



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



AHRQ Quality Indicators Software: v2019 ICD-10-CM/PCS

August 1, 2019

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.
- If multiple people from your organization are dialing in from the same location, please use only one line.
- You may submit questions via the ***question feature*** at any time; however, questions will be answered only during the Q&A sessions. Your questions will only be visible to the moderators.
- For **technical difficulties**, please contact **Madeline Polese** at mpolese@air.org.

Agenda

- Overview of the AHRQ QIs
- Retirement of select AHRQ QIs in the v2019 SAS and WinQI software
- Overview of improvements to the v2019 software, including risk-adjustment
- Specification changes for select QIs
- v2019 SAS and WinQI software resources

Today's Speakers



- **Diane Stollenwerk**, MPP, President, **Stollenwerks**
- **Mia DeSoto**, Ph.D., M.H.A., Health Scientist Administrator, Program Lead AHRQ Quality Indicators (**AHRQ**)
- **Alex Bohl**, Ph.D., Associate Director, Hospital Quality Indicator Project Director **Mathematica**
- **Eric Schone**, Ph.D., Senior Researcher, Area Quality Indicator Project Director, **Mathematica**
- **Vivek Kumar**, Senior Project Manager, **Pantheon Software**
- **Patrick Romano**, M.D., M.P.H., Professor of Medicine and Pediatrics; **University of California, Davis School of Medicine**

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 v2019 ICD-10-CM/PCS QI software
- Compatible with two commonly used platforms: SAS and Windows
 - ▶ Updated on an annual basis
- Available from AHRQ at no cost to the user

v2019 Software Release



SAS

July 2019

- **Now available:** ICD-10-CM/PCS software
- Separate software package to download for each module

WinQI

July 2019

- **Now available:** ICD-10-CM/PCS software
- Download a single ICD-10 installer package for all four modules

Software available at:

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

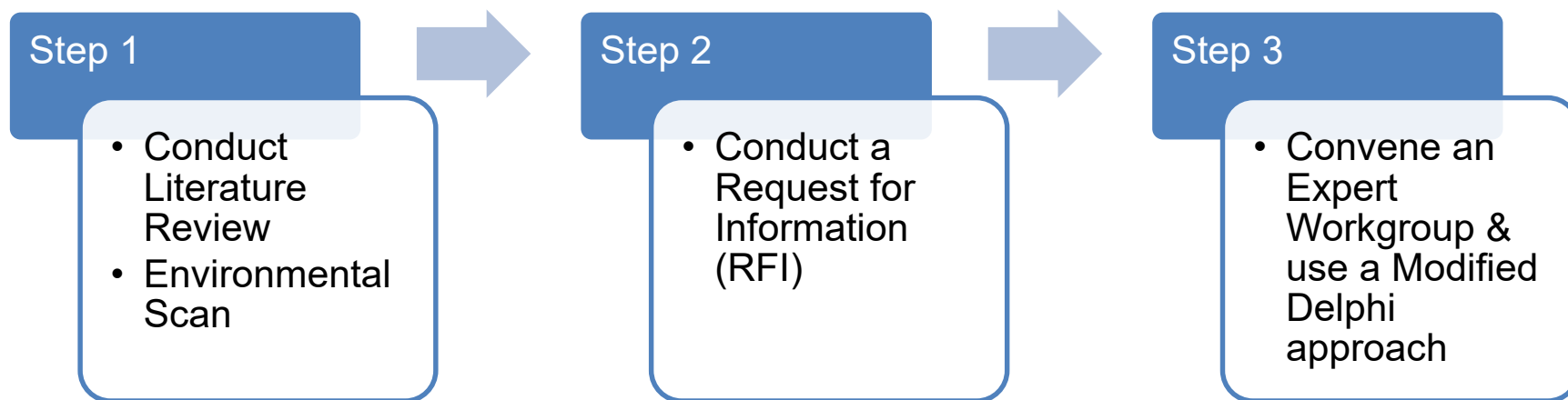
RETIREMENT OF SELECT QIs

About AHRQ QIs



- QIs have been a successful program with > 100 measures
- The field of quality measurement is rapidly changing
- Now QIs used for various purposes such as:
 - performance based payment programs
 - public reporting
 - other uses such as needs assessments, planning, research and informing policy

Overview of Process



Timeline for Expert Workgroup

Kick-off Meeting:

Discussion on Literature
Review, Environmental
Scan, User feedback &
methodology for Modified
Delphi

Jan 2018

Final Meeting: Discuss
recommendations on QIs
for retirement &
refinement

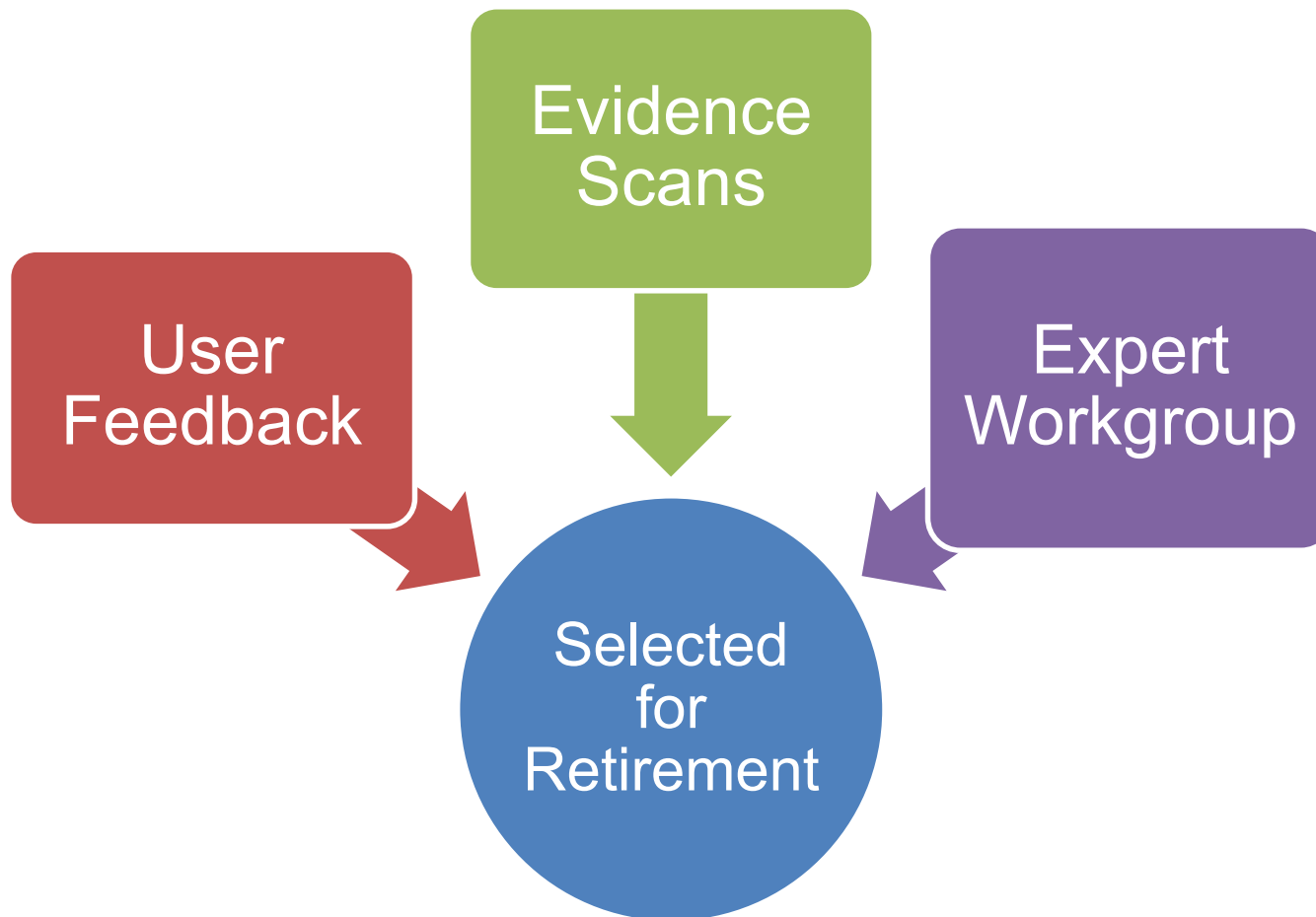
Sept 2018

**5 Meetings to Discuss
the 4 QI modules (IQIs,
PQIs, PSI, and PDIs)**

Feb – Aug 2018

Methodology: Selection of QIs for Retirement

Are the AHRQ QIs used to support quality improvement initiatives?



List of Retired QIs (v2019 QI Software)

Prevention (PQIs)

- PQI 02 Perforated Appendix Admission Rate
- PQI 09 Low Birth Weight Rate
- PQI 10 Dehydration Admission Rate

Inpatient (IQIs)

- IQI 01 Esophageal Resection Volume
- IQI 02 Pancreatic Resection Volume
- IQI 04 Abdominal Aortic Aneurysm (AAA) Repair Volume
- IQI 05 Coronary Artery Bypass Graft (CABG)
- IQI 06 Percutaneous Coronary Intervention (PCI) Volume
- IQI 07 Carotid Endarterectomy Volume
- IQI 13 Craniotomy Mortality Rate
- IQI 14 Hip Replacement Mortality Rate

Patient Safety (PSIs)

- PSI 16 Transfusion Reaction Count

Pediatric (PDIs)

- NQI 01 Neonatal Iatrogenic Pneumothorax Rate
- PDI 02 Pressure Ulcer Rate
- PDI 03 Retained Surgical Item or Unretrieved Device Fragment Count
- PDI 06 RACHS-1 Pediatric Heart Surgery Mortality Rate
- PDI 07 RACHS-1 Pediatric Heart Surgery Volume
- PDI 11 Postoperative Wound Dehiscence Rate
- PDI 13 Transfusion Reaction Count
- PDI 17 Perforated Appendix Admission Rate
- PDI 19 Pediatric Safety for Selected Indicators Composite

Rationale for Retirement

- ▶ **Limited evidence** in the literature shows these are not widely used for quality improvement
- ▶ **Rarity of events** – some indicators measured events that are so rare that the measure is no longer reliable or relevant for quality improvement
- ▶ **Advances in medical technology** – there have been practice changes in terms of both where and how care is provided which affects the validity and reliability of these indicators

Rationale for Retirement (cont.)



- ▶ **Significant analytical work for refinement required**
 - some indicators would require substantial additional validation work or improvement of the specifications for ICD-10 CM/PCS to remain useful for quality improvement
- ▶ **Volume as a stand-alone measure** is not useful for quality improvement

OVERVIEW OF V2019 SOFTWARE AND IMPROVEMENTS

v2019 Updates

- **v2019 is risk adjusted** using 2016 HCUP State Inpatient Databases (SID) data
- Implemented **coding updates**
 - ▶ Based on fiscal year 2019 ICD-10-CM/PCS
 - ▶ Compatible with ICD-10-CM/PCS hospital data for FY16 - FY19
 - ▶ Coding changes affect all software modules

v2019 Updates (cont.)

- **v2019 software reports**
 - ▶ Risk-adjusted rates, signal variance, reference population rates, and composite weights for all modules
 - ▶ Non-risk adjusted numerators, denominators, and observed rates

Population Files

- Updated **QI population file** intercensal and postcensal estimates of county-level populations from years 2000 – 2018 for use with area-level QIs
- Population categories:
 - ▶ Single-year age group
 - ▶ Sex
 - ▶ Race
 - ▶ Hispanic origin
- Details about the population methodology at:
 - ▶ http://www.qualityindicators.ahrq.gov/Downloads/Software/SAS/V2019/AHRQ_QI_v2019_ICD10_Population_File.pdf

Risk Adjustment

- HCUP enables all-payer risk adjustment modeling
 - ▶ Critical for benchmarking and internal evaluation
- Benchmark rates are available:
 - ▶ **PQI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V2019/Version_2019_Benchmark_Tables_PQI.pdf
 - ▶ **IQI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/V2019/Version_2019_Benchmark_Tables_IQI.pdf
 - ▶ **PSI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2019/Version_2019_Benchmark_Tables_PSI.pdf
 - ▶ **PDI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PDI/V2019/Version_2019_Benchmark_Tables_PDI.pdf

Risk Adjustment (cont.)

- **PSIs and IQIs:** risk adjustment accounts for age, gender, clinical conditions, major diagnostic category (MDC), and diagnostic groups
 - ▶ Diagnostic groups: PSIs use MS-DRGs, IQIs use APR-DRGs
 - ▶ Discharge-level risk adjustment
- **PQIs and area-level PDIs:** risk adjustment accounts for age and gender, and an optional adjustment for poverty
 - ▶ Poverty is defined using a census poverty definition
 - ▶ County-level risk adjustment

Risk Adjustment (cont.)

- **What to do with risk-adjusted rates**
 - ▶ Compare a hospital's performance actual (observed) to its expected performance
 - ▶ Expected performance is based on the experience of patients at all hospitals in the nation, adjusted to the hospital's case-mix.
- **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**

- ▶ **PDIs:** Hospital-level PDIs are not risk-adjusted in v2019
- ▶ **PSIs and IQIs:**
 - Updated AGE_SEX risk adjustment coefficients that account for age, gender, MDCs, diagnostic groups, and clinical conditions
 - No longer support NO_AGE, NO_SEX, and NO_AGE_NO_SEX models used for stratification
 - User must assign MDCs on their input file for risk adjustment

Summary of v2019 QI Rates

- **Compared to v2018 ICD-10-CM/PCS (non-risk adjusted) using the 2016 HCUP data, expected changes in observed rates:**
 - ▶ **PSI 12:** increased <0.15% because of removal of exclusions
 - ▶ **PSI 13:** decreased <0.1% due to increased exclusions
 - ▶ **PQI 14:** reduced substantially after correcting definition of uncontrolled diabetes
- **Comparison report:**
https://www.qualityindicators.ahrq.gov/Downloads/Software/V2019/AHRQ_QI_Rate_Comparison_v2018_v2019.pdf
- **Parameter estimates:**
 - ▶ PQI –
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V2019/Parameter_Estimates_PQI_v2019.pdf
 - ▶ IQI –
https://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/V2019/Parameter_Estimates_IQI_v2019.pdf
 - ▶ PSI -
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2019/Parameter_Estimates_PSI_v2019.pdf
 - ▶ PDI -
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PDI/V2019/Parameter_Estimates_PDI_v2019.pdf

USABILITY IMPROVEMENTS

User Suggestions Help Improve the QIs



- User feedback via technical support questions and survey responses guided improvements to QI software usability
- Users' technical support questions regarding inclusions and exclusions helped guide some QI refinements

Send suggestions to: AHRQ QI Support Team
(QIsupport@ahrq.hhs.gov)

v2019 SAS Software Changes / Improvements



- **Renamed programs and control file variables** to better align with what the module is measuring
 - ▶ Changed “provider” to “hospital”
 - ▶ Consistently named, labeled, and added comments on output variables and files across modules
 - ▶ Improved labeling and comments around transfer-related variables and exclusions, and removed any unused transfer variables
- Added **technical assistance documentation** on running the MS-DRG grouper for PSI and PDI
- **Streamlined software processing** by setting up all programs to execute within the control file instead of having to run all programs individually
- Significantly **reduced program run times** for the PDI and PSI modules

v2019 WinQI Software Changes / Improvements



- Software will **notify users of updates**
 - ▶ Accepting v2019 update will automatically uninstall prior version and install v2019
- With risk adjustment added, **running a large input file** (i.e., ≥ 3 million rows) can take a few hours to finish
- Option to use **3M's limited license APR-DRG** grouper in WinQI or provide user's own APR-DRG code
- Hospital- and area-level reports include **observed, expected, reference population, risk-adjusted, and smoothed** rates
- Improved **automation features** based on user feedback

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** document for each module
 - ▶ **PQI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PQI/V2019/ChangeLog_PQI_v2019.pdf
 - ▶ **IQI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/V2019/ChangeLog_IQI_v2019.pdf
 - ▶ **PSI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2019/ChangeLog_PSI_v2019.pdf
 - ▶ **PDI:**
https://www.qualityindicators.ahrq.gov/Downloads/Modules/PDI/V2019/ChangeLog_PDI_v2019.pdf

Highlights of Indicator Changes

Prevention (PQIs)

None

Inpatient (IQIs)

- 02
- 09
- 11
- 17
- 21
- 22
- 33

Patient Safety (PSIs)

- 02
- 04
- 06
- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 90

Pediatric (PDIs)

- **NQI:** 03
- **PDI:**
 - 05
 - 08
 - 09
 - 10

AHQ QI Software Resources



- **AHRQ QI technical assistance**
 - ▶ http://www.qualityindicators.ahrq.gov/FAQs_Support/
 - ▶ QIsupport@ahrq.hhs.gov
- **AHRQ QI v2019 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/>