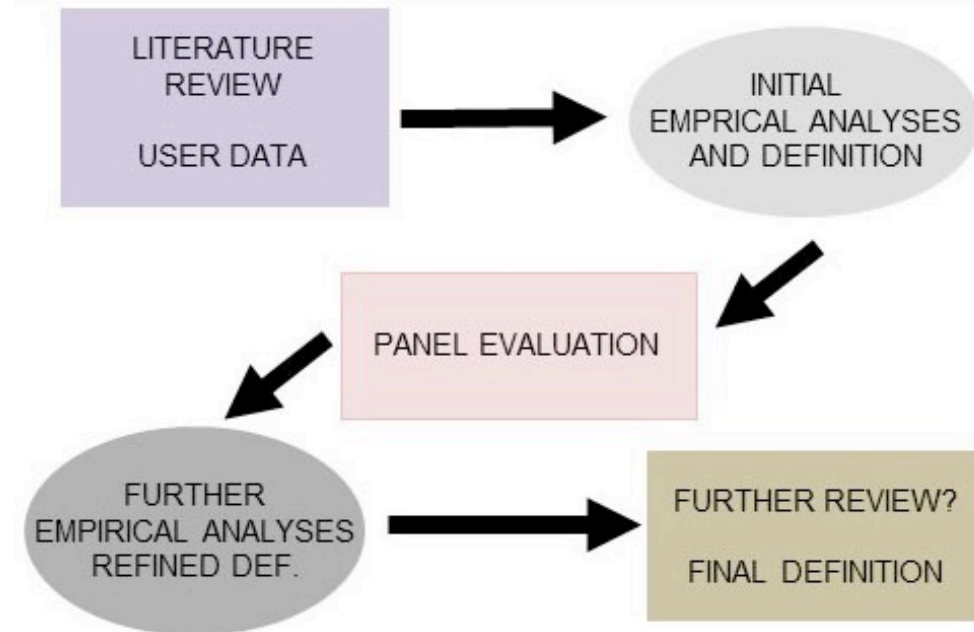
Today's Speakers



- **Jennifer Newburg**, Project Manager, Pantheon Software
- **CDR Karen Ho Chaves**, US Public Health Service
Commissioned Corps; Director, Division of Quality Measurement
and Improvement, Center for Quality Improvement and Patient
Safety (AHRQ)
- **Alex Bohl**, Associate Director, Hospital Quality Indicator Project
Director, Mathematica
- **Amanda Mummert**, Director, Data Asset Management and Sales,
IBM Government Health and Human Services Solutions
- **Vivek Kumar**, Project Director, AHRQ QI Project, Pantheon

Origins of AHRQ Quality Indicators

- Developed initially at the request of state organizations and hospital associations as a quality improvement tool
- Based on evaluation methodologies developed in the AHRQ Evidence-based Practice Centers (EPC)
- Developed and tested using all-payer Healthcare Cost and Utilization Project (HCUP) data in 47 States



AHRQ QIs Today



- **Used for**
 - ▶ Quality monitoring and improvement
 - ▶ Public reporting
 - ▶ Needs assessments, planning, research and informing policy
 - ▶ Some used for performance-based payment programs
- **Broad Applicability**
 - ▶ 65+ measures cover broad range of conditions, procedures and populations
- **Ready-to-use**
 - ▶ Readily-available administrative data
- **Actionable**
 - ▶ Provides real-time information
 - ▶ Provides national rates for comparison

Hallmarks of AHRQ QIs: Ensuring Quality



- Continuous Quality Improvement
 - ▶ Reviews of research evidence
 - ▶ Rigorous empirical testing
 - ▶ Annual updates to align coding changes
 - ▶ Expert panels and standing workgroups
 - ▶ User feedback

- Transparency
 - ▶ Technical specifications, documentation, and software (WinQI, SAS) are free to the public,
 - ▶ Open source, and
 - ▶ Improved over time based on public and private input

AHRQ QI Update: No longer seeking NQF Endorsement



- AHRQ will not seek re-endorsement of Quality Indicators from NQF
- AHRQ will continue to maintain and develop measures that meet standards of rigorous scientific development
- AHRQ will continue to seek broad stakeholder input and release annual updates, including measure refinements and new measures

AHRQ QI Modules

Prevention (PQIs)

- Potentially preventable hospital admissions rates for ambulatory care conditions
- Area-level indicators
- Risk-adjusted

Inpatient (IQIs)

- Quality of care inside the hospital—hospital level indicators
- Mortality rates for adult conditions / surgical procedures
- Risk-adjusted

Patient Safety (PSIs)

- Potentially avoidable complications and adverse event rates following adult surgeries / procedures performed in the hospital
- Hospital-level indicators
- Risk-adjusted

Pediatric (PDIs)

- Mortality rates for pediatric surgical procedures
- Potentially avoidable complications and adverse event rates in the hospital
- Potentially preventable hospitalization rates
- Hospital-level and area-level indicators
- Risk-adjusted

About the AHRQ QI Software



- Uses readily available administrative data
 - ▶ Risk-adjusted in the v2021 QI software
- Compatible with two commonly used platforms – SAS and Windows
- Available from AHRQ at no cost to the user
- Updated on an annual basis

Learn more about software features:
[WinQI Software Instructions Document](#)
[SAS QI software Instructions Document](#)

v2021 Software Release

SAS

July 2021

- **Now available:** v2021 software
- Separate software package to download for each module

WinQI

July 2021

- **Now available:** v2021 software
- Download a single installer package for all four modules

Software available at:

<http://www.qualityindicators.ahrq.gov/Software/Default.aspx>

Overview of v2021 Software and Improvements

Fiscal Year 2021 Updates



- Software implements specification and programming changes across all modules
 - ▶ Developed through a detailed deliberation and assessment process with clinicians and expert coders
- Retirement of QIs
 - ▶ IQI 32 Acute Myocardial Infarction (AMI) Mortality Rate, without Transfer Cases
 - ▶ IQI 34 Vaginal Birth After Cesarean (VBAC) Rate
 - ▶ NQI 02 Neonatal Mortality Rate
- v2021 is risk adjusted using the 2018 HCUP State Inpatient Databases (SID)
- v2021 QI software includes options for excluding COVID-19 discharges

Fiscal Year 2021 Updates (cont.)

- Implemented coding updates in **all software modules**
 - ▶ Based on fiscal year 2021 ICD-10-CM/PCS
 - Compatible with ICD-10-CM/PCS hospital data for FY16 – FY21
 - ▶ Medicare Severity-Diagnosis Related Group (MS-DRG)
 - ▶ HCUP's Clinical Classifications Software Refined (CCSR)
 - ▶ HCUP's Elixhauser Comorbidity Software
 - ▶ 3M™ All Patient Refined Diagnostic Related Groups (APR-DRG)
- Changes will be detailed in the Release Notes for each AHRQ QI module, available at:
 - ▶ <https://www.qualityindicators.ahrq.gov/Software/SAS.aspx>

Population File Updates

- Updated **QI population file** intercensal and postcensal estimates of county-level populations from years 2000 – 2020 for use with area-level QIs
- Population categories:
 - ▶ Single-year age group
 - ▶ Sex
 - ▶ Race
 - ▶ Hispanic origin
- Details about the population methodology at:
 - ▶ https://qualityindicators.ahrq.gov/Downloads/Software/SAS/V2021/AHRQ_QI_v2_021_ICD10_Population_File.pdf

v2021 Indicator Logic Changes



- **Changes by module**

- ▶ Overall

- Added a new surgical setname (SURGI2R_PREV). Comprised of MS-DRGs 014, 016, and 017 to support fiscal year functionality

- ▶ IQI

- Updated IQI 20 (Pneumonia Mortality Rate) to better align with CMS Hospital 30-day, All-Cause, Risk-Standardized Mortality Rate following Pneumonia Hospitalization
- Expanded exclusion criteria for IQI 21, 22, and 33 (Caesarean and VBAC rates)

- ▶ PSI

- Removed several exclusions from PSI 08 (In Hospital Fall with Hip Fracture Rate), PSI 11 (Postoperative Respiratory Failure Rate), and PSI 14 (Postoperative Wound Dehiscence Rate) denominators
- Updated hierarchy for PSI 04 (Death Rate among Surgical Inpatients with Serious Treatable Complications) strata based on risk. New order: Shock, Sepsis, Pneumonia, GI hemorrhage, and DVT/PE
- Updated PSI 03 (Pressure Ulcer Rate) measure logic to remove cases where Deep Tissue Injury is non-POA but all pressure ulcer is POA
- Renamed PSI 09 back to “Postoperative Hemorrhage or Hematoma Rate”, instead of “Perioperative”

- ▶ PDI

- Removed exclusion from PDI 09 (Postoperative Respiratory Failure Rate)
- Renamed PDI 08 back to “Postoperative Hemorrhage or Hematoma Rate”, instead of “Perioperative”

- ▶ PQI

- There are no significant changes to report.

Observed Rate Changes from v2020

- **Compared to v2020 expected changes in observed rates:**

Prevention (PQIs)

- Stable rates in most PQIs
- Increase in PQI 01 due to ketoacidosis codes phase-in
- Decrease in PQI 05 due to change in COPD coding guidance

Inpatient (IQIs)

Large increase in IQI 20 due to specification changes to align with CMS pneumonia denominator to specification

Patient Safety (PSIs)

- Large increase in PSI 11 and PSI 14 OPEN stratum due to update in denominator exclusions
- Large increase in denominator and numerator counts for PSI 08 due to updates in denominator exclusion. Observed rates stay stable.

Pediatric (PDIs)

- Area-level PDIs have stable rates
- Large increase in PDI 09 due to update in denominator exclusions
- Large decrease in PDI 05 due to specification updates

Risk Adjustment

- What to do with risk-adjusted rates
 - ▶ Compare a hospital's performance to a national average hospital if treating patients with the same case-mix in the hospital
- What NOT to do with risk-adjusted rates
 - ▶ Conclude Hospital A's performance is better/worse than Hospital B's performance based on their risk-adjusted rates
 - ▶ Rank a group of hospitals based on their risk-adjusted rates

Risk Adjustment (cont.)

- Notable changes:
 - ▶ Risk-adjustment: annual updates and maintenance
 - Updated data: 2018 vs. 2017 HCUP SID
 - Changes to specification and risk factors due to fiscal year updates
 - ▶ Clinical Classifications Software Refined (CCSR) HCUP tool added to IQI risk adjustment
 - CCSRs are based on present on admission (POA) information
 - CCSRs replaced APR DRGs for IQI condition-based measures
 - CCSRs included with APR DRGs for IQI procedure-based measures
 - ▶ Added Elixhauser comorbidity count to PSI and PDI risk adjustment models
 - ▶ Removed MDCs from PDI risk adjustment models
 - ▶ Added stratum-specific complication risk factors to risk adjustment models for all PSI 04 strata.
 - ▶ Added risk factor for whether a discharge is medical or surgical to certain PDIs and PSIs
 - ▶ Added risk factor for Do Not Resuscitate (DNR) that is POA to PSI mortality indicators
 - ▶ Expected rates, risk-adjusted rates, smoothed rates, and composites will be suppressed in certain situations: for strata that include variables used in the risk adjustment, when major diagnostic categories (MDC) are missing or incomplete or when PRDAYn is missing or incomplete.

Usability/Software Improvements

User Options/Software Updates

- New methodology for addressing COVID
 - ▶ New macro variable COVID_19 added in the control program for hospital indicators to show COVID exclusion in the discharge data
 - ▶ New COVID diagnosis status variable in the measure program for removing the discharges with COVID status
 - Discharge will be removed from measure population, if COVID_19 is 1 and has COVID diagnosis; or COVID_19 is 3 and has no COVID diagnosis.
 - ▶ For data that includes COVID (COVID_19 option is set to be 2 or 3), expected, risk adjusted, smoothed, and composite rates are suppressed

- COVID_19 is 1: Excludes COVID discharges [Default setting]
- COVID_19 is 2: Keeps all discharges, including COVID discharges
- COVID_19 is 3: Excludes non-COVID discharges

User Options/Software Updates (cont.)



- In v2021, certain user options suppress expected, risk adjusted, smoothed, and composite rates

User Option	Software Updates	Rationale
Procedure Day (PRDAY)	If procedure day is not included in the input data, for PSI 04, 09, 10, 11, 12, 14 and 15, and PDI 08 and 09, the software output would only include numerators, denominators, and observed rates	There is no related logic to handle cases when procedure day is missing.
Major Diagnosis Category (MDC_PROVIDED)	If MDC is not included on input data, the software output includes only numerators, denominators, and observed rates for all PSIs and IQIs	Since in v2019, users were required to provide MDC in their input data, and if not provided, the software has MDC-to-DRG crosswalk (MDCF2T) to compute MDC. In v2021, we ask user to specify if MDC is included in the control program.
Stratification (TYPELVLH)	If users choose certain stratification options (age, sex, age in days, birthweight), software output includes only numerators, denominators, and observed rates	It is inappropriate to produce risk-adjusted rates for stratum using age, sex, age in days, and birthweight because these are used in risk adjustment

User Options/Software Updates (cont.)



- Set maximum smoothed Rate at 1.0
 - ▶ In v2021, a ceiling of 1.0 is applied to the smoothed rate
 - ▶ This is to serve as a safety check. Note that after applying cap on the risk adjusted rate, the smoothed rate is not expected to be larger than 1.0.

User Suggestions Help Improve the QIs

- Reviewed and expanded list of operating room procedure codes (ORPROC)
 - ▶ Indicators Impacted:
 - PDI: NQI 03, PDI 08, PDI 09, PDI 10
 - PSI: PSI 04, PSI 08, PSI 09, PSI 10, PSI 11, PSI 12, PSI 13
- Setname codes reviewed, added, and removed for consistency with clinical intent and exploit clarity provided by ICD-10-CM/PCS. For example,
 - ▶ THORAIP: Thoracic Surgery Procedure Codes
 - PSI 06 and PDI 05: Iatrogenic Pneumothorax Rate
 - ▶ INFECID: Infection Diagnosis Codes
 - PSI 04 Death Rate among Surgical Inpatients with Serious Treatable Complications
 - PSI 13 and PDI 10: Postoperative Sepsis Rate
 - ▶ PRCSECD: Abnormal presentation, fetal death, and multiple gestation diagnosis codes
 - IQI 21 Cesarean Delivery Rate, Uncomplicated
 - IQI 22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated
 - IQI 33 Primary Cesarean Delivery Rate, Uncomplicated

User Suggestions, cont.

- Updated name of QIs
 - ▶ For example, PSI 09 Postoperative Hemorrhage or Hematoma Rate
- Revised, added, and removed inclusion/exclusion criteria. For example,
 - ▶ DTID: Deep tissue injury diagnosis codes (denominator exclusion)
 - PSI 03 Pressure Ulcer Rate
 - ▶ SEVSEPD: Severe sepsis diagnosis codes (denominator exclusion)
 - IQI 20 Pneumonia Mortality Rate

v2021 WinQI Software Changes / Improvements



- Support for fiscal year 2021 code
- Rolling updates to the input data - append input file data to the existing data when importing instead of replacing their data
- Run WinQI as a Windows Service in the background for your automation needs
- Significant performance improvements in the rates calculations time
- Provides options to exclude COVID-19 discharges for hospital-level indicators
- Risk adjustment suppression based on PRDAY, MDC, and STRATIFICATION information
- On-screen visual cues to notify users about the software updates
- The software will notify users of all software updates. By accepting the update, it will automatically uninstall the prior version and install v2021
- No changes to the input data structure

Highlights of Indicator Changes

Specification Changes

- Software implements specification and programming changes across all modules
 - ▶ Developed through a detailed deliberation and assessment process with clinicians and expert coders
- Changes are detailed in the Change Log Documents for each AHRQ QI module
 - ▶ Log of Updates
 - ▶ Annual fiscal year ICD-10-CM/PCS coding revisions
 - ▶ All ICD-10-CM/PCS coding revisions in MS Excel format
 - ▶ Available at:
 - PQI: https://www.qualityindicators.ahrq.gov/Modules/Log_Coding_Updates_PQI_v2021.aspx
 - IQI: https://www.qualityindicators.ahrq.gov/Modules/Log_Coding_Updates_IQI_v2021.aspx
 - PSI: https://www.qualityindicators.ahrq.gov/Modules/Log_Coding_Updates_PSI_v2021.aspx
 - PDI: https://www.qualityindicators.ahrq.gov/Modules/Log_Coding_Updates_PDI_v2021.aspx

Highlights of Indicator Changes

Prevention (PQIs)

Annual coding updates:
PQI 11, 12, 16

Inpatient (IQIs)

- Annual coding updates: IQI 18, 22, 33, 34
- Other updates: IQI 08, 15, 20, 21, 22, 33

Patient Safety (PSIs)

- Annual coding updates: PSI 02, 04, 06, 07, 09, 11, 14, 15,
- Other updates: PSI 03, 04, 08, 09, 11, 14

Pediatric (PDIs)

- Annual coding updates: NQI 03, PDI 01, 05, 08, 09, 10, 12, 18
- Other updates: PDI 05, 08, 09

AHRQ QI Software Resources



- **AHRQ QI technical assistance**

- ▶ http://www.qualityindicators.ahrq.gov/FAQs_Support/
- ▶ QIsupport@ahrq.hhs.gov

- **AHRQ QI v2021 software and documentation**

- ▶ <http://www.qualityindicators.ahrq.gov/Software/Default.aspx>

Q&A/Discussion

Thank You



Thank you to our speakers and participants!

General Questions and Comments:

AHRQ QI Support Team

QIsupport@ahrq.hhs.gov

AHRQ QI Website

<http://www.qualityindicators.ahrq.gov/>