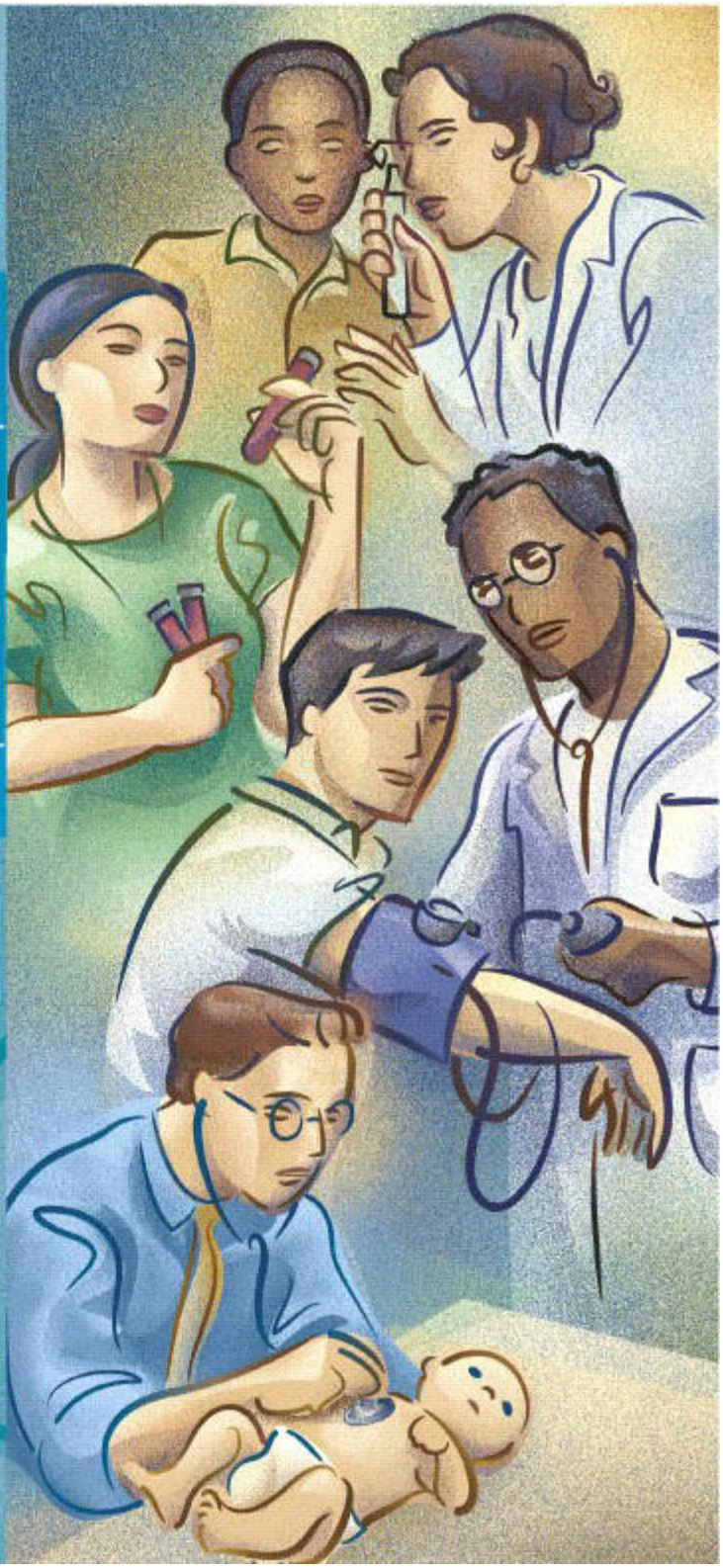
AHRQ

AHRQ QUALITY INDICATORS

Windows

SOFTWARE DOCUMENTATION



AHRQ Quality Indicators

Software Documentation, Version 4.0 Windows

Department of Health and Human Services
Agency for Healthcare Research and Quality
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Abstract

This software documentation is for the Quality Indicators (QI) Windows Application, Version 4.0, which is provided for download on the AHRQ QI website. The software was developed in C#.NET and Microsoft SQL Server, for use on a personal computer that uses the Microsoft Windows operating system. By making this tool available, we hope to assist others in producing information on health care quality more cost effectively.

Acknowledgments

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1.0 Overview of the Quality Indicators

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators (QIs) use commonly available hospital administrative data to highlight potential quality concerns, identify areas that need further study and investigation, and track changes over time. The AHRQ QIs are comprised of the following modules:

- Prevention Quality Indicators (PQIs)--or ambulatory care sensitive conditions--identify hospital admissions that evidence suggests could have been avoided, at least in part, through high-quality outpatient care.
- Inpatient Quality Indicators (IQIs) reflect quality of care inside hospitals and include:
    - Inpatient mortality for medical conditions
    - Inpatient mortality for surgical procedures
    - Utilization of procedures for which there are questions of overuse, under use, or misuse
    - Volume of procedures for which there is evidence that a higher volume of procedures maybe associated with lower mortality
- Patient Safety Indicators (PSIs) also reflect quality of care inside hospitals, but focus on potentially avoidable complications and iatrogenic events
- Pediatric Quality Indicators (PDIs) both reflect quality of care inside hospitals and identify potentially avoidable hospitalizations among children.

This document describes the AHRQ Quality Indicators Windows Software, a free tool that allows users to run AHRQ Quality Indicators analysis with data that they provide. Anyone who has access to administrative discharge data can run this software. Current users include state and federal governments, researchers, hospital associations, and individual hospitals.

1.1 Rates Calculated

Volume indicators are reported in just one unit -- the number of times a procedure is performed. All other indicators are expressed as rates: the number of times an event occurs out of the number of persons at risk for that event. The Quality Indicators software will identify the numerator, the denominator and calculate an *observed rate* for each indicator.

In addition to the observed rates, the software calculates an *expected rate* or the rate one would expect for hospitals with the same demographics and case mix, *risk adjusted rates* or the rate adjusted to reflect a typical case mix, and the statistical confidence intervals and smoothed rates. (See section 2.4 for a more detailed description.)

All of the QIs can be divided into one of two levels:

- Area-level indicators – Measure utilizations, events, or admissions within geographic areas such as a county or metro area. This level may be of interest to a government agency or association that looks at quality measures for an entire region. All of the PQIs and a few of the IQIs, PSIs and PDIs are area-level indicators. For the purposes of rate calculations, the denominator for area level indicators is based on the population of the region from the US census.

- Provider-level indicators – Measure procedure volume, rates of mortality, and rates of adverse events within an individual provider or group of providers. For rate calculations, the denominator for provider level indicators is based on admissions to each provider.

1.2 Reference Populations

The software calculates Risk-adjusted and Expected Rates using a reference population that is an aggregation of 3 years of discharges (approximately 100 million records) from all of the states that participate in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID). See http://www.ahrq.gov/data/hcup/ for information on the HCUP SID.

Risk-adjustment covariates and population rates for data that include Present on Admission values were calculated using three years of pooled SID data from California and New York. As additional states collect the POA indicator and provide the data to the HCUP program, the reference population will be updated in future AHRQ QI releases to include these states. See "What about present on admission?" in section 4.0.

1.3 Data Included

The QI software does not include data for any individual hospitals or groups of hospitals. The only QI rates included in the software are for the *reference population.* (See section 1.2.) You cannot use this program unless you provide your own data to analyze.

The software also includes coefficients based on a statistical analysis of the reference population. A second set of coefficients is applied to discharge records that include Present on Admission data, because these calculations use a different reference population.

1.4 Benchmarks

Having calculated an observed rate for an indicator, the obvious next question is "Compared to what?" Users typically want comparisons with other hospitals or a national rate. However, neither of these is generally appropriate since hospitals vary in the patients they treat. For example, it would not be fair to compare mortality rates from a hospital that specializes in high-risk cases to an "average" hospital, nor would it be reasonable to compare a hospital that serves a largely elderly population with one that serves a more balanced area. An appropriate benchmark for a hospital is necessarily specific to the demographics and the type of cases it receives.

For most purposes, the most useful check is to compare the observed rate with the expected rate calculated from the same group of cases. The QI software will allow you to calculate these rates. (See section 2.4.)

For provider level indicators, the expected rate takes into account the age, sex, comorbidities, severity and other characteristics of the actual patients at risk for each outcome. For area level indicators, the expected rate takes into account the mix of age, sex and poverty demographics of the population in each area.

1.5 Using the QIs for Analysis

The QI Software provides built-in tools to assist users in analyzing the rates that are produced.

1.5.1 Reviewing individual cases

The QI Software includes tools to review the individual cases that are selected for each indicator. Once you have loaded your data, click on <Patient Level Report> (see section 6.3) on the Main Screen and select an indicator to view all the cases flagged for that indicator. This can be useful for selecting cases for chart review and further study.

Double-click on an individual case to get more information about that case. The Case Details screen (see section 6.4) traces an indicator for a single case, showing why each case was or was not flagged -- including which DRG or ICD-9-CM codes contributed to this assignment.

1.5.2 Stratification

You may "drill into" QI rates by using the Report Wizard to generate reports that are stratified. Stratification allows you to divide the discharges into groups by attributes such as age or race and view the observed and expected rates for each group. This helps to identify whether there are differences in quality of care for different groups. When using the QIs to identify areas for quality improvement, this can help show where the greatest opportunities might be found.

1.6 Other Documentation

The Quality Indicators are separated into four modules, PSI, IQI, PQI and PDI that are described in section 1.0. Each module is documented separately in a ***User Guide*** and a ***Technical Specifications.*** These guides provide the detailed definitions, rationale, and evidence for each indicator. Any references to the *User Guide* in this document or any other AHRQ Quality Indicators documentation refer to these documents collectively.[1]

The four Technical Specifications documents provide the codes from the hospital discharge data record that are included in the numerator, the denominator, and exclusion criteria for each indicator. A *Comparative Data* document for each module provides empirical performance information appropriate to the type of indicator: such as average provider rate, average volume, area rate, and population rate. The coefficients used in calculating risk-adjusted rates are provided in a *Covariates* document for each module. Other available downloads include the SAS syntax and documentation, a list of the coding changes made for the fiscal year, covariates used in risk adjustment, and a *Change Log* for each module. These documents can be found organized by module at http://www.qualityindicators.ahrq.gov/downloads.htm.

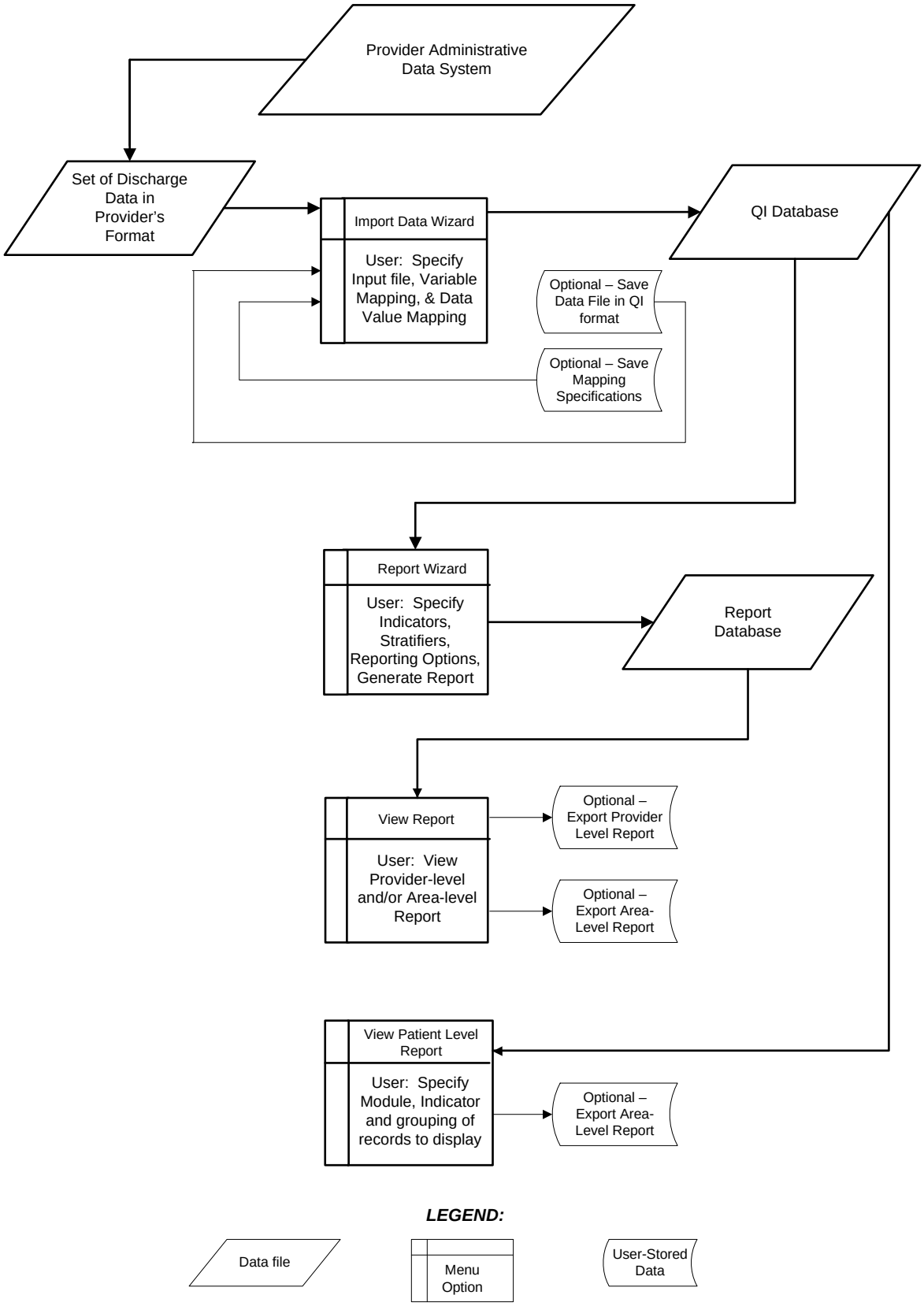
[1] For the Pediatric Quality Indicators module, the document *Measures of Pediatric Healthcare Quality Based on Hospital Administrative Data* provides the information that is contained in the *User Guide* for the other modules.

A separate *AHRQ Quality Indicators Windows Software Installation Guide* describes the hardware requirements and the installation of this software.

1.7 QI Flowchart

The figure below illustrates how the QI Windows software is used.

Figure 1 Flowchart of Data Flow through AHRQ QI Windows Application



2.0 Technical Questions

This section provides answers to frequently asked questions about the QI Software, the input data , specifying and viewing reports, using different types of QI rates, and data security and privacy.

2.1 About the Software

2.1.1 What kinds of software are available to calculate QIs?

Two[2] versions of software are provided by AHRQ to calculate the Quality Indicators:

- The SAS® version requires users to download and run a separate set of software for each QI module.
- This Windows version will calculate all of the QIs at the same time.

2.1.2 What software needs to be purchased in order to run the Quality Indicators?

The Quality Indicators software is provided free of charge by the Agency for Healthcare Quality and Research. The Windows and SAS® versions are available for download from http://www.qualityindicators.ahrq.gov/downloads.htm

To use the SAS® version of the QI software, users must have access to the commercially-available SAS® statistical software package. For more information, visit the SAS Institute website at http://www.sas.com.

No additional software is required for purchase in order to use the QI Windows software. The software does require Microsoft .NET platform version 2.0 and Microsoft SQL Server. Both are available for download along with the QI application.

To calculate risk-adjusted rates for some of the IQIs (see section 9.2), the 3M™ APR™ DRG grouper must be used. (See "What about APR™ DRG codes?" in section 2.2.) A limited license version of the 3M™ APR™ DRG system can be installed at no cost with the AHRQ QI Windows Application. If users prefer, they may use their own copy of the software to preprocess the data. Full versions of the product are available commercially. See the 3M™ Web site for more information: http://www.3m.com/us/healthcare/his/products/coding/refined_drg.jhtml.

2.1.3 What minimum software requirements are there to run the Quality Indicators?

The QI software requires Microsoft Windows 2000 or later, with the Microsoft .NET platform version 2.0 or greater and an available Microsoft SQL Server 2000 or later database. Microsoft .NET is freely available for download from http://www.microsoft.com/ and is included with the Quality Indicators software.

This software will operate with versions of SQL Server 2000 or above. SQL Server Express Edition is a free version that is available from Microsoft and is included with this software. If you wish to use a different SQL Server database, you are not required to install SQL Server. The database may be installed on the same machine as this software or it may reside elsewhere on the local area network.

2.1.4 How many discharges can be processed?

There is no limit to the size of your discharge file when using the SAS® package.

The QI Windows software is only limited by the SQL Server maximum database size. For Express Edition installations, the limit is 4 GB which comes to approximately 4 million discharge records. There is no limit to the size of a full version of SQL Server.

Users who have access to a Microsoft SQL Server for data storage may be limited by any local hardware or storage allocations which may be controlled by your local information technology office. Users should check with their local database administrator.

2.1.5 How do I start the QI Windows software?

Click on your computer's <Start> button, point to "Programs", point to the "Agency for Healthcare Research and Quality" folder, point to the" AHRQ Quality Indicators folder", and click on “AHRQ Quality Indicators”.

[2] The final release of the AHRQ QI SPSS Software, version 3.0, was released in February 2006. It is no longer maintained.

2.2 About the Input Data

2.2.1 Where do I begin?

The first thing you need to do is obtain a file that contains the inpatient discharge records you want to analyze. Once you have this file, run the QI application. The graphical user interface will guide you through the steps to load data, generate reports and review cases.

2.2.2 What kind of input data can be used by the software?

The software uses readily available hospital inpatient administrative data that provides demographics on the patient and the provider, diagnosis codes, procedure codes, and information about the admission, payer, and discharge.

2.2.3 What format should the data be in?

The software accepts three common data formats: Text (comma separated values), Microsoft Access, and Microsoft Excel. Two key formatting issues are that:

- Each row of data represents a separate discharge record.
- Each column of data represents a single variable for all discharges.

If the data file meets these requirements, the Import Data Wizard will assist users in transforming their data into the QI format.

2.2.4 What is the easiest format to work with?

If you have the flexibility to create your input file in any format, it is easiest use comma-separated variable (.csv), and use the variable names in the Data Elements table as column headers. For each *mapped* variable in the Data Elements Table, use the numeric values listed. None of these suggestions are mandatory, but they will make the data import easiest.

2.2.5 What data must be included?

The Data Elements chart (See section 3.1) lists the data that should be included for each discharge.

2.2.6 What if I don't have all the data available?

You may leave off any data that you can't get. It is not necessary to create "dummy data" to fill the column. See the comments in the Data Elements table, and on the Data Mapping screen (See section 5.5) in the Import Data Wizard to determine the consequences of leaving any variable out.

2.2.7 What if my data has additional variables that I want to use?

Your input file may contain extra data that is not required. Any variables that are not used in the Data Mapping Screen will not be imported with your data.

The software allows you to use up to 3 "Custom Stratifiers". These fields allow you calculate rates for provider-level indicators using whatever custom grouping you wish.

2.2.8 My file does not have column headers. Do I need to put them in?

Column headers are required for Excel files but are not required for CSV files. The software includes an Import Data Wizard that allows you to map variables by name or by position. However, it is generally easier and less error-prone to include column headers.

2.2.9 What are the different data types

There are four types of Data Elements: Numbers, Dates, Strings and Mapped variables. Numeric and string values must match the format specified.

Mapped variables have specific meaning according to the coding conventions in your organization and they have specific meaning to the QI application. For example, the QI disposition value for "died" is "20". Your data does not have to use "20" to mean "died," but in order for the QI application to calculate mortality indicators, you will need to provide the translation in the Crosswalk Screen.

2.2.10 What if I have commas in some of my data values?

CSV files use commas to separate the data values. If you have commas within any data values, e.g. “Private, incl. HMO”, then you will need to put double quotes around each data element. When selecting your file, check the appropriate box to have the quotes recognized.

2.2.11 Can I use tabs instead of commas as a delimiter?

Yes. You can switch the delimiter to tabs on the Program Options screen.

2.2.12 What about E-codes?

External cause of injury code (E-code) variables may be used in place of secondary diagnosis fields in the QI software. If your data has separate variables for E-codes, you can use the Data Mapping feature (see section 5.5) in the Import Data Wizard to map the QI variables to your E-code variables, starting with the first available (unmapped) secondary diagnosis QI variable. If the number of diagnosis fields plus the number of E-code fields in your input data exceeds 35, then you may wish to preprocess your data to fill in the gaps and get the maximum use of the 34 secondary diagnosis fields.

2.2.13 What about APR™ DRG codes?

Risk adjustment for some of the Inpatient Quality Indicators relies on the 3M™ All-Patient Refined Diagnosis-Related Groups (APR™ DRG) system, which has been reported to perform well in predicting resource use and death when compared to other DRG-based systems.

Users who want to report risk-adjusted IQI rates may use the built-in limited license version of the 3M™ APR™ DRG grouper. The optional limited license grouper available with the AHRQ QI software is “multi-version” (i.e., Version 20, 23, 24 and 25). The software will apply the correct version based on the discharge year and quarter. Users who have their own APR-DRG grouper can use either the applicable DRG version or the ICD-9-CM mapping to Version 20.

Information on the 3M™ APR™ DRG system is available at
http://www.3m.com/us/healthcare/his/products/coding/refined_drg.jhtml

2.3 Specifying and Viewing Reports

2.3.1 How do users specify reports?

The QI Windows software provides two Report Wizards that allows users to do the following.

- Select Indicators to include in the report
- Select the hospitals and years by which you wish to select records
- Select stratifiers
- Select additional options for data analysis
- Generate and view provider-level and area-level reports

2.3.2 Can provider-level and area-level reports be combined?

No. Rates are expressed differently. Area-level indicators use the population of the county or as the denominator. Provider-level indicators use the total number of at-risk patient discharge records as the denominator. The stratifiers available for reporting are limited by the information appropriate to each group.

2.3.3 Can I stratify area-level Indicators by hospital?

No. Area-level indicators are designed to measure potentially avoidable hospitalizations for the residents of a county. Although it could be possible to classify patients by the hospital they went to (stratify a numerator), it is not possible to classify the residents by the hospital they did not go to (stratify the denominator).

2.3.4 Can reports be viewed after closing the Report Wizard?

Yes. The View Report option on the main menu opens the Reports screen, displaying the data from the last set of reports generated using the Report Wizard.

2.3.5 What happens if a different report is generated?

The existing set of reports will be overwritten.

2.3.6 Is there a way to save reports for later viewing?

Yes and No. Reports can be exported to a .CSV or .TXT file and viewed in other software such as Microsoft Excel. After a different report is generated, there is no way to view an earlier report from within the QI Windows software.

2.3.7 How can I get a list of cases that contributed to my rate for an indicator?

Use the Patient Level Report. (See section 6.3.)

2.3.8 Why was a particular case flagged by a particular indicator?

Use the Case Details Report to show you the definition of an indicator and how it is applied to a case. See section 6.4.

2.4 Using Different Types of QI Rates

When should you use the observed, expected, risk adjusted, and/or smoothed rates generated by the AHRQ QI software? Here are some guidelines.

2.4.1 Observed rate

If the user's primary interest is to identify cases for further follow-up and quality improvement, then the observed rate would help to identify them. The observed rate is the raw rate generated by the QI software from the data the user provided. Areas for improvement can be identified by the magnitude of the observed rate compared to available benchmarks and/or by the number of patients impacted.

Additional breakdowns by the default patient characteristics used in stratified rates (e.g., age, gender, or payer) can further identify the target population. Target populations can also be identified by user-defined patient characteristics supplemented to the case/discharge level flags. Trend data can be used to measure change in the rate over time.

2.4.2 Expected rate

Another approach to identify areas to focus on is to compare the observed and expected rates. The expected rate is the rate the provider would have if it performed the same as the reference population given the provider's actual case-mix (e.g., age, gender, DRG, and comorbidity categories).

If the observed rate is higher than the expected rate (i.e., the ratio of observed/expected is greater than 1.0, or observed minus expected is positive), then the implication is that the provider performed worse than the reference population for that particular indicator. Users may want to focus on these indicators for quality improvement.

If the observed rate is lower than the expected rate (i.e., the ratio of observed/expected is less than 1.0, or observed minus expected is negative), then the implication is that the provider performed better than the reference population. Users may want to focus on these indicators for identifying best practices.

2.4.3 Population rate

Users can also compare the expected rate to the population rate reported in the Comparative Data document to determine how their case-mix compares to the reference population. The population rate refers to the overall rate for the reference population. The reference population is defined in the Comparative Data Document. If the population rate is higher than the expected rate, then the provider's case-mix is less severe than the reference population. If the population rate is lower than the expected rate, then the provider's case-mix is more severe than the reference population.

We use this difference between the population rate and the expected rate to "adjust" the observed rate to account for the difference between the case-mix of the reference population and the provider's case-mix. This is the provider's risk-adjusted rate.

If the provider has a less severe case-mix, then the adjustment is positive (population rate > expected rate) and the risk-adjusted rate is higher than the observed rate. If the provider has a more severe case-mix, then the adjustment is negative (population rate < expected rate) and the risk-adjusted rate is lower than the observed rate. The risk-adjusted rate is the rate the provider would have if it had the same case-mix as the reference population given the provider's actual performance.

2.4.4 Smoothed rate

Finally, users can compare the risk-adjusted rate to the smoothed or "reliability-adjusted" rate to determine whether this difference between the risk-adjusted rate and reference population rate is likely to remain in the next measurement period. Smoothed rates are weighted averages of the population rate and the risk-adjusted rate, where the weight reflects the reliability of the provider's risk-adjusted rate.

A ratio of (smoothed rate - population rate) / (risk-adjusted rate - population rate) greater than 0.80 suggests that the difference is likely to persist (whether the difference is positive or negative). A ratio less than 0.80 suggests that the difference may be due in part to random differences in patient characteristics (patient characteristics that are not observed and controlled for in the risk-adjustment model). In general, users may want to focus on areas where the differences are more likely to persist.

2.5 Data Security and Privacy

2.5.1 What type of data is required by the AHRQ QI software?

The AHRQ QI software is provided with no data. The AHRQ QI software is a tool that calculates the AHRQ Quality Indicators based on an input data file containing discharge level data from your organization. The software populates an SQL Server database with the data elements and data values in a format expected by the indicator logic. See the "Data Elements and Coding Conventions" table (section 3.1) for detailed descriptions of each required data element.

2.5.2 What information is collected by AHRQ?

None. No user registration is required to run this software. AHRQ does not collect or store data from users of this software. Users who wish to provide feedback may contact the AHRQ support hotline by emailing support@qualityindicators.ahrq.gov.

2.5.3 What kind of individually identifiable health information is required by the AHRQ QI software?

The AHRQ QI software does not require any direct identifiers. However, the software does require detailed information for each discharge, including demographic data elements like age and gender and relevant diagnosis and procedure codes. Use of this information must comply with the HIPAA privacy and security policies of your organization.

2.5.4 What fields contain personal identifying information?

There are 5 optional data elements to help identify particular cases. None of these fields are used in any QI definitions and all 5 may be omitted if desired. The field "Key" is printed on the Patient Level Report and on the Case Details report. There are 4 other fields that are not displayed at all within the QI application, but can be included on the data import and the data export to identify cases as part of other analysis. These are "Date of Birth", "Admit Date", "Discharge Date" and "Medical Record Number". These 4 fields are new in version 4.0. For maximum patient privacy, it is not recommended that you import these fields at all unless required for your analysis.

2.5.5 What Information is stored in the "Key" data element?

The "Key" data element is optional and is not used in the AHRQ Quality Indicator flagging or rate calculation. The 'Key' data element could be populated with an encrypted identifier for each discharge or patient, a medical record number, a random sequence number, or be left blank. The intent is to provide a "Key" that allows quality improvement staff to conduct further analysis on individual cases that are flagged for specific indicators. However, the "Key" data element may be populated with any text or it may be left unmapped in the Data Mapping screen without affecting the flagging or rate calculation of the AHRQ QIs. The Key field does not have to be unique.

2.5.6 What types of data files are used or generated by the AHRQ QI software?

The AHRQ QI Software uses or generates the following types of files:

- Input Data File – The discharge level file that the user prepares outside the AHRQ QI software for loading with the Import Data Wizard. After the data load has completed, this file is no longer required.
- Patient Level Report – Users may export a file from the Patient Level Report screen that contains the discharge level indicator flags for the selected indicator and basic demographic data for each patient. This report allows users to see which cases were excluded, if desired.

- Stratified Rate Report – Users may export a file from the View Report screen that contains the stratified rates for selected Area-level or Provider-level indicators. When the report is generated, users may select not to report rates with less than a specified number of cases in the numerator (see Cell Suppression).
- Case Details and Predicated Probability Reports - Users may save a copy of these reports as a rich text files for later viewing. These contain individual medical information.
- Data Load Reports - Users may choose to save copies of the data load reports in rich text format. These reports contain descriptive statistics about the input file and do not contain personal information.
- Export QI File – After using the Import Data Wizard, users may export a file that includes only those data elements used by the AHRQ QI software as well as the indicator flags for each record. This file may be exported from the Wizard, or by using the <Export Data> option on the Main Menu.
- Database Files – Each time the user runs the Import Data Wizard, the discharge level data is populated into a SQL Server database, which stores data in its own database file. Each time the Report Wizard is used, the resulting Area-level and/or Provider-Level reports are stored in the SQL Server database. These are overwritten the next time the user runs the Wizard.
- QI Session Log - This is a log of debugging information generated by the software. You may change the location of this file in the Program Options page.

2.5.7 Where is the SQL Server database file located?

The SQL Server database file may be located on the same PC as the AHRQ QI software, or it may be located on a remote server depending on the options the administrator selected when installing the AHRQ QI software.

If the administrator selected the default MSDE Instance that is distributed with the AHRQ QI software, then the SQL Server database is physically located on the user's hard drive. By default, SQL Server stores the data in a file called "C:\program files\Microsoft SQL Server\MSSQL$AHRQQI\Data\qualityindicators.mdf".

If the administrator selected a remote SQL Server database rather than installing the MSDE, then the file is physically located in that database on that remote server as established by the local IT administrator.

In either case, the file is machine-readable only and the location may be changed. See the question on "How do I customize the MSDE SQL Server?" below.

2.5.8 Does the AHRQ QI Software require any data sharing or Internet connection?

No. The AHRQ QI software does not share data with any other computer and does not require any Internet connection. Moreover, if the administrator selects a local database on the user's PC, it is not necessary to have any network connection at all.

2.5.9 What sort of password protection is used by the AHRQ QI Software?

The AHRQ QI software relies on the Windows authentication and permissions of the local PC. See the local IT administrator for the relevant policies and procedures.

By default, the AHRQ QI software accesses the SQL Server database using a password supplied when the AHRQ QI software is installed. The default password is "PSIIQIPQI". However, the user may modify the database security mode for added protection. See the question on "How do I customize the MSDE SQL Server?" below.

2.5.10 What permissions are required to install and run the AHRQ QI software?

The AHRQ QI software must be installed by a user with Windows administrator access.

All users with access to the PC may run the AHRQ QI software after it is installed. However, if the SQL Server database is installed with Windows NT authentication, then only users with sufficient access will be able to run the software. See the question on "How do I customize the MSDE SQL Server?" below.

2.5.11 How do I customize the SQL Server?

The AHRQ QI software is bundled with the installer for Microsoft SQL Server Express. The installer includes a file called "setup.ini" that contains options that may be customized prior to installing the database. If the user wishes to change these options, the user must do it before running the installer. (See the *Installation Guide* for more information.)

These options include:

- SAPWD – The password for the “sa” user account. This is the administrative password for the MSDE instance for this database.
- INSTANCENAME – The name of the database instance. The default value of “AHRQQI” may be used for most users.
- SECURITYMODE - The provided value of “SQL” allows any local user to connect to the SQL server database if (a) they are an administrator on the local PC or (b) they know the SA password. This setting also allows non-administrative users to access the AHRQ QI software. However, if the only user of the AHRQ QI software is an administrator on the local PC, then the user may remove the line.

Using the included setup.ini file will not allow any users to access the database unless they are connecting from the same PC. It is possible, using the option, "DISABLENETWORKPROTOCOLS," to set the SQL Server to allow remote connections to your PC from other computers. We do not recommend enabling remote connections.

2.5.12 Can I change the database password?

Yes. You may specify a different database password when you install the program. Refer to the "Install QI Software" section of the *Detailed AHRQ QI Windows Installation Guide* for more information.

If your SQL Server database administrator changes the database password, you must update the database password setting on the Program Options screen of the QI Application. See section 7.1.

3.0 Input Data

This section provides a table of the data elements used by the software and information on preparing data for use with the QI Windows software.

3.1 Data Elements and Coding Conventions Table

Variable Name	Description	Format	Value Description	Comments
Key	Sequence Number. Unique case identifier.	String Up to 20 characters	User defined unique numeric identifier for each discharge record	Not required by the AHRQ QI software, but available to allow users to link the discharge records in the Patient Level Report back to the input data.
Age	Age in Years at Admission	Numeric	Age in years	If this data element is missing the discharge record will be excluded from the analysis.
Age in Days	Age in Days at Admission (coded only when the age in years is less than 1)	Numeric 0 - 364 days	Age in days	Used in the inclusion and exclusion criteria for several indicators. If this data element is missing (and age is 0), then generally an alterative specification applies.
Race	Race of Patient.	Numeric 1 2 3 4 5 6	 White Black Hispanic Asian or Pacific Island Native American Other	Used to stratify the AHRQ QI rates. For the area level indicators[3], all the input data values must be mapped to one of the listed values. For provider level indicators, user-defined values may be retained.

[3] Area level indicators are all the PQI, IQI #26-29, PDI #14-18, and PSI #21-26. Provider level indicators are IQI #1-25, 30-34, PDI #1-13, and PSI #1-20, 27-29.

Variable Name	Description	Format	Value Description	Comments
Sex	Gender of Patient	Numeric 1 2	Male Female	If this data element is missing the discharge record will be excluded from the analysis.
Primary Payer	Expected Primary Payer	Numeric 1 2 3 4 5 6	Medicare Medicaid Private, incl. HMO Self-pay No charge Other	Used to stratify the AHRQ QI rates. Not used for the area indicators. For provider indicators, user-defined values may be retained.
Patient State/County Code	FIPS State/County Code of Patient's Residence. Use Hospital's State/County if the patient's is unavailable. (Patient recommended)[4]	Numeric ssccc	Modified Federal Information Processing Standards State/county code[5]	Available at: http://www.census.gov/popest/geographic/codes02.pdf If this data element is missing the discharge record will be excluded from area rate calculations. This variable may be renamed in the future to reflect the preference for the location of the patient rather than the hospital
Hospital ID	Data Source Hospital Id	String. Up to 12 characters.	Hospital identification number	Used to facilitate data exploration and possible trouble shooting. May also be selected as a stratifier for provider-level indicators.
Discharge Disposition	Disposition of Patient	Numeric 1 2 3 4 5 6 7 20	Routine Short-term hospital Skilled nursing facility Intermediate care Another type of facility Home health care Against medical advice Died in the hospital	The values 2 and 20 are referenced by the QI code (to identify transfers to another short-term hospital and patients who died in the hospital). Not used for PQIs.
Admission Type	Admission Type	Numeric 1 2 3 4 5 5 5 6	Emergency Urgent Elective Newborn Delivery (1988-1997) Not used (1998-2002) Trauma Center (2003-) Other	The values 3 and 4 are referenced by the AHRQ QI code (to identify elective surgeries and newborn admissions). PSIs 10, 11, 13, and 17 and PDI 8 and 9 will be affected if Admission Type values are missing. Used for PQIs in newborn definition. Not used in IQIs.

[4] See "How should I map my data element for the patient's location?" in section 5.5.
[5] Federal Information Processing Standard, as defined by the U.S. Department of Commerce, National Institute of Standards and Technology (formerly National Bureau of Standards). Note: Certain independent cities (Baltimore City, Carson City and St. Louis City), and areas within Hawaii and Virginia, are assigned to different area groupings in the Modified FIPS categories as compared to the U.S. Census Bureau groupings. The AHRQ QI software uses the Modified FIPS code assignment of these areas. Failure to use the Modified FIPS codes assignment will result in the use of incorrect denominator estimates for area indicators

Variable Name	Description	Format	Value Description	Comments
Admission Source	Admission Source	Numeric 1 2 3 4 5	ER Another hospital Another facility incl LTC Court/law enforcement Routine/birth/other	The values 2 and 3 are referenced by the PSI code (to identify transfers from another hospital or facility)
POINTOFORIGINUB04	Point of Origin	Numeric	4 Transfer from a hospital 5 Transfer from a skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF) 6 Transfer from another health care facility IF ATYPE = 4 5 Born inside this hospital 6 Born outside of this hospital	Only these values are used by the QI programs.
Length of Stay	Length of Stay	Numeric	Number of days from admission to discharge	Same data discharges are coded as 0 days stay. Not used for PQIs and IQIs.
APR™ DRG	APR™ DRG Category	Numeric	APR™ DRG from 3M software	Optional. Currently the AHRQ QI software uses a "multi-version" (i.e., Version 20, 23 and 24) APR™ DRG to risk-adjust the IQI. A free version of the software is packaged with this program and can be run during the data load. Not used for PQI, PSI and PDI.
APR™ DRG Severity of Illness	APR™ DRG Severity Score	Numeric	APR™ DRG Severity Score from 3M software	Optional. Currently the AHRQ QI software uses APR™ DRG Version 20, 23 and 24 to risk-adjust the IQI. A free version of the software is packaged with this program and can be run during the data load. Not used for PQI, PSI and PDI.
APR™ DRG Risk of Mortality	APR_DRG Mortality Score	Numeric	APR™ DRG Risk of Mortality Score from 3M software	Optional. Currently the AHRQ QI software uses APR™ DRG Version 20, 23 and 24 to risk-adjust the IQI. A free version of the software is packaged with this program and can be run during the data load. Not used for PQI, PSI and PDI.
Diagnosis Related Group	Diagnosis Related Group	Numeric	DRG from federal (CMS) Grouper	Required

Variable Name	Description	Format	Value Description	Comments
Diagnosis Related Group Version	Diagnosis Related Group Version	Numeric	DRG Version of federal (CMS) DRG Grouper	E.g. Version 25 for FY2008
Major Diagnostic Category	Major Diagnosis Category	Numeric	DRG from federal (CMS) Grouper	Required.
Principal Diagnosis	ICD-9-CM Diagnosis Code. Diagnosis 1 is the principal diagnosis.	String, 3, 4 or 5 characters (do not include decimal point)	Diagnosis code	Valid codes range from 001 to 999 in the first three digits. Some diagnoses require 4th and 5th digits. Decimal points, if any, must be removed before loading data.
Diagnosis Code 2 - Diagnosis Code 35 (up to 34 fields)	ICD-9-CM Diagnosis Codes. Diagnosis codes 2-35 are secondary diagnoses.	String, 3, 4 or 5 characters (do not include decimal point)	Diagnosis codes	NOTE: Seven of the PSIs rely on External Cause of Injury codes (E-codes). If the data set contains E-codes in user-defined variables, these variables should be remapped to secondary diagnosis codes. See instructions for using the Data Mapping screen in the Import Data Wizard.
Present on Admission 1 - Present on Admission 35 (up to 35 fields)	Present on admission indicator for each diagnosis code	String	1 = present at the time of inpatient admission `('Y','W','E','1')` 0 = not present at the time of inpatient admission ('N','U','0',' ')	Optional. These are equivalent to the DXATADMITn fields in the UB-04 specification. Having the POA fields may eliminate 'false positives' from PSI results. **IMPORTANT**: If you use these POA fields, a different set of risk adjustment covariates and reference population rates will be applied.
Principal Procedure	ICD-9-CM Procedure Codes. Procedure code 1 is the principal procedure;	String, 2,3 or 4 characters (do not include decimal point)	Procedure code	Valid codes range from 00 to 99 in the first two digits and may require a 3rd or 4th digit. Decimal points, if any, must be removed before loading data.
Procedure Code 2 - Procedure Code 30 (up to 29 different columns)	ICD-9-CM Procedure Codes. Procedure codes 2-30 are secondary procedures.	String, 2,3 or 4 characters (do not include decimal point)	Procedure codes	Include up to 30 procedures. It is not necessary to have 30.

Variable Name	Description	Format	Value Description	Comments
Days to Procedure 1 - Days to Procedure 30 (up to 30 fields)	Days from Admission to Procedure. Procedure 1 is the Principal Procedure; procedures 2-30 are secondary procedures.	Numeric	Days from admission to procedure[6]	It is expected that the number of Days to Procedure variables agrees with the number of Procedure codes present. Valid values may be negative or zero.
Year	Year of discharge. The patient's year of discharge. For example, a patient discharged on July 7, 2004 would have a discharge year of '2004.'	Numeric	YYYY Discharge year should be within the range of 1997 to present year.	Required data element and used to apply the proper fiscal year coding and to assign the APR-DRG if the limited license grouper is used.
Discharge Quarter	Quarter of discharge. The calendar quarter of the patient's discharge. For example, a patient discharged on July 7, 2004 would have a discharge quarter of '3.'	Numeric	1 January-March 2 April-June 3 July-September 4 October-December	Required data element and used to apply the proper fiscal year coding and to assign the APR-DRG if the limited license grouper is used.
Custom Stratifier 1 - Custom Stratifier 3	Custom stratification values.	String. 1-20 characters.	Any custom value you wish to stratify by.	This can be used for a variety of purposes -- groups of hospitals or groups of records with a hospital.
Days on Mechanical Ventilator	Number of days the patient spent on a mechanical ventilator.	Numeric		Option data element that is passed directly to the APR™ DRG Grouper.
Birthweight in Grams	Birthweight for newborns.	Numeric		Option data element that is passed directly to the APR™ DRG Grouper. This field is not used for pediatric birthweight categories. ICD-9-CM diagnosis codes are used to indicate birthweight.
Date of Birth	Patient date of birth.	Date.	MM/DD/YYYY.	Option - (NOT RECOMMENDED). For identification purposes only on the data export. It is not recommended that you use this field unless required for external analysis.
Admission Date	Date of patient admission.	Date.	MM/DD/YYYY.	Option - (NOT RECOMMENDED). For identification purposes only on the data export. It is not recommended that you use this field unless required for external analysis.

[6] Variables Days to Procedure 1 to Days to Procedure 30 are defined as the number of days from date of admission to date of procedure for each procedure. For example, if the patient was admitted on June 15th and had two procedures - the principal procedure on June 15th and a second procedure on June 18th – then the value of Days to Procedure 1 would be zero (0) and the value of Days to Procedure 2 would be three (3). For more information, consult the HCUP data documentation at http://www.hcup-us.ahrq.gov/db/vars/prdayn/nisnote.jsp

Variable Name	Description	Format	Value Description	Comments
Discharge Date	Date of patient discharge.	Date.	MM/DD/YYYY.	Option - (NOT RECOMMENDED). For identification purposes only on the data export. It is not recommended that you use this field unless required for external analysis.
Patient ID	Patient ID or medical record number.	String. 1-20 characters.		Option - (NOT RECOMMENDED). For identification purposes only on the data export. It is not recommended that you use this field unless required for external analysis.

3.2 Questions on Input Data

3.2.1 What is the difference between this specification and the UB-92 specification?

The data elements in the AHRQ QI are based on the coding specifications used in the State Inpatient Data (SID) in the Healthcare Cost and Utilization Project. The SID coding specifications are similar to the Uniform Bill (UB-92) but not identical. For data elements used in the AHRQ QI, crosswalks between the SID and UB-92 coding specifications are included in the SID documentation available at http://hcup-us.ahrq.gov/db/state/siddbdocumentation.jsp.

3.2.2 What if my ICD-9-CM codes are in a different format?

You will need to translate your ICD-9-CM codes into the required format for the software to interpret them properly. The software uses exact text comparison of procedure and diagnosis codes with the list of expected values to indicate each condition. If leading or trailing zeros are missing from the input file, the codes will not match.

3.2.3 Please give examples of correct ICD-9-CM codes.

Consider “011.0”, a tuberculosis diagnosis. The required format for the QI software is “0110” which is the complete code with the decimal point removed. The following are incorrect:

- “011.0” - Wrong because the decimal point must be removed.
- “110” - Wrong because the leading zero has been lost. This code would be interpreted as “110.” which is a completely different family of diseases.
- “011” - Wrong because the required 4th digit is missing. This is not a complete diagnosis code.

In cases where a specific 4th or 5th is required by the ICD-9-CM definition, the complete code is required by the AHRQ QI definitions. For example, “8081” (acetabulum fracture) is a complete code, however “8084” is not a complete code without a 5th digit that indicates the location of the fracture. These codes are used to exclude trauma cases and could result in inflated rates for some PSIs.

Similarly, you should not include additional digits where they are not required. In the previous example, the incorrect code “80810” will not match the correct “8081”.

Procedure codes are handled in the same manner as diagnosis codes except that procedure codes have one fewer digit. Valid diagnosis codes are a minimum of three digits with 4th or 5th digits required for some diagnoses. Valid procedure codes are a minimum of 2 digits with 3rd or 4th digits required for some procedures.

3.2.4 Must CMS DRG grouper software be run before the data load?

Yes. The Diagnosis Related Group (DRG) is a required input and the quality indicators cannot be run without it.

3.2.5 Must the 3M™ APR™DRG grouper software be run before the data load?

No. APR-DRG variables are used for IQI risk adjustment. A limited licensed grouper is packaged with this software and can be run during the data load. Users who already have APR-DRG values in their input file may choose to use those values instead.

3.2.6 Why might it be preferable to run the 3M™ APR™DRG grouper prior to the data load?

The license agreement for the limited license 3M ™ APR™ DRG grouper only permits its use for the calculation of IQI expected rates. APR-DRG values are only calculated for the minority of discharge records where it is required. The exported data file will therefore not contain APR-DRG data for all records.

3.2.7 Can E-codes be placed in diagnosis columns other than Dx31 through Dx35?

Yes. You may place E-codes in any diagnosis column except the primary diagnosis. Diagnoses 31-35 were created as a convenience to allow up to 30 diagnoses as well as up to 5 E-codes.

3.2.8 Can I use Zip Code instead of Patient State/County Code?

No. In order to calculate rates for area-level indicators, the QI software contains a table of population figures for each county. If you do not have valid state/county codes, the population cannot be used for the denominator of area rates. If you are not interested in area rates, you can leave out the state/county code.

3.2.9 Why is the patient's state/county preferred to the hospital's state/county code?

Area level indicators are designed to measure overall quality of care and access to care within the health system of a geographic area such as a county. Patients in the numerator for an indicator should be counted with the denominator based on the county in which they reside, and this may not necessarily be the county where they seek care.

3.2.10 What if my data doesn't contain "Days to Procedure"?

The days to procedure variables is used to determine the proper ordering of procedures relative to the operating room procedures. For example, PSI 8 excludes hip fracture repairs that occurred before any other operating room procedure since the hip fracture cannot be attributed to the operating room. Alternate specifications exist for each indicator if Days to Procedure is not loaded.

3.2.11 What if I can't determine the correct crosswalk for a variable?

Consult the SID documentation (http://hcup-us.ahrq.gov/db/state/siddbdocumentation.jsp) for a detailed discussion of each data element. Also, check the AHRQ QI Technical Specifications for the indicators that you are interested in. For most of the mapped variables, only a few of the crosswalk values are of interest to the QI software. For example, most of the mortality indicators need to distinguish between disposition=20 (died), disposition is empty (unknown), and disposition=anything else.

3.2.12 Shouldn't Admission Source = 4 indicate transfers instead of 2?

See Section 3.2.1. It is important that the crosswalk for this variable be set to the SID specification. If your data is in an alternate format, you can change the crosswalk during the data load.

3.2.13 What about Present on Admission?

New in version 3.1 was the "Present on Admission" fields (POA).

Effective March 1, 2007 the UB-04 data specification manual includes a Present on Admission indicator (http://www.nubc.org/public/whatsnew/POA.pdf). In general, cases where the outcome of interest is present on admission will be excluded from the denominator, as these cases are no longer at risk of having the outcome of interest occur during the hospitalization.

The use of POA fields can uniformly impact PSI rates by reducing the times that "false positives" occur -- diagnoses being identified as complications instead of preexisting comorbidities. If you do not use POA data, an alternate set of risk adjustment covariates and reference population rates will be used.

You should code POA for all your records or none of them. If POA data is present, the software will apply the POA risk-adjustment covariates. Mixing records with and without POA could adversely affect the expected rates.

3.2.14 What about 'Do not Resuscitate'?

"Do Not Resuscitate" (DNR) status is not imported nor used in the AHRQ QIs because it is not universally available or applied in a uniformly unbiased manner. Risk-adjusted and expected rates take into account the overall health of the inpatient population.

3.2.15 What is the purpose of the patient identification fields?

The fields "Date of Birth", "Admission Date", "Discharge Date", and "Patient ID" are pass thru fields in the QI application. These are available to identify patients in the QI export file as part of other studies such as the Collaborative Validation Pilot. If these are not required for your study, they should not be used.

3.2.16 Can Length of Stay be calculated from the Admission and Discharge Dates?

No. Length of Stay must be present in the input file. Admission Date and Discharge Date are only "pass thru" fields.

3.2.17 What is Length of Stay for a same day discharge?

Length of stay should be 0 if the patient is discharged on the same day as admission.

3.2.18 My state has different crosswalk values. How can I determine the mapping?

If your state participates in the Healthcare Cost and Utilization State Inpatient Database (HCUP SID), you may wish consult the state specific HCUP documentation found at
http://www.hcup-us.ahrq.gov/db/state/siddist/siddistvarnote_allstates.jsp

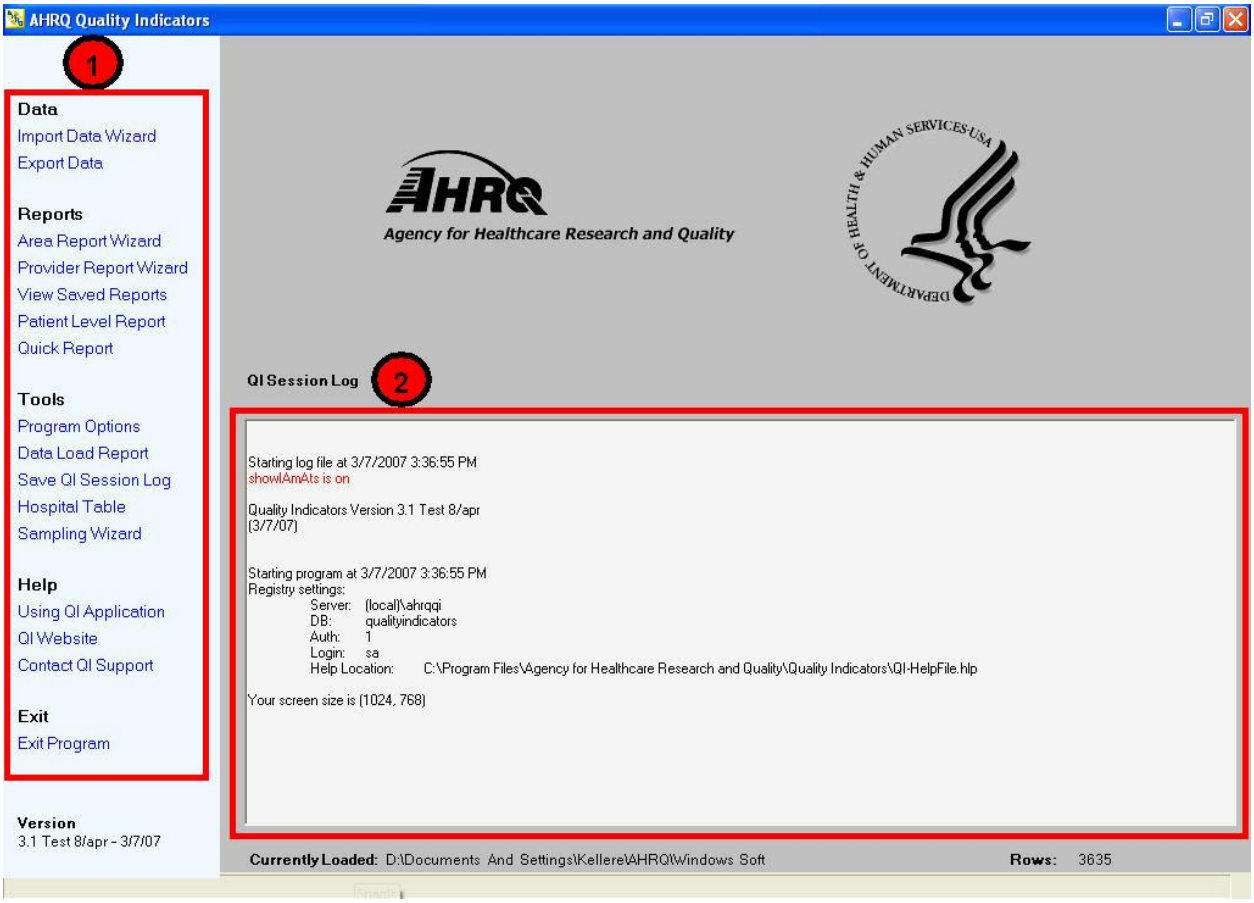
4.0 Main Screen and Session Log

The Main Screen is displayed on entry to the QI Windows software. The QI Session Log is displayed in a special section on the Main Screen.

4.1 Main Screen

4.1.1 What is this screen for?

This screen provides access to all features of the AHRQ Quality Indicators software.



4.1.2 How is this screen organized?

1

4.1.2.1 Menu Bar – Left side of the QI application window

The menu options available under **Data** include the following:

- <Import Data Wizard> - Launches the Wizard that walks you through the process of preparing your data.
- <Export Data> - Accesses the screen that allows you to save the data in the QI format and to save the data mapping that was generated using the Import Data Wizard.

The menu options available under **Reports** include the following:

- <Report Wizard> - Launches the Wizard that walks you through the process of creating a new rate report
- <View Report> - Accesses the screen that displays reports created using the Report Wizard
- <Quick Report> - Shows the total numerator and where applicable the denominator and observed rate for each indicator. Also shows the overall population rate of indicators for which risk adjustment is applied.
- <Patient Level Report> - Accesses a tool that allows you to view all discharge records associated with a selected indicator. This report uses the data that was prepared using the Import Data Wizard.

The Menu options available under **Tools** include the following:

- <Program Options> - Allows you to save the Session Log and change database connection and other system settings.
- <Data Load Report> - Displays the Data Load Summary screen seen at the end of the Input Data Wizard.
- <Save QI Session Log> - Allows you to save the "Session Log" window to a file. It is often helpful to include a copy of the session log if you contact the AHRQ QI support email with questions.
- <Hospital Table> - Allows you to change the county code or provide a name for hospitals in the data file
- <Sampling Wizard> - Launches the Wizard that walks you through the process of selecting cases at random for study

The menu options available under **Help** include the following:

- <Using QI Application> – Accesses the application Help system.
- <QI Website> – Launches the Quality Indicators Website using your system's default Web browser
- <Contact QI Support> - Displays a message containing the contact information for the QI Support Team.

The <Exit Program> control closes the AHRQ Quality Indicators application.

2

4.1.2.2 QI Session Log – Lower half of the QI application window

The QI Session Log keeps a record of all actions performed by the application. You may save a copy of this to a rich text file that includes the text formatting using the "Save Session Log" menu item.

Additionally, the QI session log is automatically saved to a text file. See the topic "Logging" in section 7.1. When contacting AHRQ Support, please only include the relevant portions of your log file.

During the data check some helpful error messages are written to the log about some of the invalid values found. See section 5.7 for more information.

4.1.3 What do I do here?

Click one of the options in the Menu Bar. You will need to use the Import Data Wizard to load your file before you will get any results using any of the other items.

4.1.4 Questions

4.1.4.1 What happens to the data after the application is closed?

The most recent set of selections is saved between sessions. Once new selections are made, they overwrite the previous selections.

4.1.4.2 What if I want to save the data I prepare using the Import Data Wizard?

An Export Data screen is presented by the Wizard. If you don't save the data then, you may do it at any time using the <Export Data> option on the Menu Bar.

4.1.4.3 What if I forget to save a report?

The report will stay in memory until you use the Report Wizard to generate a new report. You can use the <View Report> option to access the report, and then use the <Export All> button on that screen to save the report to a file.

4.1.4.4 What if I have a problem?

You may contact support@qualityindicators.ahrq.gov if you have problems running the QI application. To provide context for your questions, please include a copy of the QI Session log (see section 4.2) and a copy of your column mapping – either the .QIM mapping file or the contents of the Mapping Quick Check screen. (See section 5.6)

4.2 QI Session Log

The Session Log is displayed on the Main Screen. If one of the application screens is open, it is likely that the Session Log is not visible. Close the screen to see the Session Log.

4.2.1 What data is recorded in the Session Log?

The Session Log provides a record of all activities during the session. It also records any errors that might be generated during the session. This information can be useful when trying to solve problems.

4.2.2 How can I save the data in the Session Log?

A cumulative QI Session Log is stored automatically in a text file that has the ".log" extension. The location of this file can be changed (see "Logging" in section 7.1.)

There is also a <Save QI Session Log> control on the Main Screen. Selecting this control allows you to specify a different location (such as the Desktop) to save the log information for the current session. This information is saved in Rich Text Format (RTF).

A third way to save the Session Log data is to select the text to be saved, press Control-c, and then paste the saved text into a document. When contacting AHRQ Support, please only include the relevant portions of your log file.

5.0 Import Data Wizard

The Import Data Wizard walks you through the process of preparing data for calculating all of the AHRQ Quality Indicators, calculates the values for the QIs, and then allows you to save the resulting data for later use.

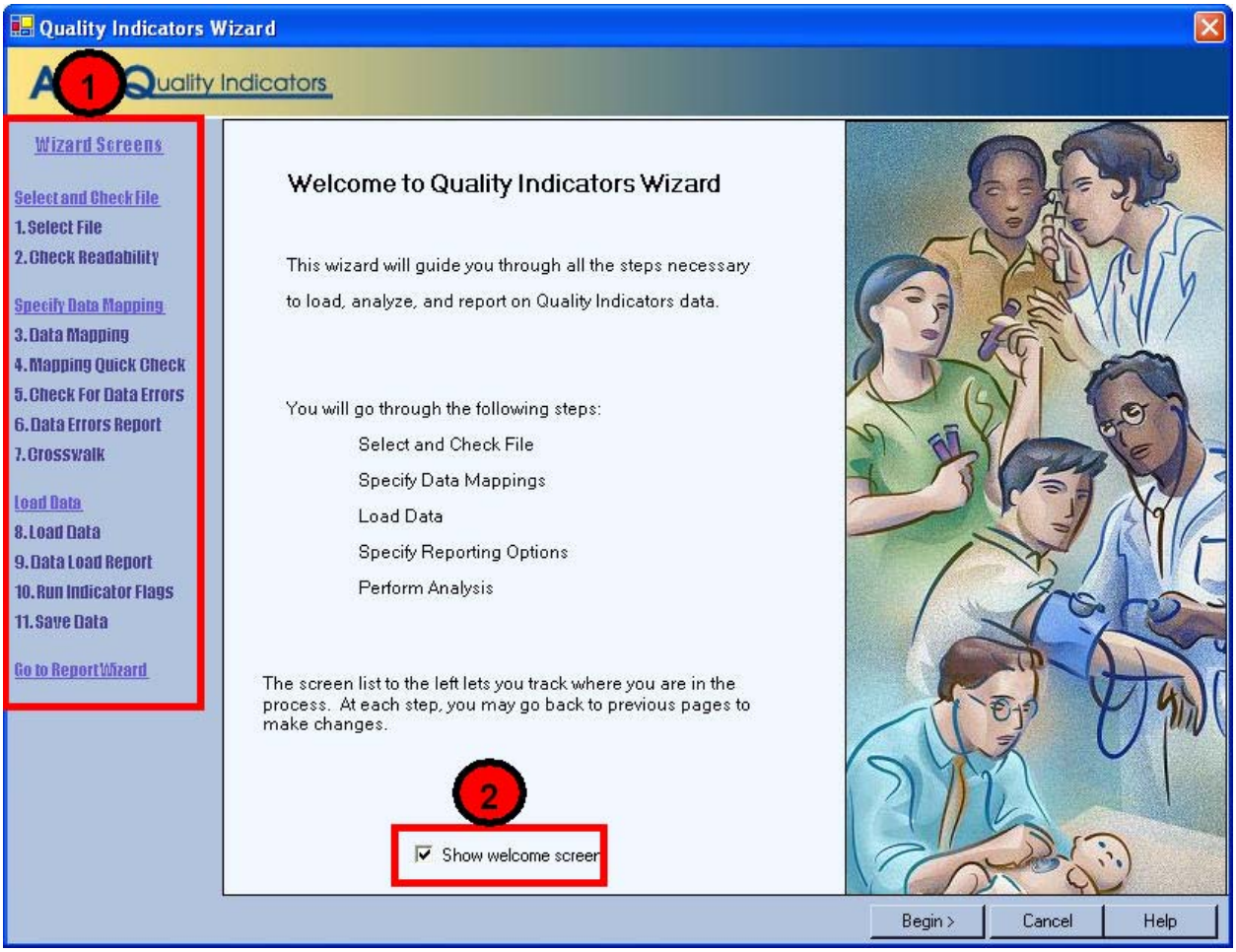
Saving the data is optional. You can use the QI data immediately and in subsequent sessions to generate reports. The data will not be discarded or overwritten until the next time you run the Wizard. You can save the data for use in an external program at any time by selecting the <Export Data> option on the application menu.

The Wizard also provides the option to save the specifications for mapping your data variables to the QI variables. This option can save time the next time you import data files that have the same structure.

5.1 Welcome to the Quality Indicators Wizard

5.1.1 What is this screen for?

This screen introduces the Import Data Wizard.



5.1.2 How is this screen organized?

1

5.1.2.1 Wizard Screens

Lists the names of all screens in the Import Data Wizard. This list is displayed on the left side of every screen in the Wizard. As you progress through the wizard, the title of the current screen will be highlighted in red.

2

5.1.2.2 Show welcome screen checkbox

If you uncheck this box, the next time you open the Import Data Wizard; it will skip this screen and proceed directly to the Select File screen.

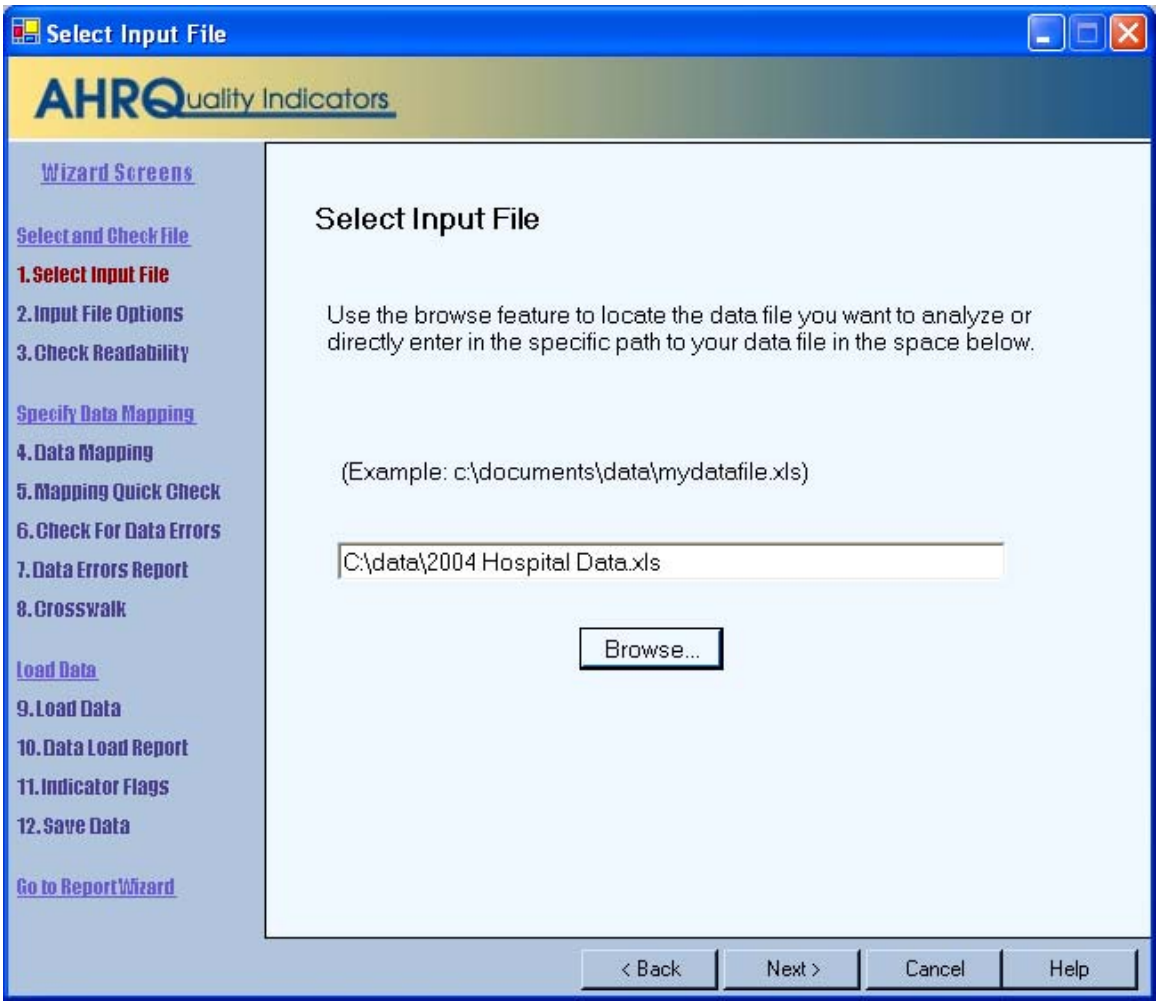
5.1.3 What do I do here?

If you click the <Cancel> button on any screen, the Wizard will close. Click the <Begin> button to proceed to the first Wizard screen.

5.2 Select Input File

5.2.1 What is this screen for?

Use this screen to specify the data file you want to load.



5.2.2 How is this screen organized?

The file name field displays the name of the data file selected for loading. This field will be blank the first time you use the Wizard. In subsequent sessions, the Wizard will default to the most recent data file loaded, displaying the complete path to the file.

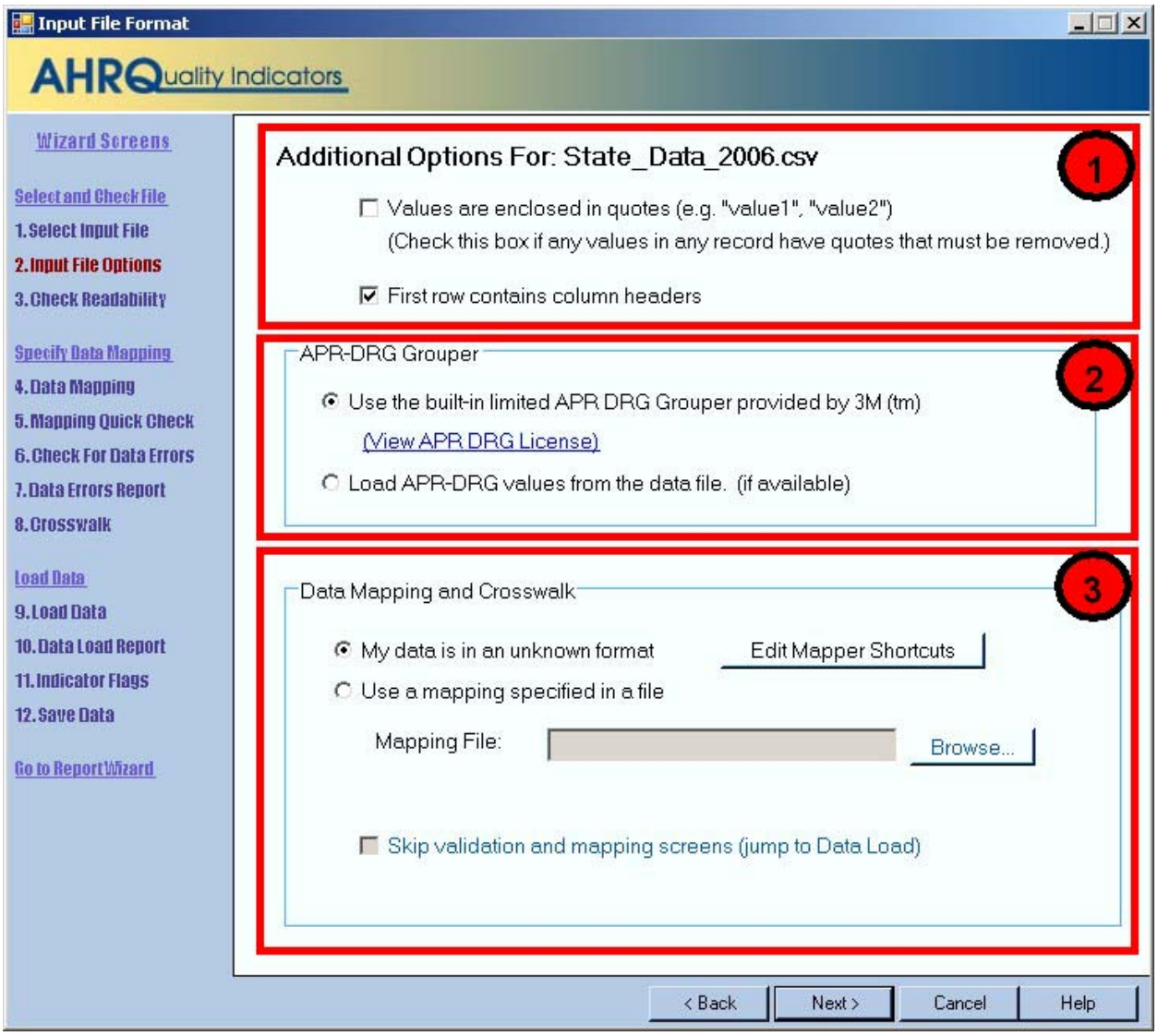
5.2.3 What do I do here?

Use the <Browse> button to locate and select the data file you wish to load. Click the <Next> button after a file has been selected.

5.3 Input File Format

5.3.1 What is this screen for?

Use this screen to provide information about your data format. You may also specify a mapping file on this screen. A mapping file describes the contents of your file to the Import Data Wizard. See the description below for more information on mapping files.



5.3.2 How is this screen organized?

1

5.3.2.1 Additional Options for <Filename>

The title of the screen displays the name of the file you selected on the Select Input File screen. The selections available in this area depend on the type of file you selected.

- Access database file (MDB) - You will be prompted to Select Table to use for the input data.

- Excel file (XLS) – You will be prompted to Select Worksheet to use for the input data. Column headers are required input for Excel files.
- Comma-separated Value (CSV) file – Checkboxes are provided for you to select whether the first row of the file contains column headers, and whether values are enclosed in quotes.

2

5.3.2.2 APR-DRG Grouper

This section provides options for either using the built-in limited license 3M™ APR™ DRG Grouper or mapping the APR™ DRG, severity-of-illness and risk-of-mortality data elements from the input data file. If you use the built-in grouper, your file must have the discharge date and quarter.

3

5.3.2.3 Data Mapping and Crosswalk

This section provides options to use a mapping file that was created in a previous session. Doing so allows you to skip several steps in the data import wizard.

5.3.3 What do I do here?

5.3.3.1 Specify Table or Worksheet

Options available in this section depend on the type of file selected for loading. If an Access or Excel file was selected for loading, use the drop-down menu to select which of the Worksheets (Excel) or Tables (Access) to use.

5.3.3.2 Select Options for CSV Files

First row contains column headers - Check this box if the first row of your file contains variable names rather than data. By default, the option is checked. (This option is also displayed for Excel files, but it may not be unchecked.)

If your data values are enclosed in quotation marks, click the *Values are enclosed in quotes…* checkbox to have the quotation marks removed when the file is loaded (double-quotes only.)

5.3.3.3 Specify Mapping Method

Data elements in your file need to be mapped to the QI format. The program uses a mapping shortcuts table to automatically match input variables in your data to variables used by the QI software. Initially, the shortcuts table matches HCUP variable names (e.g., "ASOURCE" is mapped to "Admission Source").

If you choose *My data is in an unknown format*", the Wizard will step you through the process of specifying your data format. Once you have completed the Wizard, you can save the data mapping for reuse.

If you have a saved mapping file that you want to load, refer to the directions below under Timesaving tips. If you use a mapping file, you have the option of skipping the validation and mapping steps and jumping directly to the data load.

If you know that your input file has variables that do not use HCUP data element names, you can save time by editing the mapping shortcuts table to increase the number of automatic matches made by the program. To do so, click the <Edit Mapper Shortcuts> button. After you are finished (see section 7.3), close the screen, leave *My data is in an unknown format*" selected, and proceed.

5.3.3.4 Select a Mapping File

By default, the *My data is an unknown format* radio button is selected. If you have a saved mapping file that you want to load, refer to the directions below under Timesaving tips. If you use a mapping file, you have the option of skipping the validation and mapping steps and jumping directly to the data load.

5.3.4 Timesaving tips

Once you have been through the Wizard and created and saved a mapping of your variables, you can reuse those specifications with other data files that have the same variables in the same order. Click the *Use a mapping specified in a file* radio button, and use the <Browse> button to locate and select the data file you wish to load.

Mapping files may be used in three ways:

- With a mapping file, you may bypass the data validation, data mapping and crosswalk screens. To do so, click the checkbox *Skip validation and mapping screens*.
- You may use a mapping file that does not perfectly match your input data specification. Make sure that *Skip validation and mapping screens* is **not** checked. This will allow you to add any additional information.

- You may import data directly from the command line[7] using a mapping file.

There are two types of mapping files.

- "By Position" mapping files define columns based on the exact order of columns. The column headings of text files imported with positional mappings are ignored and may be excluded.
- "By Name" mapping files can only be used with files that have column names. These columns may be in any order. The program will not allow you to use a mapping file that is inappropriate for the type of file you have selected.

An error message will be displayed if you attempt to use a "By Position" mapping file with an MDB data file.

5.3.5 Questions

5.3.5.1 Why Can't I Uncheck the *First Row Contains Column Headings* checkbox for an Excel File?

The Import Data Wizard requires alphanumeric column headings for Excel files. **IMPORTANT!** You should make sure that all of your column names have alphabetical characters in them—otherwise data values may be misread and lost (e.g. E-codes and ICD-9-CM codes that look like numbers but are not purely numeric.)

5.3.5.2 Why are alphabetical column headers so important for Excel?

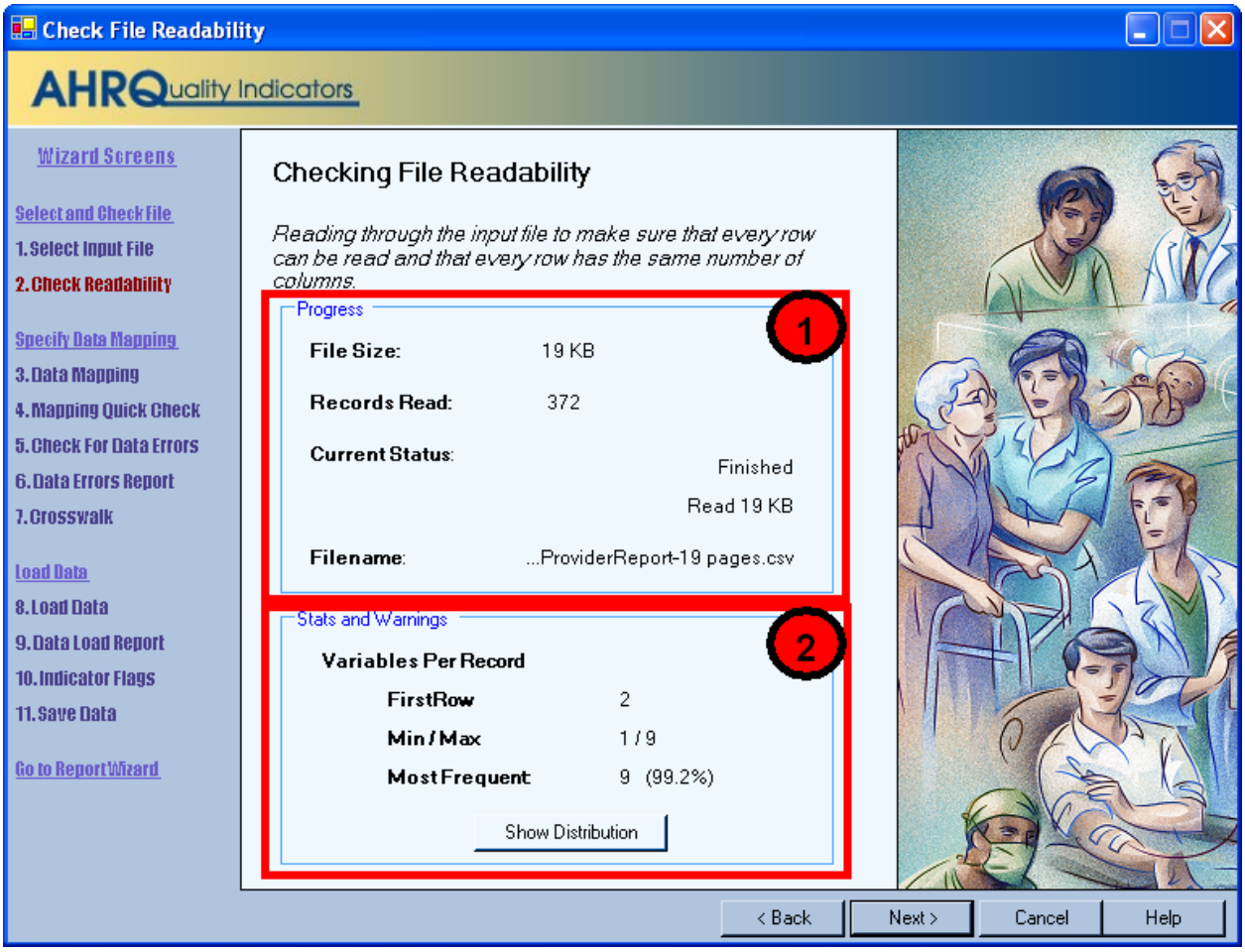
The driver that reads Excel files examines the first few rows of the file to "guess" whether each column should be interpreted as a column of text or as column of numbers. If the driver decides to interpret the column as numeric, then it will cause an error or silently skip over any data that is not a valid number. This can easily happen if a column contains numeric ICD-9-CM codes mixed with E- or V-codes.

5.4 Check File Readability

5.4.1 What is this screen for?

This screen displays the progress and results of a scan of the data to verify that the data can be read by the application.

[7] *Advanced users who wish to use this feature may contact the AHRQ QI Hotline for more information.



5.4.2 How is this screen organized?

1

5.4.2.1 Progress

Displays the file name and size on entry. The number of records read increments as the readability check progresses, and the *Current Status* value will change from "Reading file" to "Finished" on completion

2

5.4.2.2 Stats and Warnings

Displays a report on the Variables found per record.

5.4.3 What do I do here?

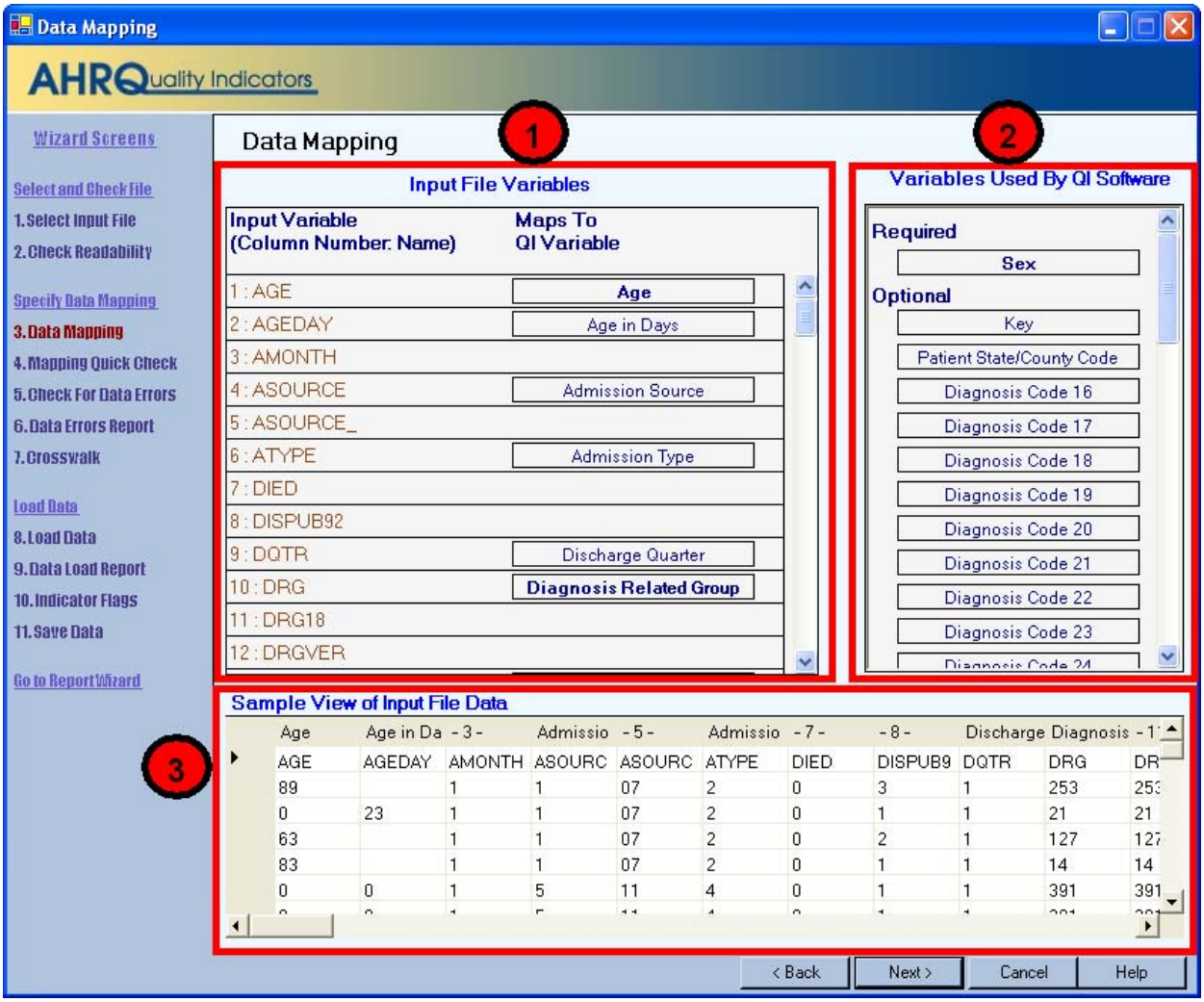
Pay attention to the number of variables found in your file. Normally, all rows will contain the same number of variables. If there are numbers displayed next to *Min/Max*, some rows have more variables than others. Check to make sure that the correct data file has been specified and that the file has not become corrupted.

When you click the <Show Distribution> button, the Wizard displays a table showing the number of rows found for each different set of column numbers. Ideally, there should be only one row in this table. In other words every row should have the same number of variables. If this is not the case then either some rows have extra values or some rows have values missing. The popup window also shows the row number of the first row with each count of values. This can be helpful in figuring out where and why a file became corrupted.

5.5 Data Mapping

5.5.1 What is this screen for?

This screen lets you map variables used by the QI software to the variables in your input file.



5.5.2 How is this screen organized?

1

5.5.2.1 Input File Variables

Lists the names of all variables found in your data file along with the position of each variable (the column number) within each row.

2

5.5.2.2 Variables Used By QI Software

Lists the names of all QI variables that have not been mapped to one of your data input file variables. If any required variables have not been mapped, the title "Required" will appear above those variable names and the title "Optional" will appear above the other variable names. Once all required variables have been mapped (all the remaining variables are optional), these titles are not displayed.

3

5.5.2.3 Sample View of Input File Data

Lists the contents of the first 50 rows in your data file.

5.5.3 What do I do here?

Map a QI variable to the variable in your data file by clicking on a variable in the right-hand list, dragging it to the **Input File Variables** list on the left, and dropping it next to the corresponding variable name in your input data file.

Remove a mapping by dragging the QI variable back to the QI variable tray.

If you aren't sure how one of your variables matches up to a QI variable, look at the **Sample View** of your data to see what values are stored in the variable.

NOTE: If you want to use custom stratifiers in your reports, you must map them to Custom Stratifier 1, 2, or 3, provided in the "Variables used by QI Software" list.

5.5.4 Example

The required variable *Sex* is listed under **Variables Used By QI Software**. You are not sure which of your variables corresponds to this. You look at the Sample View and notice that a column named *GG* contains the values "m" and "f". Therefore you conclude that you need to drag the *Sex* variable to the empty spot next to *GG* in the **Input File Variables** area.

5.5.5 Timesaving tip

5.5.5.1 Select variable names

Use the QI variable names for the columns when you create your data file. If they are found (spelled exactly the same), they will be matched up automatically.

5.5.5.2 Data Mapper Shortcuts

Other column names can be matched automatically to QI variables. These include the SAS equivalent variable names and other common mappings such as "Ecode1" to "Diagnosis Code 31". You may edit the shortcut table on the Data Mapper Shortcuts screen. See section 5.3 and section 7.3.

5.5.6 Questions

5.5.6.1 What is the difference between "required" and "optional" variables?

Certain variables are critical to the proper flagging of the majority of the Quality Indicators. You will not be allowed to load a file that does not have each of these variables.

Other variables are used for optional reporting features, such as expected rates and particular stratifiers. If you leave these variables unmapped, they will be treated as blanks in every record.

5.5.6.2 What if I have extra variables in my file?

Just leave the data mapping blank for variables that aren't used. These will not be imported and will not affect the QI calculations.

5.5.6.3 What if I have fewer than 35 diagnoses or 30 procedures?

Just map the number of diagnosis and procedure variables that are coded according to the conventions in your institution. Unmapped QI variables will be treated as blank.

5.5.6.4 What if I have separate fields for E-Codes?

Diagnosis fields 31-35 are intended for E-codes, however you may put E-Codes in any secondary diagnosis field.

5.5.6.5 What if I have more than 35 diagnoses or 30 procedures?

You may only use up to 35 diagnosis and procedure codes. You may wish to preprocess your data to remove empty elements in order to get maximum efficiency out of the 35 codes. If you do preprocess your data, be careful to make sure that the procedures and procedure day fields are appropriately matched.

5.5.6.6 What if I don't have inputs for all variables?

Normally, you should correct your input file to get the best results possible.

5.5.6.7 What are the data elements "Days on Mechanical Ventilation" and "Birth Weight in Grams" used for?

The data elements are optional inputs into the limited license 3M™ APR™ DRG Grouper.

5.5.6.8 Why does my data view display quotation marks?

On an earlier screen, Select File Input, there is a checkbox "Values are enclosed in quotes…" If you check the box, the quotation marks would have been removed before this point. Go back and enable this option.

5.5.6.9 Why are none of my e-code variables mapped to a QI variable?

You may map any of the unused secondary diagnosis variables from the list of Variables Used by QI Software to your data's e-code variables.

5.5.6.10 How should I map my data element for the patient's location?

If you intend to use the area level rates, we recommend that you map the patient FIPS state/county code to the data element labeled "Patient State/County Code."

If the FIPS state/county code of the patient's residence is not available, then you may map the hospital FIPS state/county code to the data element labeled "Patient State/County Code." However, we then recommend that you analyze the area rates at the state or METRO AREA level. Otherwise patients that reside outside the same county as the hospital will be included in the numerator but not the denominator. The larger the geographic unit of analysis, the less likely it is that this situation will occur. However, if the hospital FIPS state/county code is used instead of the patient FIPS state/county code, the area rates must still be interpreted with caution.

5.5.6.11 What is the proper format for Diagnosis Codes?

Diagnosis codes are always 3, 4 or 5 characters long. The first 3 digits range from "001" to "999." Some diagnoses require a 4th or even a 5th digit to be a valid code. V codes and E codes may also be supplied in the diagnosis fields. V codes range from "V01" to "V85" and E codes range from "E800" to "E999". V codes and E codes may also require additional digits. In all cases, you must remove the decimal point before loading the data.

The QI software does an "exact text" comparison of all codes. Therefore it is important not to pad any additional characters (such as trailing zeros) to the right of ICD-9-CM codes. Similarly, if the rightmost character is a zero, you should not remove this zero as it will change the meaning of the code.

See "Please give examples of ICD-9-CM codes" in section 3.1.

5.5.6.12 What is the proper format for Procedure Codes?

Procedure codes are always 2, 3 or 4 characters. The first two digits range from "00" to "99" and they may require 3rd or 4th digits to be valid codes. As with diagnosis codes, you should remove any decimal points and you should not add or remove characters on the left or ride side of the code.

5.5.6.13 Can custom stratifiers be used for personal information?

Custom stratifiers are intended for grouping records, they are not intended to store patient information. For small data sets, it is feasible to store extra patient information (such as name), but doing so will cause the program to run slower and require more disk space. You can instead save information in the Key field or in the Patient ID field.

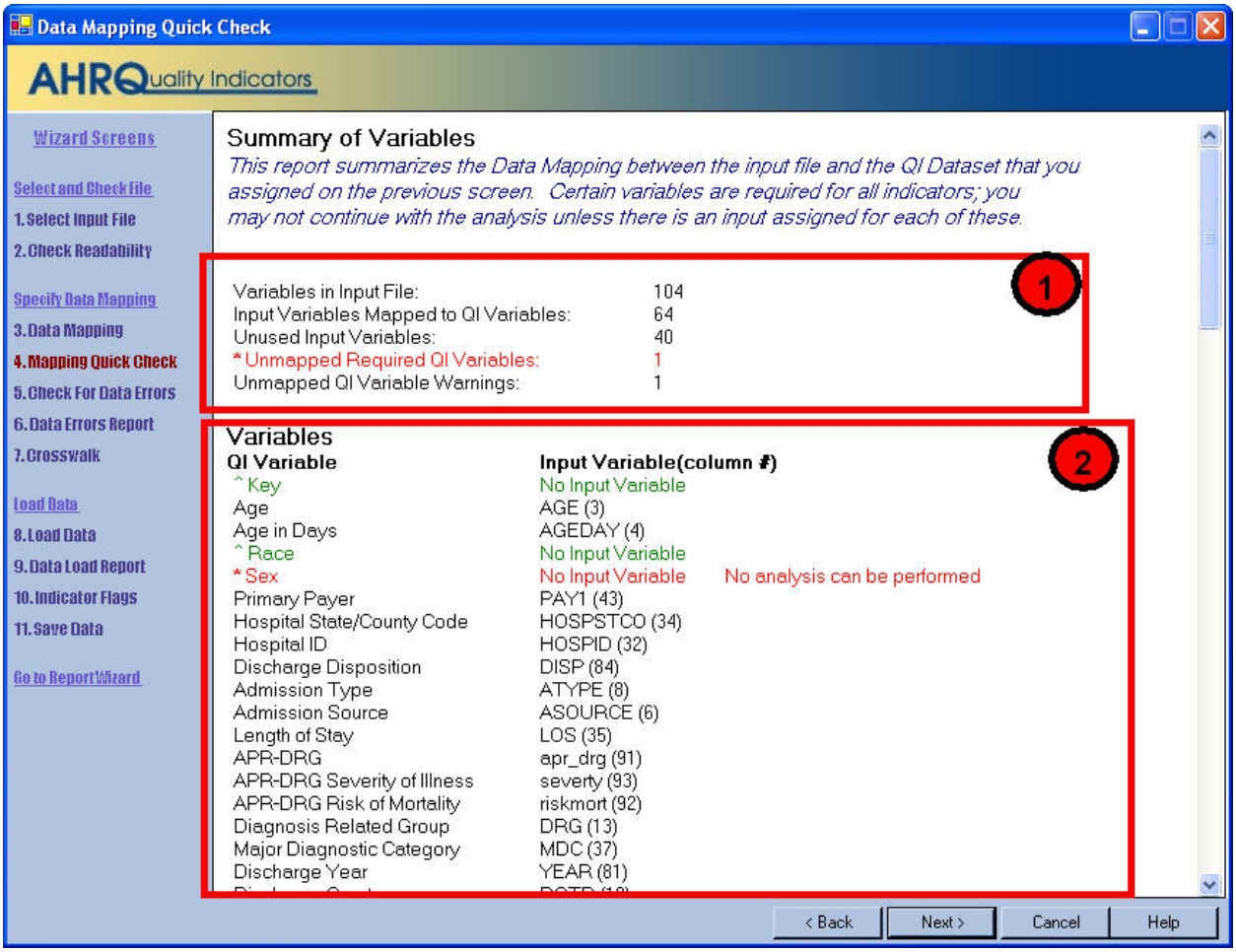
5.5.6.14 What's the difference between Key and Patient Id?

The Key field is intended to distinguish discharge records while the Patient Id field is intended to help link patients across discharges. However, any data may be stored in either field. The Key field is displayed in several places in the application, but the Patient Id field is only included in the Export Data. Additionally, Patient Id is stored in a separate table and requires additional disk space.

5.6 Data Mapping Quick Check

5.6.1 What is this screen for?

This screen provides a double check of the mapping of QI variables to input file variables. It shows the set of variables from the previous screen opposite perspective.



5.6.2 How is this screen organized?

1

5.6.2.1 Summary of Variables

Displays counts of mapped and unmapped variables and data warnings.

2

5.6.2.2 Variables

Displays two columns of variables and warning messages. QI variables are listed on the left, and variable names from your input data file are listed in the right-hand column of variables. Warnings, if any, are displayed to the right of the name of the variable to which they apply.

5.6.3 What do I do here?

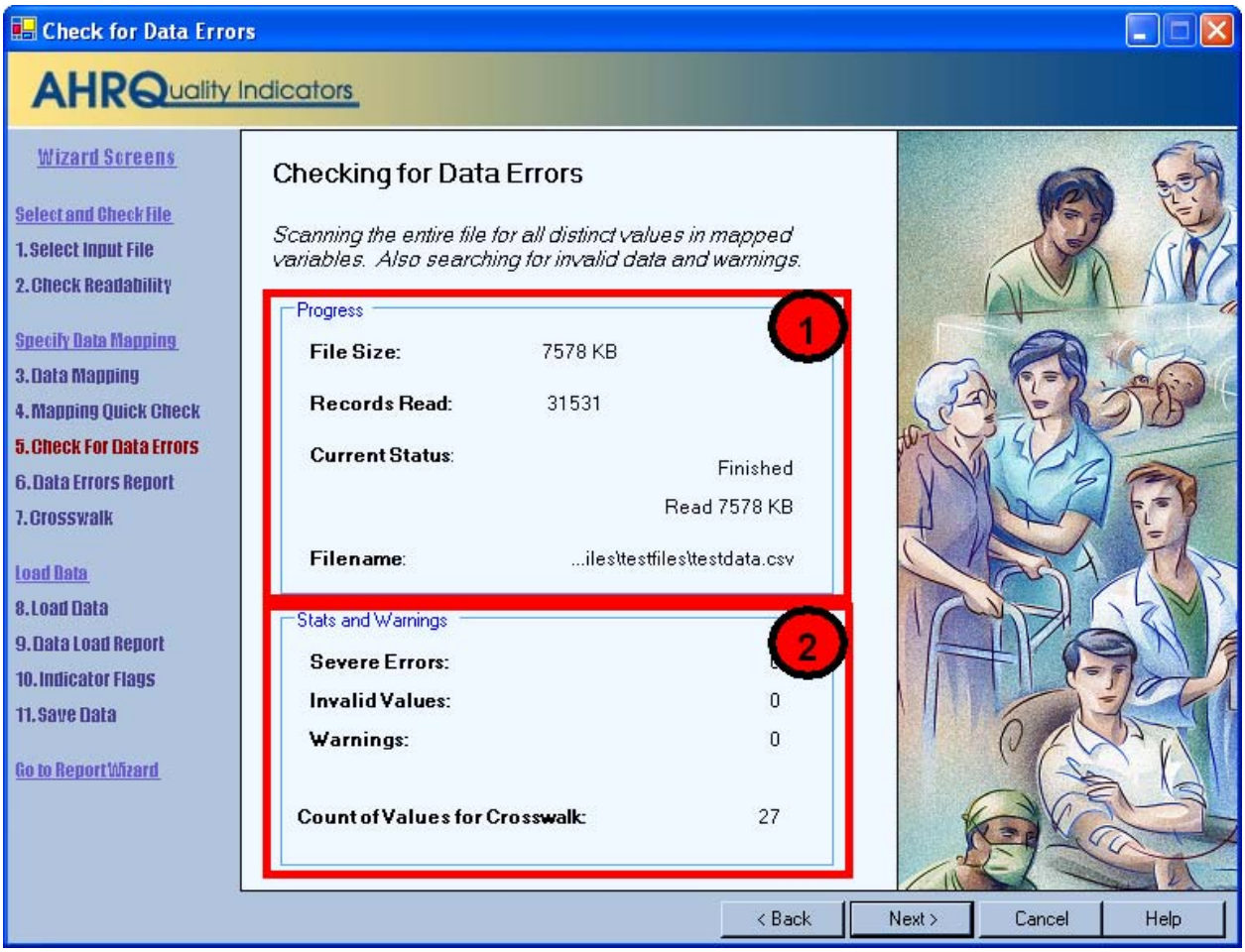
Scan the list of messages to see if anything needs to be corrected. You may return to the Data Mapping screen to correct mappings, or you may need to load a different file.

If there are any *Unmapped Required QI Variables* you will not be able to proceed further through the wizard.

5.7 Check for Data Errors

5.7.1 What is this screen for?

The program scans your file for errors and potential errors in your data. At the same time, it creates a list of values needed for the Crosswalk screen.



5.7.2 How is this screen organized?

1

5.7.2.1 Progress

Lets you know how far along the read has progressed within your file. The number of records read increments as the check progresses. The *Current Status* value will change from "Reading file" to "Finished" upon completion

2

5.7.2.2 Stats and Warnings

Displays a report on the number of errors, invalid values, and warnings found. Ideally, these values should all be "0".

The number of unique values found for the six Crosswalk variables is also displayed. This count is usually in the mid 20s; however it will vary between different institutions. It should be fairly consistent, however, when the same data source is polled for different time periods. A sharply higher or lower value can be an indication of a mismatched variable.

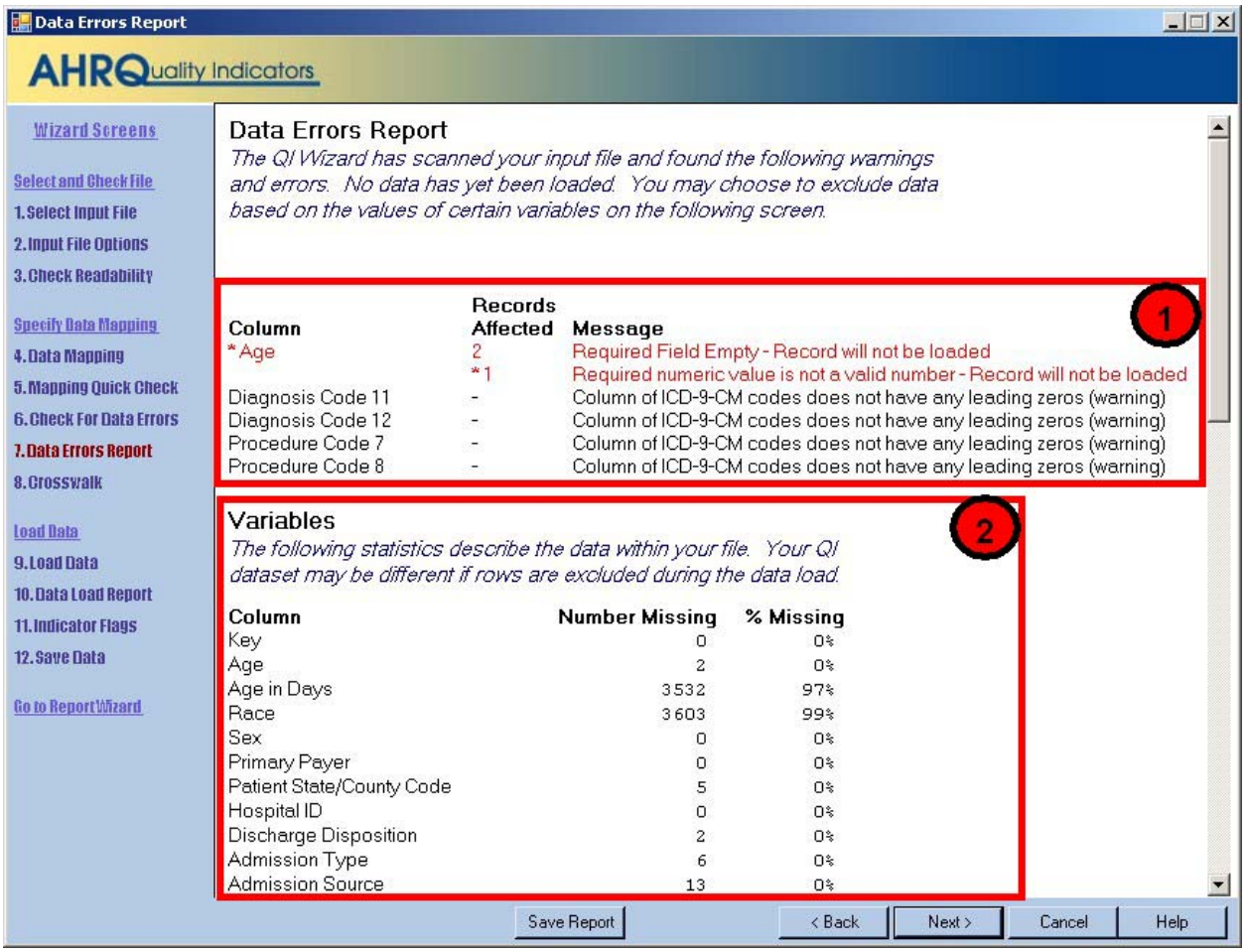
5.7.3 What do I do here?

There are no user actions on this screen. When the data check finishes, click the <Next> button.

5.8 Data Errors Report

5.8.1 What is this screen for?

This screen displays information about the values stored in your input data file.



5.8.2 How is this screen organized?

1

5.8.2.1 Warnings and errors

If there are any warnings or errors found during the check, the column (variable) name, number of records affected, and the message will be displayed.

2

5.8.2.2 Variables

Lists the QI variable names under *Columns*, along with the number and percent of missing values for each.

5.8.3 What do I do here?

If there are errors in the data values, you may need to edit the data or select a different input file.

Know your data. The warnings provided are intended to catch common errors. However, depending on the typical case mix and coding conventions in your institution, these warnings may or may not be significant.

Click the <Next> button to proceed.

5.8.4 Warnings

The screen checks for several different types of data errors such as missing data, invalid numbers and numbers out of range. (such as “Age in Days” over 365)

5.8.5 Timesaving tip

Use caution when saving a data file using Excel, because the program sometimes tries to ‘simplify’ numbers and remove leading or trailing zeros from ICD-9-CM codes.

5.8.6 Questions

5.8.6.1 How can I find out what rows had problems?

Formatting errors due to individual values on records are written to the QI session log. You can view the error messages along with the line number if you view the session log. In the above example, the following lines are printed to the session log:

```
Check For Data Errors
Reading column names from the first row in the file
Read 106 values from first row.
KEY column number = 1
Hospital ID column number = 34
Reading Text File (CSV)
File is 1046475 characters.
Row 4, COLUMN Age, KEY 94615.     Not an integer: "abcdefg"
Row 6, COLUMN Age, KEY 94617.     Missing or invalid required value
Row 7, COLUMN Age, KEY 94618.     Missing or invalid required value
Read 1046475 characters from file, total of 3637 rows
```

5.8.6.2 Do the “Missing” and “% Missing” denote errors?

This section of the report shows how many rows do not contain a value for each variable. The information that it reports should be checked for reasonableness with your own knowledge of your data. For example, a file that has only adult patients should have 100% missing for “Age in Days” but a file containing a mix of adults and children should reflect this mix by having “Age in Days” for every child under year old.

5.8.6.3 Does the program check for invalid ICD-9-CM codes?

No, the program only verifies that data is in the correct format. It does not check the reasonableness of the data. Any 3 to 5 character string will be accepted as a diagnosis code regardless of whether it “looks like” an ICD-9-CM code. Users should verify the quality of their discharge data by some other means before loading the file with this program.

5.8.6.4 Why does it check for leading zeros in ICD-9-CM codes?

QI users often use a spreadsheet program such as Excel to calculate some fields prior to loading data into the QI software. Frequently, the spreadsheet will reformat text it considers numbers into the simplest format. For example it may remove a leading zero that it considers unnecessary from “04567” and change the code to “4567”. This is a completely different diagnosis code and will result in errors in your QI results.

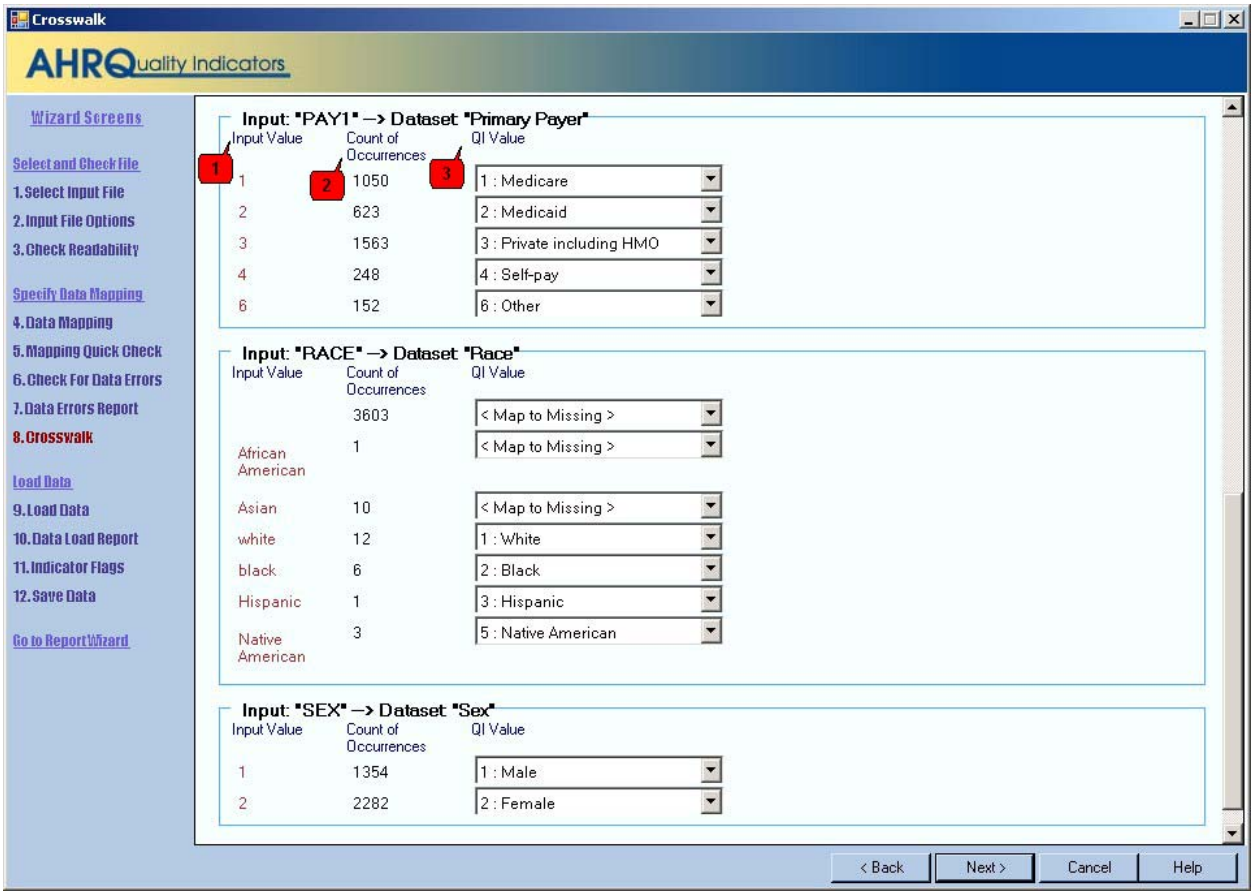
The diagnosis codes in the range of 001 to 100 are related to infectious diseases. Removing all leading zeros can result in a subtle error in which some of the QIs are unaffected and some are incorrect.

Since most diagnosis codes do not have leading zeros, it is certainly possible a data file will not have any leading zeros in a column. If you see a message, "Column of ICD-9-CM codes does not have any leading zeros (warning)” consider the number of diagnosis codes involved. The more codes found in a column, the more improbable it is that they will all happen to not having leading zeros. If all or most of the diagnosis and procedure code columns have this warning, it may signal that they zeros were stripped out of the entire file at some point prior to importing the file into the QI Wizard.

5.9 Crosswalk – Map Input Values to QI Values

5.9.1 What is this screen for?

This screen allows you to update the mapping between data values that occur in your input file and those that are expected by this program for six critical QI variables.



5.9.2 How is this screen organized?

A separate area is provided for each of the six variables. Within each area, the following lists are displayed:

1. *Input Value* - lists each unique value found in the input data file for that variable.
2. *Count of Occurrences* - lists the number of times that value occurred
3. *QI Value* - lists the QI value proposed to correspond to the Input Value

Warning messages, if any, are displayed to the right of the *QI Value* column.

5.9.3 What do I do here?

Compare the *Input Value* to the proposed *QI Value*. In particular, look for warning messages that read "Case will be excluded from analysis set."

You may reassign any input value to a value that is already known to the QI software. For example, the QI software uses “1” for male and “2” for female, but your input file may have them reversed, or it may not use numbers at all.

To specify a different QI value, click the arrow next to the QI Value select one from the drop-down menu.

When you have completed the value mapping, click <Next> to proceed with the data load.

5.9.4 Other Choices

In addition to the recognized QI values, you may also use the following:

<Exclude From Dataset> - All cases with the particular value will not be loaded at all. This allows you to remove invalid cases from analysis. It is also a useful way to “filter out” cases and limit your analysis to a particular sub-population that you are studying.

<Map to Missing> - This is the default choice, which leaves the field blank in the QI data for any cases with this value. See the comments in the following section for more information.

<Retain Value> - This leaves the value in the variable as-is. This may be particularly useful if your data has a different values for the Race variable, since it will allow you to stratify by those races instead of the built-in values.

Using <Retain Value> or <Map to Missing> will result in the value not being used in the indicator analysis. This will have a different effect on each indicator for each field. Take note of the warning messages onscreen, and review the comments in the Data Elements table in the documentation.

All 3 choices may not be available for some variables depending on how they are used in the application.

5.9.5 Questions

5.9.5.1 What effect does <Map to Missing> have?

Missing values affect different variables in different ways. Records with missing values for Sex will not be loaded. You may map values to missing for Admission Type, Admission Source and Discharge Disposition, but this will affect the assignment for some indicators. Primary Payer is used solely for stratification; missing values will be displayed as "Missing" in any reports. Missing Race values affect provider level and area level indicators differently. For Provider indicators, a missing race may be used in stratification. However, race is required for obtaining the denominator of Area indicators and missing values cannot be used.

5.9.5.2 Why would I want to exclude cases from the dataset?

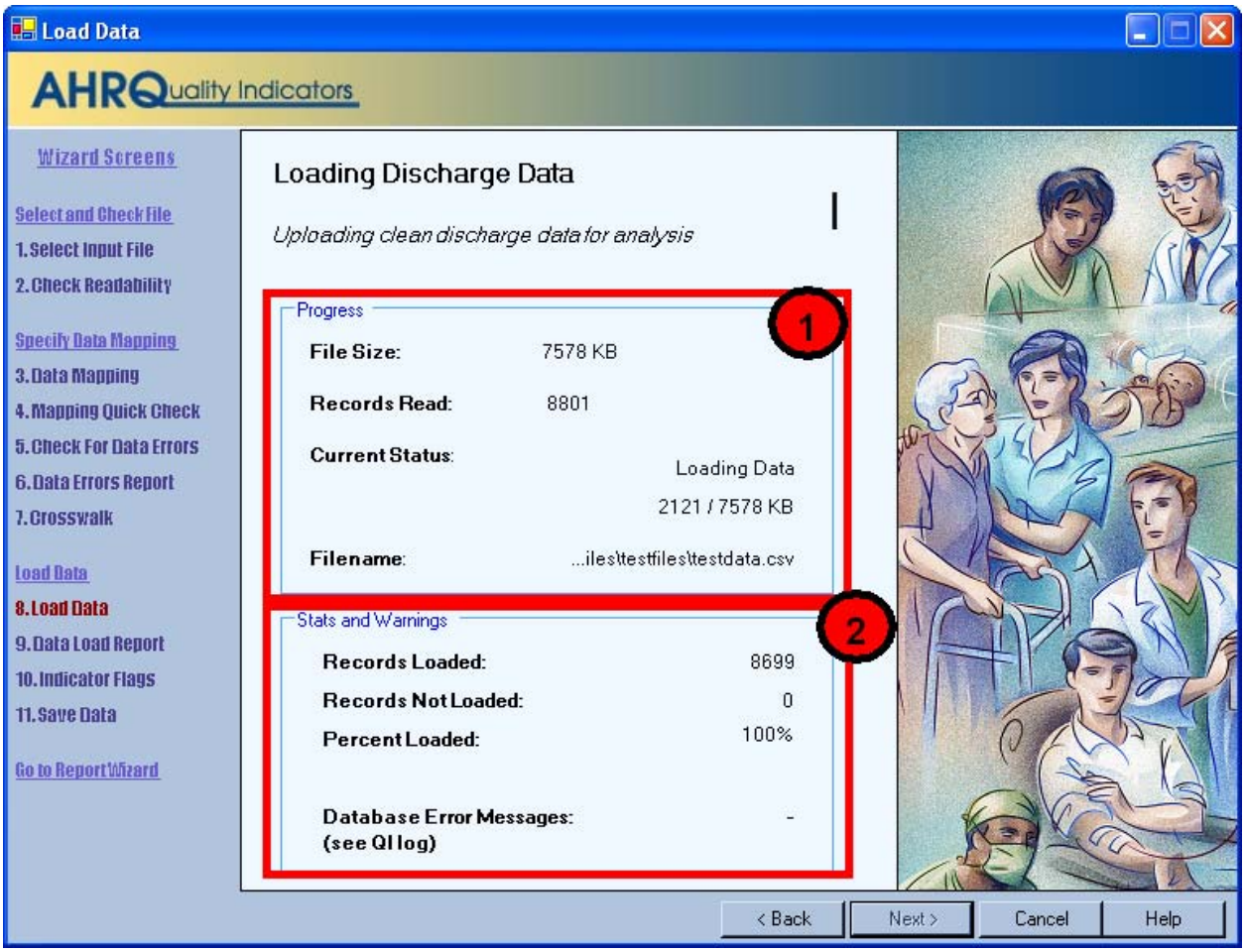
This will depend on your knowledge of your input data. Particular values may be the result of data errors or they may be from cases that are incomplete.

You can also use this option to limit your analysis to a particular population of interest. For example, to get female only rate reports, you can exclude all males.

5.10 Load Data

5.10.1 What is this screen for?

The program reads the input file, translating data as necessary and getting ready to run the indicators. Depending on the size of the file, this make take anywhere from a few seconds to several minutes.



5.10.2 How is this screen organized?

1

5.10.2.1 Progress

The number of records read increments as the check progresses, and the *Current Status* value will change from "Reading file" to "Finished" on completion.

2

5.10.2.2 Stats and Warnings

Displays running totals of the number of records loaded, records not loaded (for any reason), and percent loaded. The Wizard also displays the number of error messages generated.

5.10.3 What do I do here?

Check the values displayed next to *Records Loaded* and *Records Not Loaded* to confirm that they match your expectations.

Confirm that "-" appears next to *Database Error Messages*.

If the number of records loaded looks correct and "-" appears next to *Database Error Messages*, click <Next> to proceed.

5.10.4 Questions

5.10.4.1 Why are records "not loaded"?

There are several reasons this might be true. Records may be excluded because you specified "<Exclude from Dataset>" in the crosswalk. They may also be excluded due to data value errors, such as invalid numbers in the Age or DRG field. You will have an opportunity to review the reasons for excluded rows on the following screen.

5.10.4.2 What should I do if no records were loaded?

If no records were loaded, click <Back> to return to the Crosswalk screen and correct the value settings for records excluded from analysis. If you have errors in your data file, then you may need to edit the file and restart import data wizard.

5.10.4.3 What should I do if there is a number displayed next to *Database Error Messages*?

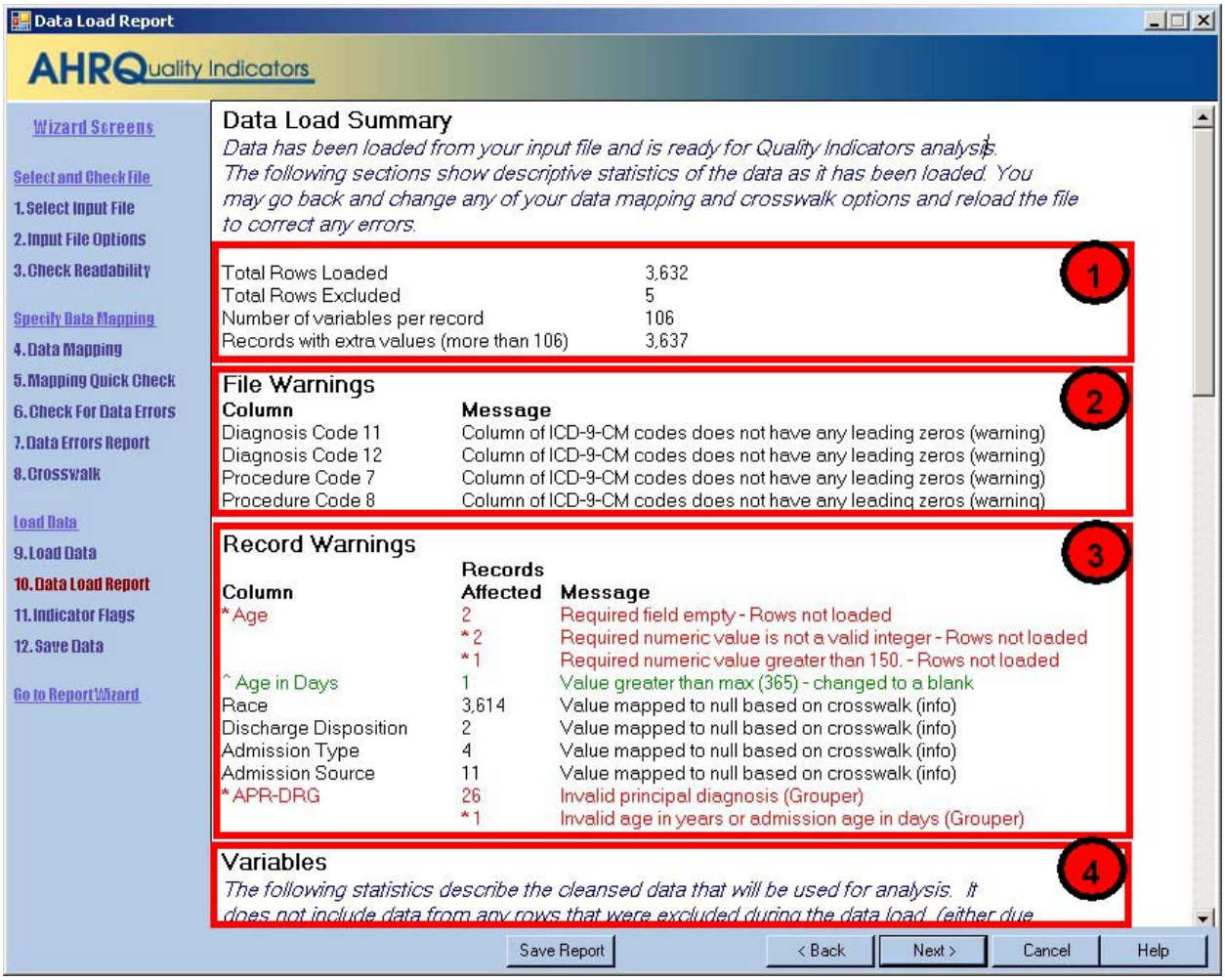
Database errors should not occur. They can be caused by unanticipated data within your input file, by external causes such as a network failure between your computer and your database server, or by errors in the QI program.

Click <Cancel> to close the Wizard. The **QI Session Log** (see section 4.2) will then be visible. Click the <Save QI Session Log> link on the main menu and send a copy of the session log to AHRQ Quality Indicators Support.

5.11 Data Load Report

5.11.1 What is this screen for?

This provides confirmation that the file was loaded and gives a summary of any errors found.



5.11.2 How is this screen organized?

1

5.11.2.1 Data Load Summary

Displays total statistics for the file.

2

5.11.2.2 File Warnings

This displays warning messages that apply to a particular variable over all records in the file.

3

5.11.2.3 Record Warnings

This displays warning messages that apply to values found in some of the records. The number of affected records will be displayed along with the Column name and warning message. You may have more than one warning message.

4

5.11.2.4 Variables

Displays statistics about all the QI variables, including the number and percent missing values, and the minimum and maximum value found.

5.11.3 What do I do here?

Scan this report to verify that your data was loaded correctly.

5.11.4 Questions

5.11.4.1 Doesn't this tell me the same information as the previous reports?

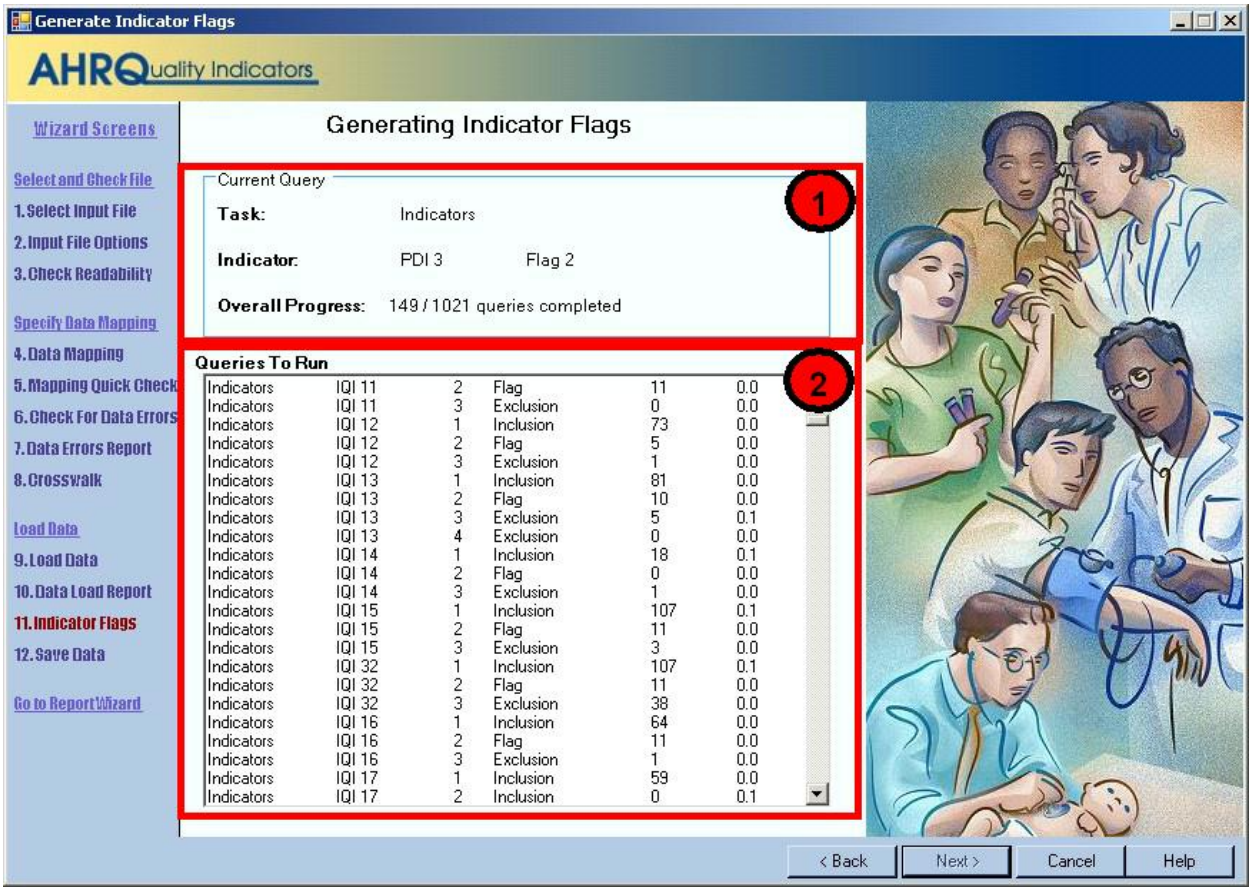
Not exactly. The previous reports tell you what will be loaded before the settings are finalized; this screen tells you what was actually loaded. The counts may be different when more than one error occurs on the same record.

5.12 Generate Indicator Flags

5.12.1 What is this screen for?

This screen does the Quality Indicators analysis of your data. It scans your entire input for cases of interest in each of the indicators and calculates expected rates based on demographic information and comorbidities for each case.

For thousands of cases, this may take several minutes. For millions of cases, this may take several hours to complete.



5.12.2 How is this screen organized?

1

5.12.2.1 Current Query

This tracks the analysis progress.

2

5.12.2.2 Queries to Run

This displays a list of all the work that the QI program is doing. Queries correspond to specific inclusion or exclusion rules listed in the User Guides for each indicator. The number of rows updated and elapsed time are only of interested to advanced users. This information may also be helpful to QI support if you have questions about your results.

5.12.3 What do I do here?

Wait. Be patient; some indicators are complex and the analysis may take several minutes. The <Next> button will be unavailable until all the queries have been run.

5.12.4 Questions

5.12.4.1 What's a "Query"?

This is an instruction to the database. There is roughly one query per inclusion or exclusion rule listed in the User Guide.

5.12.4.2 What do I do if I get an error?

If you have a SQL error on this screen, your entire results should be considered invalid. Check the QI Session log to see what the error was. The error may be due to your database server being shut down; in that case retry the data load at another time. Other errors should be sent to QI support for assistance.

5.12.4.3 What do if I'm loading millions of rows and a SQL query times out?

You may edit the maximum amount of time each query is permitted to run on the Program Options Screen. The default setting for *Indicator Query Timeout* is 7200 seconds (2 hours). Normally, this is more than sufficient, but for very large datasets, you may need to increase this value. This timeout is the maximum allowed time for each query to complete without error; most queries will run much faster.

5.12.4.4 Why are there so many queries?

There are currently 97 indicators, each with multiple rules. Additionally, there are queries to assign categories to discharges and to calculate risk adjusted rates.

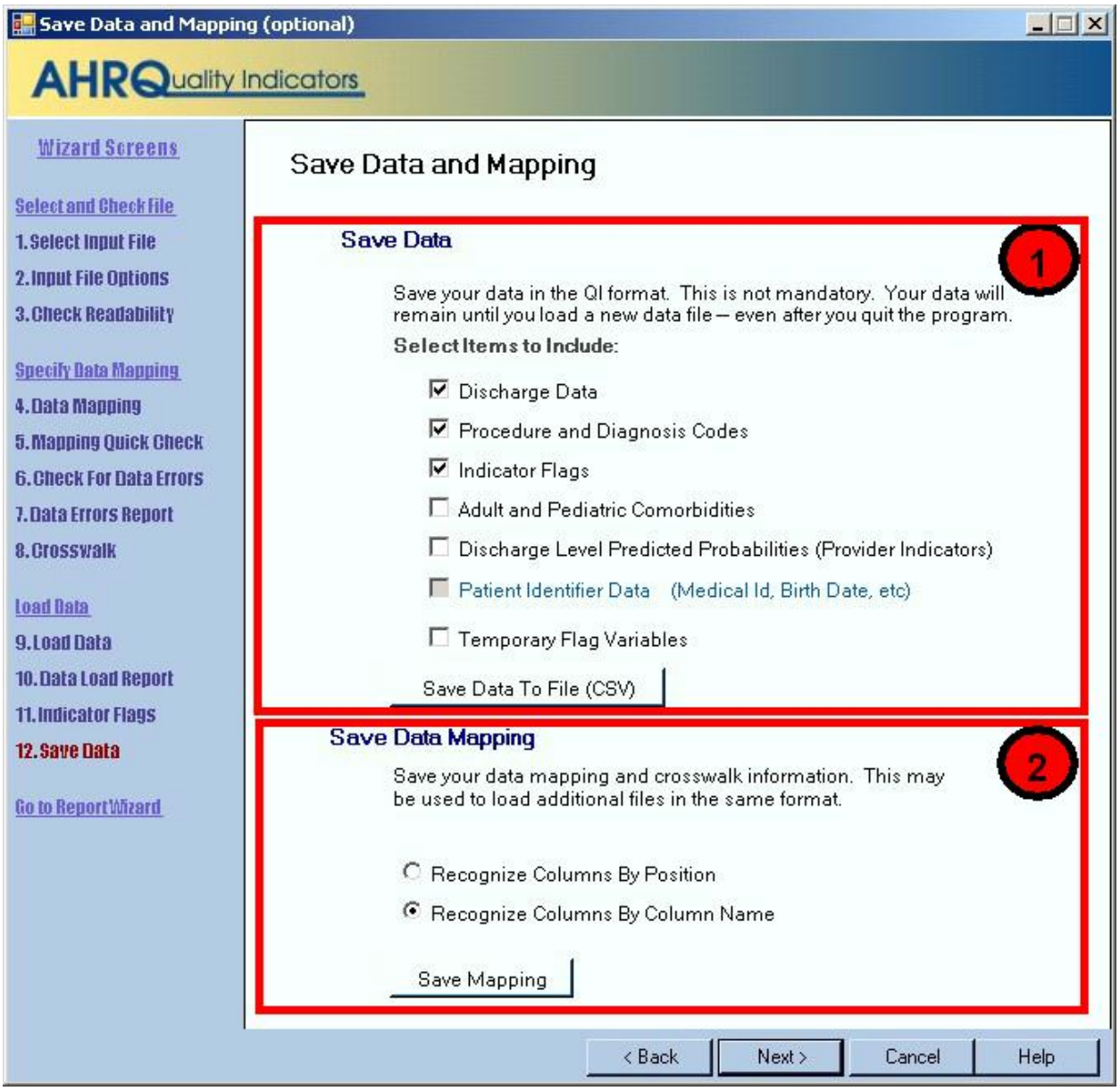
5.12.4.5 Why does it run all indicators when I am only interested in a few?

You only need to generate indicator flags once. The results are then summarized for quick reporting. Once this screen has completed, you may use the Report Wizard multiple times to prepare reports that display as many or as few indicators as you wish. The entire indicator flagging analysis must run before you can generate any reports.

5.13 Save Data and Mapping

5.13.1 What is this screen for?

This lets you export your data at a discharge level for analysis in other programs. It also lets you save your data mapping for use with additional files in the same format.



5.13.2 How is this screen organized?

1

5.13.2.1 Save Data

This lets you save your cleansed and translated data in a comma separated file along with indicator results.

2

5.13.2.2 Save Data Mapping

Provides the option to save the mapping of variables and values (Crosswalk).

5.13.3 What do I do here?

5.13.3.1 Save Data

Use the checkboxes to indicate the data you want to include in the file (see Export File Options below), and then click the <Save Data> button. You will be prompted to provide a file name and may choose where you want to save the file.

5.13.3.2 Save Data Mapping

Click the <Save Mapping> button. You will be prompted to provide a file name and may choose where you want to save the file. If you have other data files that have the same variable names and same structure, you can load this mapping file to save time.

5.13.4 Export File Options

Discharge Data
Check this option to include the formatted discharge data that you imported into the QI application.

Procedure and Diagnosis Codes
Check this option to include the ICD-9-CM procedure and diagnosis codes that you imported into the QI application.

Indicator Flags
Check this option to include a column for each indicator in your output file. That column will contain the following values:

1 – Outcome of Interest. Case is included in the numerator and the denominator.
0 – Population at Risk. Case is included in the denominator but not the numerator.
missing – Case is not included in either total. This may be because the case is not of interest at all for that indicator (e.g. males for a female only indicator) or it may have been excluded for a particular reason. (See the Technical Specifications.)

Adult and Pediatric Comorbidities
Check this option to include a column for each of the comorbidity definitions. Adult comorbidities are based on the AHRQ Comorbidity software and are used in risk adjustment. See the PSI Guide for more information. Pediatric comorbidities are used in pediatric risk adjustment.

Discharge Level Predicted Probabilities
Check this option to include the predicted probability for each case based on demographics, comorbidities, and risk of mortality ratings for each case in the population at risk.

Patient Identifier Data
Check this option to the following fields: Patient ID, Birth Date, Admit Date, and Discharge Date. These fields are only recommended if they are required for your analysis. This checkbox is disabled if those fields have not been loaded.

Temporary Flag Variables
Check this option to include some additional fields used in the calculation of the PSI and PDI indicators.

5.13.5 Mapping File Questions

Mapping File Types

- Recognize Columns By Name – Use this option if you have other data files to import that have column names identical to column names in this data file.
- Recognize Columns By Position – Use this option if you need to import text or Excel files that have the same columns in the same order as this data file. Text files do not require column headings.

5.13.6 Questions

5.13.6.1 Why would I want to save my data?

You can reload this file later for the purpose of generating reports. You can also import the resulting QI dataset into other programs.

5.13.6.2 Why would I want to save my data mapping?

Once you have been through the Wizard and created and saved a mapping of your variables, you can reuse those specifications with other data files that have the same variable names.

5.13.6.3 Should I save mappings "By Name" or "By Position"?

If you do not have column names in your file, then your only option is to save mappings by position. If you do have column names, these will be ignored in future files if "By Position" is selected. You may use either, however, "By Name" mappings are generally less error-prone if your source file is changed.

5.14 Data Load Completed

5.14.1 What is this screen for?

This screen lets you know that the process of using the Import Data Wizard is complete.

5.14.2 What do I do here?

Click the <Close Window> control.

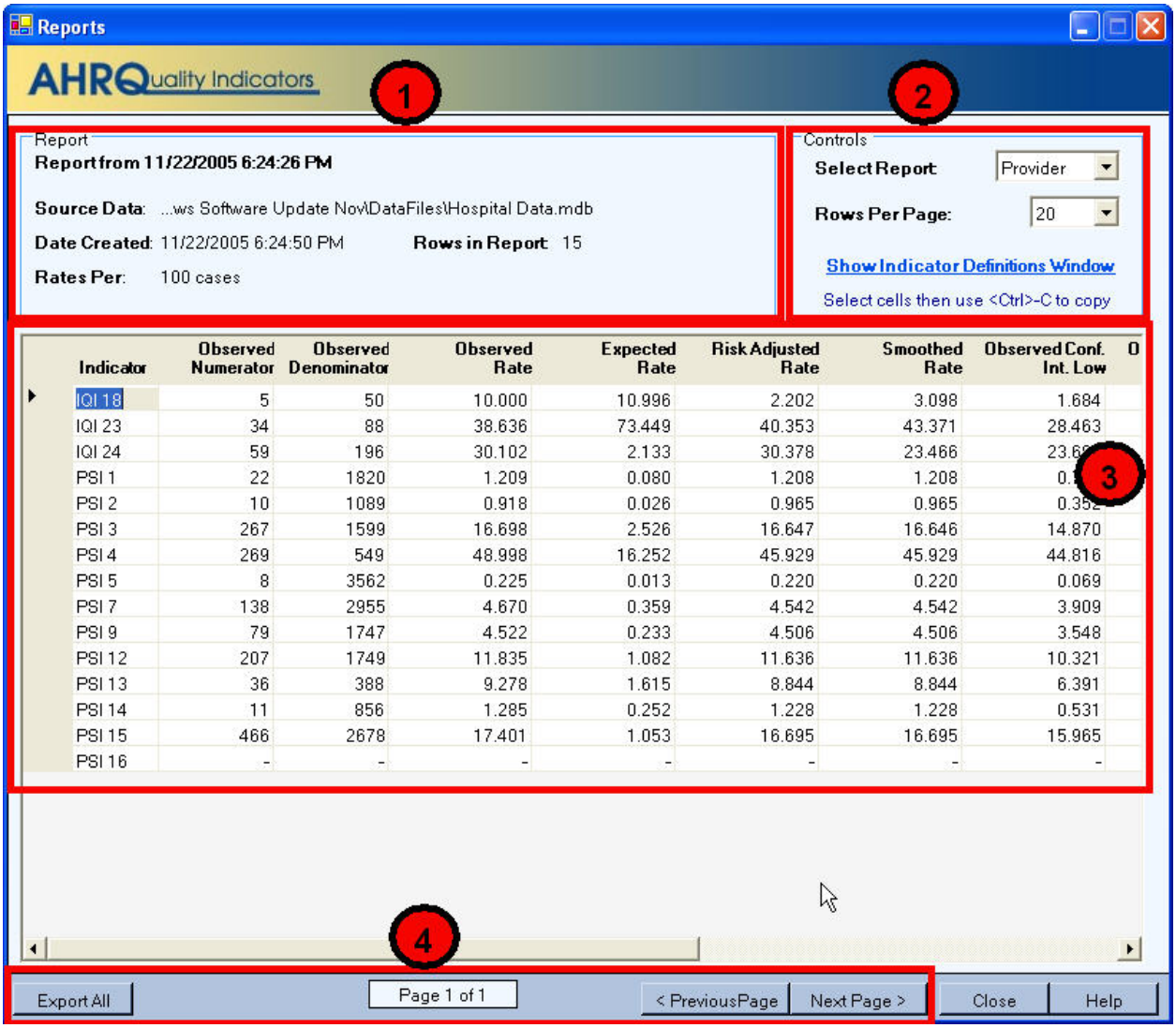
6.0 Reports

The QI Windows Software provides several types of reports: Area-level and provider-Level rates, a Quick Report on the input data, and a Patient Level Report.

6.1 View Report

6.1.1 What is this screen for?

This screen displays the Area and Provider level reports that have been generated through the Report Wizard. You can access this window from the main menu, or you may access it as the last screen of the Report Wizard. Once a report has been generated, it stays in the database until another report is generated. Export the report to save the data permanently.



Indicator	Observed Numerator	Observed Denominator	Observed Rate	Expected Rate	Risk Adjusted Rate	Smoothed Rate	Observed Conf. Int. Low
IQI 18	5	50	10.000	10.996	2.202	3.098	1.684
IQI 23	34	88	38.636	73.449	40.353	43.371	28.463
IQI 24	59	196	30.102	2.133	30.378	23.466	23.6
PSI 1	22	1820	1.209	0.080	1.208	1.208	0.
PSI 2	10	1089	0.918	0.026	0.965	0.965	0.35
PSI 3	267	1599	16.698	2.526	16.647	16.646	14.870
PSI 4	269	549	48.998	16.252	45.929	45.929	44.816
PSI 5	8	3562	0.225	0.013	0.220	0.220	0.069
PSI 7	138	2955	4.670	0.359	4.542	4.542	3.909
PSI 9	79	1747	4.522	0.233	4.506	4.506	3.548
PSI 12	207	1749	11.835	1.082	11.636	11.636	10.321
PSI 13	36	388	9.278	1.615	8.844	8.844	6.391
PSI 14	11	856	1.285	0.252	1.228	1.228	0.531
PSI 15	466	2678	17.401	1.053	16.695	16.695	15.965
PSI 16	-	-	-	-	-	-	-

6.1.2 How is this screen organized?

The Reports screen contains four sections.

1

6.1.2.1 Report

Provides the following information about the displayed report:

- Title of the report

- *Source Data* -Complete path to the data file that was used to generate the report
- *Date Created* - Date and time the report was generated
- *Rows in Report* - Total number of rows in report being displayed
- *Rates Per* - The report scale, depends on the level of report displayed
    - Area-level report = "case"
    - Provider-level report = "population"

2

6.1.2.2 Controls

This section of the screen provides options for report display, including the following:

- <*Select Report*>- Shows the type of report displayed: Area or Provider. (Since only one report is stored at a time, this control has no action.)
- <*Rows Per Page*> - The maximum number of rows displayed per page while viewing the report online. The default of 20 allows you to view the report without scrolling; a different value may be more appropriate for a faster computer, or if you wish to sort the data.
- <Show Indicator Definitions Window> - Opens a window that displays the names and definition for the Indicators selected for the report.

3

6.1.2.3 Report window

The large area in the center of the Reports screen displays the report data. Data displayed may include any of the following columns:

- *Indicator*
- *Stratifier(s)*
- *Observed Numerator*
- *Observed Denominator*
- *Observed Rate*
- *Expected Rate*
- *O/E Ratio*
- *Population Rate*
- *Risk Adjusted Rate*
- *Smoothed Rate*
- *Observed Conf Int Low*
- *Observed Conf Int High*
- *Expected Conf Int Low*
- *Expected Conf Int High*
- *Risk Adj Conf Int Low*
- *Risk Adj Conf Int High*

See the answer to "What are the definitions of Observed, Risk Adjusted, Smoothed, Expected Rates, and Reference Population rates?" in section 6.14 for more information.

If you selected stratifiers using the Report Wizard columns named for each stratifier are also displayed and a separate row will be listed for each distinct value of that stratifier for each indicator.

4

6.1.2.4 Page Controls

The buttons at the bottom of the Reports screen can be used to export the report and to navigate between pages in the report.

6.1.3 What do I do here?

If the report requires more than one page, you may use the <Next Page> and <Previous Page> buttons to see more data.

Use the <Export All> button to save the report in .CSV format that can be read by Excel and other programs.

To see more records, use the Page Controls, or use the <Rows Per Page> control at the top of the screen.

6.1.4 Timesaving Tips

You can cut & paste directly from the data grid in this report into other applications such as Excel.

6.1.5 Questions

6.1.5.1 I sorted the data, but when I went to the next page the data was not sorted. Why?

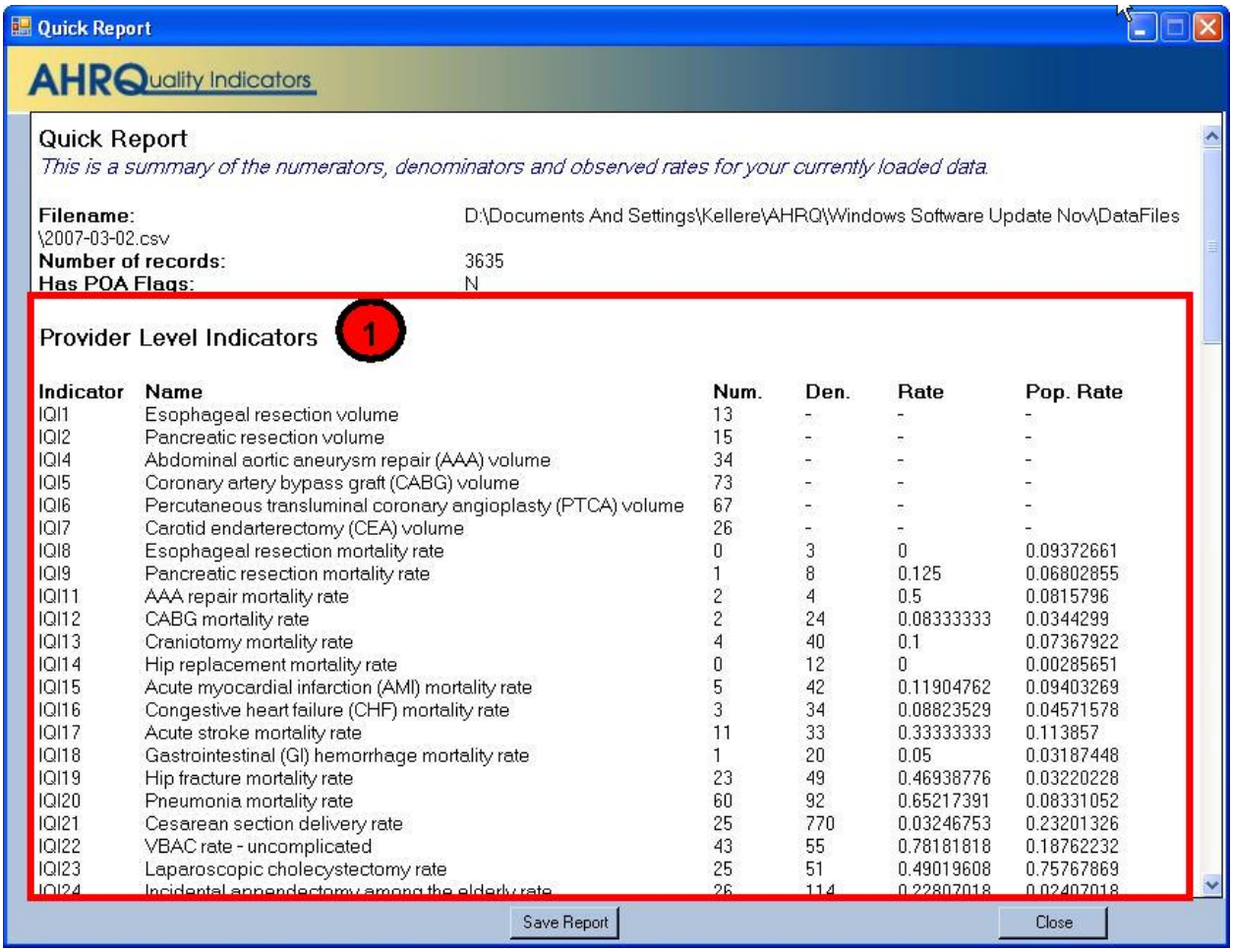
The report is sorted in order of the stratifier selected. If you want a different ordering, you should rebuild the report with a different order of stratification. You can also adjust the <*Rows Per Page*> control to include your entire report and temporarily sort it that way.

6.2 Quick Report

The Quick Report screen can be accessed from the main menu after data has been loaded.

6.2.1 What is this screen for?

This screen allows you to view the overall observed rates for your input file without going through the Report Wizard. The report serves as a quick check to see if your data appears to have been loaded properly.



Indicator	Name	Num.	Den.	Rate	Pop. Rate
IQI1	Esophageal resection volume	13	-	-	-
IQI2	Pancreatic resection volume	15	-	-	-
IQI4	Abdominal aortic aneurysm repair (AAA) volume	34	-	-	-
IQI5	Coronary artery bypass graft (CABG) volume	73	-	-	-
IQI6	Percutaneous transluminal coronary angioplasty (PTCA) volume	67	-	-	-
IQI7	Carotid endarterectomy (CEA) volume	26	-	-	-
IQI8	Esophageal resection mortality rate	0	3	0	0.09372661
IQI9	Pancreatic resection mortality rate	1	8	0.125	0.06802855
IQI11	AAA repair mortality rate	2	4	0.5	0.0815796
IQI12	CABG mortality rate	2	24	0.08333333	0.0344299
IQI13	Craniotomy mortality rate	4	40	0.1	0.07367922
IQI14	Hip replacement mortality rate	0	12	0	0.00285651
IQI15	Acute myocardial infarction (AMI) mortality rate	5	42	0.11904762	0.09403269
IQI16	Congestive heart failure (CHF) mortality rate	3	34	0.08823529	0.04571578
IQI17	Acute stroke mortality rate	11	33	0.33333333	0.113857
IQI18	Gastrointestinal (GI) hemorrhage mortality rate	1	20	0.05	0.03187448
IQI19	Hip fracture mortality rate	23	49	0.46938776	0.03220228
IQI20	Pneumonia mortality rate	60	92	0.65217391	0.08331052
IQI21	Cesarean section delivery rate	25	770	0.03246753	0.23201326
IQI22	VBAC rate - uncomplicated	43	55	0.78181818	0.18762232
IQI23	Laparoscopic cholecystectomy rate	25	51	0.49019608	0.75767869
IQI24	Incidental appendectomy among the elderly rate	26	114	0.22807018	0.02407018

6.2.2 How is this screen organized?

1

6.2.2.1 Provider Level Indicators

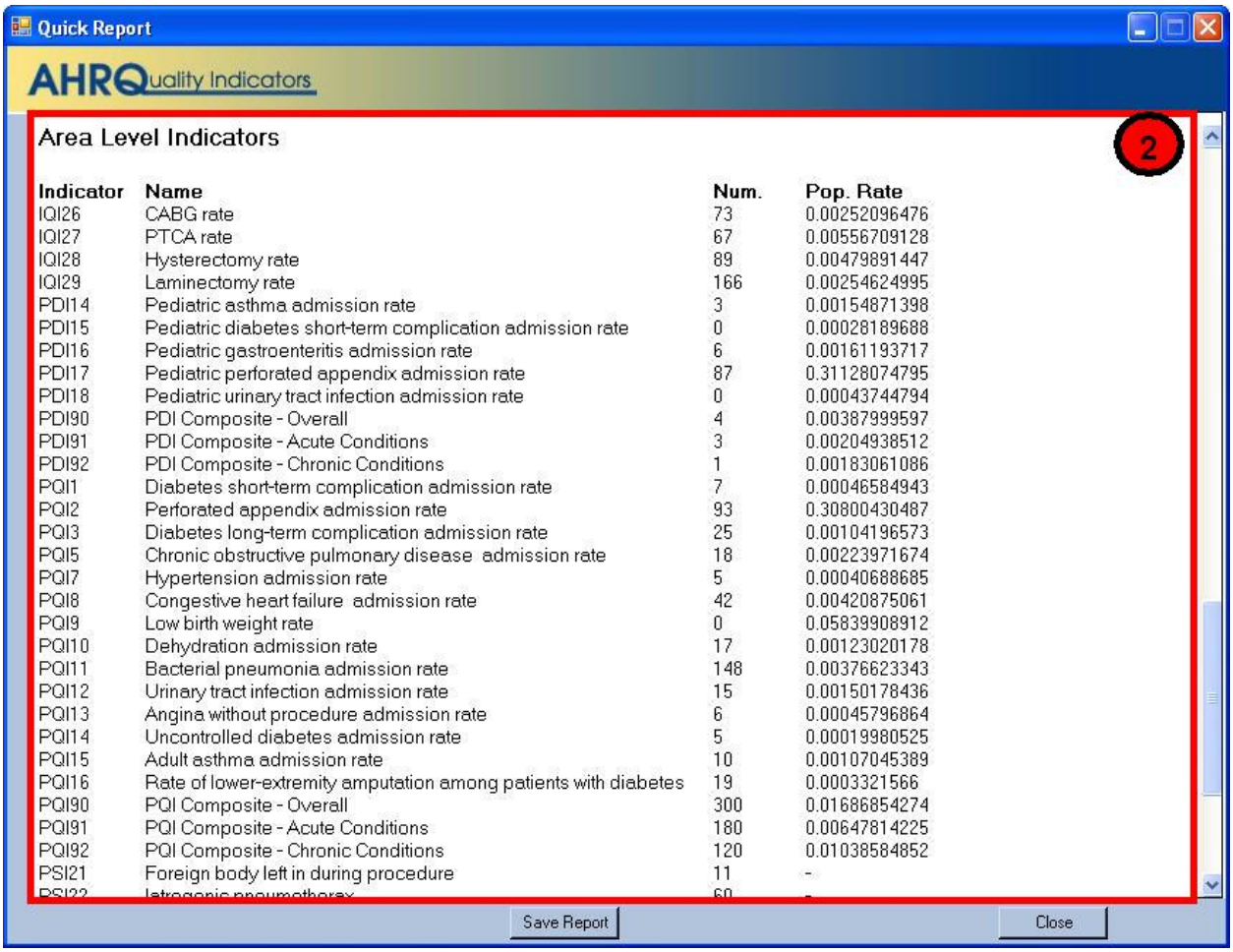
Displays the observed numerator, denominator, observed rate, and population rate for all provider level indicators.

Num.
This is the total number of cases that meet the inclusion criteria as well as the flag criteria but do not meet the exclusion criteria. This is the numerator for the observed rate.

Den.
The total number of cases that meet the inclusion criteria but do not meet the exclusion criteria. This is the denominator of the observed rate. Volume indicators are not reported as a rate and do not have a denominator.

Rate
The observed rate for the indicator. This is equal to the Num./Den.

Pop. Rate
The overall rate for this indicator in the reference population. The reference population is pooled discharges for the HCUP SID database over a three year period. This rate is used in the calculation of the risk adjusted rate (observed rate / expected rate * population rate) and it is not affected by the currently loaded data. The population rate can serve as a quick national comparison to your observed rate, but a more appropriate benchmark is generally the expected rate that is calculated by the Report Wizard.



Indicator	Name	Num.	Pop. Rate
IQI26	CABG rate	73	0.00252096476
IQI27	PTCA rate	67	0.00556709128
IQI28	Hysterectomy rate	89	0.00479891447
IQI29	Laminectomy rate	166	0.00254624995
PDI14	Pediatric asthma admission rate	3	0.00154871398
PDI15	Pediatric diabetes short-term complication admission rate	0	0.00028189688
PDI16	Pediatric gastroenteritis admission rate	6	0.00161193717
PDI17	Pediatric perforated appendix admission rate	87	0.31128074795
PDI18	Pediatric urinary tract infection admission rate	0	0.00043744794
PDI90	PDI Composite - Overall	4	0.00387999597
PDI91	PDI Composite - Acute Conditions	3	0.00204938512
PDI92	PDI Composite - Chronic Conditions	1	0.00183061086
PQI1	Diabetes short-term complication admission rate	7	0.00046584943
PQI2	Perforated appendix admission rate	93	0.30800430487
PQI3	Diabetes long-term complication admission rate	25	0.00104196573
PQI5	Chronic obstructive pulmonary disease admission rate	18	0.00223971674
PQI7	Hypertension admission rate	5	0.00040688685
PQI8	Congestive heart failure admission rate	42	0.00420875061
PQI9	Low birth weight rate	0	0.05839908912
PQI10	Dehydration admission rate	17	0.00123020178
PQI11	Bacterial pneumonia admission rate	148	0.00376623343
PQI12	Urinary tract infection admission rate	15	0.00150178436
PQI13	Angina without procedure admission rate	6	0.00045796864
PQI14	Uncontrolled diabetes admission rate	5	0.00019980525
PQI15	Adult asthma admission rate	10	0.00107045389
PQI16	Rate of lower-extremity amputation among patients with diabetes	19	0.0003321566
PQI90	PQI Composite - Overall	300	0.01686854274
PQI91	PQI Composite - Acute Conditions	180	0.00647814225
PQI92	PQI Composite - Chronic Conditions	120	0.01038584852
PSI21	Foreign body left in during procedure	11	-
PSI22	Iatrogenic pneumothorax	60	-

2

6.2.2.2 Area Level Indicators

Displays the number of cases found for each indicator in your discharge data along with the overall population rate.

Num.
This is the total number of cases that meet the inclusion criteria as well as the flag criteria but do not meet the exclusion criteria. This is the numerator for the observed rate.

Pop. Rate
The overall rate for this indicator in the reference population. The reference population is pooled discharges for the HCUP SID database over a two year period. This rate is used in the calculation of the risk adjusted rate (observed rate / expected rate * population rate) and it is not affected by the currently loaded data.

6.2.3 What do I do here?

The provider-level indicators are displayed first. Use the scroll bar to see the Area-level indicators. You can use this screen to verify that your data has been loaded properly before you go through the Report Wizard. This report can be saved in Rich Text Format using the <Save Report> button.

6.2.4 Questions

6.2.4.1 Why is the Population Rate inappropriate for comparison?

The population rate is based on the reference population which is a nationwide sample of discharges. It would only be fair to compare your observed rate with the population rate if your hospital(s) perfectly matched the average demographics and severity of case in this sample. A more appropriate rate to compare with is the Expected Rate that can be calculated by the Report Wizard (see section 6.1). See also section 2.4.)

6.2.4.2 Why is the Population Rate displayed?

It can be useful to see if your observed rates are “in the same ballpark” as the population rate to determine whether the data load was correct. You can use the population rate to verify the calculation of the Risk Adjusted Rates that are calculated by the Report Wizard.

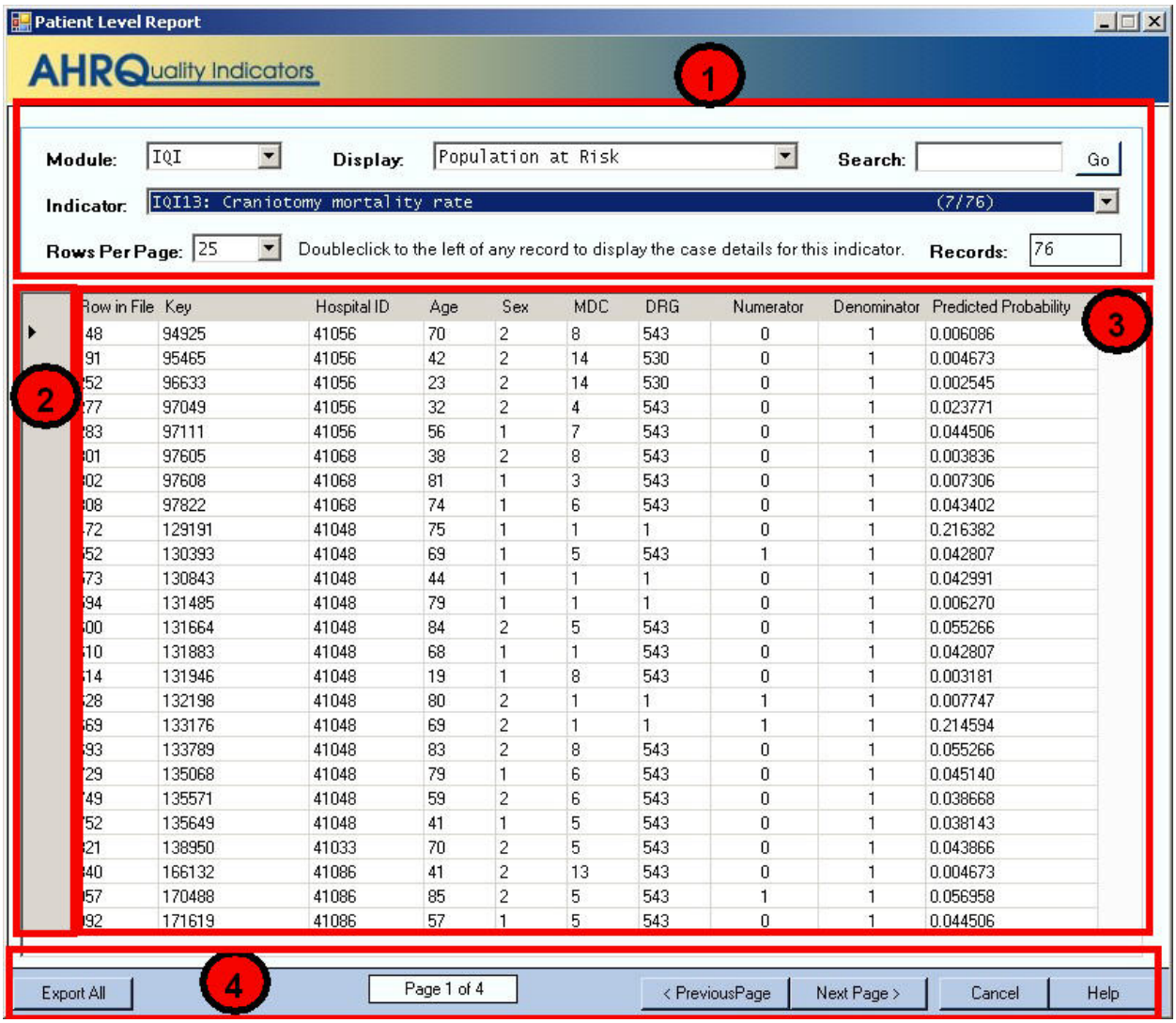
6.2.4.3 Why are no denominators or rates displayed for area level indicators?

It is necessary to go through the Report Wizard to select the correct census population to get a denominator for area level indicators. Also, many discharge files will contain a few out of state discharges that can inflate the total population counts if the proper stratifiers are not selected.

6.3 Patient Level Report

6.3.1 What is this screen for?

This screen provides a view of the individual cases flagged for each indicator. This screen can be useful for exploring which cases were actually included in the numerator and denominators for each Indicator.



Row in File	Key	Hospital ID	Age	Sex	MDC	DRG	Numerator	Denominator	Predicted Probability
48	94925	41056	70	2	8	543	0	1	0.006086
91	95465	41056	42	2	14	530	0	1	0.004673
52	96633	41056	23	2	14	530	0	1	0.002545
77	97049	41056	32	2	4	543	0	1	0.023771
83	97111	41056	56	1	7	543	0	1	0.044506
01	97605	41068	38	2	8	543	0	1	0.003836
02	97608	41068	81	1	3	543	0	1	0.007306
08	97822	41068	74	1	6	543	0	1	0.043402
72	129191	41048	75	1	1	1	0	1	0.216382
52	130393	41048	69	1	5	543	1	1	0.042807
73	130843	41048	44	1	1	1	0	1	0.042991
94	131485	41048	79	1	1	1	0	1	0.006270
00	131664	41048	84	2	5	543	0	1	0.055266
10	131883	41048	68	1	1	543	0	1	0.042807
14	131946	41048	19	1	8	543	0	1	0.003181
28	132198	41048	80	2	1	1	1	1	0.007747
69	133176	41048	69	2	1	1	1	1	0.214594
93	133789	41048	83	2	8	543	0	1	0.055266
29	135068	41048	79	1	6	543	0	1	0.045140
49	135571	41048	59	2	6	543	0	1	0.038668
52	135649	41048	41	1	5	543	0	1	0.038143
21	138950	41033	70	2	5	543	0	1	0.043866
40	166132	41086	41	2	13	543	0	1	0.004673
57	170488	41086	85	2	5	543	1	1	0.056958
92	171619	41086	57	1	5	543	0	1	0.044506

6.3.2 How is this screen organized?

1

6.3.2.1 Report controls

Controls at the top of the screen allow you to select a QI module, an indicator from that module, a grouping of records to display, and the number of rows per page to display in the report. The options available under **Display** to select the grouping of records are as follows:

- Population at Risk – All records that are included in the denominator of the selected Indicator.
- Outcome of Interest – All records that are included in the numerator of the selected Indicator.
- Population at Risk Before Exclusions – All records that were initially flagged for inclusion in the denominator of the selected Indicator.
- Outcome of Interest Before Exclusions – All records that were included in the numerator of the selected Indicator, as well as cases that were excluded from the denominator. For more information on exclusions, see the appropriate *User Guide* found on the QI website.

- All discharges - All records in the data file.

2

6.3.2.2 Display Case Details control

The area to the left of each row functions as a control to access the Case Details screen for the discharge record displayed in that row.

3

6.3.2.3 Report area

Displays a list of the actual discharges meeting the criteria of the Report Controls selections. The *Key* field and several other useful identifying columns are included.

4

6.3.2.4 Page controls

Buttons at the bottom of the screen allow you to export the records, and to navigate between pages of data in the Patient Level Report.

6.3.3 What do I do here?

Find the indicator that you are interested in by selecting the *Module* and then the *Indicator* from the drop-down lists. The drop-down list of indicators shows the number of cases included in the numerator, as well as the number of cases in the denominator (the denominator does not apply to all indicators.)

"Population at Risk" is selected for <*Display*> by default, so after an <*Indicator*> is selected, all records that were included in the denominator for the selected Indicator are displayed. Select a different value for <*Display* > if desired.

You may quickly search for a particular case by entering its Key value in the Search box and then selecting "All Discharges". Records are returned if your search term can be found anywhere in the Key value.

Use the <Export All> button to export all records in the report.

You may drill into any one row of this report to show exactly why any particular case was flagged for this indicator. Double click to the left of the row to pop open the Case Details screen (see section 6.4.)

6.3.4 Questions

6.3.4.1 What data is displayed?

Columns displayed on all reports include *Row in File, Key, Age, Sex, MDC, DRG, Numerator*, *Denominator* and *Predicted Probability*. A value of "1" under *Numerator* or *Denominator* indicates that the record was included in the rate calculation of the selected Indicator, and "0" indicates the record was not included.

An additional column appears on the report when any of the last three options is selected from the <*Display* > drop-down menu: *Excluded*.

A value of "X" in the *Excluded* column indicates that the record was excluded.

Note that records excluded from the Population at Risk (denominator) are, by definition, also excluded form the Outcome of Interest (numerator) as well. In all QIs, the numerator is a subset of the denominator.

6.3.4.2 What is the predicted probability?

The predicted probability is the probability that the outcome of interest will occur for each case in the population at risk.

6.3.4.3 How can I see why a case was flagged?

Double-click on the case and open up the Case Details screen. (See section 6.4)

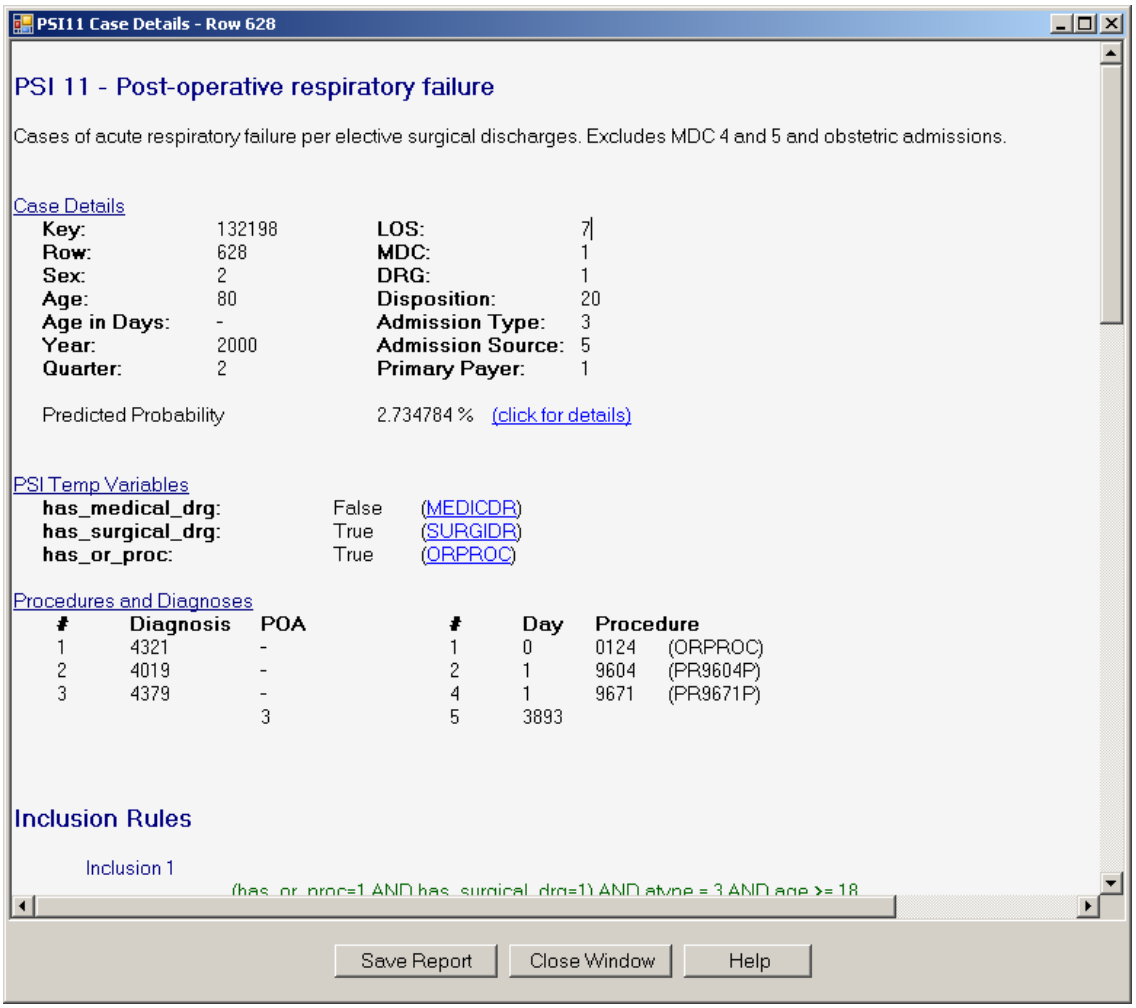
6.3.4.4 How is the predicted probability calculated?

The predicted probability is calculated from the age, sex, diagnoses and procedures on each discharge record. Open the Case Details screen for that case and click on the Predicted Probability link in that case. (See section 6.5)

6.4 Case Details

6.4.1 What is this screen for?

This screen, accessed by double-clicking to the left of a row on the Patient Level Report, lets you see exactly why a particular case was or was not flagged for a particular indicator.



Use the scrollbar to view the entire report. For this case, the report shows the following:

PSI 11 - Post-operative respiratory failure

Cases of acute respiratory failure per elective surgical discharges. Excludes MDC 4 and 5 and obstetric admissions.

Case Details

Key:	131231	**LOS:**	7
Row:	628	**MDC:**	1
Sex:	2	**DRG:**	1
Age:	80	**Disposition:**	20
Age in Days:	-	**Admission Type:**	3
Year:	2004	**Admission Source:**	5
Quarter:	2	**Primary Payer:**	1

Predicted Probability 2.734784 % (click for details)

PSI Temp Variables

has_medical_drg:	False	(MEDICDR)
has_surgical_drg:	True	(SURGIDR)
has_or_proc:	True	(ORPROC)

Procedures and Diagnoses

#	Diagnosis	POA	#	Day	Procedure	
1	4321	-	1	0	0124	(ORPROC)
2	4019	-	2	1	9604	(PR9604P)
3	4379	-	4	1	9671	(PR9671P)
		3	5	3893		

Inclusion Rules

Inclusion 1

(has_or_proc=1 AND has_surgical_drg=1) AND atype = 3 AND age >= 18

Inclusion 1 Result = True

Case meets denominator inclusion criteria before exclusion

Exclusion Rules

Exclusion 1

Primary DX or Secondary DX that is POA in set ACURFID
Comments: "POST-OPERATIVE RESPIRATORY FAILURE PROVIDER INDICATOR / PSI # 11 ICD-9-CM DIAGNOSIS CODES"

Exclusion 1 Result = False

Exclusion 2

Any Diagnosis above matches a Diagnosis in set NEUROMD
Comments: "Neuromuscular Disorder"

Exclusion 2 Result = False

Exclusion 3

The only operating room procedures are in the set TRACHIP
Comments: "EXCLUDE: TRACHEOSTOMY ICD-9-CM PROCEDURE CODE"

0124 (ORPROC)

Exclusion 3 Result = False

Exclusion 4

A procedure in TRACHIP occurred before the first operating room procedure
TRACHIP Comments: "EXCLUDE: TRACHEOSTOMY ICD-9-CM PROCEDURE CODE"

Exclusion 4 Result = False

Exclusion 5

mdc IN (4, 5, 14)

Exclusion 5 Result = False

Case is not excluded

Flag Rules

Flag 1

Secondary Diagnosis above matches a Diagnosis in set ACURFID
Comments: "POST-OPERATIVE RESPIRATORY FAILURE PROVIDER INDICATOR / PSI # 11 ICD-9-CM DIAGNOSIS CODES"

Flag 1 Result = False

Flag 2

Procedure in set PR9604P occurs at least 1 days after the first orproc
Comments: "Respiratory Failure"

9604 INSERT OF SENSTAKEN TUBE

Flag 2 Result = True

Flag 3

Procedure in set PR9670P occurs at least 2 days after the first orproc
Comments: "Respiratory Failure"

Flag 3 Result = False

Flag 4

Procedure in set PR9671P occurs at least 2 days after the first orproc
Comments: "Respiratory Failure"

9671 CONTINUOUS MECHANICAL VENTILATION FOR LESS THAN 96 CONSECUTIVE HRS

Flag 4 Result = False

Flag 5

Procedure in set PR9672P occurs at least 0 days after the first orproc
Comments: "Respiratory Failure"

Flag 5 Result = False

Case is flagged for the numerator

6.4.2 How is this screen organized?

1

6.4.2.1 Case details

Displays information from the discharge record that may be used in some indicators.

2

6.4.2.2 Inclusion Rules

Displays the rules for including a case in the denominator of this indicator.

3

6.4.2.3 Exclusion Rules

Displays the rules for excluding a case from both the numerator and denominator of this indicator.

4

6.4.2.4 Flag Rules

Displays the rules for including this case in the numerator of this indicator.

6.4.3 What do I do here?

You can view one case using the scrollbar to display the entire report. Save this report as a Rich Text File that can be emailed or printed. You may also cut and paste from this screen using Ctrl+A (select all) and Ctrl+C (copy).

Click on any underlined set name to get a list of all the ICD-9 procedure, ICD-9 diagnosis or DRG codes that apply. See section 7.4.

6.4.4 What data is displayed?

The number and complexity of rules varies per indicator. Each rule may be based on a list of procedures, a list of DRGs, a list of diagnoses or it may be based on a Boolean expression. See the technical documentation applicable to this indicator to interpret each rule. If there are procedure or diagnosis codes that match any of the lists referenced, the ICD-9 codes and descriptions will be displayed along with the rule.

6.4.5 Example

In the above example, the following information can be seen:

Temporary Variables:
has_surgical_flag = true, has_orproc_flag = true. This indicates that this record includes both a surgical DRG and an operating room procedure.

Inclusion Rules:
This case is “true” for inclusion rule 1 (the only inclusion rule) and is therefore included in the denominator of PSI 11. The inclusion rule specifies that the case has a surgical DRG, an operating room procedure as determined above, and admission type of 3 (Elective) and the patient age is greater than or equal to 18.

Exclusion Rules:
This case is “false” for all of the exclusion rules and it thus remains in the denominator.

Flag Rules:
This case is “true” for Flag Rule 4 and “false” for all other Flag rules. In order to satisfy the indicator, it is only necessary that at least one flag rules is true. Therefore, the case is flagged for the numerator due to the 9604

procedure that occurred on day 2. (As you can see above, 0124 was an operating room procedure that occurred on day 0.)

6.4.6 Other Questions

6.4.6.1 What does ORPROC mean?

The ICD-9 codes for Operating Room procedures are denoted by (ORPROC). This may be helpful in interpreting some of the exclusion rules for some PSIs. The complete list of OR procedures can be found on the QI website: http://www.qualityindicators.ahrq.gov/psi_download.htm.

6.4.6.2 What happens if there are two inclusion rules?

If there are two inclusion rules for an indicator, “Inclusion rule 1” and “Inclusion rule 2” then the case will be included if either (or both) of the two rules is satisfied.

This is not the same as a rule having multiple conditions -- e.g. a required primary diagnosis AND an age comparison. All parts of a single rule must be true for the rule to be satisfied.

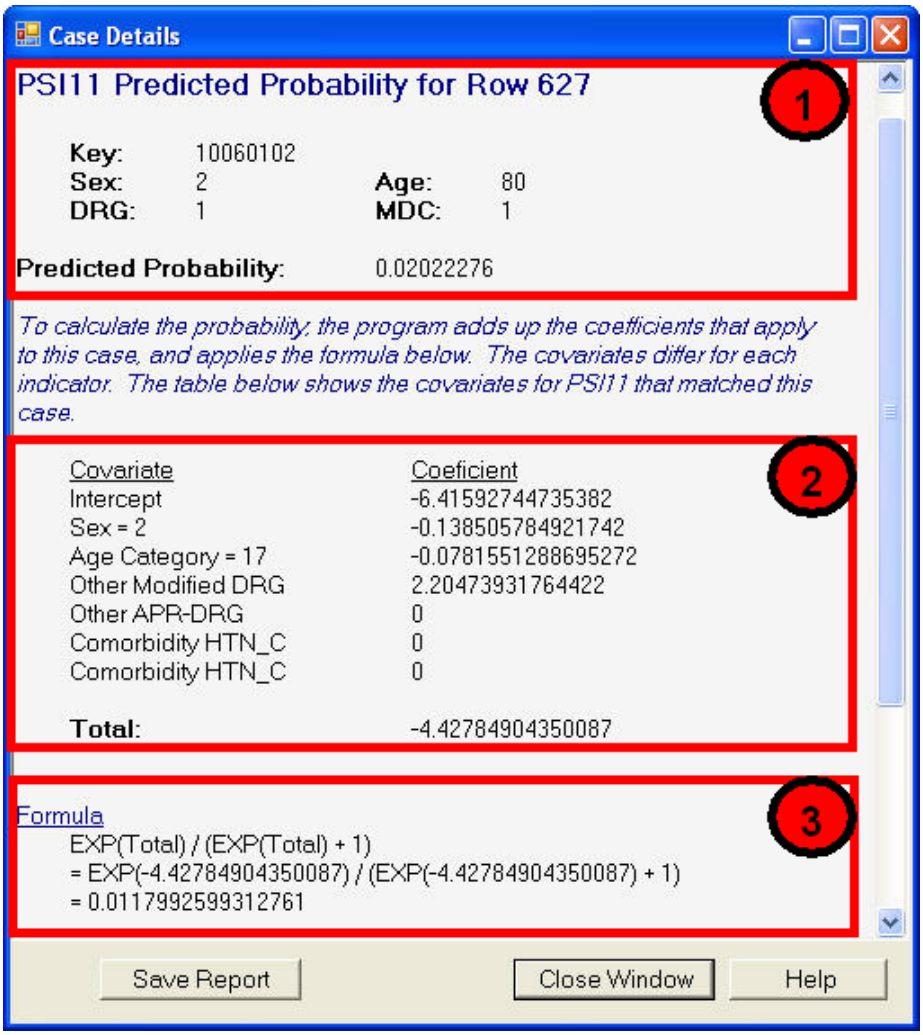
6.4.6.3 How is the Predicated Probability calculated?

The predicted probability is calculated from the covariates that apply to this case. Click on the link to open a window that shows this calculation. See section 6.5.

6.5 Predicted Probability

6.5.1 What is this screen for?

This screen, accessed by clicking the <Predicted Probability> link on a Case Details screen (see section 6.4), displays information on how the Predicted Probability (the expected rate for a specific case) was calculated.



6.5.2 How is this screen organized?

1

6.5.2.1 Case information

Relevant information about the case is displayed at the top of the screen.

2

6.5.2.2 Covariates

Displays the applicable covariates and corresponding coefficients.

3

6.5.2.3 Formula

Displays the formula used to calculate the predicted probability for the case.

6.5.3 What do I do here?

You can view the covariates that were included in the calculation of the predicted probability for one case. This screen is provided to help users understand the details of expected rate calculation.

This is a new feature of the application that is not fully implemented.

6.5.4 Questions?

6.5.4.1 What is the Predicted Probability?

The predicted probability is the probability that an outcome will occur for a particular case that is at risk for that outcome. This probability is based on a regression model applied to approximately 100,000,000 cases in the reference population.

6.5.4.2 How is the Expected Rate related to the Predicted Probability?

The expected rate for a group of cases is the average predicted probability of the cases. (Some QI documentation refers to the predicted probability as the "case level expected rate.")

6.5.4.3 What other covariates are applicable to this indicator?

You may view the entire table of covariates for each QI module on the AHRQ QI website, http://www.qualityindicators.ahrq.gov/downloads.htm

6.5.4.4 What if the numbers on the screen don't add up?

This predicted probability viewer is a new feature that does not yet full support all types of covariates. If you find an error on this screen, please email it to QI support.

6.5.4.5 How can an individual covariate be interpreted?

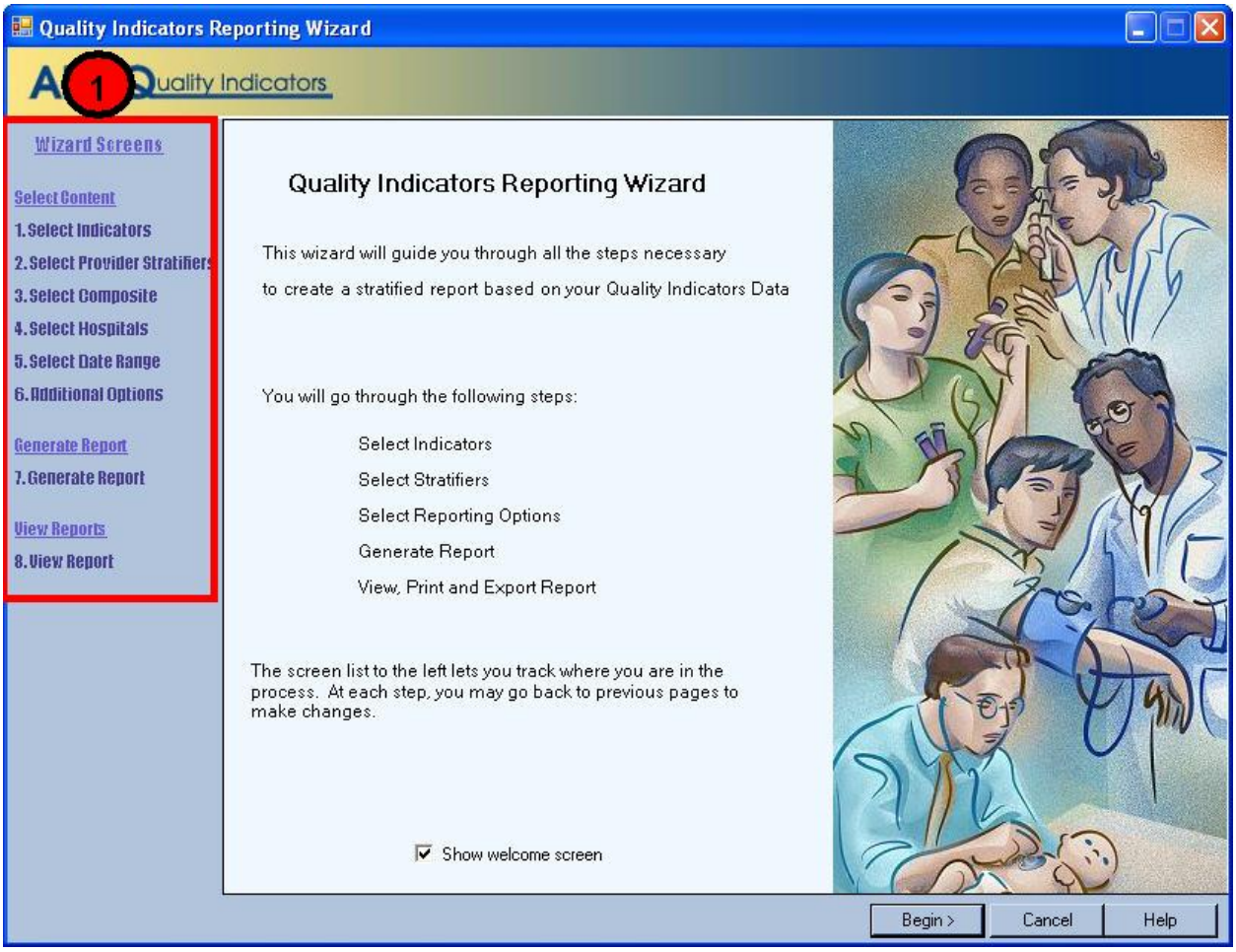
You can often see the relative importance of different covariates from the magnitude of the coefficient, however individual covariates are not intended to be interpreted in isolation.

Report Wizard (Provider and Area)
The Report Wizard has been separated into two Wizards, tailored for the Area and Provider level indicators.

6.6 Welcome – Quality Indicators Reporting Wizard

6.6.1 What is this screen for?

This screen introduces the Report Wizard.



6.6.2 How is this screen organized?

1

6.6.2.1 Wizard Screens

Lists the names of all screens in the Import Data Wizard. This list is displayed on the left side of every screen in the Wizard. The current screen will be highlighted in red as you progress through the wizard.

6.6.3 What do I do here?

If you click the <Cancel> button on any screen, the Wizard will close. Click the <Begin> button to proceed to the first Wizard screen.

6.6.4 What if I just want to see the cases for each indicator?

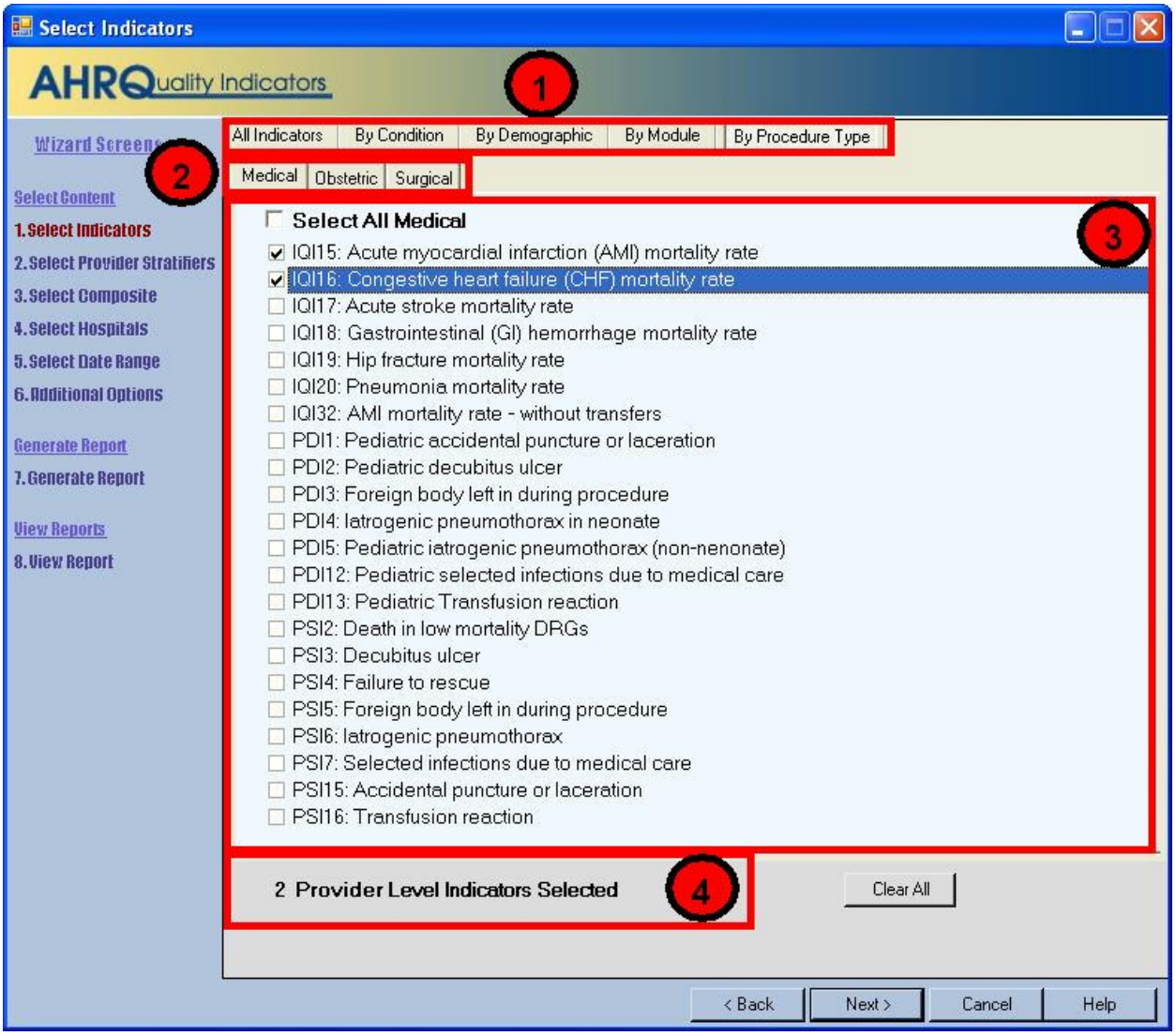
You don't need to run the Report Wizard to see the individual cases for each indicator. After you have run the Import Data Wizard, you can view the cases using the Patient Level Reporting option (see section 6.3.)

6.7 Select Indicators

6.7.1 What is this screen for?

Use this screen to specify the Indicators to include in the report.

NOTE: If you have used the Report Wizard previously, all of your selections have been saved. To specify a new group of Indicators, use the <Clear All> button before proceeding.



6.7.2 How is this screen organized?

Indicators are organized according to categories that may be of interest to different types of researchers. Each indicator is listed in several different tabs. The available tabs, subtabs, and choices are geared to the type of report, Area or Provider.

1

6.7.2.1 Top-Level Tabs

All Indicators - Quick access to all the PSI, PDI, IQI, and/or PQI (Area level only) indicators.
By Condition - Pages for indicators that are grouped by the particular condition.
By Demographic - Pages for each of several interesting demographic groupings.
By Module - The traditional way of finding indicators; separate pages for the Patient Safety Indicators, the Inpatient Quality Indicators, the Prevention Quality Indicators, and the Pediatric Quality Indicators.

By Procedure Type - Separate pages for indicators related to Medical, Surgical, and Obstetric cases.
Composite Measures - The area level composite measures.[8]

2

6.7.2.2 Sub-tabs

The <All Indicators> tab has no sub-tabs. Each of the other tabs contains a number of pages as described above that are accessed via the sub-tabs.

3

6.7.2.3 Indicators

Each page (sub-tab) contains a list of indicators with checkboxes. There is also a checkbox above the list that can be used to select all indicators on the page.

4

6.7.2.4 Selection Summary Information

Displays the total number and type (Provider or Area) of indicators selected on all pages.

6.7.3 What do I do here?

Click on one of the tabs in the top row to select a category. When a tab in the top row is clicked, sub-tabs are displayed below the main tabs.

Click one of the sub-tabs to select the page that lists the indicators for the selected topic.

Click the checkbox to select or deselect an indicator. You may also select or deselect all the indicators on a page at one time using the "Select All ____" checkbox.

Use the selection summary information at the bottom of the screen to track the number of indicators selected.

Click the <Clear All> button to deselect all indicators on all pages.

Click <Next> when the desired indicators have been selected.

6.7.4 Timesaving tips

6.7.4.1 Selecting Everything

Click on “All Indicators” and check all modules on this page to get all the available indicators.

6.7.4.2 Currently Selected

The number of Indicators currently selected is displayed at the bottom of the page.

6.7.4.3 Clearing a Page

Click the “Select All ____” checkbox to select the entire page, and then click it again to unselect the entire page.

6.7.4.4 Clear All

Each time you run the Report Wizard, your previous selection of indicators is automatically selected. Just click the <Clear All> button to clear the checkboxes on all pages if you want to start from scratch.

6.7.5 Questions

6.7.5.1 Why can't I find an indicator that used to be on this screen?

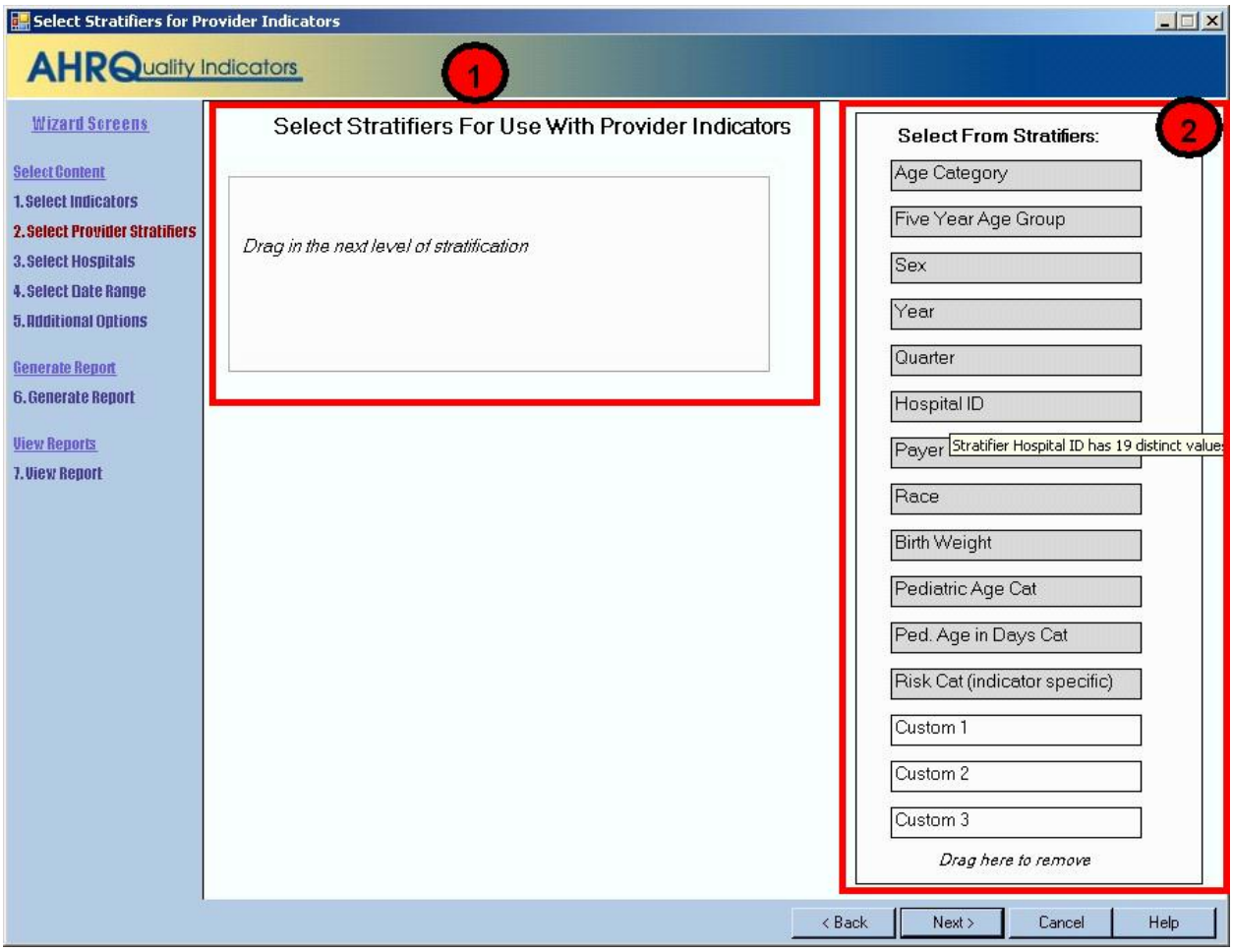
Area and provider level indicators pertain to different populations and are now completely separated into two different wizards.

[8] Provider level composite measures can be selected on a different screen.

6.8 Select Stratifiers For Use With Provider Indicators

6.8.1 What is this screen for?

This screen is used to build a hierarchy of stratification for provider-level indicators.



6.8.2 How is this screen organized?

1

6.8.2.1 Selected stratifiers

Displays the provider-level stratifiers currently selected, in the hierarchical order in which they will be sorted.

2

6.8.2.2 Select From Stratifiers

Displays a list of stratifiers that can be used for reports on provider-level indicators.

6.8.3 What do I do here?

Click on a stratifier box, drag it to the Selected Stratifiers area and drop it in the desired position.

To remove a selected stratifier, click and drag it back to the bottom of the Select From Stratifiers list.

To reposition a stratifier, click and drag it up or down in the list of Selected Stratifiers. You will see a line that shows you were the stratifier will be placed.

Stratifiers that were not used during the data load will be disabled. You can see the number of distinct values in a stratifier by pointing to the column name with your mouse.

6.8.4 Questions

6.8.4.1 What is a "stratifier"?

A stratifier is how your data will be broken down. In database parlance, this is equivalent to an item in a "group by" clause.

6.8.4.2 What if I just want the totals for each indicator?

Do not select any stratifiers.

6.8.4.3 Does the order matter?

Yes. This determines the order in which the stratifiers are listed on the reports and the order in which the rows are sorted.

6.8.4.4 How do I know which stratifiers to select?

Select stratifiers that will provide you with useful information. For example, if you are processing data from a single provider, selecting the stratifier Hospital ID will not provide you with any useful information. If your data does not separate patients by Race, then the Race stratifier will be of no use.

6.8.4.5 How many stratifiers may I select?

You may not select more than 10 stratifiers. In practice, you will generally not want more than a few stratifiers. Selecting too many will subdivide your populations and reduce the statistical significance of the calculated rates.

6.8.4.6 What are "Custom 1", "Custom 2" and "Custom 3"? Why can't I select them?

These are custom stratifiers that may contain any information you wish. Each field will only be enabled if you provided a data mapping on the Data Mapping screen (see section 5.5.) Common custom stratifiers are physician name and hospital type.

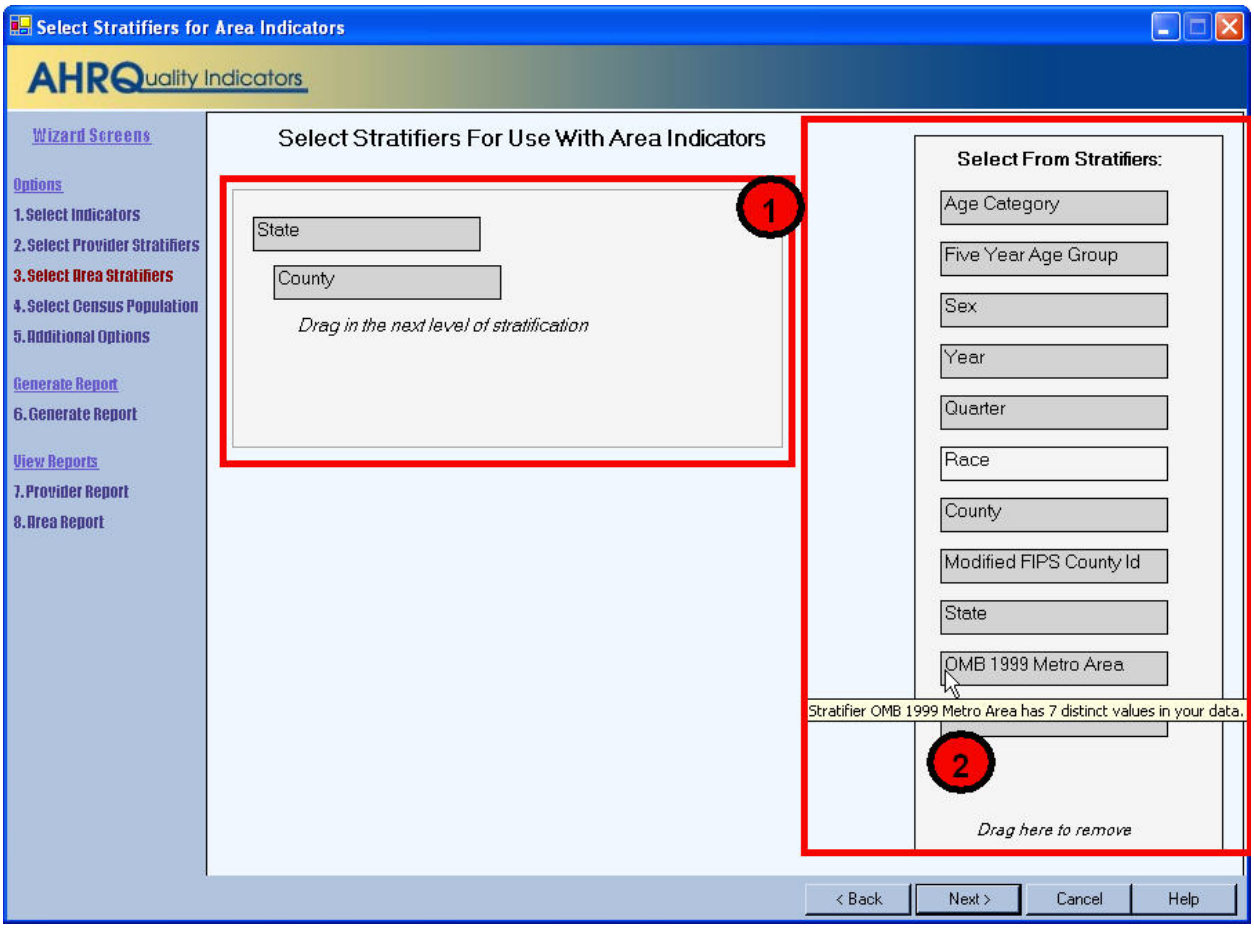
6.8.4.7 How large will my report be?

You can get a rough estimate of the number of rows in your file by multiplying the number of distinct values for each of your selected stratifiers. The number of values will be shown in a tool tip when you point to the stratifier name in the right panel with your mouse.

6.9 Select Stratifiers For Use With Area Indicators

6.9.1 What is this screen for?

This screen is used to build a hierarchy of stratification for area-level indicators.



6.9.2 How is this screen organized?

1

6.9.2.1 Selected stratifiers

Displays the area-level stratifiers current selected, in the hierarchical order in which they will be sorted.

2

6.9.2.2 Select From Stratifiers

Displays a list of stratifiers that can be used for reports on area-level indicators.

6.9.3 What do I do here?

Click on a stratifier box, drag it to the selected stratifiers area and drop it in the desired position.

To remove a selected stratifier, click and drag it back to the bottom of the Select From Stratifiers list.

To reposition a stratifier, click and drag it up or down in the list of selected stratifiers. You will see a line that shows you were the stratifier will be placed.

6.9.4 Questions

6.9.4.1 What's the difference between provider and area level stratifiers?

The population used to calculate area-level indicators is based on the US census. In that context, some fields do not make sense, such as "hospital id".

6.9.4.2 What is a "stratifier"?

A stratifier is how your data will be broken down. In database parlance, this is equivalent to an item in a "group by" clause.

6.9.4.3 What if I just want the totals for each indicator?

Do not select any stratifiers.

6.9.4.4 Does the order matter?

Yes. This determines the order in which the stratifiers are listed on the reports and the order in which the rows are sorted.

6.9.4.5 How do I know which stratifiers to select?

Select stratifiers that will provide you with useful information. For example, if you are processing data from a single provider, selecting the stratifier Hospital ID will not provide you with any useful information. If your data does not separate patients by Race, then the Race stratifier will be of no use.

6.9.4.6 Can I display the names of each county?

Yes. Select the State/County stratifier, then choose the option *Show the names of each county, state, or metro area* on the Additional Options for Data Analysis screen.

6.9.4.7 What are the definitions of the metro areas?

The Office of Management and Budget (OMB) defines metropolitan and micropolitan statistical areas. Refer to http://www.census.gov/population/www/estimates/metrodef.html for more information.

6.9.4.8 What is the Modified FIPS stratifier?

Federal information processing standards codes (FIPS codes) are a standardized set of numeric or alphabetic codes issued by the National Institute of Standards and Technology (NIST) to ensure uniform identification of geographic entities through all federal government agencies. The entities covered include: states and statistically equivalent entities, counties and statistically equivalent entities, named populated and related location entities (such as, places and county subdivisions), and American Indian and Alaska Native areas.

The modified FIPS stratifier aggregates the independent cities with the counties that surround them. This table can be downloaded from http://www.arfsys.com/indep.htm.

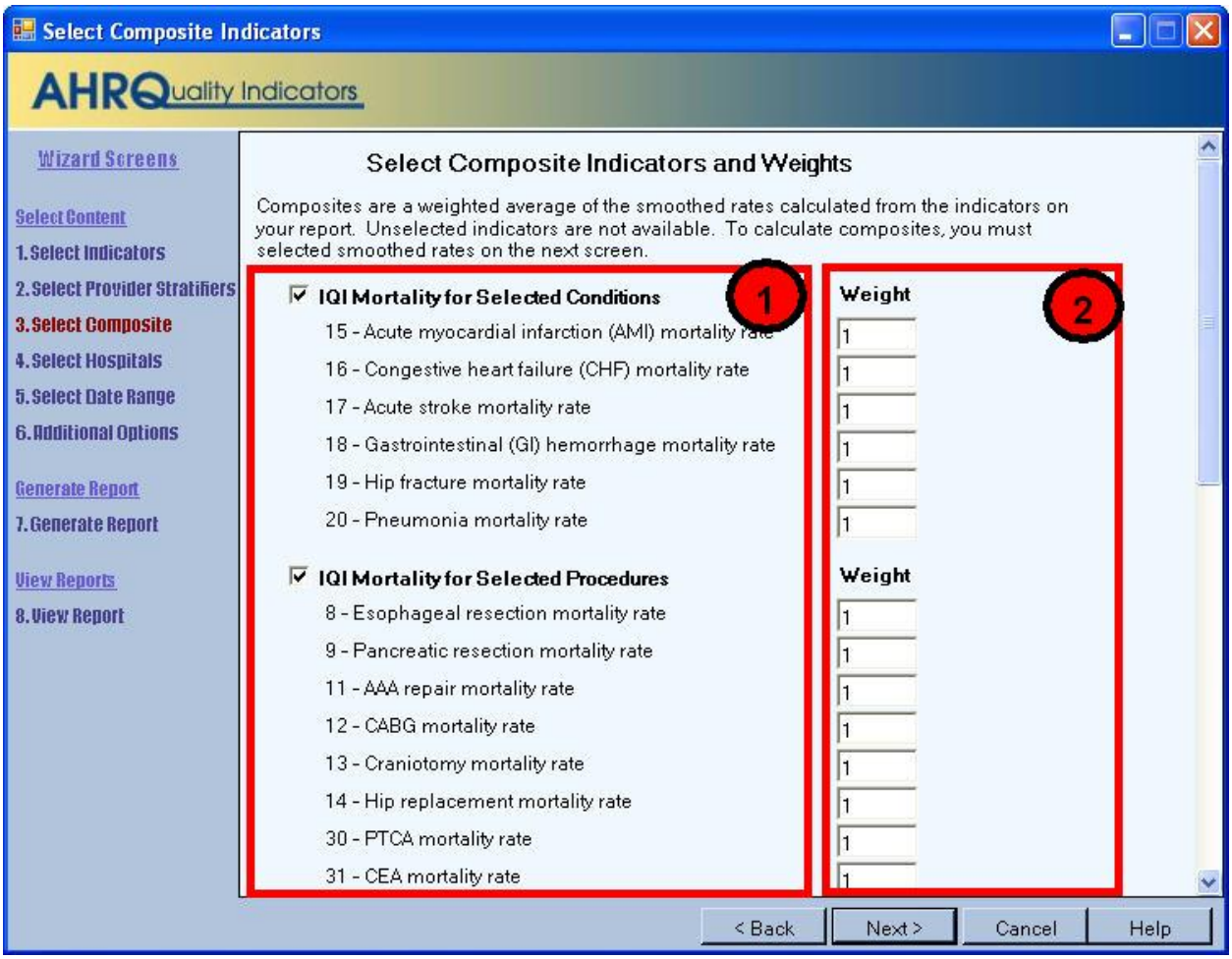
6.9.5 Timesaving tips

If you hover the mouse over a stratifier, a tooltip will display the number of different values there are in your data.

6.10 Select Composite Indicators and Weights

6.10.1 What is this screen for?

This screen lets you select whether to include the composite measures and if so, what weight to assign to each indicator that makes up the composite. This screen was a new feature in Version 3.1.



6.10.2 How is this screen organized?

1

6.10.2.1 Measures and components

A checkbox appears next to each of the composite measures. The indicators that make up each component are listed below the composite measure name.

2

6.10.2.2 Weights for component indicators

A field for the relative weight appears next to each indicator.

6.10.3 What do I do here?

Check the composite measures you wish to include in your report.

Initially a weight of "1" is assigned to each component indicator. You may increase or decrease the weight assigned to each indicator as desired, or you can set the weight to zero to exclude the indicator from the composite altogether.

6.10.4 Questions

6.10.4.1 How are the composite measures calculated?

The provider level composite measures are calculated from the following formula:
Sum(Smoothed Rate[i] * weight[i]) / (Population Rate [i] * Sum(weight[i]))

6.10.4.2 My report has missing values for the composite measures.

The mostly likely cause is that you did not select "Calculate Smoothed Rates" on the report options screen. If smoothed rates are blank, then the above formula will result in a missing value.

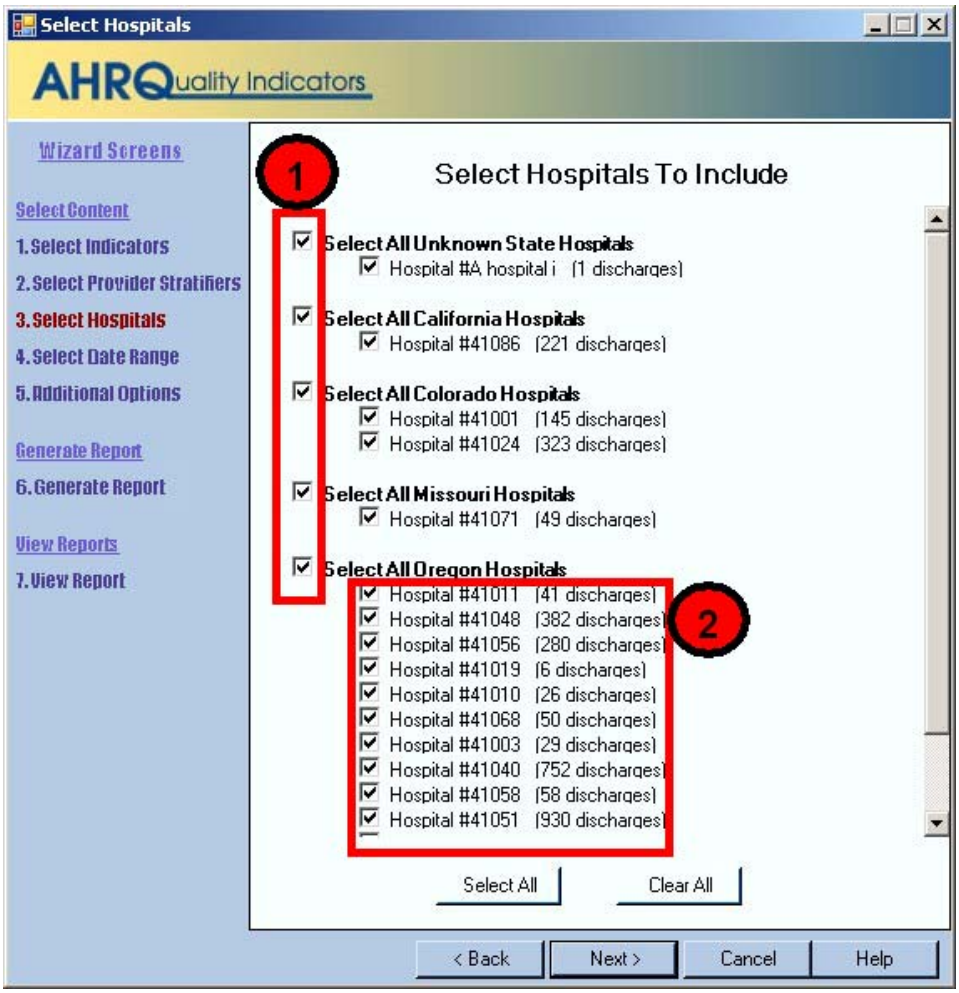
6.10.4.3 Where can I find more information about the use of composite measures?

The AHRQ QI team conducted several workgroups on composite measures, one for each of the QI modules. The reports from these workgroups can be downloaded from the QI website.

6.11 Select Hospitals (Provider Reports Only)

6.11.1 What is this screen for?

This screen lets you limit the discharge records that will be included in your report. There will be a list displayed of all of the states represented in the input data, and each hospital is listed under the state. This screen was a new feature in Version 3.1.



6.11.2 How is this screen organized?

1

6.11.2.1 States in Input Data

Checkboxes to allow you to select (or deselect) all the hospitals in a state at once.

2

6.11.2.2 Hospitals in each state

The hospitals and number of discharges are listed under their state.

6.11.3 What do I do here?

Check the states and hospitals you want to include in your report.

6.11.4 Questions

6.11.4.1 How is the hospital's state determined?

During the data load, the program collects a list of hospitals from the *Hospital Id* and *Patient State/County Code* from the discharge records. The default hospital county is first county read for that hospital. You may change the hospital county code. (See section 7.2.)

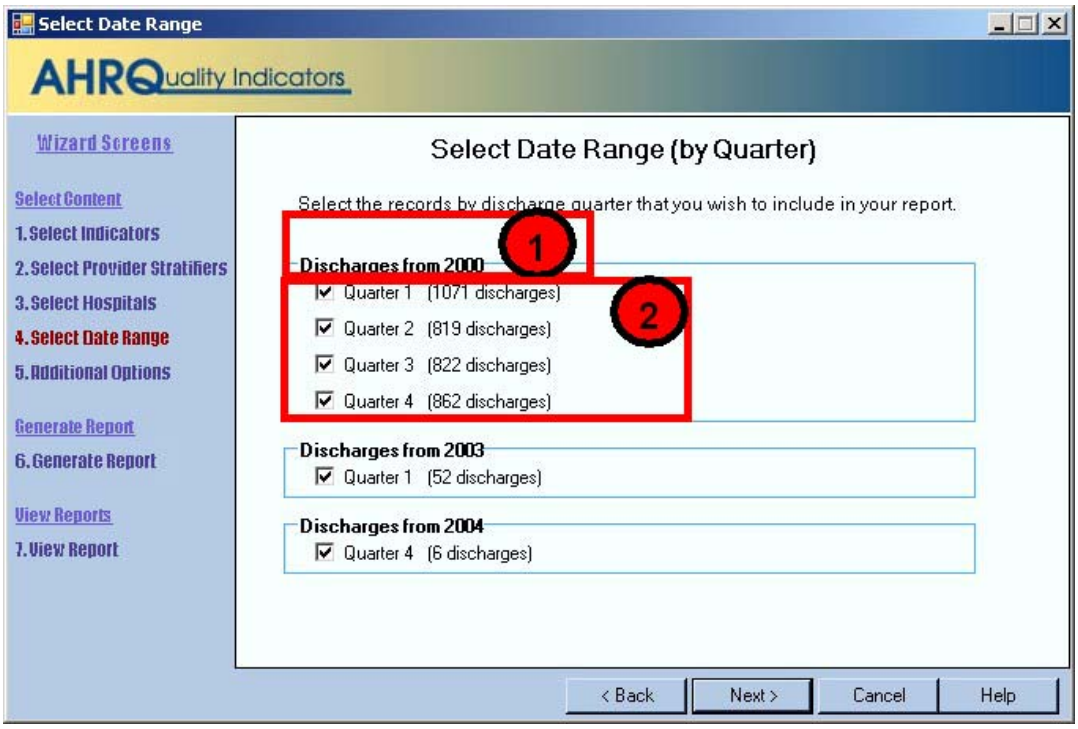
6.11.4.2 What is done with records from hospitals that are not checked?

These discharge records will not be included in your report. This was a new feature in Version 3.1, and it allows you to generate different provider level reports with different data without having to edit and reload your data file.

6.12 Select Date Range (Provider Reports)

6.12.1 What is this screen for?

This screen allows you to limit the discharge records you wish to include on your report to only those that occurred during the selected quarters. (This was a new feature in Version 3.1)



6.12.2 How is this screen organized?

1

6.12.2.1 Discharge Year

Each year represented in the Input Data is listed.

2

6.12.2.2 Quarters

The quarters for each year in the Input Data are listed under the corresponding year.

6.12.3 What do I do here?

Select the checkboxes next to the quarters that you wish to include in your report.

6.12.4 Questions

6.12.4.1 How can I generate a "rolling year" report?

A "rolling year" report is a report in which the results reported for each quarter includes the previous 3 quarters of data. E.g. 2003 Q1 includes discharges from 2003 Q1 and 2002 Q2 - Q4, 2003 Q2 includes discharges from 2003 Q1-Q2 and 2002 Q3-Q4, etc.

The report wizard cannot generate this report in a single pass since each discharge record would have to be included in the total for different quarters. However, you can run the report wizard several times and select a different rolling set of quarters for each report. (Do not select year or quarter as stratifiers.) You will still need to merge these reports using a spreadsheet program.

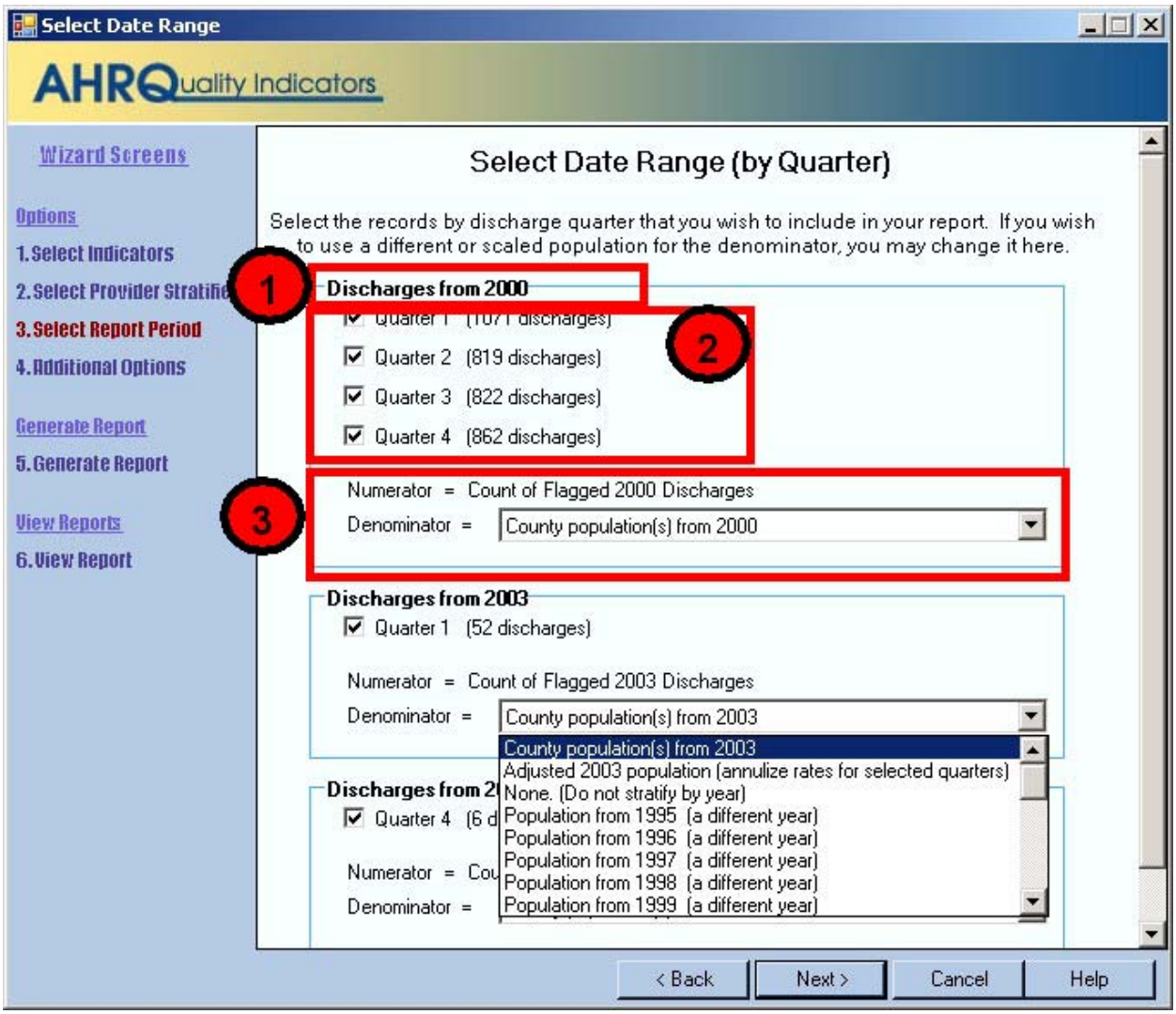
6.12.4.2 What if I do not have year and quarter data in my file?

Records that do not have year or quarter will be listed under "Missing Year" and "Missing Quarter". You may select these just like any other selection for year and quarter.

6.13 Select Date Range (Area Reports)

6.13.1 What is this screen for?

This screen allows you to limit the discharge records you wish to include on your report to only those that occurred during the selected quarters. Additionally, in this screen, you may select a different denominator for each year.



6.13.2 How is this screen organized?

1

6.13.2.1 Discharge Year

Each year represented in the Input Data is listed.

2

6.13.2.2 Quarters

The quarters in the Input Data are listed below the corresponding year.

3

6.13.2.3 Numerator and Denominator

The default Numerator (count of all flagged discharges for the corresponding year) and Denominator appear below the Quarters. The default Denominator is the population from the corresponding year.

6.13.3 What do I do here?

Select the checkboxes next to the quarters that you wish to include in your report.
If desired, you may also change the default denominator for some or all of the years in your data. The following options are available:

- County Population from X - The default option. This is the total population from the selected year for all counties in your input file.
- Adjusted X population - The denominator of each rate will be scaled down based on the number of quarters selected for that year. This option is useful if you want to get a annualized rates but only have a partial year's data.
- Population from a different year - You may specify a different year's population to go with your input data. This may be useful if the year field is incorrect or missing.
- None - No population data will be included to match this year in your input file. This may be appropriate if you have records with an invalid year field but still wish to count these records as part of the total. You should not use this option in combination with a stratification selection that includes Year.

6.13.4 Questions

6.13.4.1 What if I do not have year and quarter data in my file?

Records that do not have year or quarter will be listed under "Missing Year" and "Missing Quarter". You may select these just like any other selection for year and quarter.

6.13.4.2 How does the program determine the numerator and denominator for each rate?

The program first gets a list of all of the discharge year and quarter values that you have selected. This includes the records with a missing year or quarter value if you have checked the appropriate box.

The program then totals the numerators for the selected indicators for each year grouped by the selected stratifiers.

For the denominator, the program totals the census population that you have selected for each discharge year. These are also grouped by the selected stratifiers. Unless you have selected "none" above, you will have a separate total population for each discharge year.

The indicator numerator and denominators are joined together to get the observed rate grouped by the selected stratifiers.

6.13.4.3 Why should you not stratify by discharge year when you have selected "None" for a discharge year?

These records will be grouped by the discharge year, but they will not have a denominator.

6.13.4.4 When is it useful to select "None" for a denominator?

This may be appropriate in two ways: (1) you have incorrect year data for some records or (2) you want a 1-year rate that spans multiple calendar years.

In the first case, suppose you have a many discharges that occurred in "2006" but a few are incorrectly recorded as "206". If you select "County population for 2006" as the denominator for the 2006 records and "None" as denominator for the "206" records, the total numerator will include all records and the total denominator will include the population for 2006. (If you stratify by year, then the numerator cases will be separated and 206 records will have no denominator.)

The other application is if you want a 12-month rate that spans two calendar years. To achieve that result, you would select the population to go with one discharge year and not select a population for the other year.

6.13.4.5 How is an annualized rate calculated?

When selecting the denominator to go with a discharge year, the population is divided by 4 times the number of selected quarters. So if you only select 3 quarters but want an annualized rate, you would get the following:
Total Numerator = Sum of the cases from 3 quarters.
Total Denominator = 3 times 1/4 of the population. (If you stratify by quarter, this will be 3 lines)
Total Observed Rate = 3 quarters of cases / (3/4 the total population). Multiplied through, this is 4 times the rate per quarter.

6.13.4.6 How does this compare with the options in the AHRQ QI SAS Syntax?

To use the QI SAS software for area level indicators, you must select the population year in your control file. Your data file is assumed to be a full year of discharges and thus the observed rate is calculated as the numerator total divided by the population for the selected year. It does not matter what data you have populated on the YEAR field in the discharge records -- if you have several different YEAR values, these are treated as though they are all the same.

To get the same result from WinQI, you should select the year from the list. If you have more than one discharge year, you should select the year as the denominator only once, and select "None" for the other discharge years.

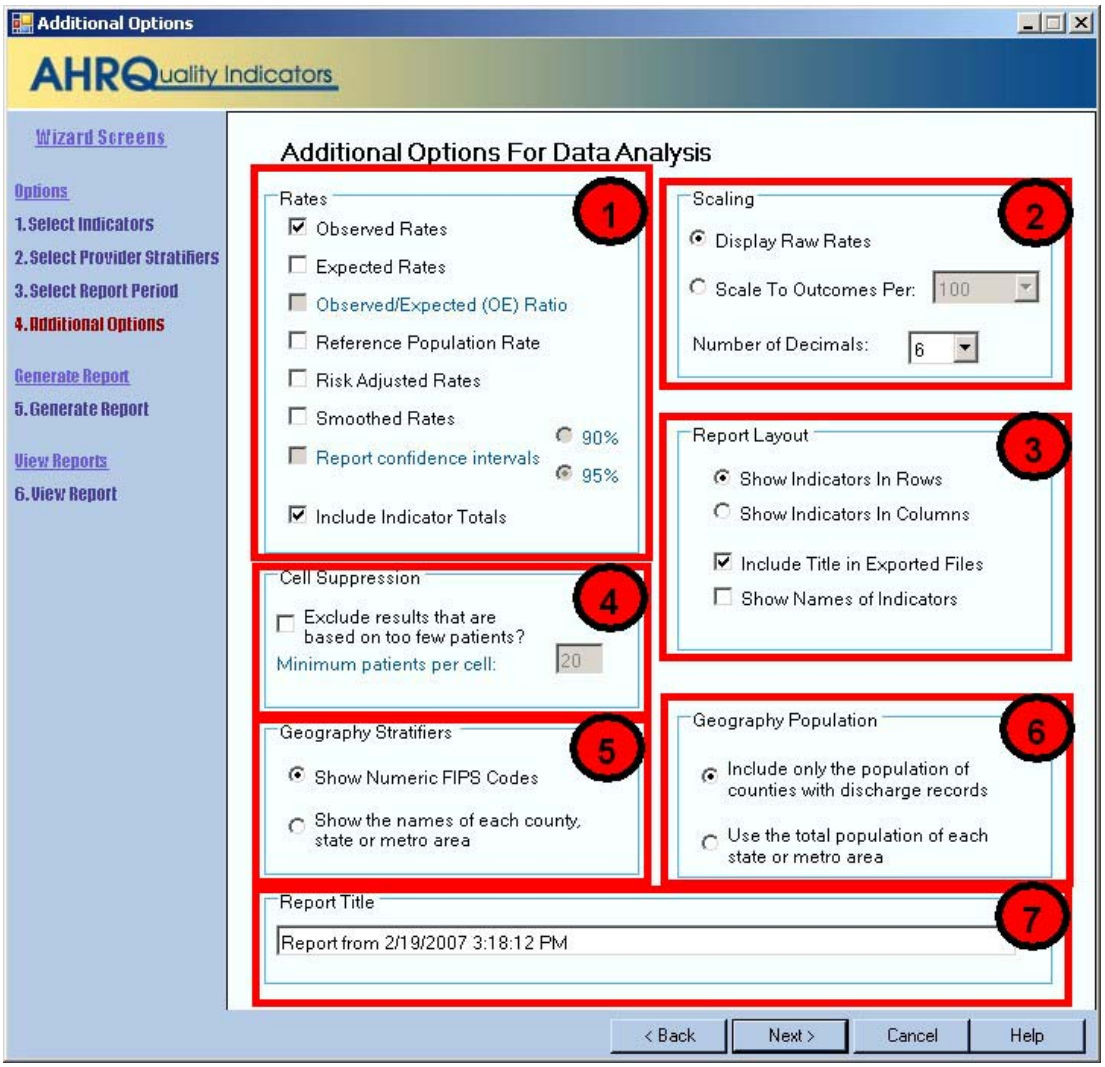
6.13.4.7 How does this compare with the Select Census Population in the pervious versions of WinQI?

The denominator selection feature of this screen replaces the "Select Census Population" screen in version 3.0. In that version, you did not have the option of selecting "None" or of the quarters on your report. Therefore, every distinct "Year" value in your report contributes 1 times the population to the denominator. Area rates for anything other than exactly 12 months of discharges per Year would be incorrect. Version 3.0 does have the option of excluding records with a missing Year value; this is equivalent to unchecking the quarters in this box in this version.

6.14 Additional Options For Data Analysis

6.14.1 What is this screen for?

This screen lets you choose additional options before generating reports.



6.14.2 How is this screen organized?

1

6.14.2.1 Rates

Provides checkboxes to select which columns you want included in your report. You may also decide whether or not to include the overall totals for each indicator here. If the Composite Measures have been selected, be sure to select "Smoothed Rates."

2

6.14.2.2 Scaling

Allows you to select the scale that rates are reported in and the number of decimal places to use.

3

6.14.2.3 Report Layout

Allows you to select whether to display the indicators as rows (creating a long report format) or as columns (creating a wide report format). You may also select whether to include the title when exporting the report.

4

6.14.2.4 Cell Suppression

Provides the option to blank out rates for cells that are based on a small population or a small number of cases.

5

6.14.2.5 Geography Stratifiers

Allows you to select whether to display FIPS codes or the name of the county, state, or metro area.

6

6.14.2.6 Geography Population

Allows you to select the population to be included in the denominator.

7

6.14.2.7 Report Title

Allows you to change the default report title, which includes the date and time the report was generated.

6.14.3 What do I do here?

Change any of the options for your report here.

6.14.4 Questions

6.14.4.1 What are the definitions of Observed, Risk Adjusted, Smoothed, Expected Rates, and Reference Population rates?

Type of Rate	Definition
Observed	The rates as initially calculated applying the Indicator definitions (See Data Elements and Coding Conventions) to the set of data for the numerator (outcome of interest) and denominator (population at risk).
Risk-adjusted	The estimated performance of providers or areas if those providers or areas had an 'average' case-mix. This average case mix is estimated using proportional indirect standardization: risk-adjusted rate = (observed rate / expected rate) * reference population rate.
Smoothed	Estimated using multivariate signal extraction (MSX). MSX smoothing estimates the effect of random differences in the observed rate across providers or areas. In essence, smoothing describes how persistent a rate would be from year to year. Smoothing is a useful tool to "level the playing field" for providers or areas with a small numbers of cases.
Expected	Rates that assume an "average" performance for each patient group based on the reference population, but the provider's actual case-mix. The reference population is based on all states participating in the most recently available HCUP SID databases.

Reference Population	The rate for the current reference population (see section 1.2.)

For more information, see section 2.4.

6.14.4.2 What is the Observed/Expected Ratio?

The observed rate divided by the expected rate. This is the most appropriate benchmark of performance. A ratio of 1 indicates performance is as expected. A ratio over 1 is performance that is higher (usually worse) than expected and a ratio less than 1 is performance that is lower than expected.

NOTE: In version 3.0 of the AHRQ QIs, we recommended comparing the Risk Adjusted Rate to the Population Rate. This is mathematically equivalent to comparing the O/E ratio to 1.

6.14.4.3 Why is the Risk Adjusted Rate disabled?

The risk adjusted rate is disabled if certain stratifiers are selected. Change your stratification to enable risk adjusted rates.
h
The Risk Adjusted Rate is only appropriate at the hospital level or above. Age and sex are attributes of the patients that affect the expected outcome. Thus it would be inappropriate to calculate a risk adjusted rate based on the total reference population but observed rates and expected rates that are only based on a segment of the population.

Version 3.0, allowed the reporting of (observed / expected * population rate) as the risk adjusted rate for segments of the population. In general, you should compare O/E ratios instead.

6.14.4.4 What are the recommended Rate Units?

The AHRQ QI Windows Application calculates rates as raw rates (see section 3.1.) In the Report Wizard, users may report rates using optional multipliers in order to facilitate interpretation and analysis and to compare user rates to published national rates.

Definitions

Term	Definition	Example
Raw rate	Numerator divided by denominator	0.0255
Multiplier	A unit of “per X”	100 or 1,000
Reported rate	Raw rate * multiplier	2.55 per 100

6.14.4.5 What are the Recommended Multipliers?

Provider or Area	Type of Rate	Example	Recommended Multiplier
Area	Avoidable hospitalization	CHF (PQI #8)	100,000
Area	Potentially preventable adverse event	Infection due to medical care (PSI #23)	100,000
Area	Utilization	CABG (IQI #26)	100,000
Provider	Mortality	AMI Mortality (IQI #15)	100
Provider	Potentially preventable adverse event	Decubitus Ulcer (PSI #3)	1,000
Provider	Utilization	VBAC (IQI #22)	1,000
Provider	Volume	CABG Volume (IQI #6)	Not applicable

6.14.4.6 What does Cell Suppression mean?

In performance measurement work, it is often recommended that rates be suppressed when there are fewer than 30 cases in the denominator. This exclusion rule serves two purposes:

- It eliminates unstable estimates based on too few cases.
- It helps protect the identities of hospitals and patients.

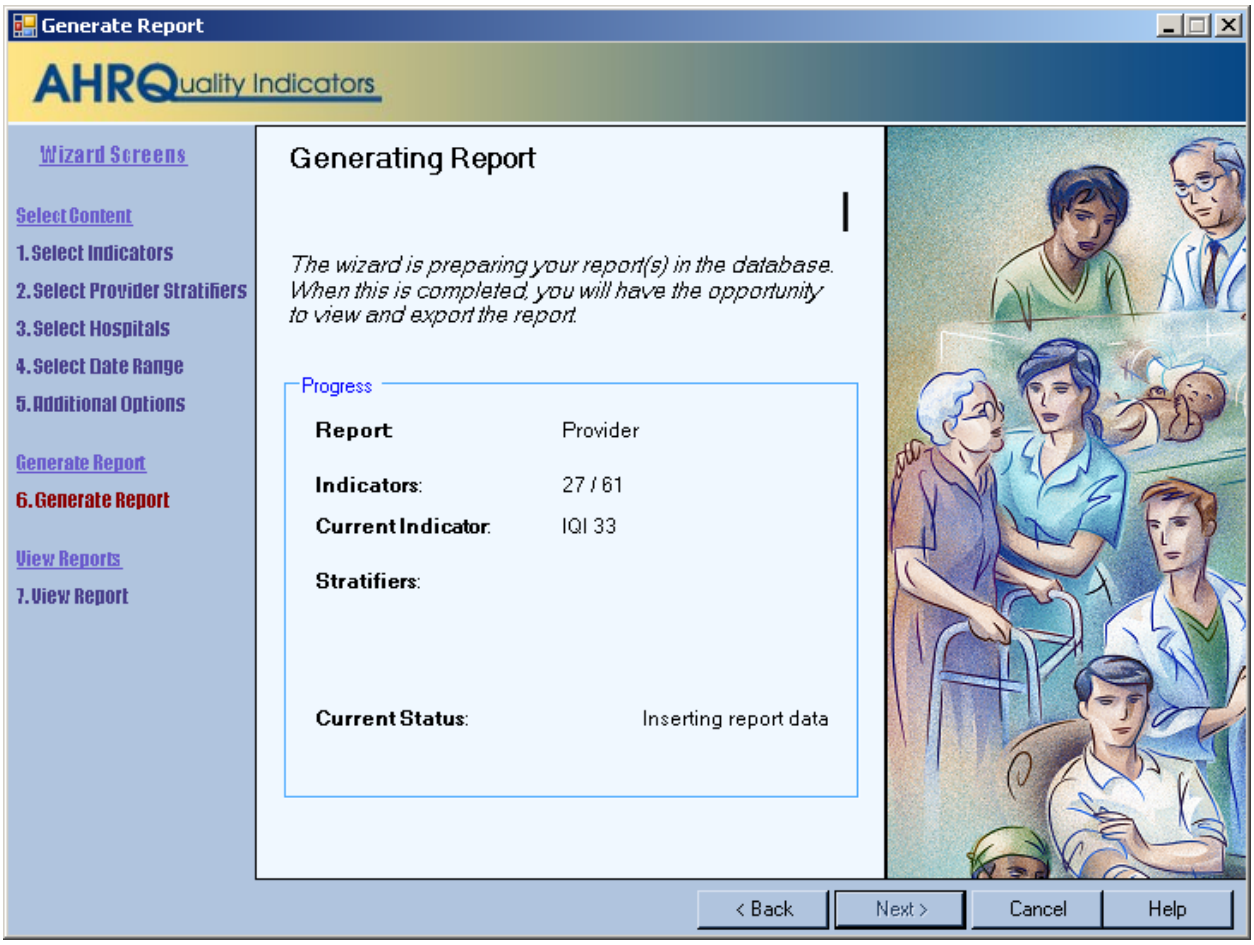
Rates will be suppressed (set to null) in the resulting report if:

- There are fewer than N people or cases in the denominator (where N is the value you supply for "Cell size to suppress")
- There are fewer than N cases of interest in the numerator
- There are fewer than N cases that are in the denominator but not the numerator

6.15 Generating Report

6.15.1 What is this screen for?

This screen displays the progress of the process as your report is generated.



6.15.2 How is this screen organized?

The window displays its current processing so that you can track its progress.

6.15.3 What do I do here?

There are no user actions on this screen. Wait for the processing to complete, and then click <Next>.

After the report has been generated, you are finished with the Report Wizard. When you click <Next>, you will go directly to the View Report screen (see section 6.1.) This report can be viewed later from the main window using the <View Saved Report> menu item. The report will be saved until you generate another report.

7.0 Helpful Tools

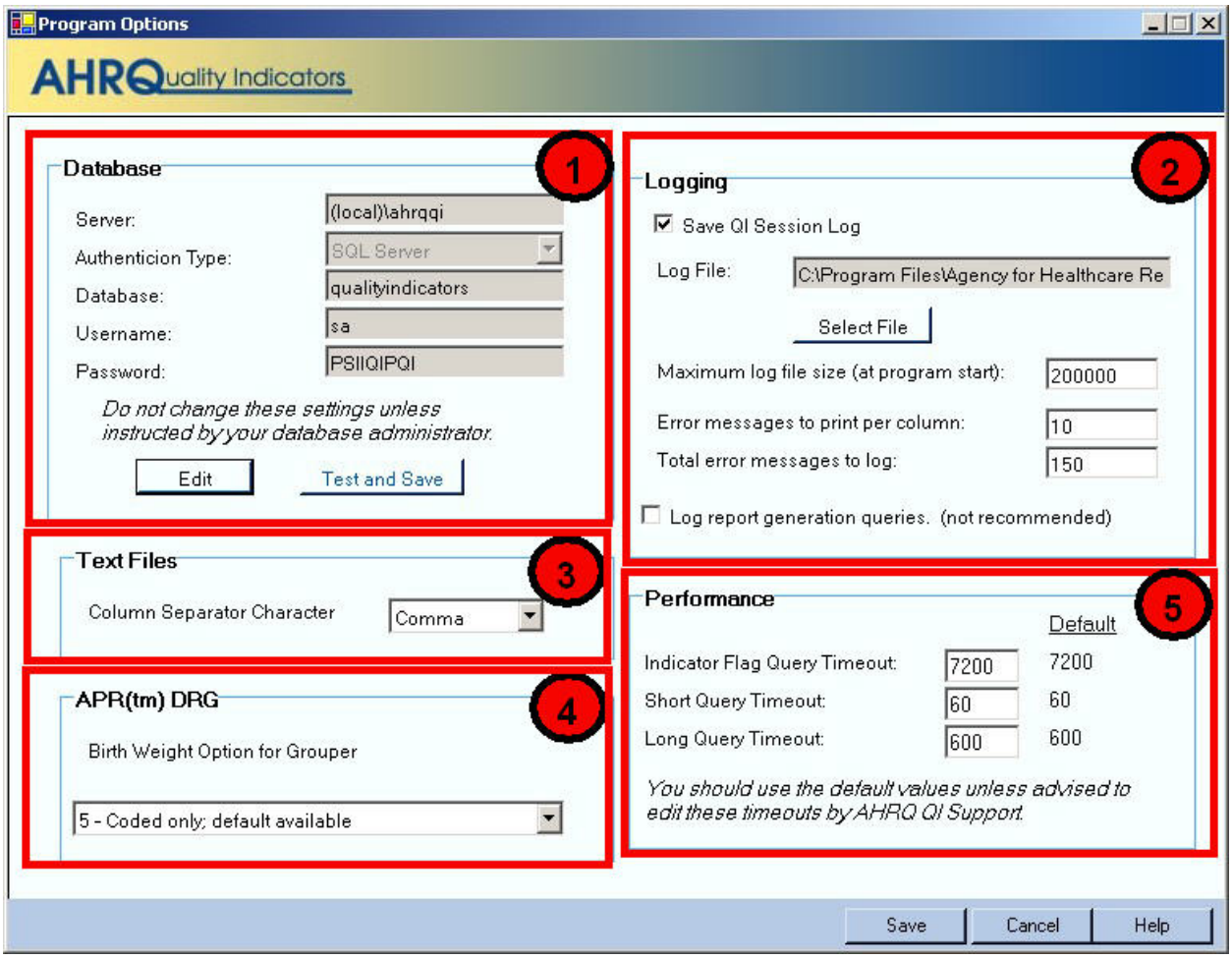
The QI Windows software includes several helpful tools. Many of these tools are menu options listed under Tools on the Main screen. The <Data Load Report> options accesses the screen described in section 5.11. The QI Session Log is discussed in sections 4.1 and 4.2.

Other tools are accessed from related screens,

7.1 Program Options

7.1.1 What is this screen for?

This screen, accessed by clicking the <Program Options> control under "Tools" on the Main screen allows you to change your database options and to save the Session Log.



7.1.2 How is this screen organized?

1

7.1.2.1 Database

You may change the database connection information here. This should only be done when your database password has changed or if the database server has been renamed. Only make changes if you are instructed to do so by your database administrator. You cannot simply change to a blank database, because it would not contain the tables necessary for the program to run.

2

7.1.2.2 Logging

Specify a file to save the information written to the QI Session Log. The session log will be appended to the specified file until the file reaches 200KB. At 200KB, the file will be truncated and started again. When writing to the AHRQ Quality Indicators support, please include the relevant portions of your session log.

During the data error check screen, messages will be written to the log if certain types of data errors are found--for example an invalid number in a numeric column. This may be helpful if you wish to make corrections to your input file. You may adjust the number of errors saved.

3

7.1.2.3 Text Files

You may change the separator between the values in a row of data to Tab instead of Comma.

4

7.1.2.4 APR(tm) DRG Birth Weight Option

This is used by the 3M™ APR™ DRG Grouper. The default value of 5 should be used in most cases. Do not modify this value without consulting 3M™ APR™ DRG Grouper documentation.

5

7.1.2.5 Performance

It is not recommended that you change any of these settings without consulting the AHRQ QI support.

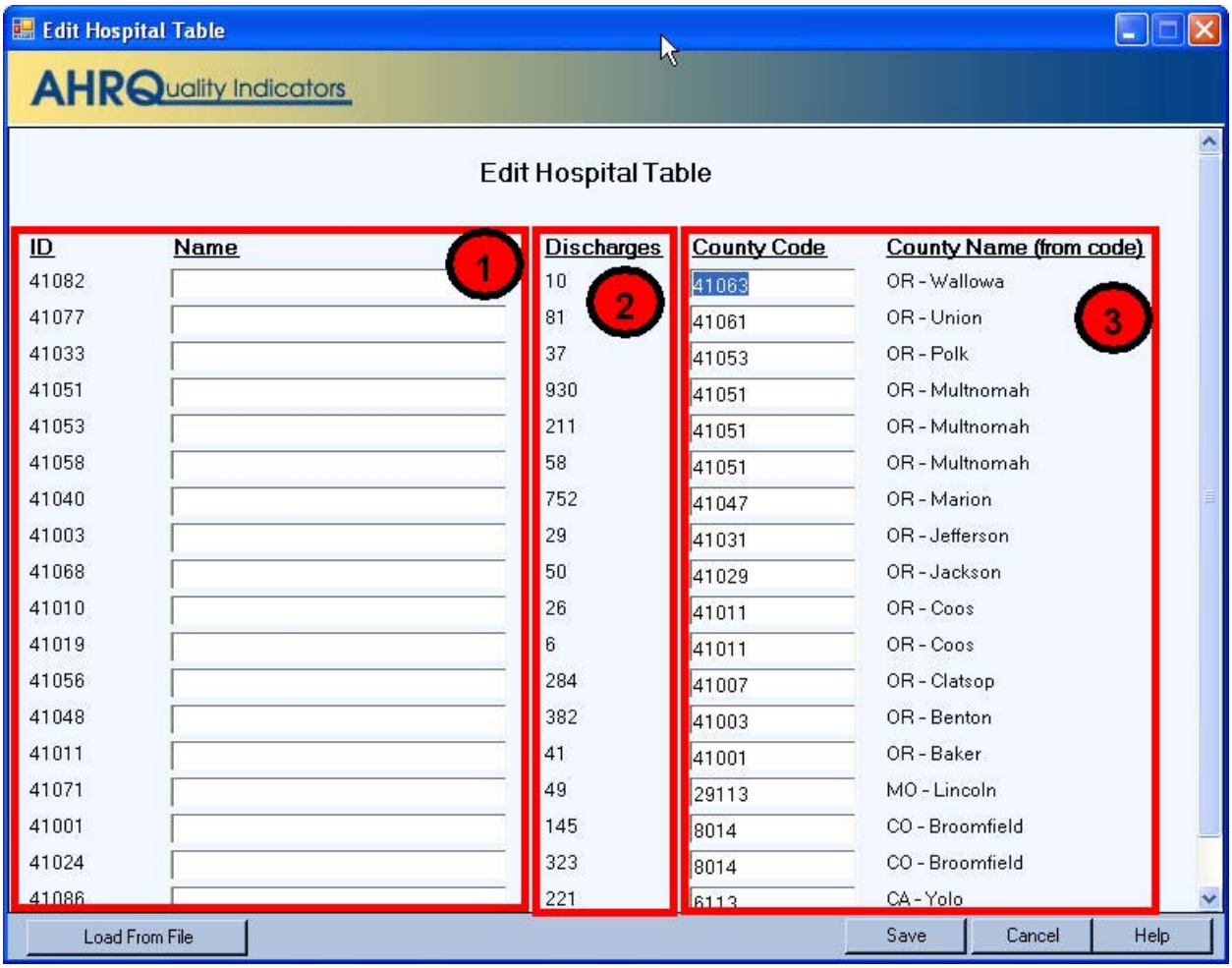
7.1.3 What do I do here?

It is recommended that you not change the database options unless your database administrator instructs you to do so. If you wish to change the location for the Session Log, use the options under Logging to do so.

7.2 Hospital Table

7.2.1 What is this screen for?

This screen, accessed by accessed by clicking the <Edit Hospital Table> control under "Tools" on the Main screen allows you to specify a name and to change the county code for any hospital in the Input Data.



7.2.2 How is this screen organized?

1

7.2.2.1 ID and Name

Lists each of the hospital ID numbers and provides a field for entering a name.

2

7.2.2.2 Discharges

Displays the number of discharge records from the corresponding hospital.

3

7.2.2.3 County Code and County Name

Displays the County Code for the corresponding hospital in a field that can be edited, and the County Name associated with the displayed County Code.

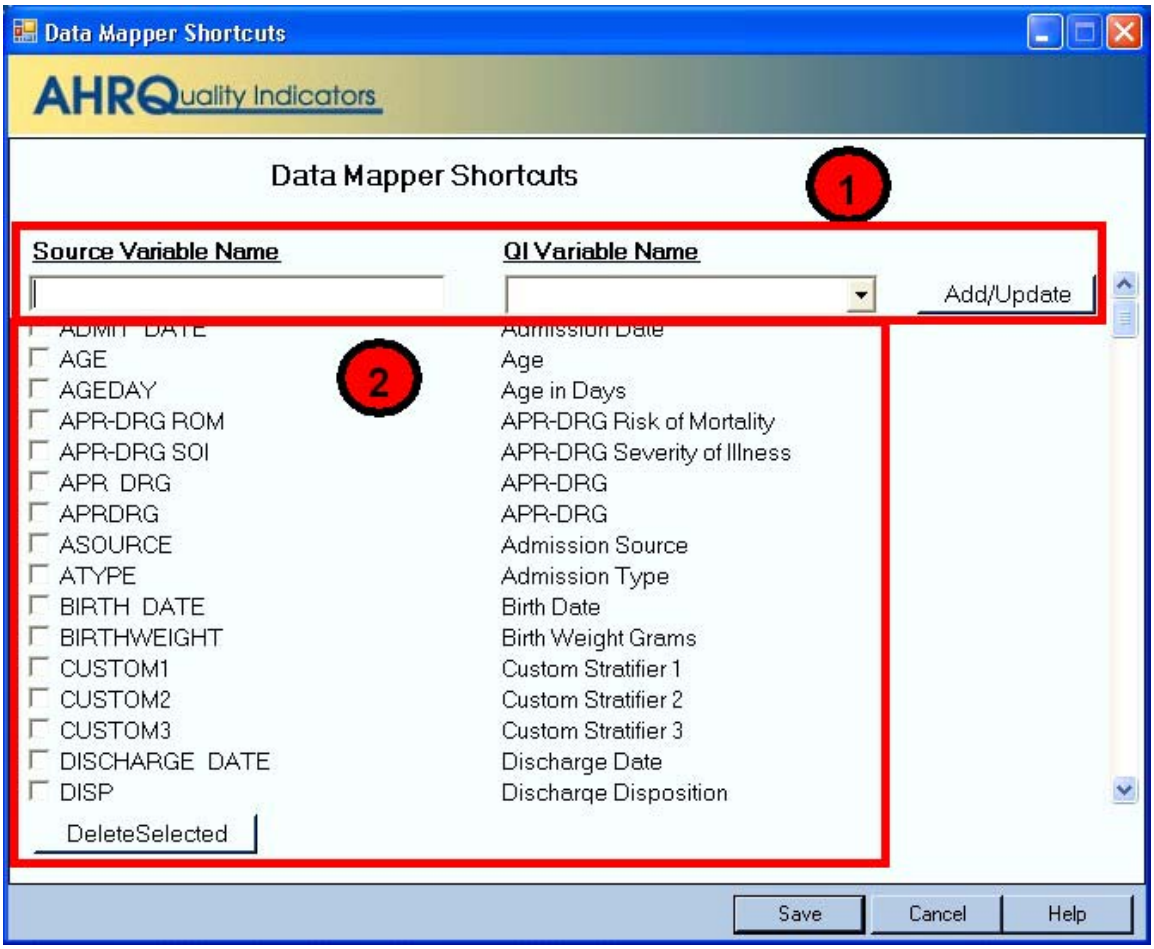
7.2.3 What do I do here?

You can type a name for a hospital in the field next to the ID. You can replace the County Code for a hospital with a different county code.

7.3 Data Mapper Shortcuts

7.3.1 What is this screen for?

This screen, accessed by clicking the <Edit Mapper Shortcuts> button on the Additional Options screen (see section 5.3) allows you to map variables in the Data Mapper screen. If you load similar files but do not use a mapping file, this can save effort in the Import Data Wizard.



7.3.2 How is this screen organized?

1

7.3.2.1 Mapping Controls

The controls used to create new matches include the Source Variable Name, the QI Variable Name, and the <Add/Update> button.

2

7.3.2.2 Mapped Variables

The mapped variables are listed. A checkbox is displayed next to each source variable name. A <Delete Selected> button.

7.3.3 What do I do here?

To delete the association between a source variable and QI Variable, click the checkbox next to the source variable and then click the <Delete Selected> button.

To create an association, type the variable name as it appears in the Input Data file into the "Source Variable Name" field, select a QI Variable Name from the drop-down menu, and then click the <Add/Update> button.

When all desired changes have been made, click the <Save> button at the bottom of the screen.

7.3.4 Questions

To delete the association between a source variable and QI Variable, click the checkbox next to the source variable and then click the <Delete Selected> button.

7.3.4.1 How are mappings used?

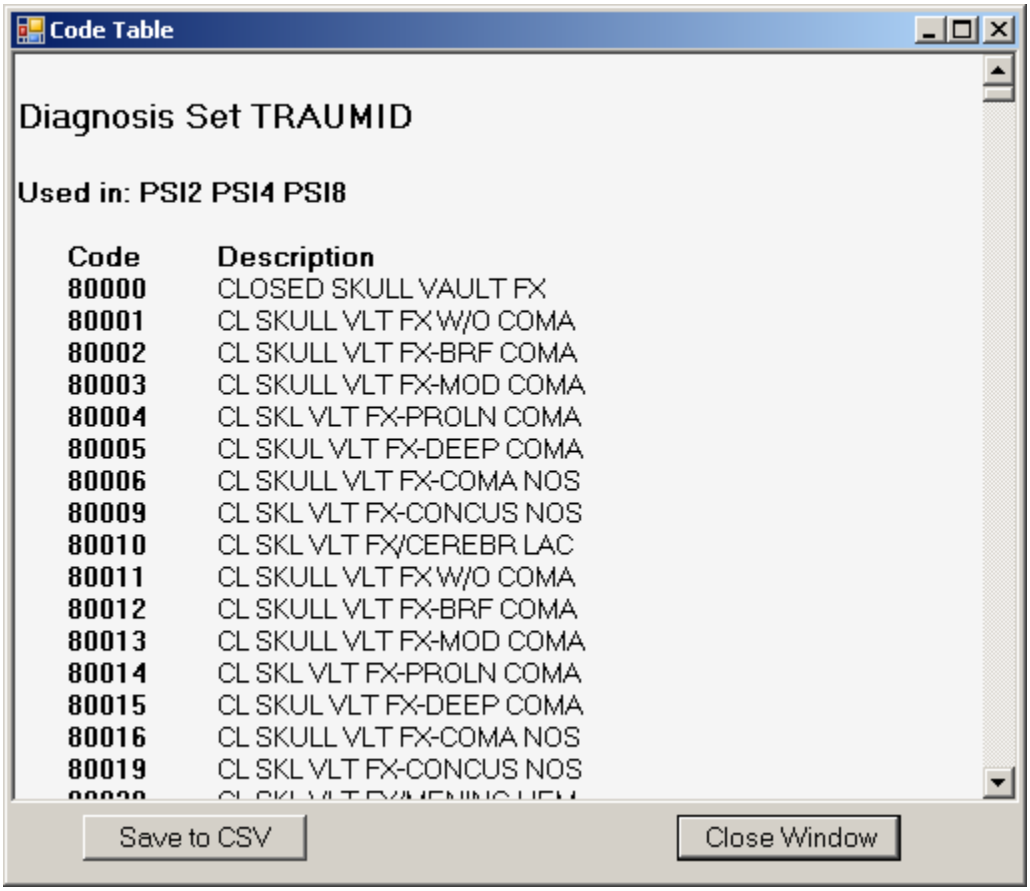
To delete the association between a source variable and QI Variable, click the checkbox next to the source variable and then click the <Delete Selected> button.

7.4 Code List

7.4.1 What is this screen for?

This is a popup window that displays the ICD-9-CM codes or DRGs that are used in indicator definitions. You can view these lists by clicking on the blue links on the Case Details screen (see section 6.4.) Each set corresponds to a list of codes that can be found in the Technical Specifications.

7.4.2 How is this screen organized?



1

7.4.2.1 Set Name

The name of this set of codes. This corresponds to the SAS format name in the formats library.

2

7.4.2.2 Used In

The list of indicators that directly use this set of codes.

NOTE: Indicators that indirectly make use of a set of codes are not listed. Lists that are indirectly used include the list of surgical DRGs and operating room procedures.

3

7.4.2.3 List of codes

The list of DRG or ICD-9-CM codes. Where available, the descriptions of each code are listed.

4

7.4.2.4 Save to CSV

This allows you to save a list of codes to a separate file that can be used with other programs.

7.4.3 What do I do here?

You can scroll through a list of codes here. Also, if you wish to import the list into another program, you may click on the <Export to CSV”>button to save this list.

7.4.4 Questions

7.4.4.1 What significance is the name?

The name of each “code set” corresponds to the same set of codes in the SAS format library. This name is a succinct way of referring to a group of codes that may be used by more than one indicator.

8.0 Sampling Wizard

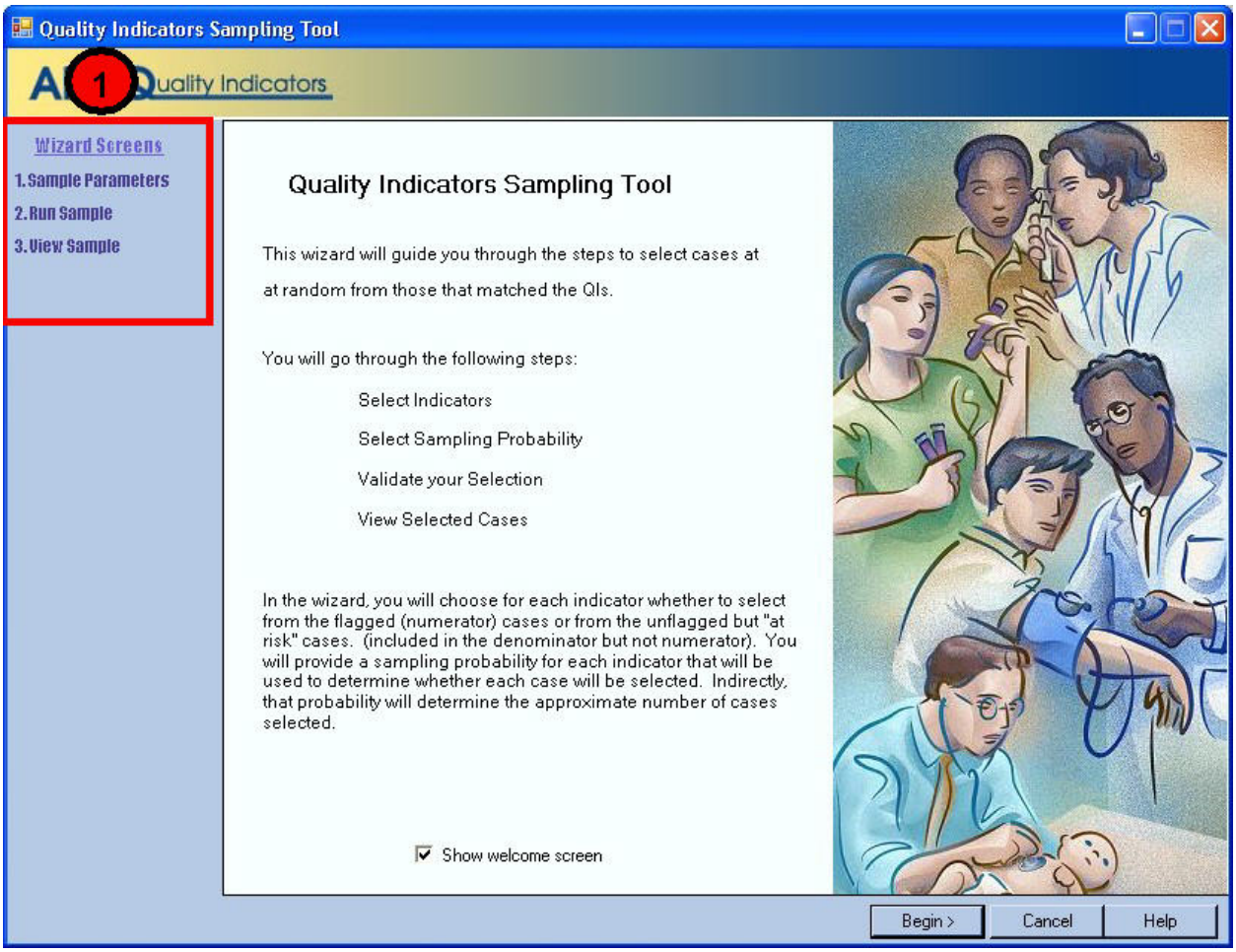
The Quality Indicators Sampling Tool will select cases at random from specified indicators for study. In the wizard, you will select the indicators you wish to study, whether you want to select from flagged or unflagged cases, and the percentage of cases you want selected.

The purpose of the sampling tool is to randomly select a subset of the flagged or unflagged cases for chart review and research purposes.

8.1 Quality Indicators Sampling Wizard

8.1.1 What is this screen for?

This screen introduces the Sampling tool.



8.1.2 How is this screen organized?

1

8.1.2.1 Wizard Screens

Lists the names of all screens in the Sampling Tool Wizard. This list is displayed on the left side of every screen in the Wizard. As you progress through the wizard, the title of the current screen will be highlighted in red.

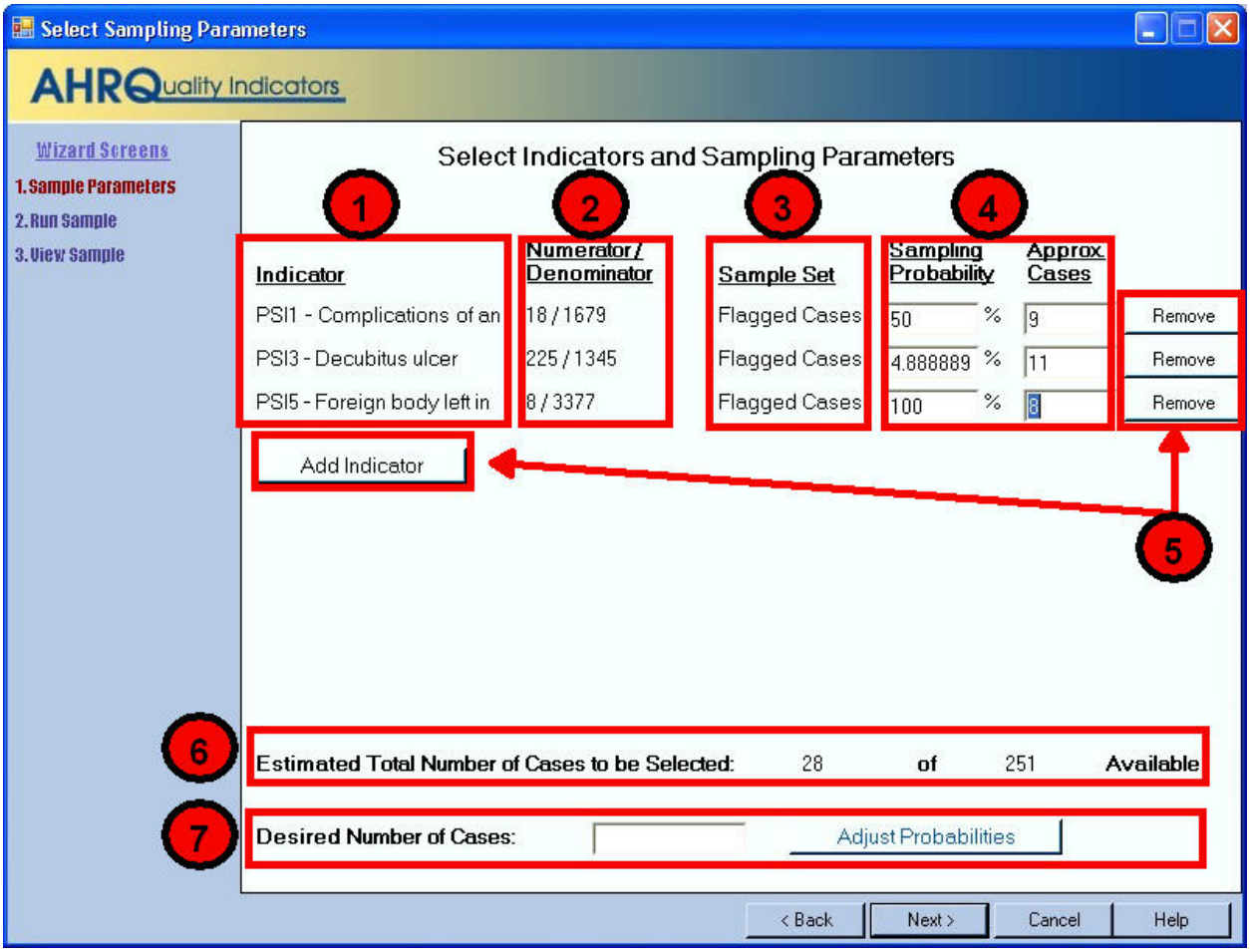
8.1.3 What do I do here?

Click <Begin> to proceed through the Sampling Wizard.

8.2 Select Sampling Parameters

8.2.1 What is this screen for?

This screen is used for selecting the indicators to include in the report, the sample set, and the sampling probability.



8.2.2 How is this screen organized?

1

8.2.2.1 Indicators

Lists the Indicators that have been specified.

2

8.2.2.2 Numerator / Denominator

Lists the total numerator and total denominator for each indicator for all cases that are currently loaded. This determines which cases are available for selection.

3

8.2.2.3 Sample Set

For each case, indicates whether you selected the “Flagged Cases” (i.e. those that are in the numerator) or the “Unflagged cases” (those that are in the denominator but not in the numerator.)

4

8.2.2.4 Sampling Probability and Approx. Cases

Determines the number of cases that are to be selected. You may either set the probability and let the number of cases be set automatically, or you may set the desired number of cases and let the probability be set automatically.

5

8.2.2.5 Add and Remove Indicators Buttons

These buttons allow you to add and remove indicators. You may include each indicator twice -- once for the flagged cases and once for the unflagged cases.

6

8.2.2.6 Estimated Total Number of Cases

This is the approximate total number of cases that will be sampled for all of the selected indicators.

7

8.2.2.7 Desired Number of Cases and Adjust Probabilities

This control allows you to automatically adjust the probabilities of all the indicators in order get a specific total number of cases.

8.2.3 What do I do here?

8.2.3.1 Specify indicator

Click on “Add Indicator” to choose an indicator that you wish to select for your sample and then choose whether you want the Flagged or Unflagged cases.

8.2.3.2 Specify sample size

If you want to sample all of the cases for a particular indicator, select 100 for the sampling probability. Otherwise, you may set the probability by either entering a sampling probability percent or the number of cases you want to sample. You must have a nonzero probability or the indicator will be ignored.

8.2.3.3 Adjust Probabilities

The <Adjust Probabilities> button allows you to change the probabilities for all of your indicators simultaneously. Enter the desired total number of cases and click the button. It will raise or lower the probabilities for each indicator so that the total estimated number of cases adds up to the desired number.

This function will not change the sampling probability of any indicators for which you have selected 100% or 0%. It will not work unless it is possible to adjust the other indicators and still have each indicator's probability fall between 0 and 100.

8.2.4 Questions

8.2.4.1 How will the sampling probability be used?

The program will generate a random between 1 and 100,000 for each case that is available to be selected. If the random number is less than 1000 * the probability, then the case will be selected.

8.2.4.2 How is the number of available cases determined for each indicator?

If you have selected “Flagged” cases, then the available cases are all those that are in the numerator of that indicator. If you have selected “Unflagged” then the available cases are those that are in the denominator but not the numerator. (These have a zero in the export data.)

8.2.4.3 Why is the number of cases approximate?

This screen only determines the sampling probability. Random variation can result in more or less actual cases selected.

8.2.4.4 Can the same case be selected more than once?

Yes. The same case may be selected for different indicators.

8.2.4.5 How does the Adjust Probabilities function work?

The new probabilities are calculated as follows:

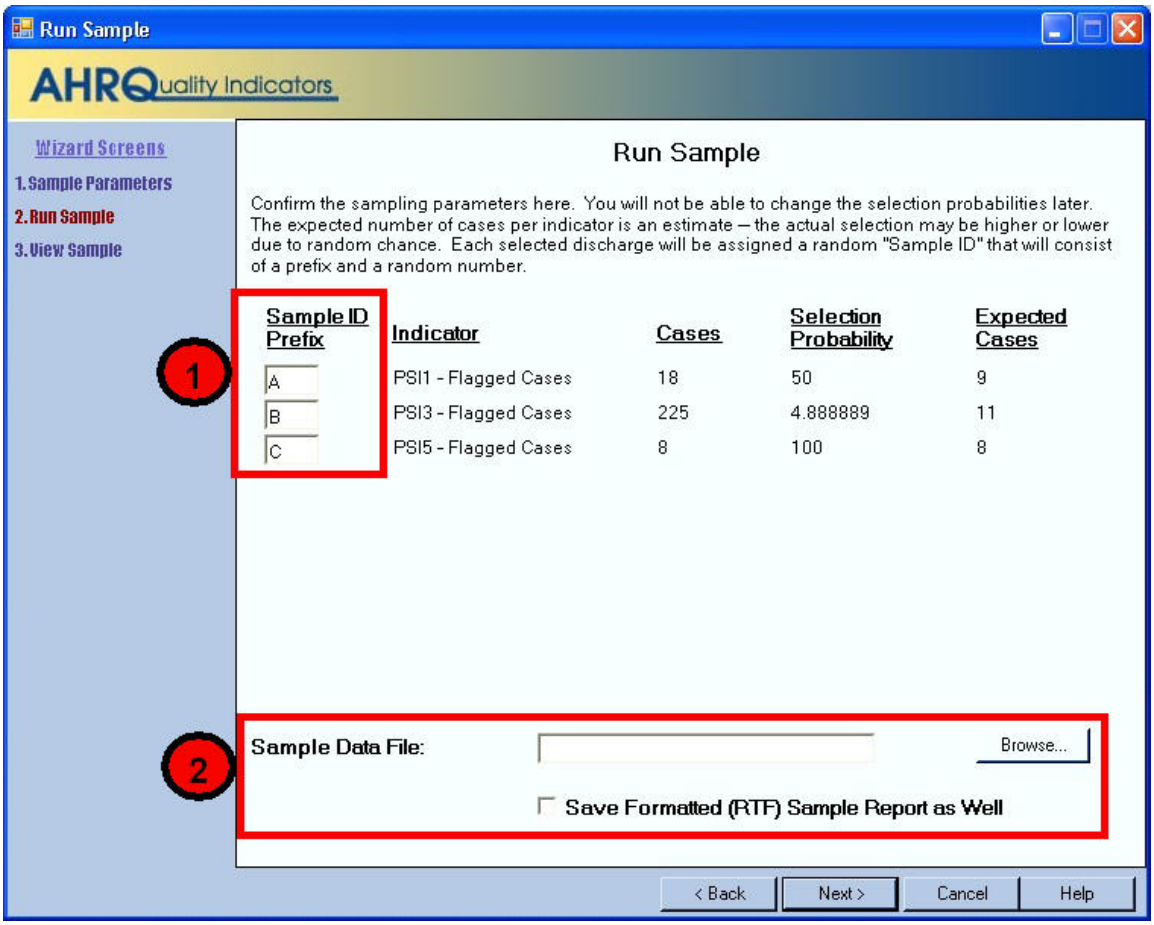
1) Tally the number of cases for indicators that are set at 100%.
2) Tally the number of cases for the indicators that are NOT set to 100%. Let this be A.
3) Subtract this from the number of desired cases. Let this be D.

4) Multiply each of the indicators in step #2 by A/D.

8.3 Run Sample

8.3.1 What is this screen for?

This screen lets you verify the indicators you want and actually execute the sampling. You cannot go back and change the sample parameters after this point.



8.3.2 How is this screen organized?

1

8.3.2.1 Sample Prefix

Each selected case will be assigned a random "Sample ID". You can assign a prefix to this sample here. The ID will be this prefix followed by a random number.

2

8.3.2.2 Sample Data File

You must select a text file that will be created to store your sample.

8.3.2.3 Save Formatted RTF Sample Report as Well

In addition to the text file, you may create a formatted version that is easier to read and print.

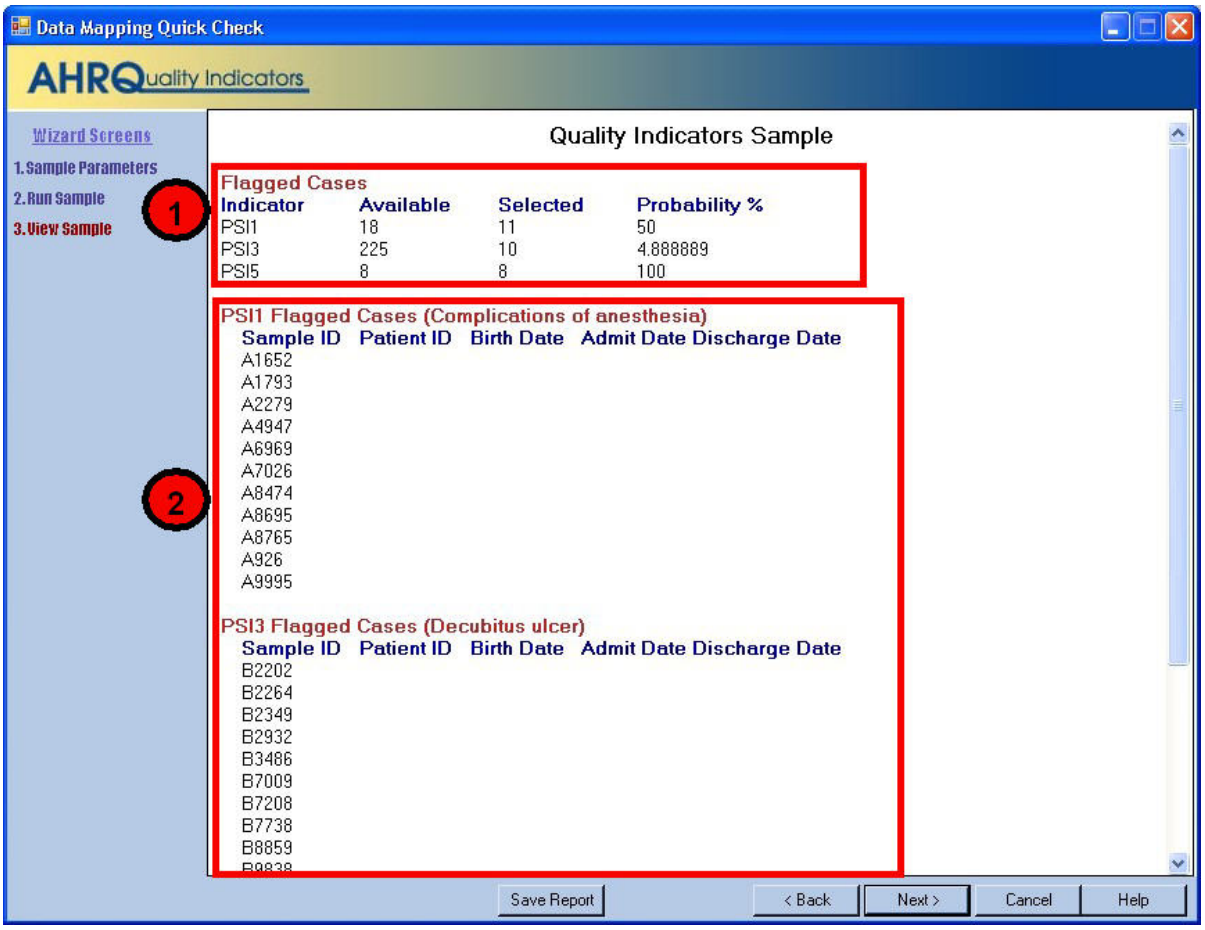
8.3.3 What do I do here?

Select prefixes for each indicator. Select an output file, and then click <Next> for the program to create your sample.

8.4 View Sample

8.4.1 What is this screen for?

This screen shows the cases that have been sampled. The same information is saved to a file during the previous screen.



8.4.2 How is this screen organized?

1

8.4.2.1 Sample summary

Lists the indicators for each sample set along with the number of cases available, number of cases selected, and probability %.

2

8.4.2.2 Selected cases

Lists each indicator. The cases that were selected at random are listed under the indicator.

8.4.3 What do I do here?

Nothing. Your sample has already been generated and saved to a file. You should not go back and change your sample at this point.

9.0 Reference

This section contains a list of each of the Quality Indicators and their definitions.

9.1 Quality Indicators Name and Definition

For complete, detailed information on the QIs, including the codes specifically included and excluded in the numerator and denominator of each indicator, consult the Technical Specifications for each QI module, available at http://www.qualityindicators.ahrq.gov/downloads.htm

9.2 Inpatient Quality Indicators (IQIs)

The table below lists the Inpatient Quality Indicators, their definitions, and risk adjustment method. NOTE: QI Windows Software allows the user to scale the rate units to display raw rates, rates per 100, per 1000, or per 100,000. See section 6.14.4.

Indicator Name (Number)	Definition	Risk Adjustment
Provider-Level Volume Indicators		
Esophageal Resection Volume (IQI 1)	Raw volume compared to annual thresholds (6 and 7 procedures).	Not applicable.
Pancreatic Resection Volume (IQI 2)	Raw volume compared to annual thresholds (10 and 11 procedures).	Not applicable.
Abdominal Aortic Aneurysm Repair (AAA) Volume (IQI 4)	Raw volume compared to annual thresholds (10 and 32 procedures).	Not applicable.
Coronary Artery Bypass Graft (CABG) Volume (IQI 5)	Raw volume compared to annual thresholds (100 and 200 procedures).	Not applicable.
Percutaneous Transluminal Coronary Angioplasty (PTCA) Volume (IQI 6)	Raw volume compared to annual thresholds (200 and 400 procedures).	Not applicable.
Carotid Endarterectomy (CEA) Volume (IQI 7)	Raw volume compared to annual thresholds (50 and 101 procedures).	Not applicable.
Provider-Level Mortality Indicators		
Esophageal Resection Mortality Rate (IQI 8)	Number of deaths per esophageal resections for cancer.	Age, sex and APR™ DRG with ROM subclass
Pancreatic Resection Mortality Rate (IQI 9)	Number of deaths per pancreatic resections for cancer.	Age, sex and APR™ DRG with ROM subclass
AAA Repair Mortality Rate (IQI 11)	Number of deaths per AAA repairs.	Age, sex and APR™ DRG with ROM subclass
CABG Mortality Rate (IQI 12)	Number of deaths per CABG procedures.	Age, sex and APR™ DRG with ROM subclass
PTCA Mortality Rate[a] (IQI 30)	*Number of deaths per PTCAs*	Age, sex and APR™ DRG with ROM subclass
CEA Mortality Rate[a] (IQI 31)	*Number of deaths per CEAs.*	Age, sex and APR™ DRG with ROM subclass
Craniotomy Mortality Rate (IQI 13)	Number of deaths per craniotomies.	Age, sex and APR™ DRG with ROM subclass
Hip Replacement Mortality Rate (IQI 14)	Number of deaths per hip replacements.	Age, sex and APR™ DRG with ROM subclass

Indicator Name (Number)	Definition	Risk Adjustment
Provider-Level Mortality Indicators for Inpatient Conditions		
Acute Myocardial Infarction (AMI) Mortality Rate (IQI 15)	Number of deaths per discharges for AMI.	Age, sex and APR™ DRG with ROM subclass
Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases (IQI 32)	Number of deaths per discharges for AMI.	Age, sex and APR™ DRG with ROM subclass
Congestive Heart Failure (CHF) Mortality Rate (IQI 16)	Number of deaths per discharges for CHF.	Age, sex and APR™ DRG with ROM subclass
Acute Stroke Mortality Rate (IQI 17)	Number of deaths per discharges for stroke.	Age, sex and APR™ DRG with ROM subclass
Gastrointestinal (GI) Hemorrhage Mortality Rate (IQI 18)	Number of deaths per discharges for GI hemorrhage.	Age, sex and APR™ DRG with ROM subclass
Hip Fracture Mortality Rate (IQI 19)	Number of deaths per discharges for hip fracture.	Age, sex and APR™ DRG with ROM subclass
Pneumonia Mortality Rate (IQI 20)	Number of deaths per discharges for pneumonia.	Age, sex and APR™ DRG with ROM subclass
Provider-Level Utilization Indicators		
Cesarean Delivery Rate (IQI 21)	Number of Cesarean deliveries per deliveries.	Age
Primary Cesarean Delivery Rate (IQI 33)	Number of Cesarean deliveries per deliveries in women with no history of previous Cesarean delivery.	Age
Vaginal Birth After Cesarean (VBAC) Rate, Uncomplicated (IQI 22)	Number of vaginal births per deliveries in women with previous Cesarean delivery.	Age
Vaginal Birth After Cesarean (VBAC) Rate, All (IQI 34)	Number of vaginal births per deliveries in women with history of previous Cesarean delivery.	Age
Laparoscopic Cholecystectomy Rate (IQI 23)	Number of laparoscopic cholecystectomies per cholecystectomies.	Age and sex
Incidental Appendectomy in the Elderly Rate (IQI 24)	Number of incidental appendectomies per abdominal surgeries.	Age, sex and APR™ DRG with SOI subclass
Bilateral Cardiac Catheterization Rate (IQI 25)	Number of bilateral catheterizations per cardiac catheterizations.	Age, sex and APR™ DRG with SOI subclass
Area-Level Utilization Indicators		
CABG Rate (IQI 26)	Number of CABGs per population.	Age and sex
PTCA Rate (IQI 27)	Number of PTCAs per population.	Age and sex
Hysterectomy Rate (IQI 28)	Number of hysterectomies per population.	Age
Laminectomy or Spinal Fusion Rate (IQI 29)	Number of laminectomies per population.	Age and sex

[a] PTCA and CEA mortality are not recommended as stand-alone indicators, but are suggested as companion measures to the corresponding volume measures.
[b] CABG and PTCA area utilization are not recommended as stand-alone indicators. They are designed only for use with the corresponding volume and/or mortality measures.

NOTE: For IQIs that use APR™ DRG as the risk adjustment method, version 20 of the 3M™ APR™ DRG system must be used. See " What about APR™ DRG codes?" on page 7.

9.3 Patient Safety Indicators (PSIs)

The table below lists the Patient Safety Indicators and their definitions. NOTE: QI Windows Software allows the user to scale the rate units to display raw rates, rates per 100, per 1000, or per 100,000. See section 6.14.4.

Indicator Name (Number)	Definition
Provider-Level Indicators	
Complications of Anesthesia (PSI 1)	Cases of anesthetic overdose, reaction, or endotrachial tube misplacement per surgery discharges with an operating room procedure.
Death in Low-Mortality DRGs (PSI 2)	In-hospital deaths per patients in Diagnosis-Related Groups (DRGs)[9] with less than 0.5% mortality.[a]
Decubitus Ulcer (PSI 3)	Cases of decubitus ulcer per discharges with a length of stay of 5 or more days.
Failure to Rescue (PSI 4)	Deaths per patients having developed specified complications of care during hospitalization.
Foreign Body Left During Procedure (PSI 5)	Discharges with foreign body accidentally left in during procedure per discharges.
Iatrogenic Pneumothorax (PSI 6)	Cases of iatrogenic pneumothorax per discharges.
Selected Infections Due to Medical Care (PSI 7)	Cases of secondary ICD-9-CM codes 9993 or 99662 per discharges.
Postoperative Hip Fracture (PSI 8)	Cases of in-hospital hip fracture per surgical discharges with an operating room procedure.
Postoperative Hemorrhage or Hematoma (PSI 9)	Cases of hematoma or hemorrhage requiring a procedure per surgical discharges with an operating room procedure.
Postoperative Physiologic and Metabolic Derangement (PSI 10)	Cases of specified physiological or metabolic derangement per elective surgical discharges with an operating room procedure.
Postoperative Respiratory Failure (PSI 11)	Cases of acute respiratory failure per elective surgical discharges with an operating room procedure.
Postoperative PE or DVT (PSI 12)	Cases of deep vein thrombosis or pulmonary embolism per surgical discharges with an operating room procedure.
Postoperative Sepsis (PSI 13)	Cases of sepsis per elective surgery patients with an operating room procedure, with length of stay more than 3 days.
Postoperative Wound Dehiscence (PSI 14)	Cases of reclosure of postoperative disruption of abdominal wall per cases of abdominopelvic surgery.
Accidental Puncture or Laceration (PSI 15)	Cases of technical difficulty (e.g., accidental cut or laceration during procedure) per discharges.
Transfusion Reaction (PSI 16)	Cases of transfusion reaction per discharges.
Birth Trauma–Injury to Neonate (PSI 17)	Cases of birth trauma, injury to neonate, per liveborn births.
Obstetric Trauma–Vaginal Delivery with Instrument (PSI 18)	Cases of obstetric trauma (3rd and 4th degree lacerations, other obstetric lacerations) per instrument-assisted vaginal deliveries.
Obstetric Trauma–Vaginal Delivery without Instrument (PSI 19)	Cases of obstetric trauma (3rd and 4th degree lacerations, other obstetric lacerations) per vaginal deliveries without instrument assistance.
Obstetric Trauma–Cesarean Delivery (PSI 20)	Cases of obstetric trauma (3rd and 4th degree lacerations, other obstetric lacerations) per Cesarean deliveries.
Area-Level Indicators	
Foreign Body Left During Procedure (PSI 21)	Discharges with foreign body accidentally left in during procedure per population.
Iatrogenic Pneumothorax (PSI 22)	Cases of iatrogenic pneumothorax per population.
Selected Infections Due to Medical Care (PSI 23)	Cases of secondary ICD-9-CM codes 999.3 or 996.62 per population.
Postoperative Wound Dehiscence (PSI 24)	Cases of reclosure of postoperative disruption of abdominal wall per population.

[9] DRGs that are divided into "with complications and comorbidities" and "without complications and comorbidities" are only included if both divisions have mortality rates below 0.5%.

Indicator Name (Number)	Definition
Accidental Puncture or Laceration (PSI 25)	Cases of technical difficulty (e.g., accidental cut or laceration during procedure) per population.
Transfusion Reaction (PSI 26)	Cases of transfusion reaction per population.
Postoperative Hemorrhage or Hematoma (PSI 27)	Cases of hematoma or hemorrhage requiring a procedure per population.

[a] DRGs that are divided into "with complications and comorbidities" and "without complications and comorbidities" are only included if both divisions have mortality rates below 0.5%.

9.4 Pediatric Quality Indicators (PDIs)

The table below lists the Pediatric Quality Indicators and their definitions. NOTE: QI Windows Software allows the user to scale the rate units to display raw rates, rates per 100, per 1000, or per 100,000. See section 6.14.4.

Indicator Name (Number)	Definition
Provider-Level Indicators	
Accidental Puncture or Laceration (PDI 1)	Cases of technical difficulty (e.g., accidental cut or laceration during procedure) per discharges under age 18 years.
Decubitus Ulcer (PDI 2)	Cases of decubitus ulcer per discharges under age 18 years with a length of stay of 5 or more days.
Foreign Body Left During Procedure (PDI 3)	Discharges under age 18 years with foreign body accidentally left in during procedure per discharges.
Iatrogenic Pneumothorax in neonates (PDI 4)	Cases of iatrogenic pneumothorax in neonates per discharges.
Iatrogenic Pneumothorax (PDI 5)	Cases of iatrogenic pneumothorax per non-neonate discharges under age 18 years.
Pediatric Heart Surgery Volume (PDI 6)	Raw volume compared to annual threshold (100 procedures).
Pediatric Heart Surgery Mortality Rate (PDI 7)	Number of deaths per heart surgeries in patients under age 18 years.
Postoperative Hemorrhage or Hematoma (PDI 8)	Cases of hematoma or hemorrhage requiring a procedure per surgical discharges under age 18 years with an operating room procedure.
Postoperative Respiratory Failure (PDI 9)	Cases of acute respiratory failure per elective surgical discharges under age 18 years with an operating room procedure.
Postoperative Sepsis (PDI 10)	Cases of sepsis per elective surgery patients under age 18 years with an operating room procedure, with length of stay more than 3 days.
Postoperative Wound Dehiscence (PDI 11)	Cases of reclosure of postoperative disruption of abdominal wall per cases under age 18 years of abdominopelvic surgery.
Selected Infections Due to Medical Care (PDI 12)	Cases of secondary ICD-9-CM codes 999.3 or 996.62 per population under age 18 years.
Transfusion Reaction (PDI 13)	Cases of transfusion reaction per discharges under age 18 years.
Area-Level Indicators	
Asthma Admission Rate (PDI 14)	Number of pediatric admissions for asthma per population ages 2 through 17 years.
Diabetes Short-term Complication Admission Rate (PDI 15)	Number of pediatric admissions for diabetes short-term complications per population ages 6 through 17 years.
Pediatric Gastroenteritis Admission Rate (PDI 16)	Number of pediatric admissions for gastroenteritis per population ages 90 days through 17 years.
Perforated Appendix Admission Rate (PDI 17)	Number of pediatric admissions for perforated appendix as a share of all admissions ages 1 through 17 years for appendicitis within an area.
Urinary Tract Infection Admission Rate (PDI 18)	Number of pediatric admissions for urinary tract infection per population ages 90 days through 17 years.

9.5 Prevention Quality Indicators (PQIs)

The table below lists the Prevention Quality Indicators and their definitions. All of the PQIs are area-level indicators. NOTE: QI Windows Software allows the user to scale the rate units to display raw rates, rates per 100, per 1000, or per 100,000. See section 6.14.4.

Indicator Name (Number)	Definition
Diabetes Short-term Complication Admission Rate (PQI 1)	Number of admissions for diabetes short-term complications per population.
Perforated Appendix Admission Rate (PQI 2)	Number of admissions for perforated appendix as a share of all admissions for appendicitis within an area.
Diabetes Long-term Complication Admission Rate (PQI 3)	Number of admissions for long-term diabetes per population.
Pediatric Asthma Admission Rate (PQI 4)	Number of admissions for pediatric asthma per population.
Chronic Obstructive Pulmonary Disease Admission Rate (PQI 5)	Number of admissions for COPD per population.
Pediatric Gastroenteritis Admission Rate (PQI 6)	Number of admissions for pediatric gastroenteritis per population.
Hypertension Admission Rate (PQI 7)	Number of admissions for hypertension per population.
Congestive Heart Failure Admission Rate (PQI 8)	Number of admissions for CHF per population.
Low Birth Weight Rate (PQI 9)	Number of low birth weight births as a share of all births in an area.
Dehydration Admission Rate (PQI 10)	Number of admissions for dehydration per population.
Bacterial Pneumonia Admission Rate (PQI 11)	Number of admissions for bacterial pneumonia per population.
Urinary Tract Infection Admission Rate (PQI 12)	Number of admissions for urinary tract infection per population.
Angina without Procedure Admission Rate (PQI 13)	Number of admissions for angina without procedure per population.
Uncontrolled Diabetes Admission Rate (PQI 14)	Number of admissions for uncontrolled diabetes per population.
Adult Asthma Admission Rate (PQI 15)	Number of admissions for asthma in adults per population.
Rate of Lower-extremity Amputation Among Patients with Diabetes (PQI 16)	Number of admissions for lower-extremity amputation among patients with diabetes per population.

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