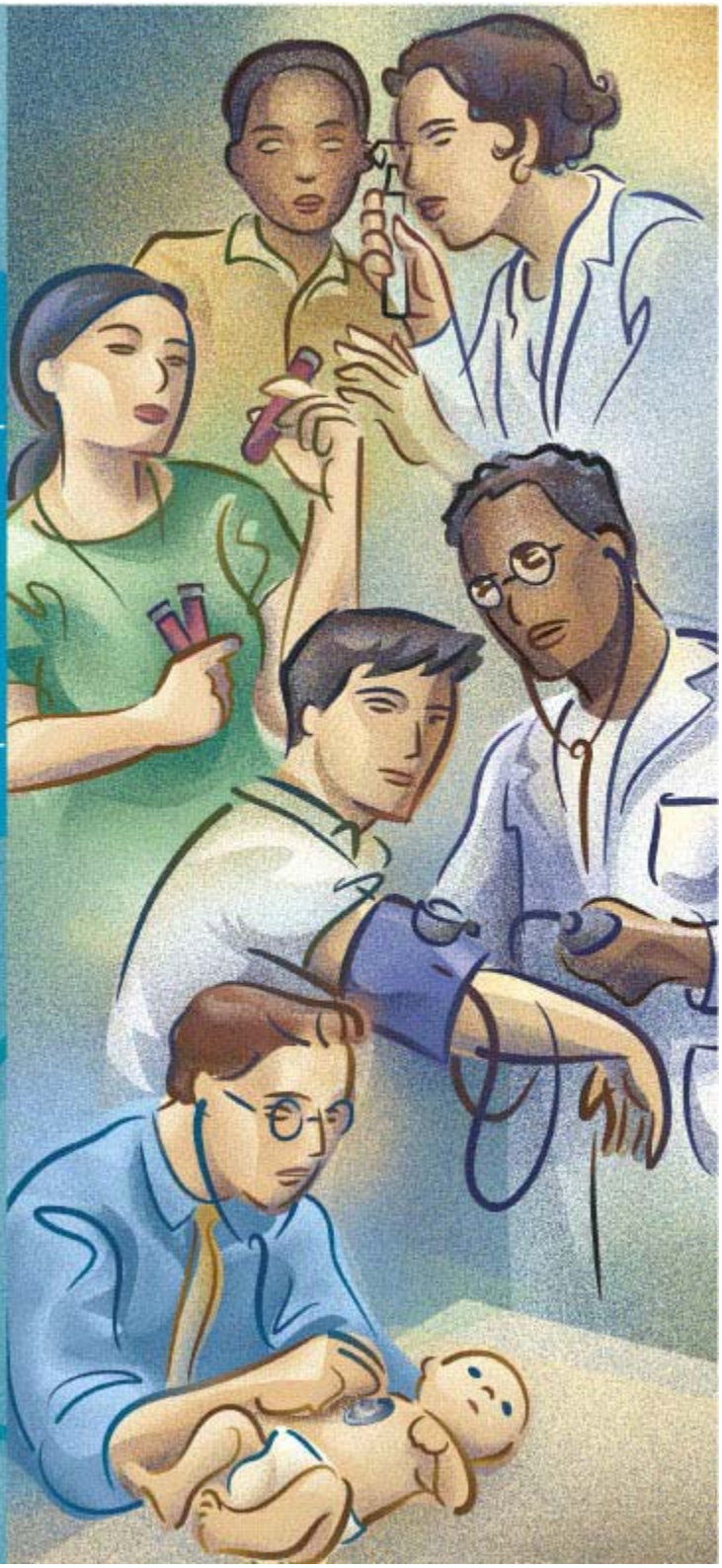
AHRQ

AHRQ QUALITY INDICATORS

Windows

SOFTWARE DOCUMENTATION



AHRQ Quality Indicators

Software Documentation, Version 3.0
Windows

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Agency for Healthcare Research and Quality
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Abstract

This document is the software documentation for the Quality Indicators (QI) Windows, Version 3.0, which is provided on the AHRQ Web site. The software was developed in C#, 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.

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1.0 Overview

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:

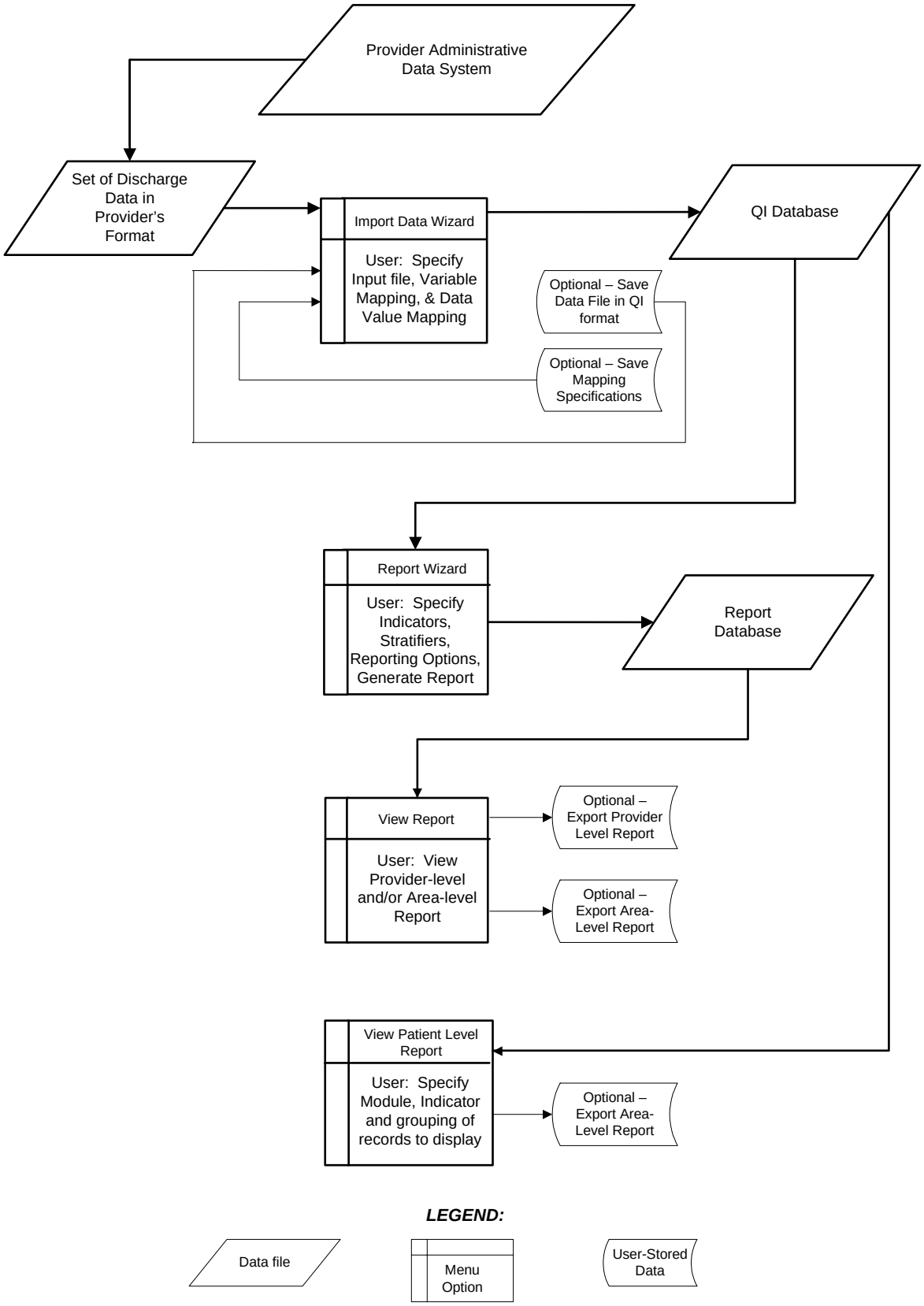
- Prevention Quality Indicators (PQIs) --or ambulatory care sensitive conditions--identify hospital admissions that evidence suggests could have been avoided, at least in part, through high-quality outpatient care.
- Inpatient Quality Indicators (IQIs) reflect quality of care inside hospitals and include:
    - 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

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 Metropolitan Statistical Area (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 and PSIs 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.

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

Figure 1 Flowchart of Data Flow through AHRQ QI Windows Application



1.1 About the QI Software

1.1.1 What kinds of software are available to calculate QIs?

Two 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.

There is also an SPSS® version of the software that is superseded by the Windows version.

1.1.2 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 version is available at http://www.qualityindicators.ahrq.gov/winqi_download.htm. The SAS® versions must be downloaded from the individual QI module download pages (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. However, to calculate risk-adjusted rates for some of the IQIs (see Inpatient Quality Indicators (IQIs) on page 58), Version 20 of the 3M™ APR™ DRG system must be used. (See "What about APR™ DRG codes?" on page 5.) A limited license version of the 3M™ APR™ DRG system can be installed 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.

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

The QI software requires Microsoft Windows 2000 or Microsoft Windows XP, with the Microsoft .NET platform and an available Microsoft SQL Server 2000 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. MSDE 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 MSDE. The database may be installed on the same machine as this software or it may reside elsewhere on the local area network.

1.1.4 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 MSDE installations, the limit is 2 GB which comes to approximately 3 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 .

1.1.5 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 <Quality Indicators>.

1.2 Other Documentation

The Quality Indicators are separated into three modules, the PSIs, PQIs and IQIs. Each module is documented separately in a ***User Guide.*** These guides provide the detailed definitions, rationale, and evidence for each indicator. In particular, each document includes an *Appendix A* that contains the complete technical definition of each indicator. Any references to the *User Guide* in this document or any other AHRQ Quality Indicators documentation refer to these three documents collectively.

The Quality Indicators website contains a separate download section for each of the 3 modules. These can be found at http://www.qualityindicators.ahrq.gov/downloads.htm. The *User Guides* and other documentation can be found on the page for each module. Other available downloads include the SAS syntax and documentation, and a *Change Log* for each module.

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

1.3 About the Input Data

1.3.1 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. Two wizards will step you through everything you need to do in order to load data or generate a report.

1.3.2 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(s), and discharge.

1.3.3 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 these requirements are met by the data file, the Import Data Wizard will assist users in transforming their data into the QI format.

1.3.4 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.

1.3.5 What data must be included?

The Data Elements chart (See page 8) lists the data that should be included for each discharge.

1.3.6 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 page 21) in the Import Data Wizard to determine the consequences of leaving any variable out.

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

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.

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

No. 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.

1.3.9 What are the different data types?

There are three types of Data Elements: Numbers, 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, in order to calculate mortality indicators, the QI application needs

to know what disposition value corresponds to “died”. You may use any appropriate values for each variable, however if you do not use the values in the Data Elements table you will need to provide the translation in the Crosswalk Screen.

1.3.10 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.

1.3.11 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 in the Import Data Wizard (see page 21) 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.

NOTES FOR SAS® USERS: The Windows software differs from the SAS® software in that the Windows version allows gaps between diagnosis fields. Therefore it is not required that you preprocess the data to use the first empty secondary diagnosis field in each record for E-code data.

1.3.12 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 will need to do one of two things:

- Preprocess their data by running Version 20 of the 3M™ APR™ DRG software before importing the file into the Windows QI application
- Use the built-in limited license version of the 3M™ APR™ DRG when importing the data.

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

1.4 Specifying and Viewing Reports

1.4.1 How do users specify reports?

The QI Windows software provides a Report Wizard that allows users to do the following.

- Select Indicators to include in the report
- Select stratifiers
- Select additional options for data analysis
- Generate and view provider-level and area-level reports

1.4.2 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 procedures or conditions as the denominator. The stratifiers available for provider-level indicators are different than those for area-level indicators.

1.4.3 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.

1.4.4 What happens if a different report is generated?

The existing set of reports will be overwritten.

1.4.5 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.

1.5 Data Security and Privacy

1.5.1 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 on Page 8 for detailed descriptions of each required data element.

1.5.2 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.

1.5.3 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.

1.5.4 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.

1.5.5 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

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).

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.

1.5.6 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?"

1.5.7 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.

1.5.8 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?"

1.5.9 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?"

1.5.10 How do I customize the MSDE SQL Server?

The AHRQ QI software is bundled with the installer for MSDE. The MSDE 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 MSDE 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 MSDE SQL Server to allow remote connections to your PC from other computers. We do not recommend enabling remote connections.

1.5.11 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 V2.0* 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 page 14.

2.0 Input Data

2.1 Data Elements and Coding Conventions

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 file.
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[1], all the input data values must be mapped to one of the listed values. For provider level indicators, user-defined values may be retained.
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.

[1] 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
State/County Code	Provider or Patient Location (FIPS State/County Code) (Patient recommended)[2]	Numeric ssccc	Modified Federal Information Processing Standards State/county code[3]	Available at: http://www.census.gov/popest/geographic/codes02.pdf If this data element is missing the discharge record will be excluded from rate calculations.
Hospital ID	Data Source Hospital Number	Numeric	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.
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)
Length of Stay	Length of Stay	Numeric	Number of days from admission to discharge	Not used for PQIs and IQIs.

[2] See Data Mapping on page 21.

[3] 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
APR™ DRG	APR™ DRG Category	Numeric	APR™ DRG from 3M software	Optional. Currently the AHRQ QI software uses APR™ DRG Version 20.0 to risk-adjust the IQI. If not available the IQI will be risk-adjusted using only age and gender Not used for PQIs and PSIs.
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 20.0 to risk-adjust the IQI. If not available the IQI will be risk-adjusted using only age and gender Not used for PQIs and PSIs.
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 20.0 to risk-adjust the IQI. If not available the IQI will be risk-adjusted using only age and gender. Not used for PQIs and PSIs.
Diagnosis Related Group	Diagnosis Related Group	Numeric	DRG from federal (CMS) Grouper	
Major Diagnostic Category	Major Diagnostic Category	Numeric	MDC from federal (CMS) grouper	
Primary 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	
Diagnosis Code 2 – Diagnosis Code 35	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.
Count of Diagnosis Codes	Count of the Number of Diagnoses on the Discharge Record.	Numeric	Count of diagnoses (principal and all secondary diagnoses)	Optional. Not used by the AHRQ QI Windows software.

Variable Name	Description	Format	Value Description	Comments
Primary Procedure	ICD-9-CM Procedure Codes. Procedure code 1 is the principal procedure;	String, 3 or 4 characters (do not include decimal point)	Procedure code	
Procedure Code 2 - Procedure Code 30	ICD-9-CM Procedure Codes. Procedure codes 2-30 are secondary procedures.	String, 3 or 4 characters (do not include decimal point)	Procedure codes	Include up to 30 procedures. It is not necessary to have 30.
Count of Procedure Codes	Count of the Number of Procedures (PR) on the Discharge Record.	Numeric	Count of procedures (principal and all secondary procedures)	Optional. Not used by the AHRQ QI Windows software.
Days to Procedure 1 - Days to Procedure 30	Days from Admission to Procedure. Procedure 1 is the Principal Procedure; procedures 2-30 are secondary procedures.	Numeric	Days from admission to procedure[4]	It is expected that the number of Days to Procedure variables agrees with the number of Procedure codes present.
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.

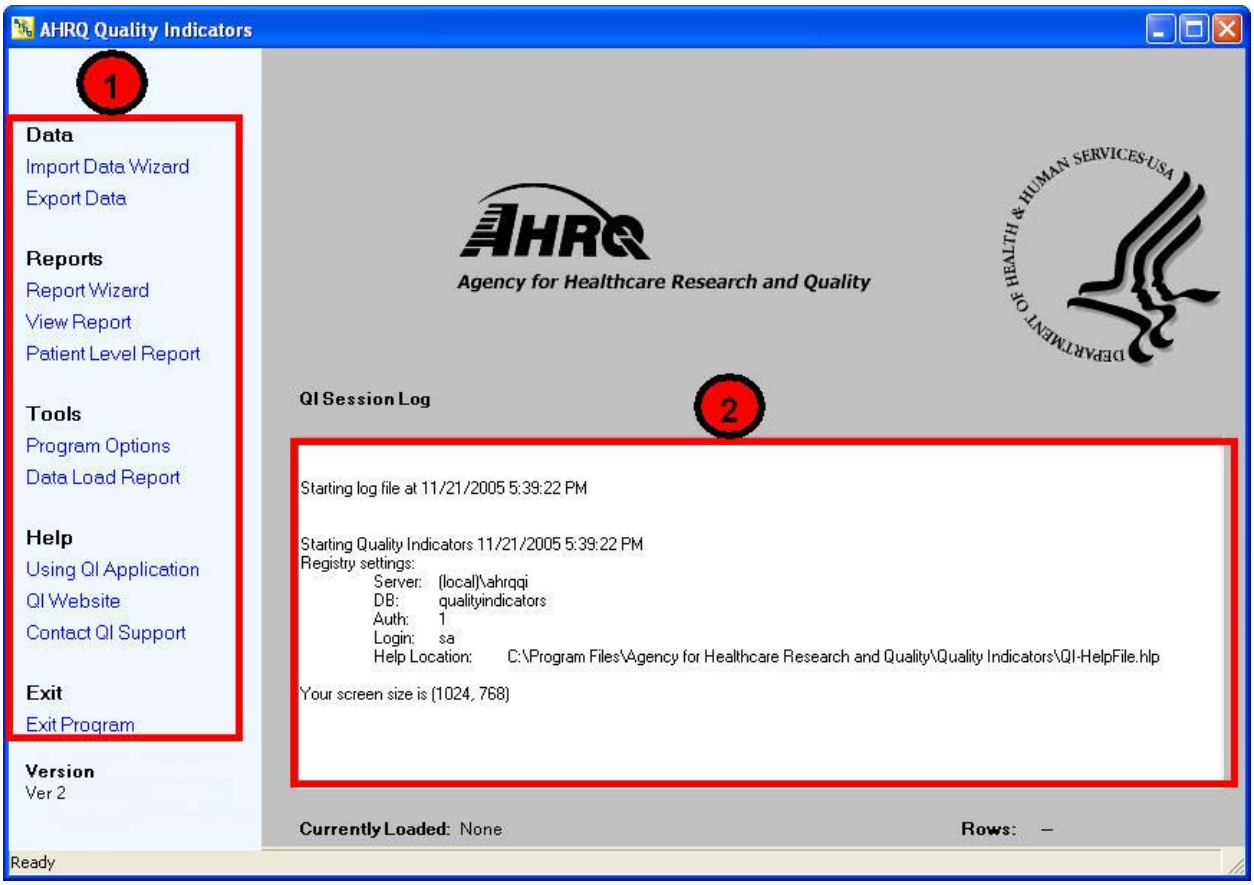
[4] Variables Days to Procedure 1 to Days to Procedure 30 are defined as the number of days from date of admission to date of procedure for each procedure. For example, if the patient was admitted on June 15th and had two procedures - the principal procedure on June 15th and a second procedure on June 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

3.0 Main Screen and Program Options

3.1 Main Screen

3.1.1 What is this screen for?

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



3.1.2 How is this screen organized?

1

3.1.2.1 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
- <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 settings
- <Data Load Report> - Displays the Data Load Summary screen seen at the end of the Input Data Wizard.

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

3.1.2.2 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 cut and paste information from this log when contacting AHRQ support.

Additionally, the QI session log may be saved to a file. See the Program Options page. When contacting AHRQ Support, please only include the relevant portions of your log file.

3.1.3 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.

3.1.4 Questions

3.1.4.1 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.

3.1.4.2 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.

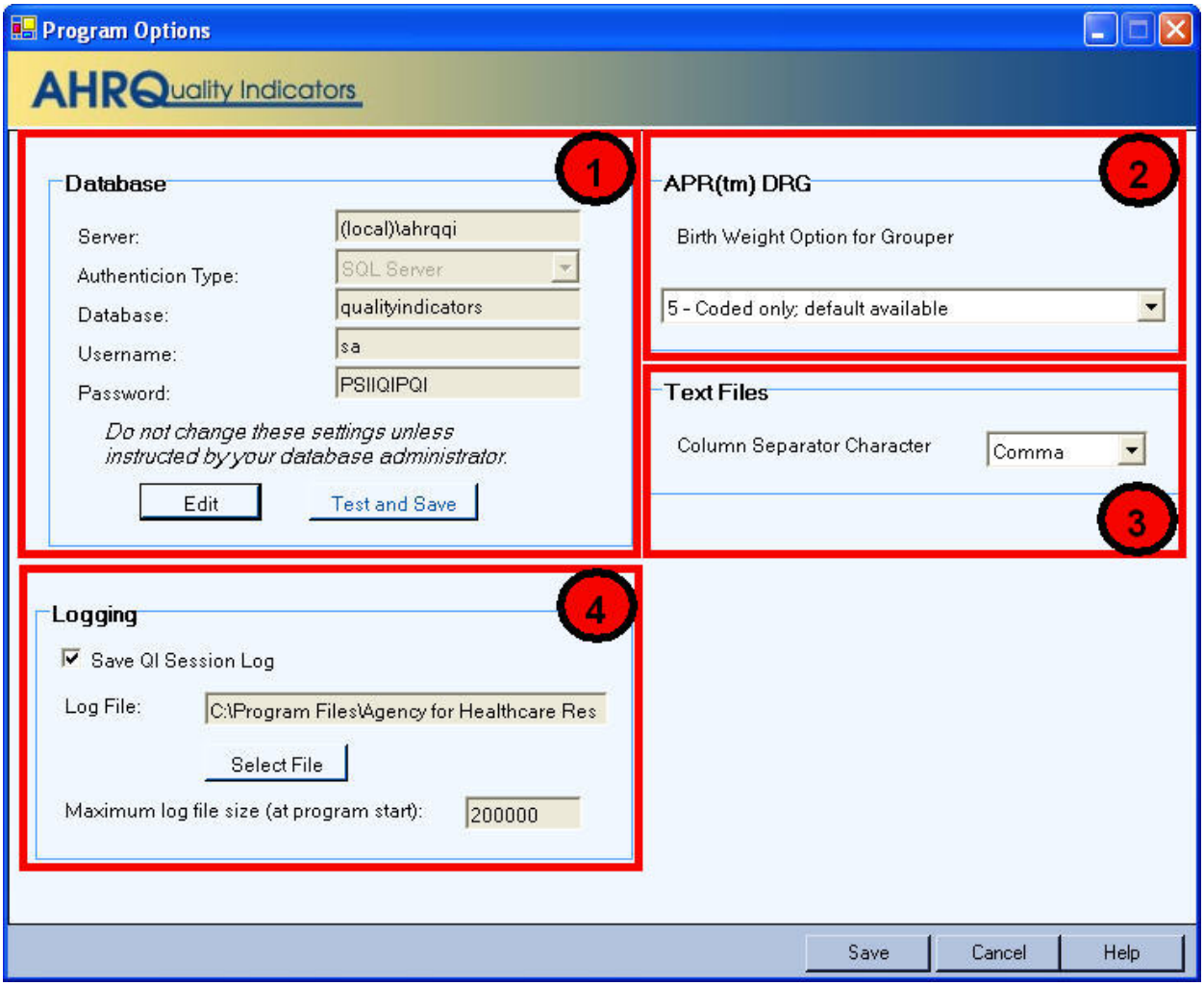
3.1.4.3 What if I forget to save a report?

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.

3.2 Program Options

3.2.1 What is this screen for?

This screen allows you to change your database options and to save the Session Log.



3.2.2 How is this screen organized?

1

3.2.2.1 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

3.2.2.2 APR(tm) DRG

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.

3

3.2.2.3 Text Files

You may specify whether Text Files (csv) use a comma or a tab to separate values in a row.

3.2.2.4 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.

3.2.3 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 name, location, or maximum size for the Session Log, use the options under Logging to do so.

3.2.4 Questions

3.2.4.1 Of what value is the QI Session Log?

If you encounter problems when using the application, after closing the Wizard or screen being viewed, click in the QI Session Log, press Ctrl-a to select all of the text, press Ctrl-c to copy the text, and then paste the text into an email to send to the QI Support Team. This information will assist the Support Team in solving your problem.

4.0 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.

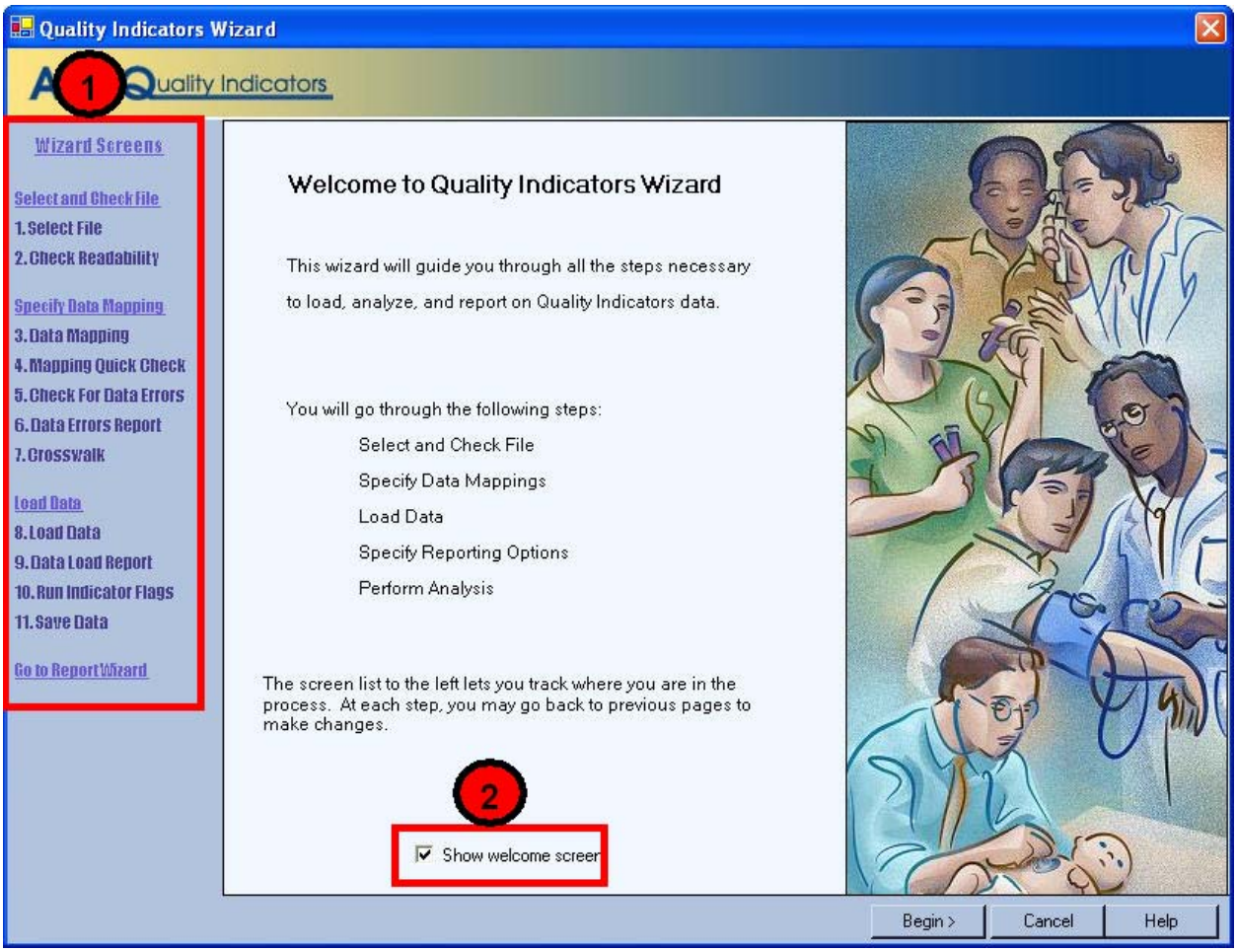
Saving the data is optional. You can use the QI data immediately and in subsequent sessions to generate reports. The data will not be discarded or overwritten until the next time you run the Wizard. You can save the data for use in an external program at any time by selecting the <Export Data> option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

4.1 Welcome to the Quality Indicators Wizard

4.1.1 What is this screen for?

This screen introduces the Import Data Wizard.



4.1.2 How is this screen organized?

1

4.1.2.1 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.

4.1.2.2 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.

4.1.3 What do I do here?

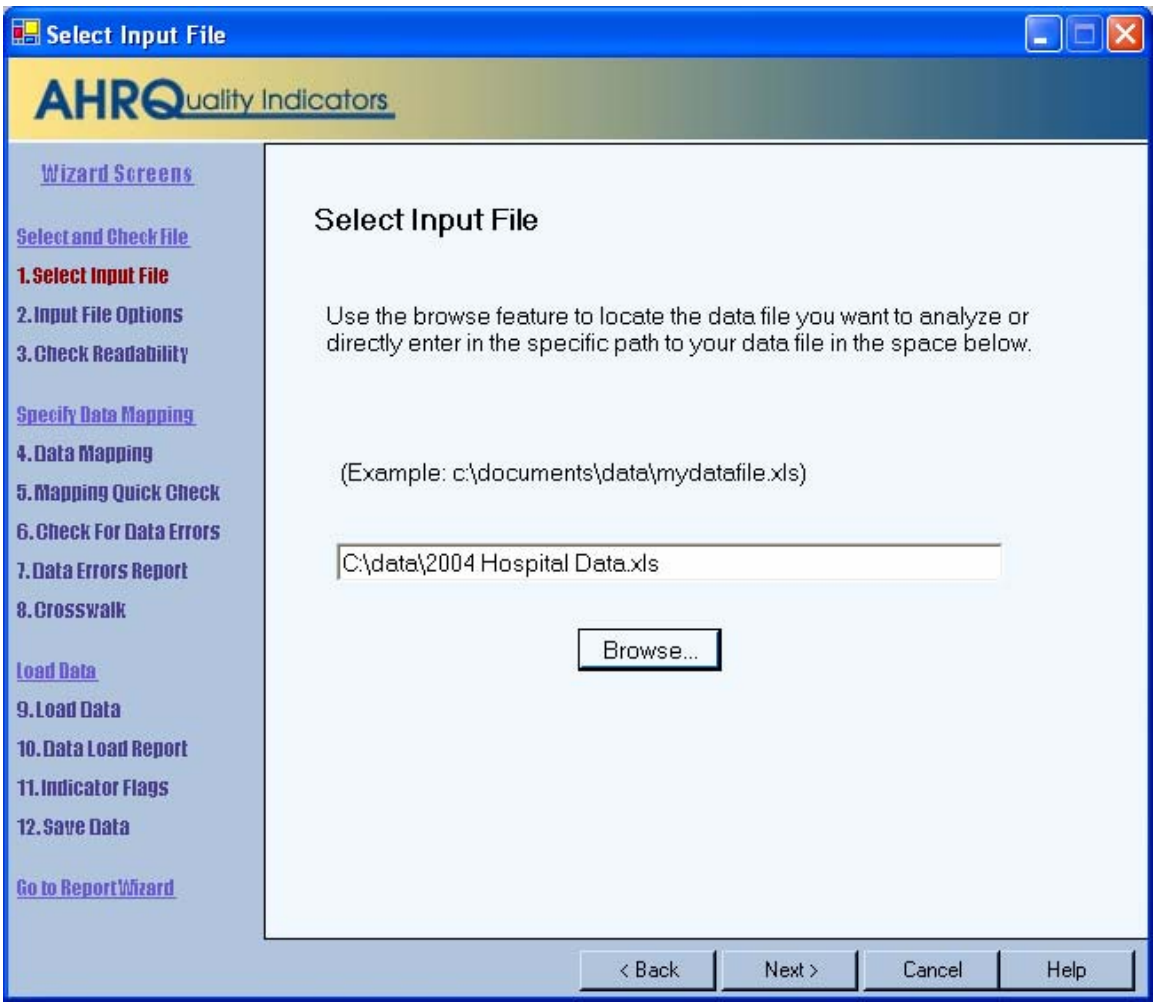
If you wish to bypass the Welcome screen in future sessions, click to uncheck the *Show welcome screen* checkbox.

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

4.2 Select Input File

4.2.1 What is this screen for?

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



4.2.2 How is this screen organized?

4.2.2.1 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.

4.2.3 What do I do here?

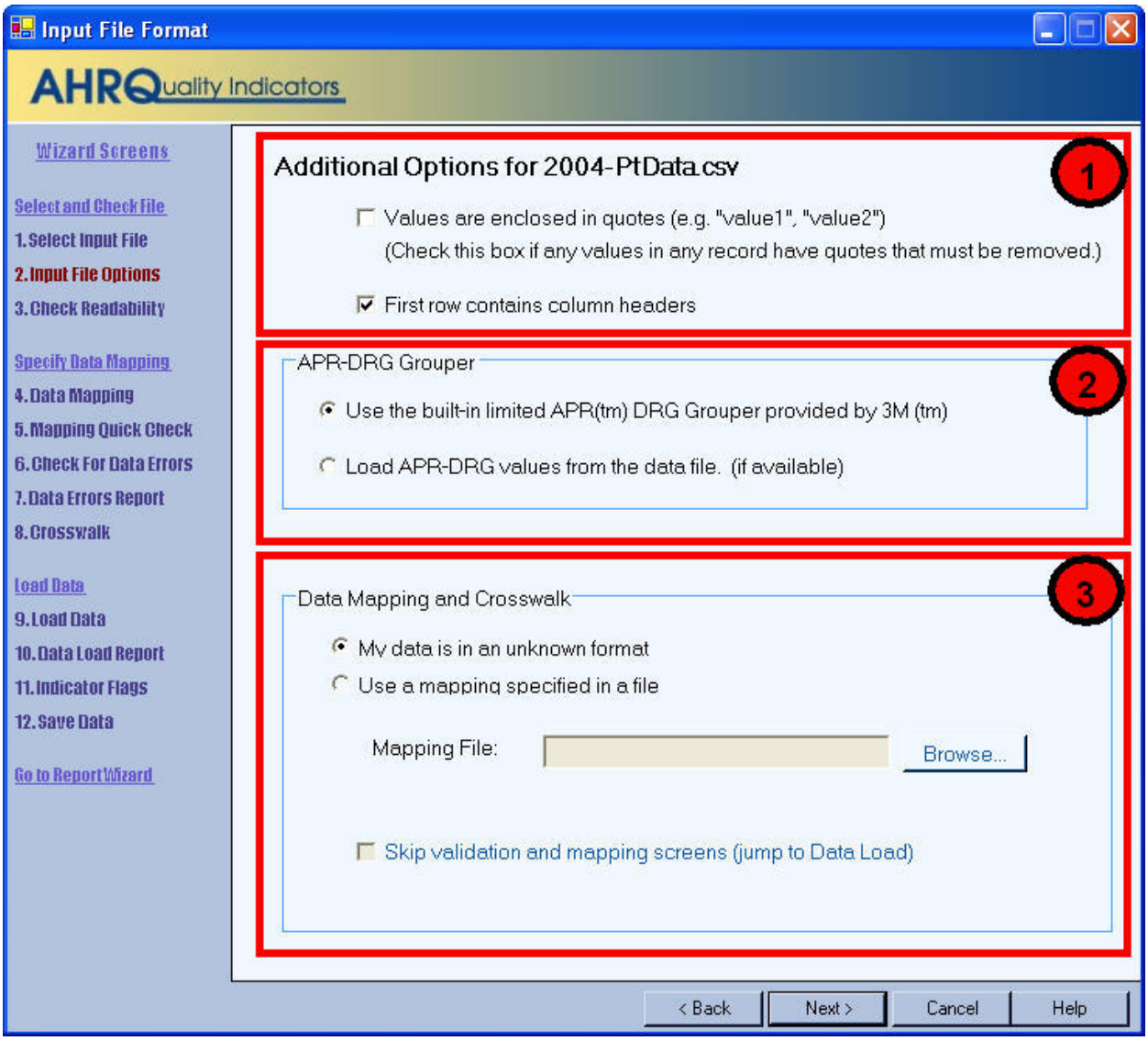
4.2.3.1 Specify data file

Use the <Browse> button to locate and select the data file you wish to load.

4.3 Additional Options for <Filename>

4.3.1 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.



4.3.2 How is this screen organized?

1

4.3.2.1 File format area

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. A checkbox will also be provided for you to select whether the first row of the worksheet contains column headers.
- 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

4.3.2.2 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.

3

4.3.2.3 Data Mapping and Crosswalk

This section provides options to use a mapping file that was created in a previous session and to skip steps in the data import wizard.

4.3.3 What do I do here?

4.3.3.1 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.

4.3.3.2 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.)

4.3.3.3 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.

4.3.4 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[**] 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.

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

- “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.

4.3.5 Questions

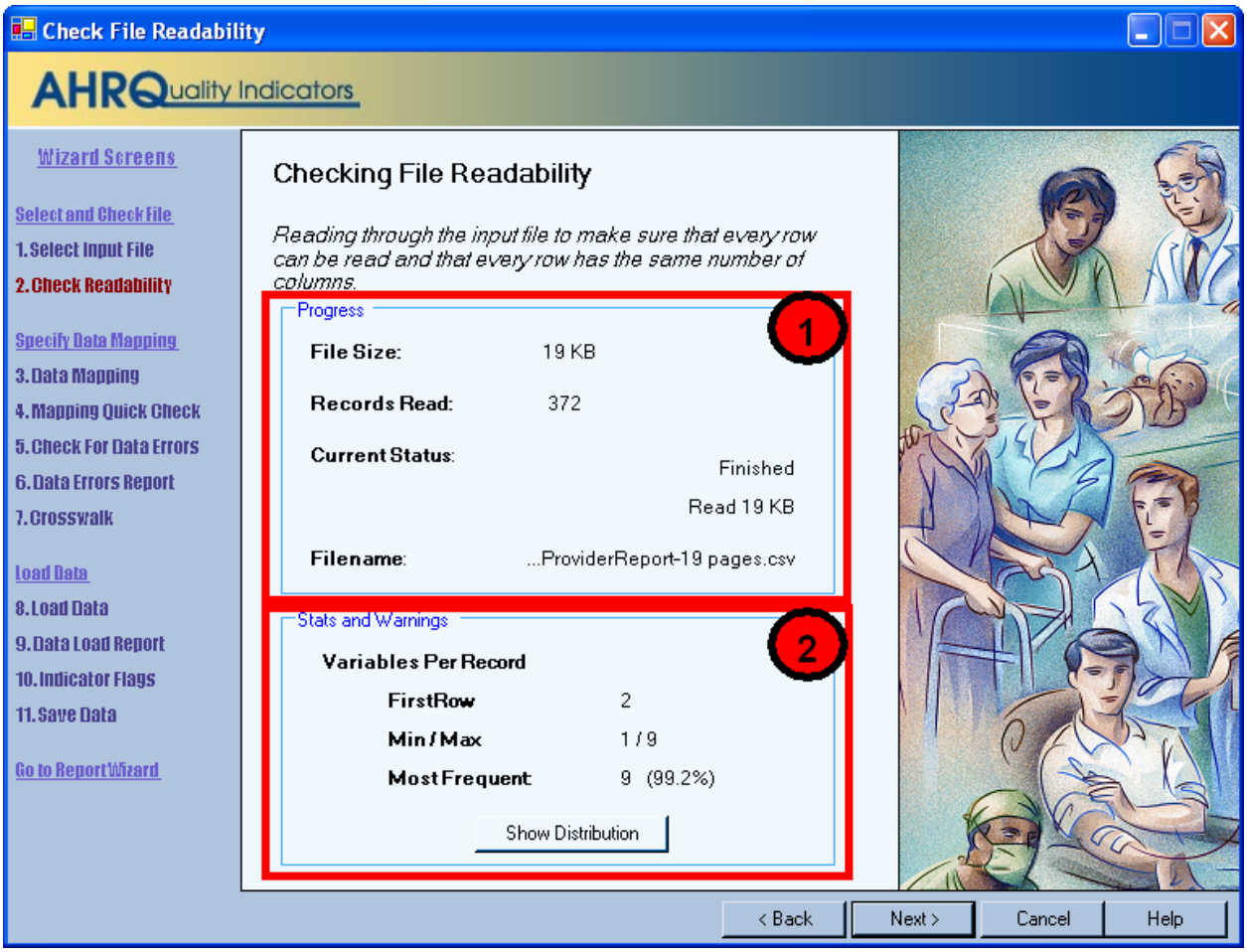
4.3.5.1 Why Can’t I Uncheck the *First Row Contains Column Headings* checkbox for an Excel File?

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

4.4 Checking File Readability

4.4.1 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.



4.4.2 How is this screen organized?

1

4.4.2.1 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

4.4.2.2 Stats and Warnings

Displays a report on the Variables found per record.

4.4.3 What do I do here?

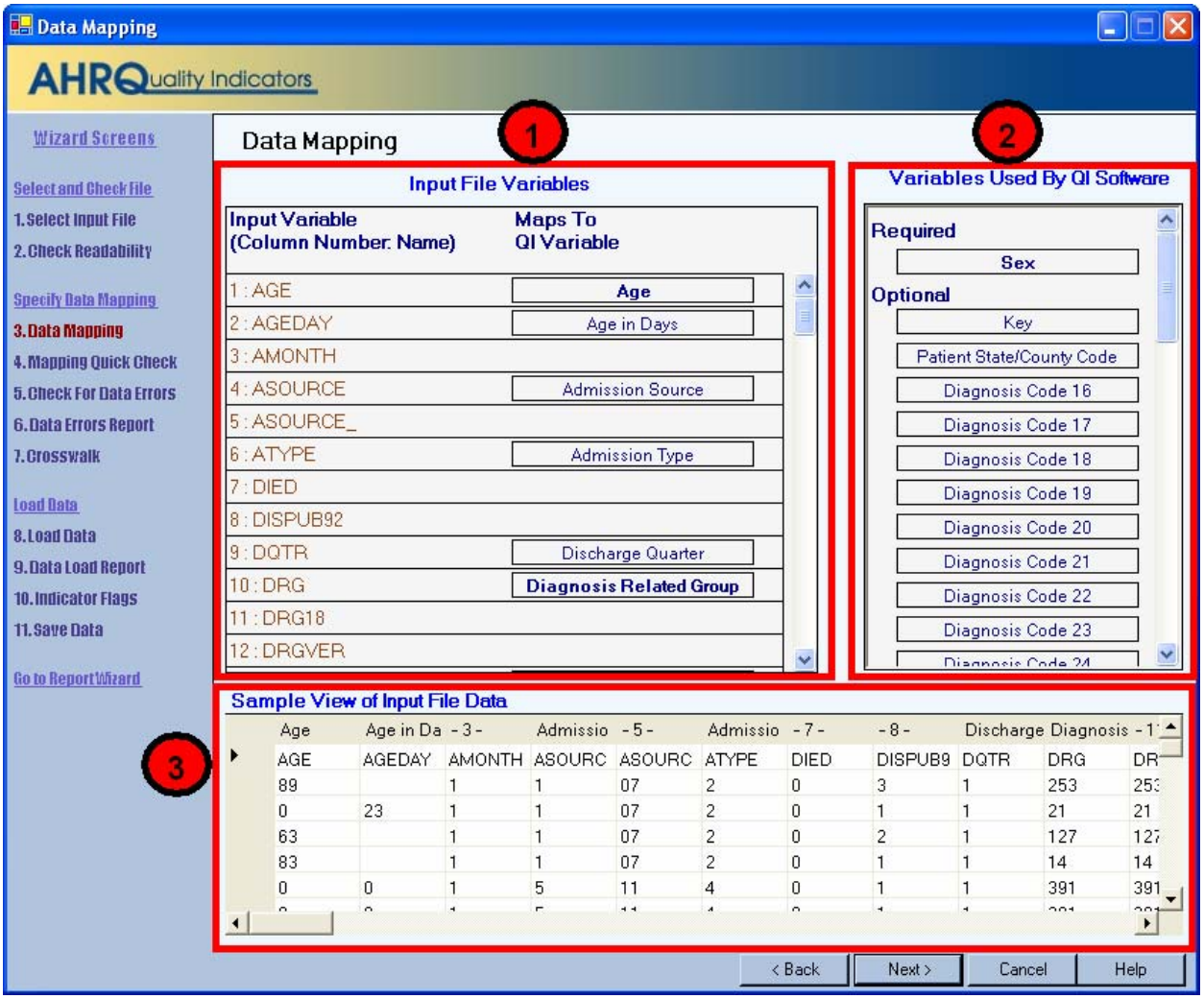
Pay attention to the number of variables found in your file. Normally, all rows will contain the same number of variables. If there are numbers displayed next to *Min/Max*, some rows have more variables than others. Check to make sure that the correct data file has been specified and that the file has 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. 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.

4.5 Data Mapping

4.5.1 What is this screen for?

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



4.5.2 How is this screen organized?

1

4.5.2.1 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

4.5.2.2 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

4.5.2.3 Sample View of Input File Data

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

4.5.3 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.

4.5.4 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.

4.5.5 Timesaving tip

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.

4.5.6 Questions

4.5.6.1 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.

4.5.6.2 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.

4.5.6.3 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.

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

Diagnosis fields 31-35 are intended for E-codes.

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

Diagnosis codes 31-35 are intended for E-codes.

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

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

4.5.6.7 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.

4.5.6.8 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 will be removed when the data is loaded.

4.5.6.9 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.

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

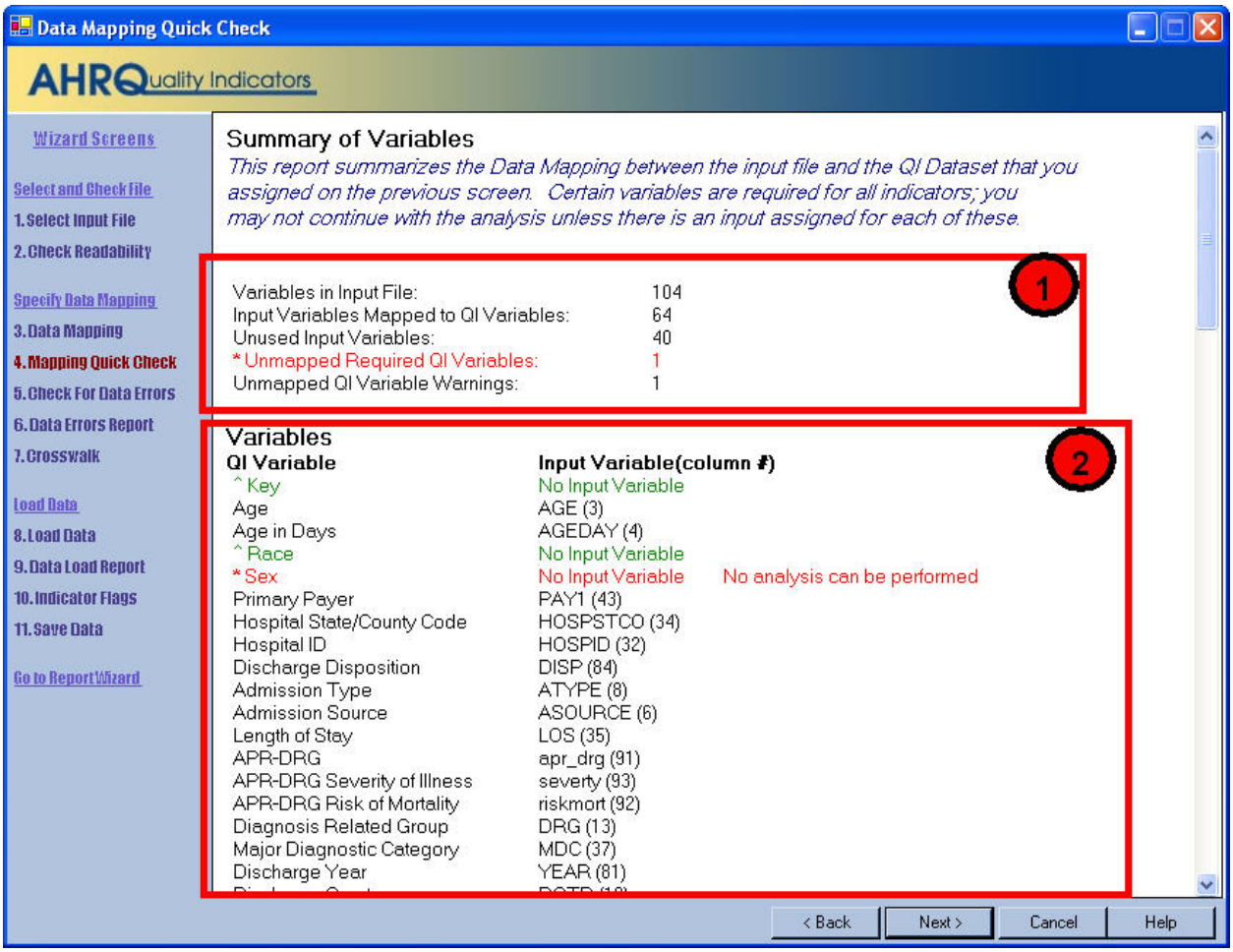
If you intend to use the area level rates, we recommend that you map the patient FIPS state/county code to the data element labeled "Hospital State/County Code." This recommendation is analogous to the current SAS version, where we recommend that you populate the data element PSTCO with the patient FIPS state/county code if available.

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 "Hospital 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.

4.6 Summary of Variables

4.6.1 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.



4.6.2 How is this screen organized?

1

4.6.2.1 Summary

Displays counts of mapped and unmapped variables and data warnings.

4.6.2.2 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.

4.6.3 What do I do here?

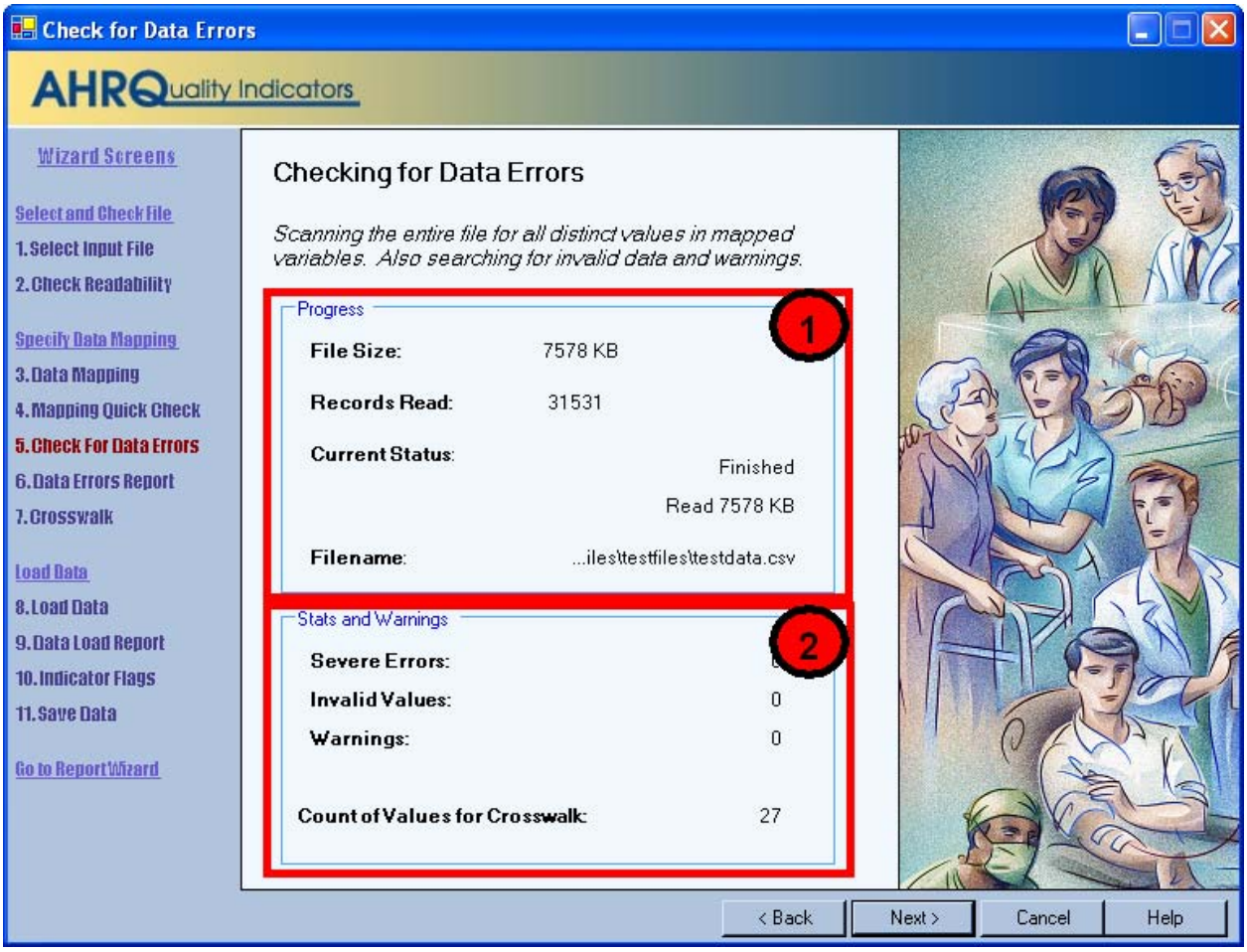
Scan the list of messages to see if anything needs to be corrected. You may return to the Data Mapping screen to correct mappings, or you may need to load a different file.

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

4.7 Checking for Data Errors

4.7.1 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.



4.7.2 How is this screen organized?

1

4.7.2.1 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

4.7.2.2 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.

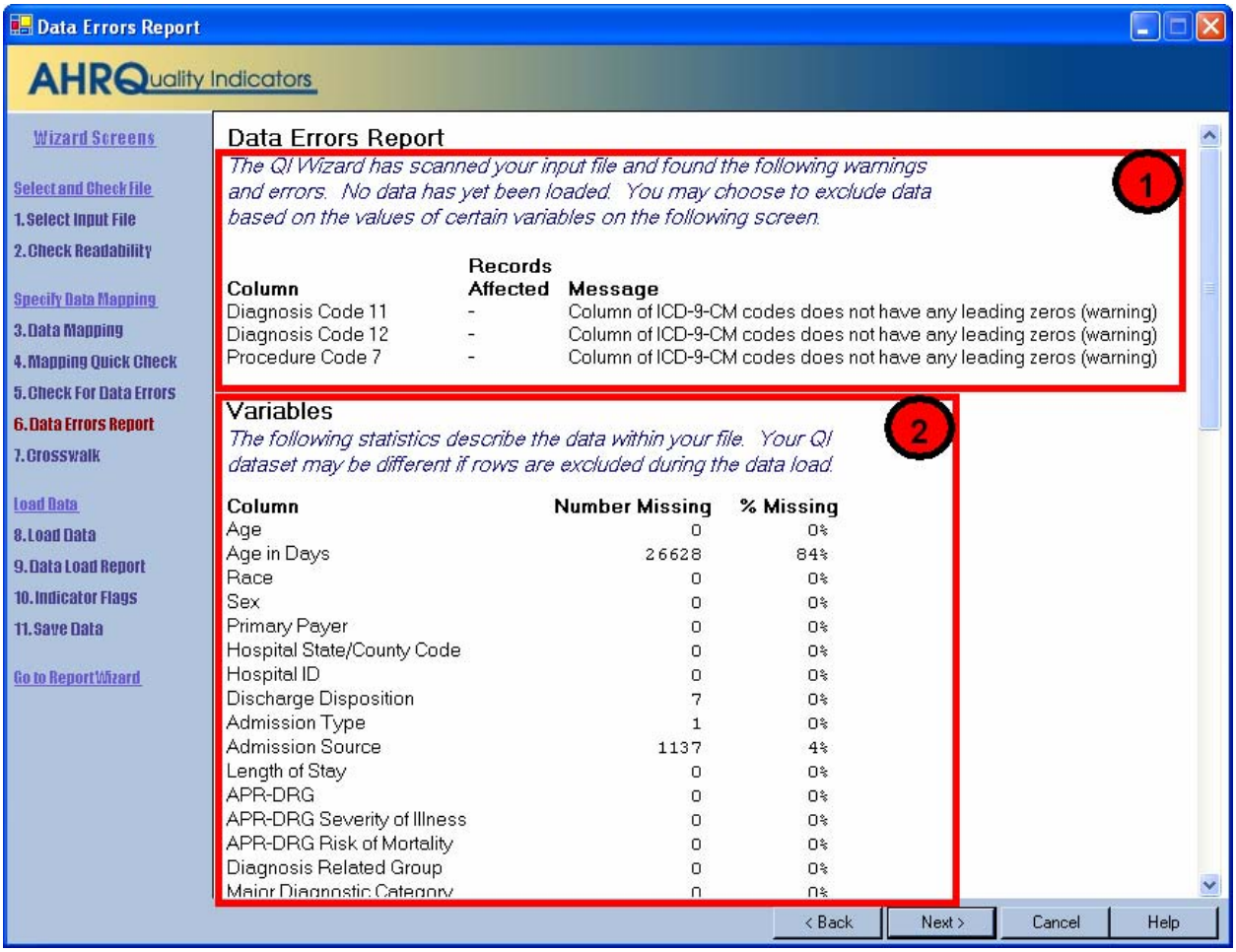
4.7.3 What do I do here?

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

4.8 Data Errors Report

4.8.1 What is this screen for?

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



4.8.2 How is this screen organized?

1

4.8.2.1 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

4.8.2.2 Variables

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

4.8.3 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.

4.8.4 Warnings

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 at some point prior to importing the file into the QI Wizard.

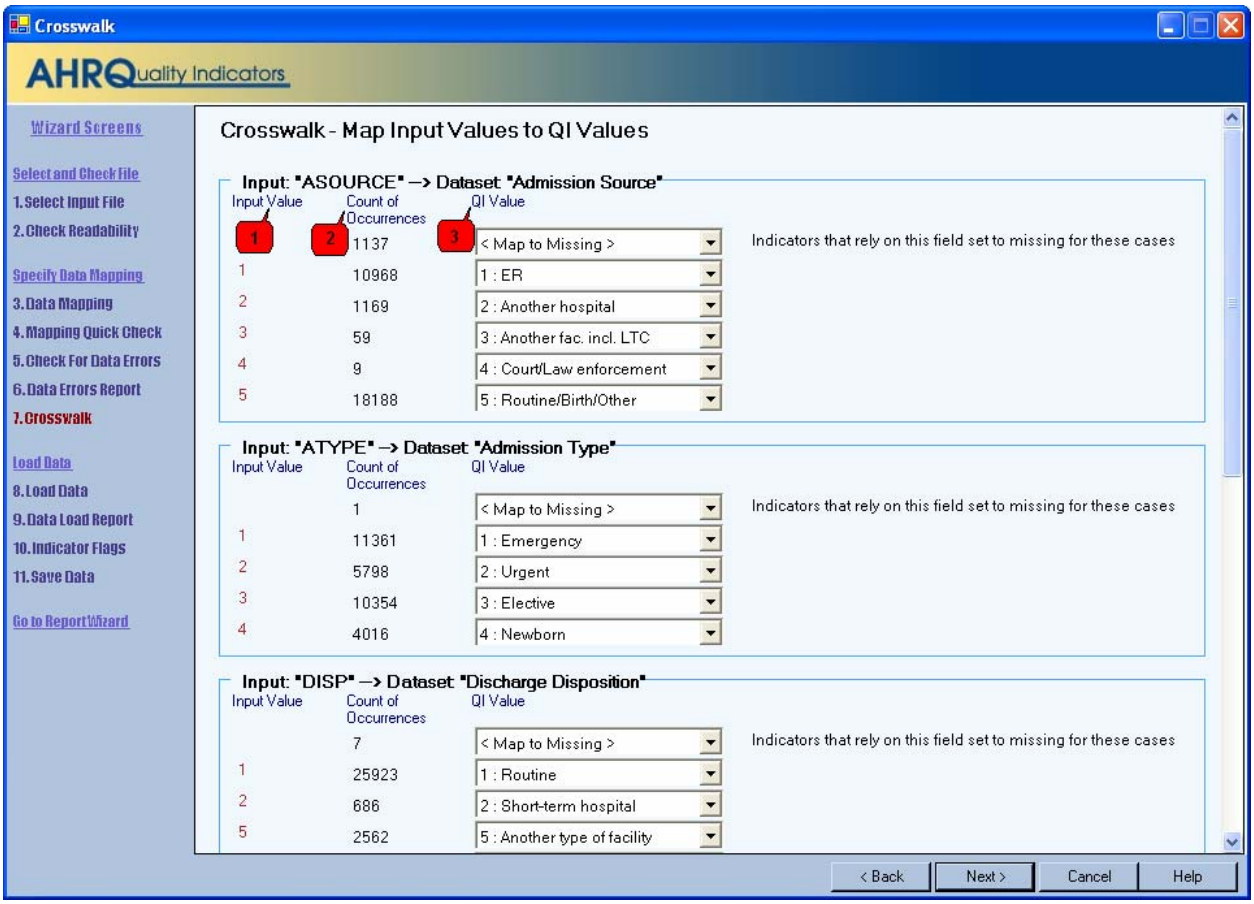
4.8.5 Timesaving tip

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

4.9 Crosswalk – Map Input Values to QI Values

4.9.1 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.



4.9.2 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.

4.9.3 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.

4.9.4 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 breakdown of the Race variable, since it will allow you to stratify

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.

4.9.5 Questions

4.9.5.1 What effect does <Map to Missing> have?

Missing data for some elements results in the exclusion of that case from the denominator. For a few other elements, the case is retained. For the following variables, the case(s) will be excluded from the denominator of indicators where it is used:

- Admission Source
- Admission Type
- Discharge Disposition

The following variables handle missing data by classifying the case as "Other":

- Primary Payer
- Race

Note: You may stratify provider indicators on any breakdown of race that you wish. However, a known race is required for obtaining the denominator of any Area indicators that are stratified by race.

Missing values for the Sex variable exclude the cases from all analysis; these will not be loaded at all.

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

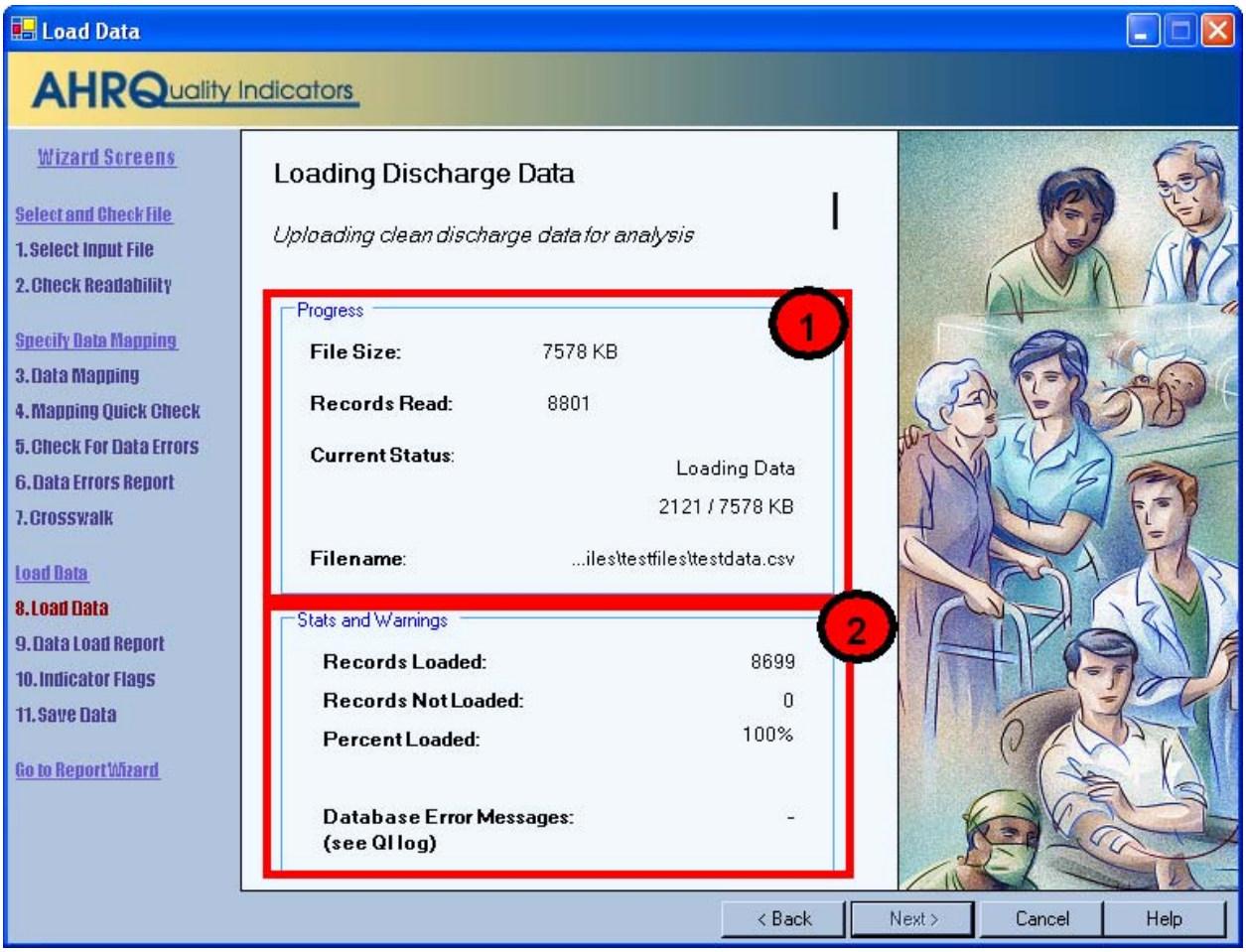
This will depend on your knowledge of your input data. Particular values may be the result of data errors or they may be from cases that are incomplete.

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.

4.10 Load Data

4.10.1 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.



4.10.2 How is this screen organized?

1

4.10.2.1 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

4.10.2.2 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.

4.10.3 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.

4.10.4 Questions

4.10.4.1 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 a numeric variable. You will have an opportunity to review the reasons for excluded rows on the following screen.

4.10.4.2 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.

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

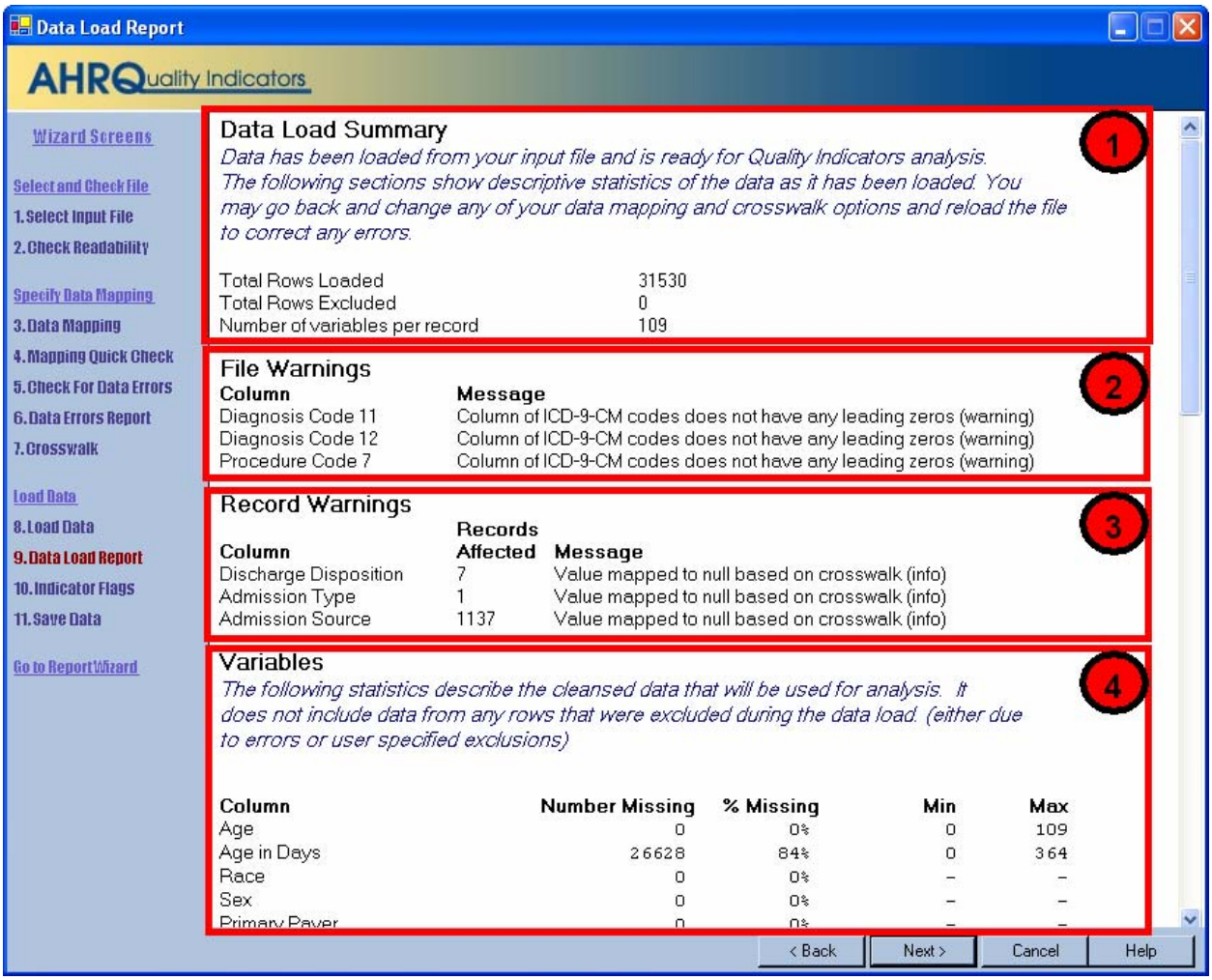
Database errors should not occur. They can be caused by unanticipated data within your input file, by external causes such as a network failure between your computer and your database server, or by errors in the QI program.

Click <Cancel> to close the Wizard. The **QI Session Log** (see Page 13) will then be visible. Scroll to the bottom of the log, select the lines containing the error message(s), copy them (press <Ctrl-c> when the text is highlighted, and paste the text into an email message to send to AHRQ Quality Indicators Support.

4.11 Data Load Summary

4.11.1 What is this screen for?

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



4.11.2 How is this screen organized?

1

4.11.2.1 Summary

Displays total statistics for the file.

2

4.11.2.2 File Warnings

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

3

4.11.2.3 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

4.11.2.4 Variables

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

4.11.3 What do I do here?

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

4.11.4 Questions

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

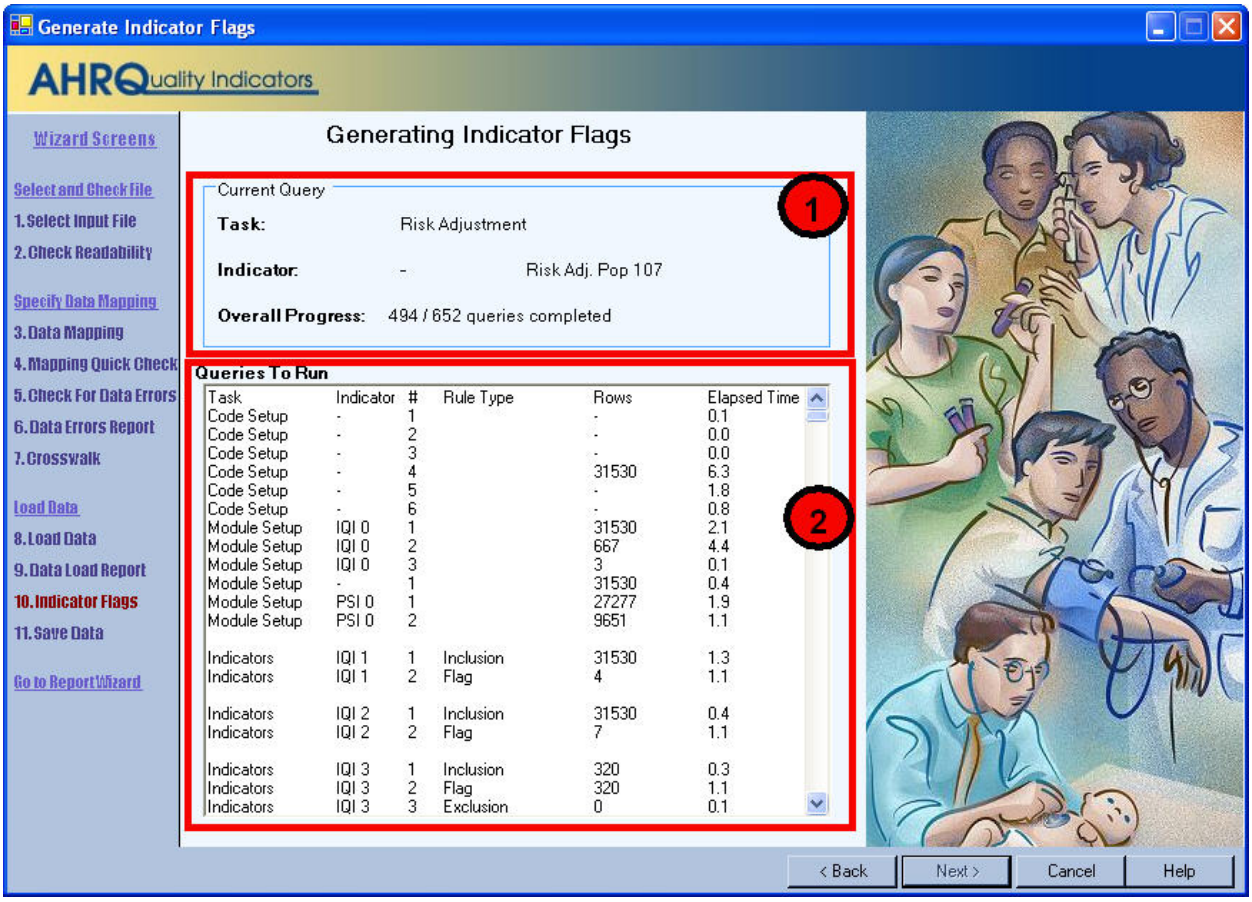
Not exactly. The previous reports tell you what will be loaded before the settings are finalized; this screen tells you what was actually loaded.

4.12 Generate Indicator Flags

4.12.1 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 a large number of cases, this may take several minutes.



4.12.2 How is this screen organized?

1

4.12.2.1 Current Query

This tracks the analysis progress.

2

4.12.2.2 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.

4.12.3 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.

4.12.4 Questions

4.12.4.1 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.

4.12.4.2 Why are there so many queries?

There are currently 97 indicators, each with multiple rules.

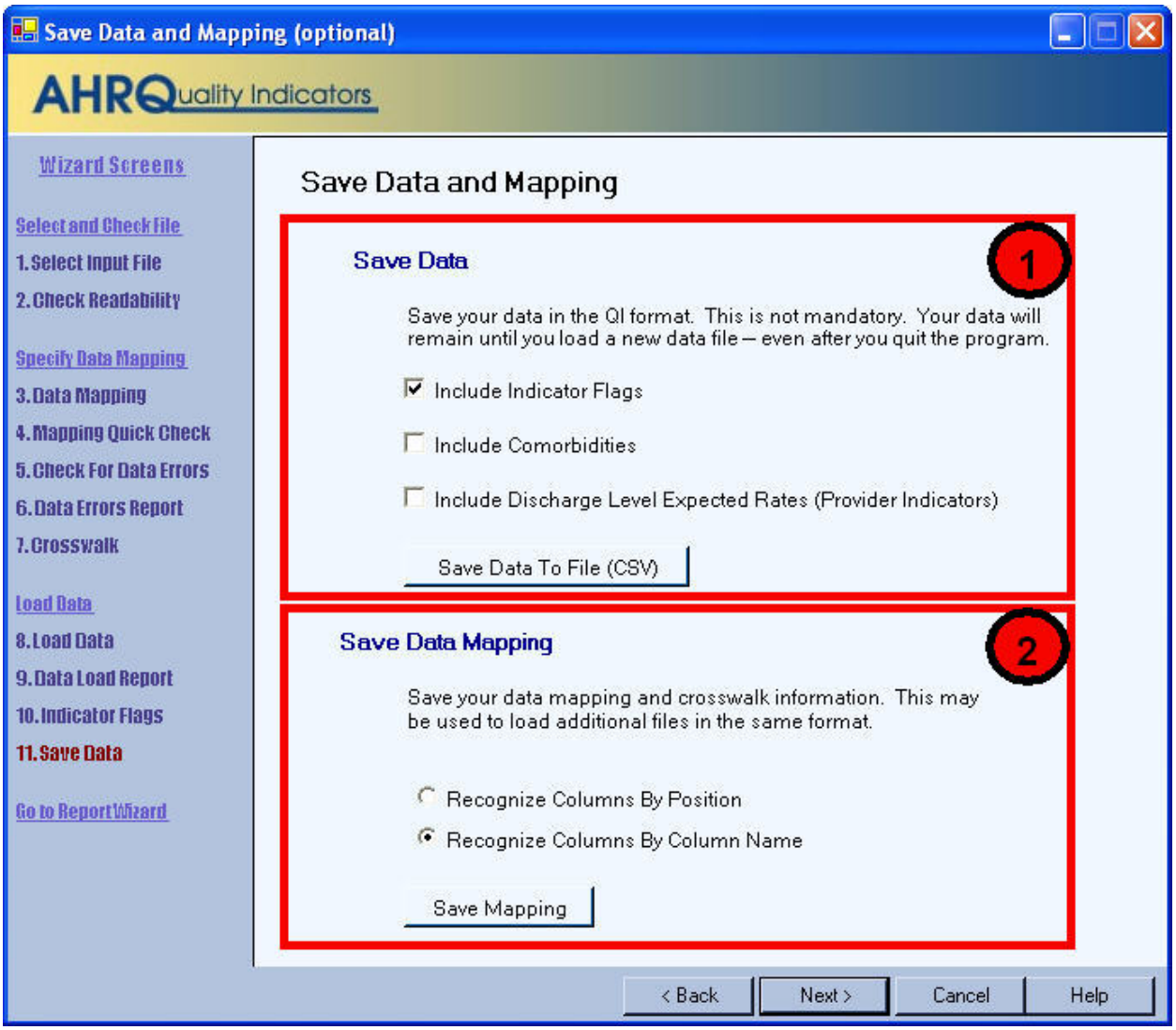
4.12.4.3 Why does it run all indicators when I am only interested in a few?

You only need to generate indicator flags once. Having done that, 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.

4.13 Save Data and Mapping

4.13.1 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.



4.13.2 How is this screen organized?

1

4.13.2.1 Save Data

This lets you save your cleansed and translated data in a comma separated file.

2

4.13.2.2 Save Data Mapping

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

4.13.3 What do I do here?

4.13.3.1 Save Data

Use the checkboxes to indicate the data you want to include in the file, 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.

4.13.3.2 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.

4.13.4 Options

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 User Guide Appendix A for that indicator)

Comorbidities
Check this option to include a column for each of the comorbidity definitions. See the PSI Guide for more information.

Discharge Level Expected Rates
Check this option to include the expected rates based on demographics, comorbidities, and risk of mortality ratings for each case in the population at risk.

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.

4.13.5 Questions

4.13.5.1 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.

4.13.5.2 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.

4.14 Data Load Completed

4.14.1 What is this screen for?

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

4.14.2 What do I do here?

Controls are provided for you to <Close Wizard Window> or to <Run Report Wizard>. If you choose the first option, the Main screen will reappear. If you chose to run the Report Wizard, it will open and the Import Data Wizard will close.

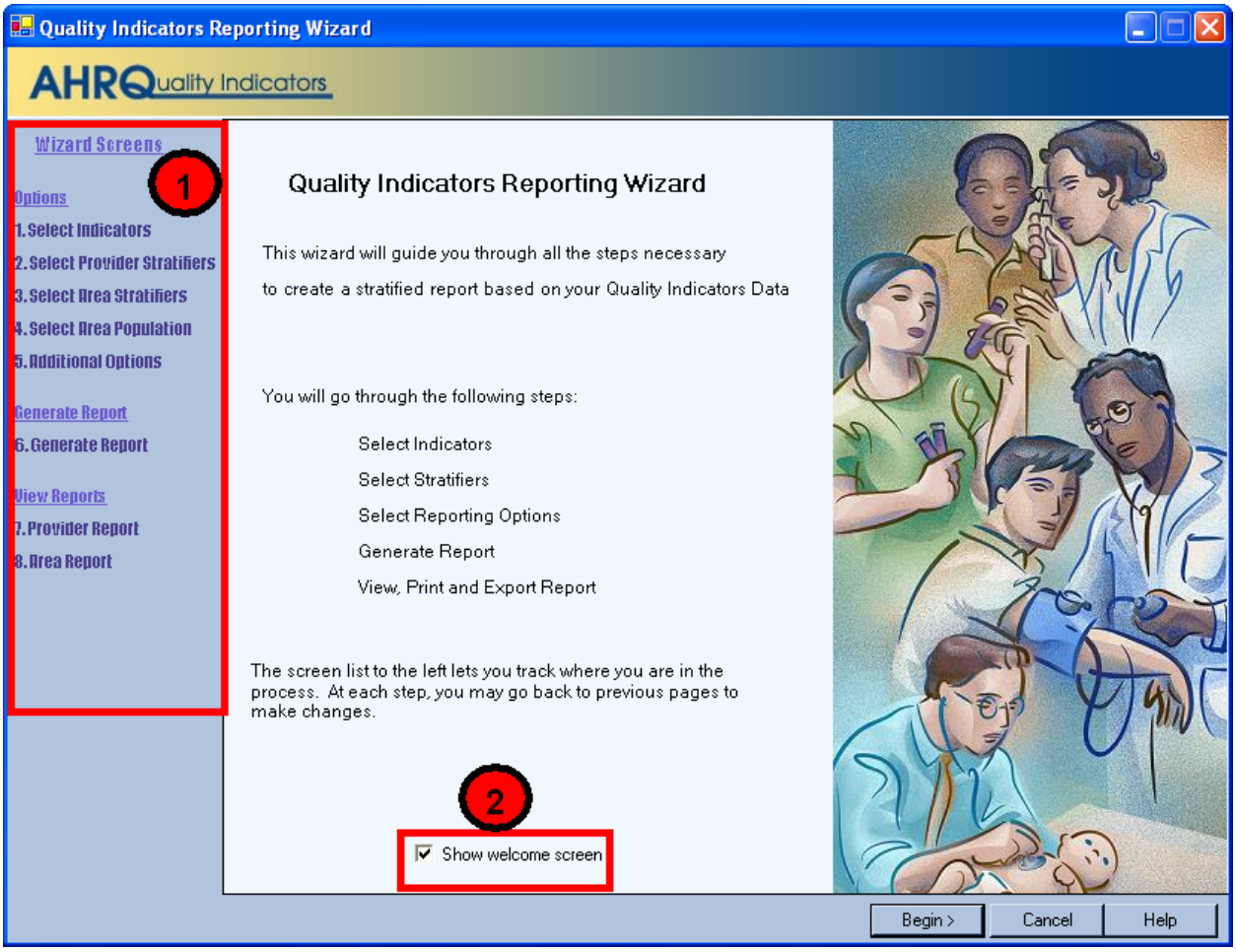
5.0 Report Wizard

The Report Wizard walks you through the process of creating a stratified report based on your QI data. Because Area-Level and Provider-Level rates are not comparable, they are displayed on separate report screens.

5.1 Welcome – Quality Indicators Reporting Wizard

5.1.1 What is this screen for?

This screen introduces the Report 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. The current screen will be highlighted in red as you progress through the wizard.

2

5.1.2.2 Show welcome screen checkbox

If the box is checked, the Welcome screen will be displayed each time you enter the Wizard. If you click to uncheck the box, when you launch the Import Data Wizard, you will proceed directly to the Select File screen.

5.1.3 What do I do here?

If you wish to bypass the Welcome screen in future sessions, click to uncheck the *Show welcome screen* checkbox.

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

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

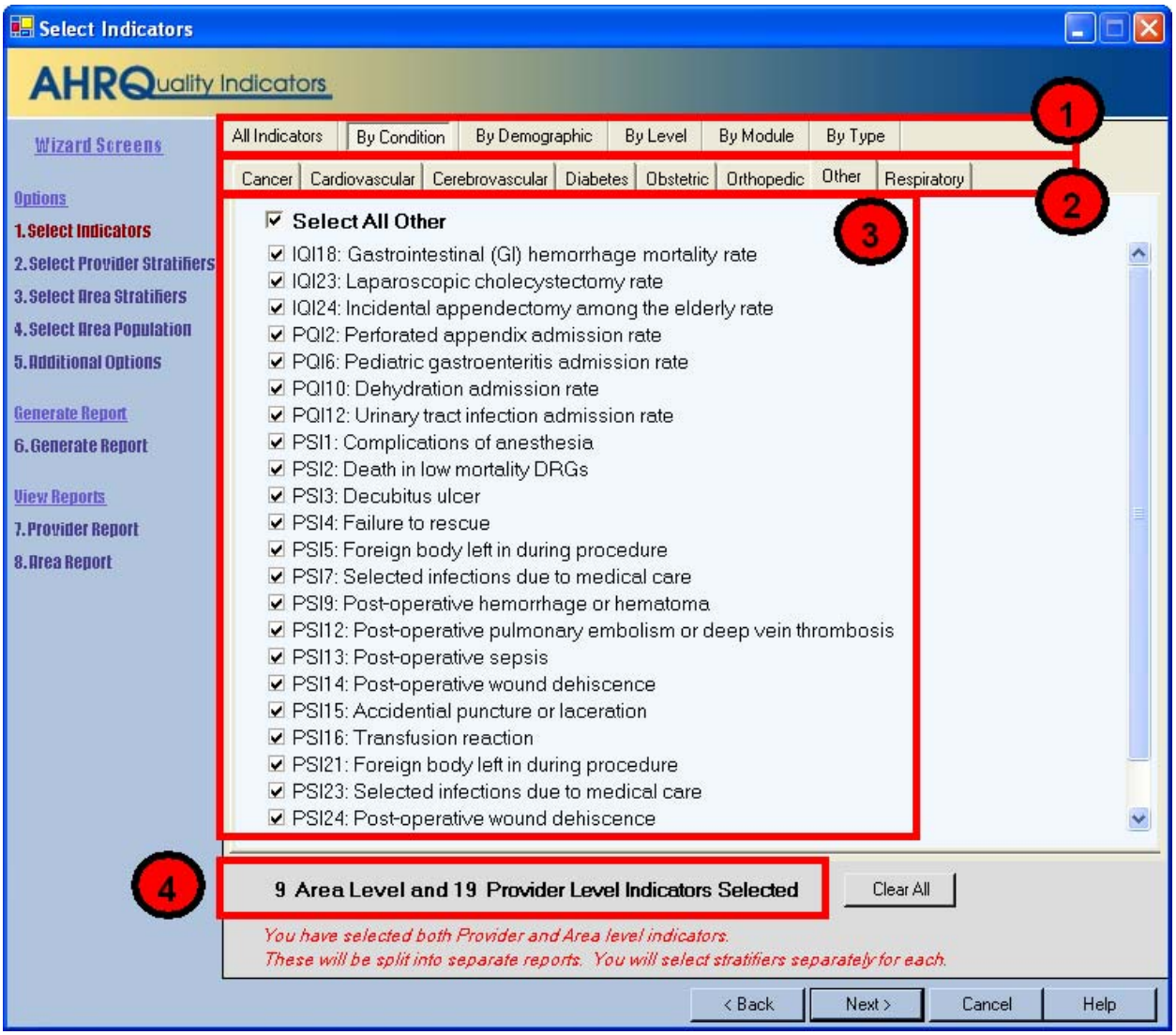
You don't need to run the Report Wizard to see the individual cases for each indicator. After you have run the Import Data Wizard, you can view the cases using the Patient Level Reporting option.

5.2 Select Indicators

5.2.1 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.



5.2.2 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.

1

5.2.2.1 Top-Level Tabs

All Indicators - Quick access to all the PSI, IQI or PQI indicators.
By Condition - Pages for indicators that are grouped by the particular condition.
By Demographic - Pages for each of several interesting demographic groupings.
By Level - Separate page for all Area and all Provider level indicators.
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 Type - Separate pages for indicators related to Medical, Surgical, and Obstetric cases.

2

5.2.2.2 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

5.2.2.3 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

5.2.2.4 Selection Summary Information

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

5.2.3 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.

5.2.4 Timesaving tips

5.2.4.1 Selecting Everything

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

5.2.4.2 Currently Selected

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

5.2.4.3 Clearing a Page

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

5.2.4.4 Clear All

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

5.2.5 Questions

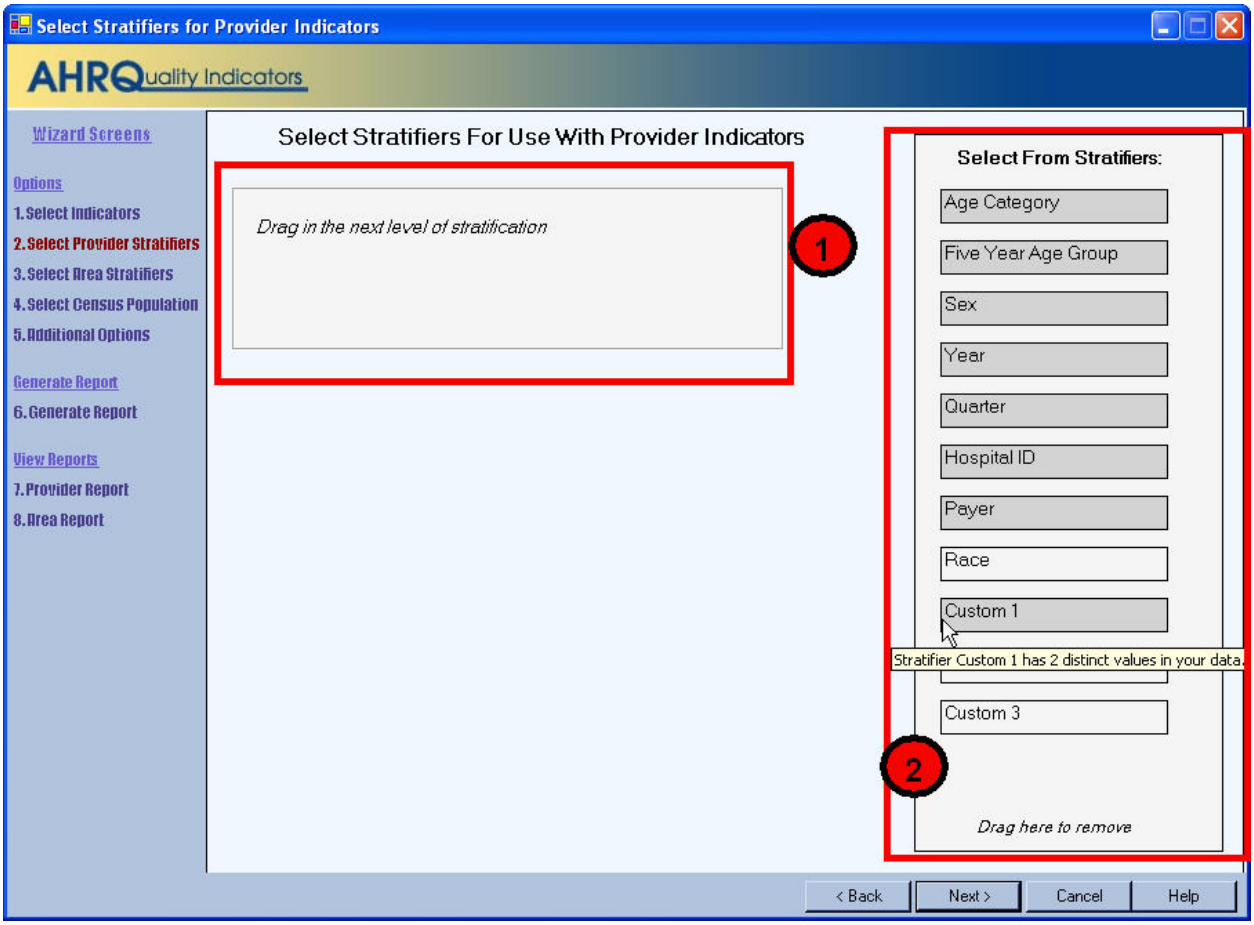
5.2.5.1 Why are Provider and Area Indicators Separated?

Area and provider level indicators pertain to different populations and are separated in the Select Stratifiers screen and the View Report screen.

5.3 Select Stratifiers For Use With Provider Indicators

5.3.1 What is this screen for?

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



5.3.2 How is this screen organized?

1

5.3.2.1 Selected stratifiers

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

2

5.3.2.2 Select From Stratifiers

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

5.3.3 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.

5.3.4 Questions

5.3.4.1 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.

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

Do not select any stratifiers.

5.3.4.3 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.

5.3.4.4 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.

5.3.4.5 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.

5.3.4.6 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. Common custom stratifiers are physician name and hospital type.

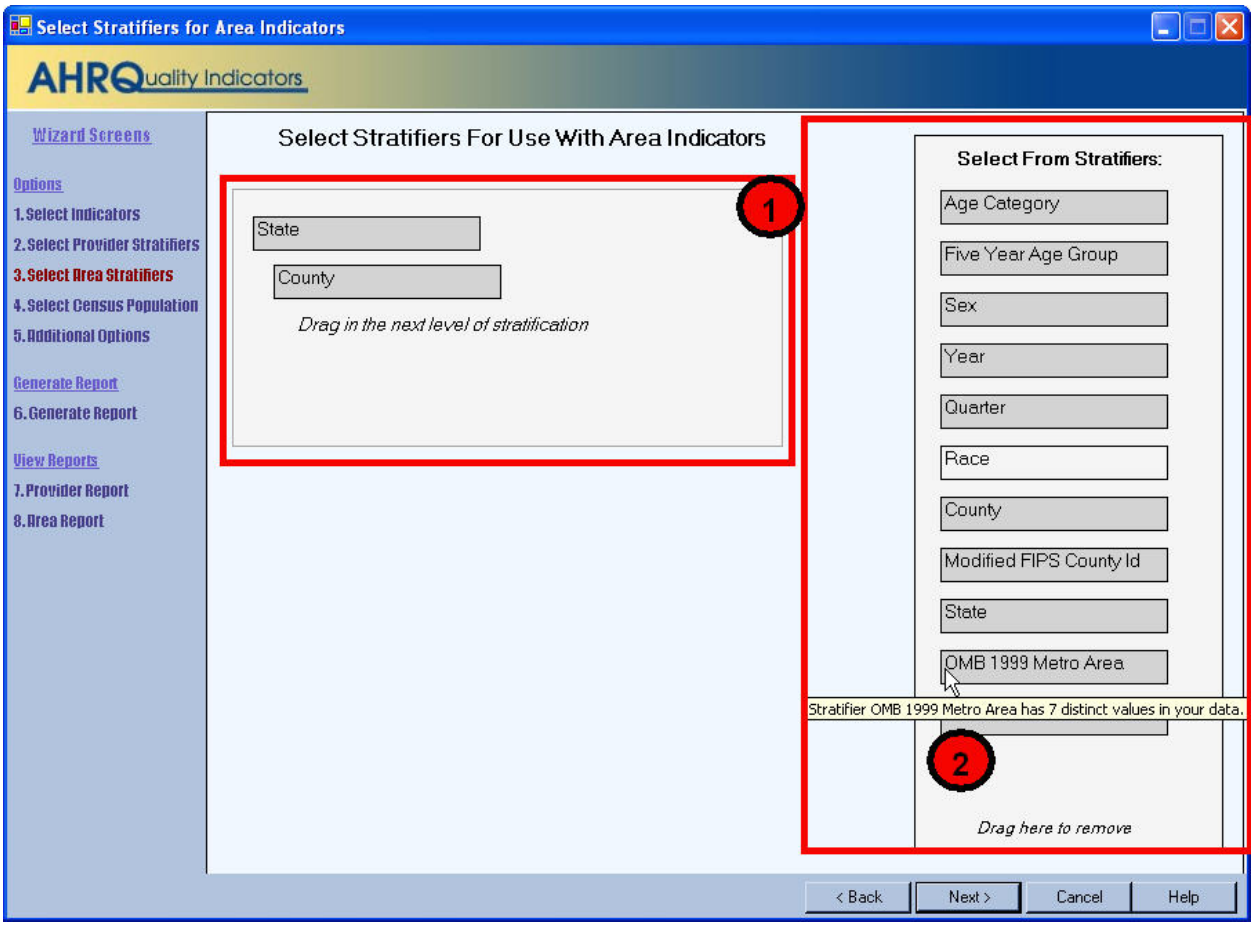
5.3.4.7 How large will my report be?

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.

5.4 Select Stratifiers For Use With Area Indicators

5.4.1 What is this screen for?

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



5.4.2 How is this screen organized?

1

5.4.2.1 Selected stratifiers

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

2

5.4.2.2 Select From Stratifiers

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

5.4.3 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.

5.4.4 Questions

5.4.4.1 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".

5.4.4.2 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.

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

Do not select any stratifiers.

5.4.4.4 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.

5.4.4.5 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.

5.4.4.6 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.

5.4.4.7 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.

5.4.4.8 What is the Modified FIPS stratifier?

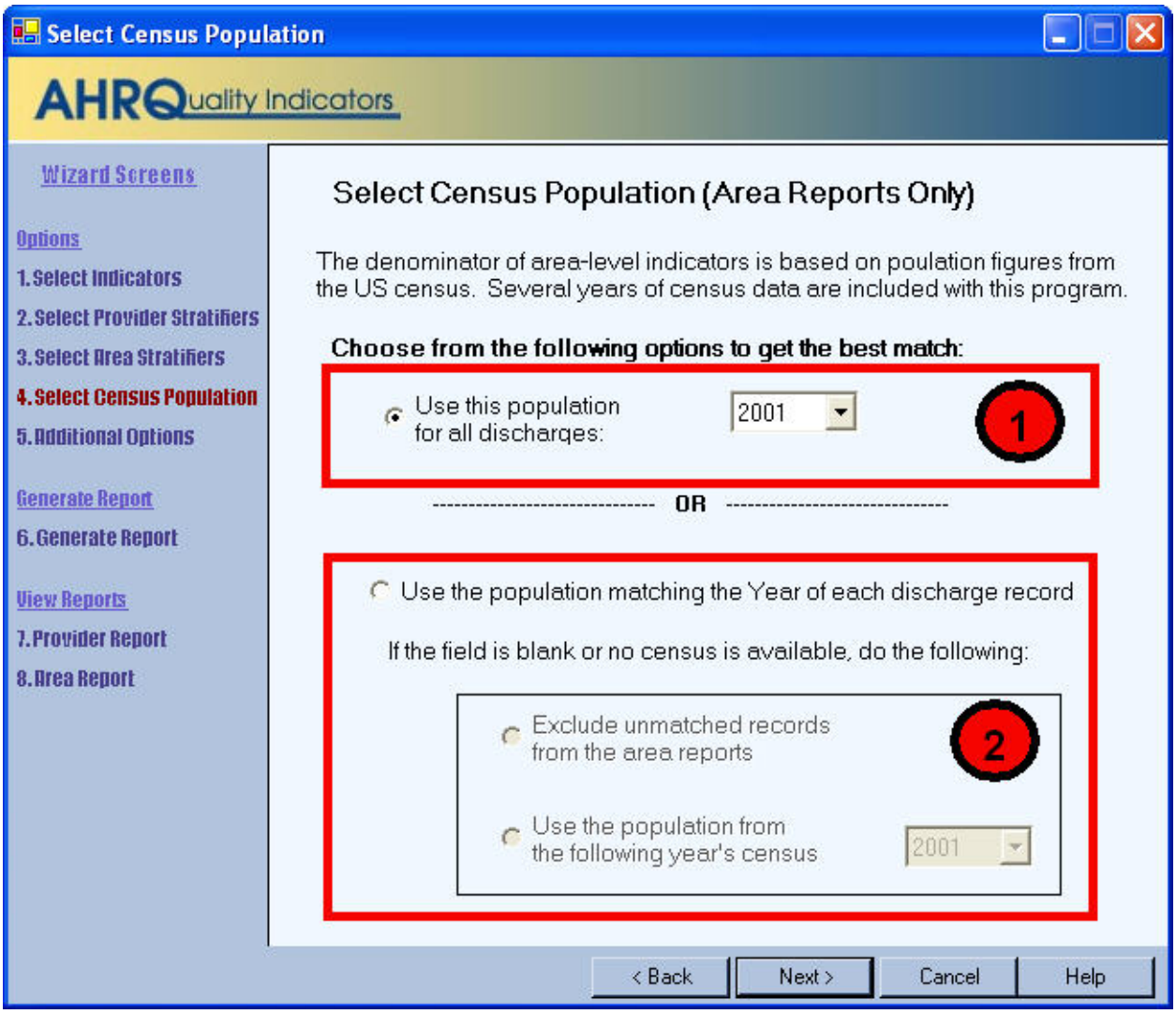
Federal information processing standards codes (FIPS codes) are a standardized set of numeric or alphabetic codes issued by the National Institute of Standards and Technology (NIST) to ensure uniform identification of geographic entities through all federal government agencies. The entities covered include: 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.

5.5 Select Census Population (Area Reports Only)

5.5.1 What is this screen for?

When calculating area rates, the denominator is based on the US census population for the counties where the patients live. The QI software is provided with the population figures for several different years. This screen allows you to select the population that most closely matches your data.



5.5.2 How is this screen organized?

1

5.5.2.1 Designate a year

The controls in the top half of the screen allow you to specify the year of Census population.

2

5.5.2.2 Match discharge record Year value

The controls in the bottom half of the screen allow you to use the census from the *Year* field in each discharge record.

5.5.3 What do I do here?

The default selection on this screen is to designate a Census population year for all discharges, regardless of the value in the record for *Year*. You may select from the available years on the drop-down menu.

To use the *Year* value in the data, click the radio button for *Use the population matching the year of each discharge record*. You must then select an option for how to treat records where the *Year* field is for a year for which the software does not include population figures. You may elect to exclude such cases, or you may select a year of Census data to apply.

5.5.4 Caution

Census data typically runs about two years behind the current date. If you select *Use the population matching the Year of each discharge record*, and some records contains a *Year* value that does not match any of the available Census data years, rates for those cases will not be included.

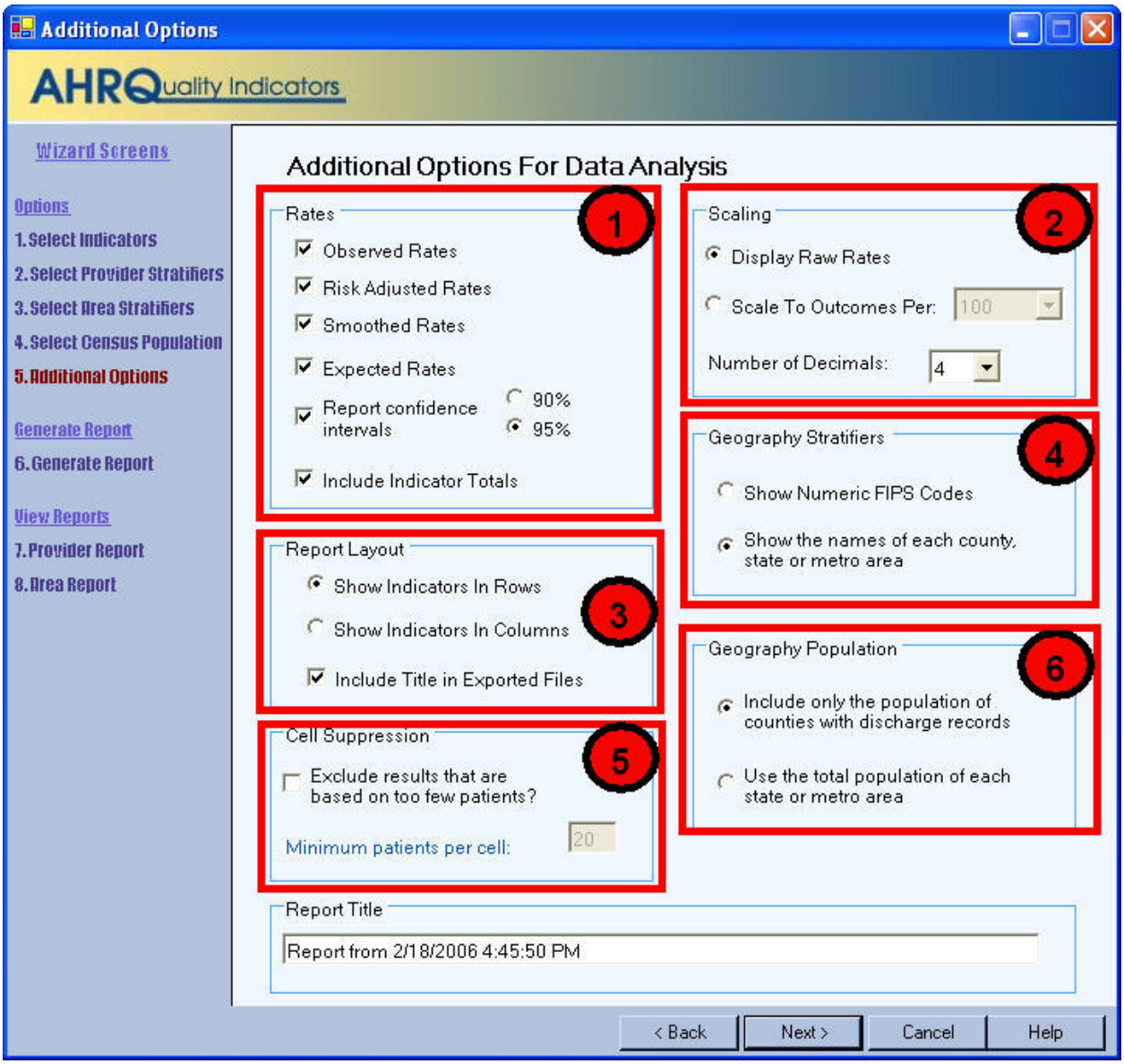
5.5.5 Questions

When would I not want to use the *Year* field?
If your input data includes the year, then it generally makes the most sense to make use of this field to match up with the correct population. However, your *Year* field may be inaccurate, or it may split a fiscal year incorrectly in which case you would want to override that value.

5.6 Additional Options For Data Analysis

5.6.1 What is this screen for?

This lets you choose additional options before generating reports.



5.6.2 How is this screen organized?

1

5.6.2.1 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.

2

5.6.2.2 Scaling

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

3

5.6.2.3 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

5.6.2.4 Geography Stratifiers

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

5

5.6.2.5 Cell Suppression

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

6

5.6.2.6 Geography Population

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

5.6.2.7 Report Title

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

5.6.3 What do I do here?

5.6.3.1 Change any of the options for your report here.

5.6.4 Questions

5.6.4.1 What are the definitions of Observed, Risk Adjusted, Smoothed and Expected 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.

5.6.4.2 What are the recommended Rate Units?

The AHRQ QI Windows Application calculates rates as raw rates (see Data Elements and Coding Conventions.) 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

5.6.4.3 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

5.6.4.4 What does Cell Suppression mean?

In performance measurement work, it is 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

5.7 Generating Report

5.7.1 What is this screen for?

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

5.7.2 How is this screen organized?

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

5.7.3 What do I do here?

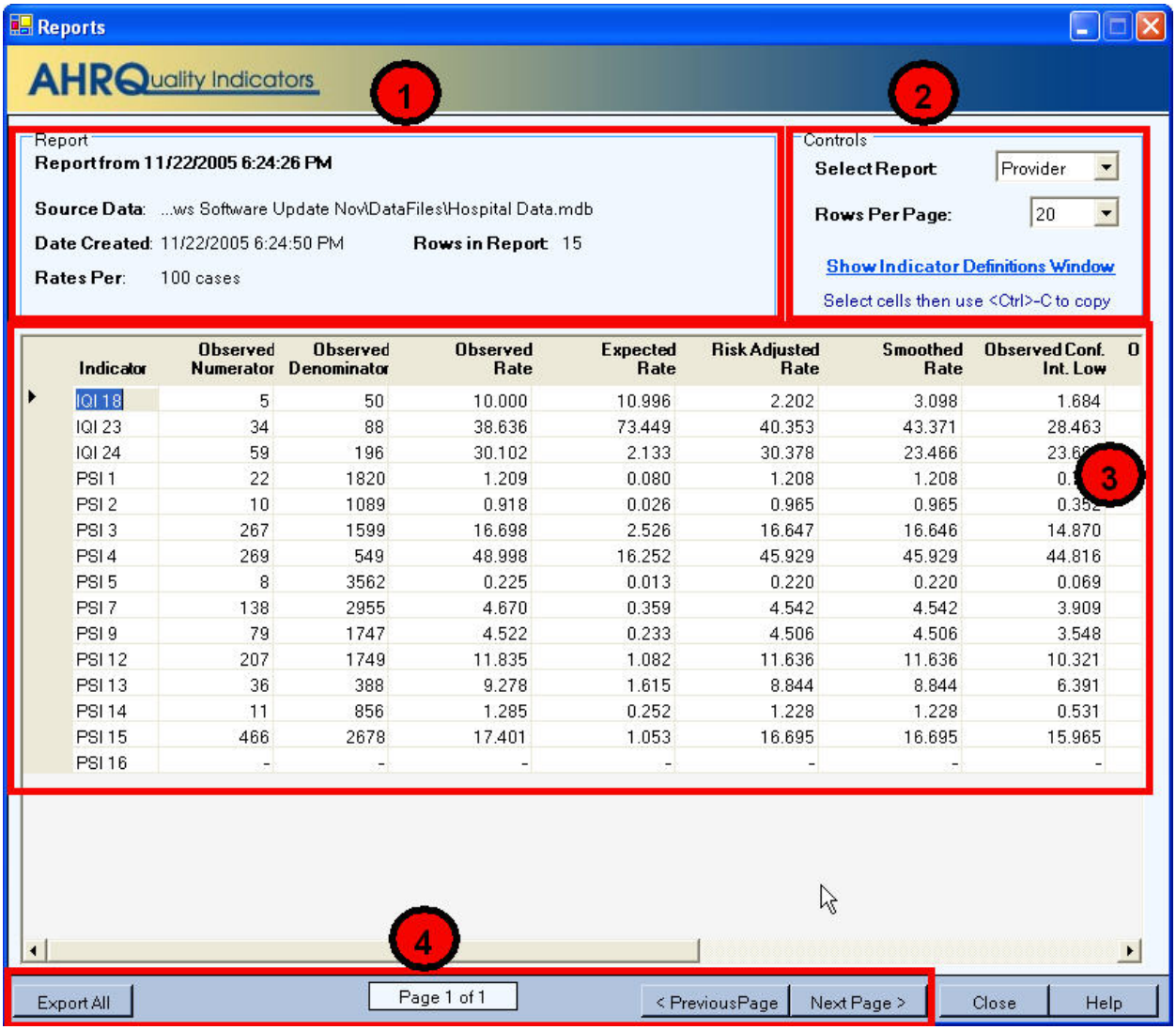
There are no user actions on this screen. Wait for the processing to complete, and then click <Next>.

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. This can be later from the main window using the <View Report> menu item.

6.0 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* -Type of rates being displayed, 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* >- If you had selected both Area and Provider indicators for this report, you may switch between the two here.
- <*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 include the

- *Indicator*
- *Observed Numerator*
- *Observed Denominator*
- *Observed Rate*
- *Expected 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 notes under the Additional Options For Data Analysis 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.

Use the <*Select Report*> control at the top of the screen to view the other report.

6.1.4 Timesaving Tips

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

You can quickly resort the current page of data by clicking on a column header.

6.1.5 Questions

6.1.5.1 Why are there separate screens for Area and Provider?

Provider indicators are based on the inpatient hospitalized population, whereas the area-level indicators are based on the total population of each county. You may stratify each group differently; therefore they are displayed as separate reports.

6.1.5.2 Why is there no alternate option for <*Select Report*>?

If all of the indicators you selected are of the same type (provider-level or area-level), the option to select the other type of report is not available.

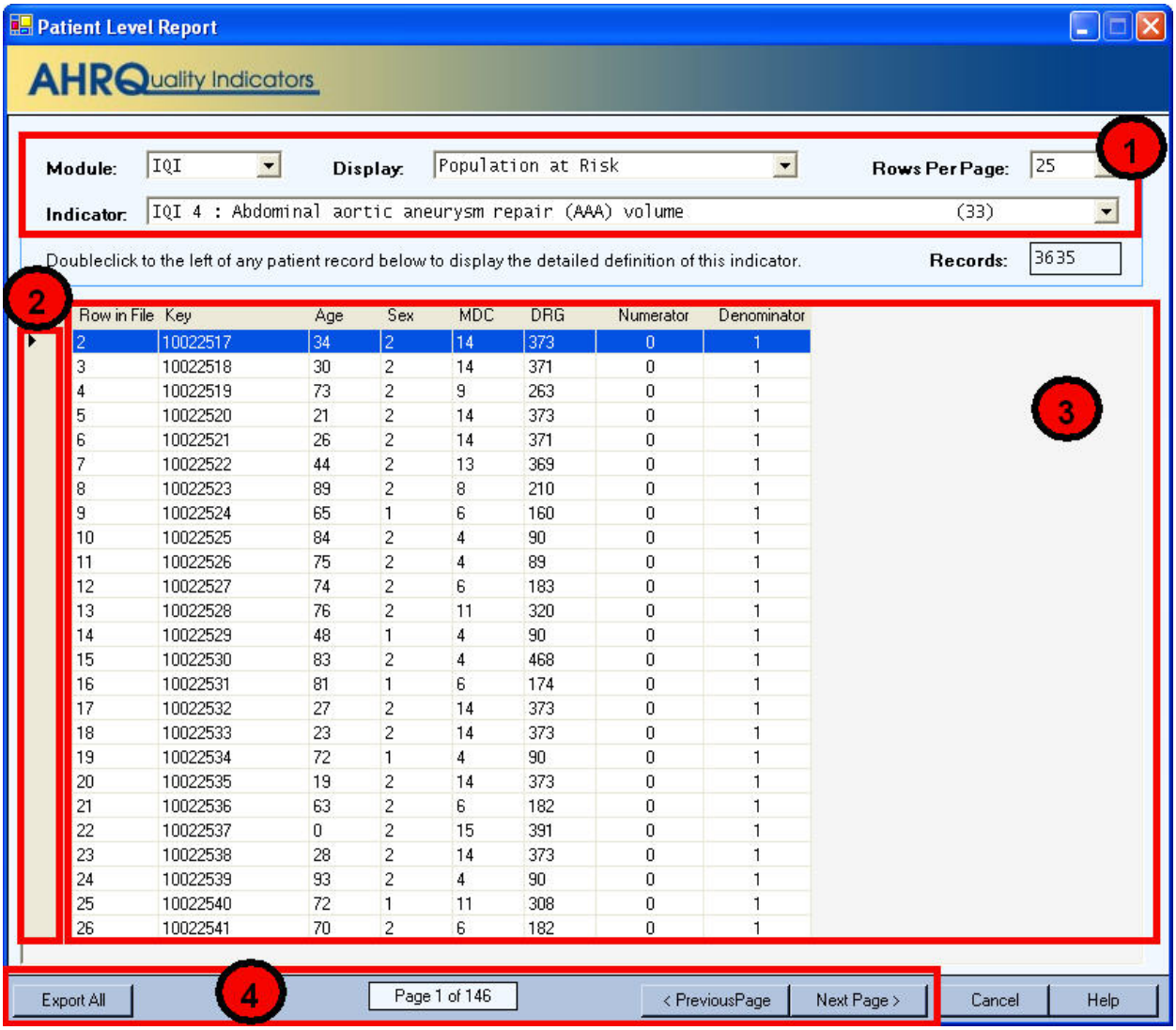
6.1.5.3 I sorted the data, but when I went to the next page the data was not sorted. Why?

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.

7.0 Patient Level Report

7.1.1 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.



7.1.2 How is this screen organized?

1

7.1.2.1 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.

The Rows Per Page defaults to 25, but you may select up to 50,000 rows per page to display.

2

7.1.2.2 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

7.1.2.3 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

7.1.2.4 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.

7.1.3 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 can scroll through the data with the <Next Page> and <Previous Page> buttons as well as adjust the number of rows displayed per page.

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.

7.1.4 What data is displayed?

Columns displayed on all reports include *Row in File, Key, Age, Sex, MDC, DRG, Numerator*, and *Denominator*. 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.

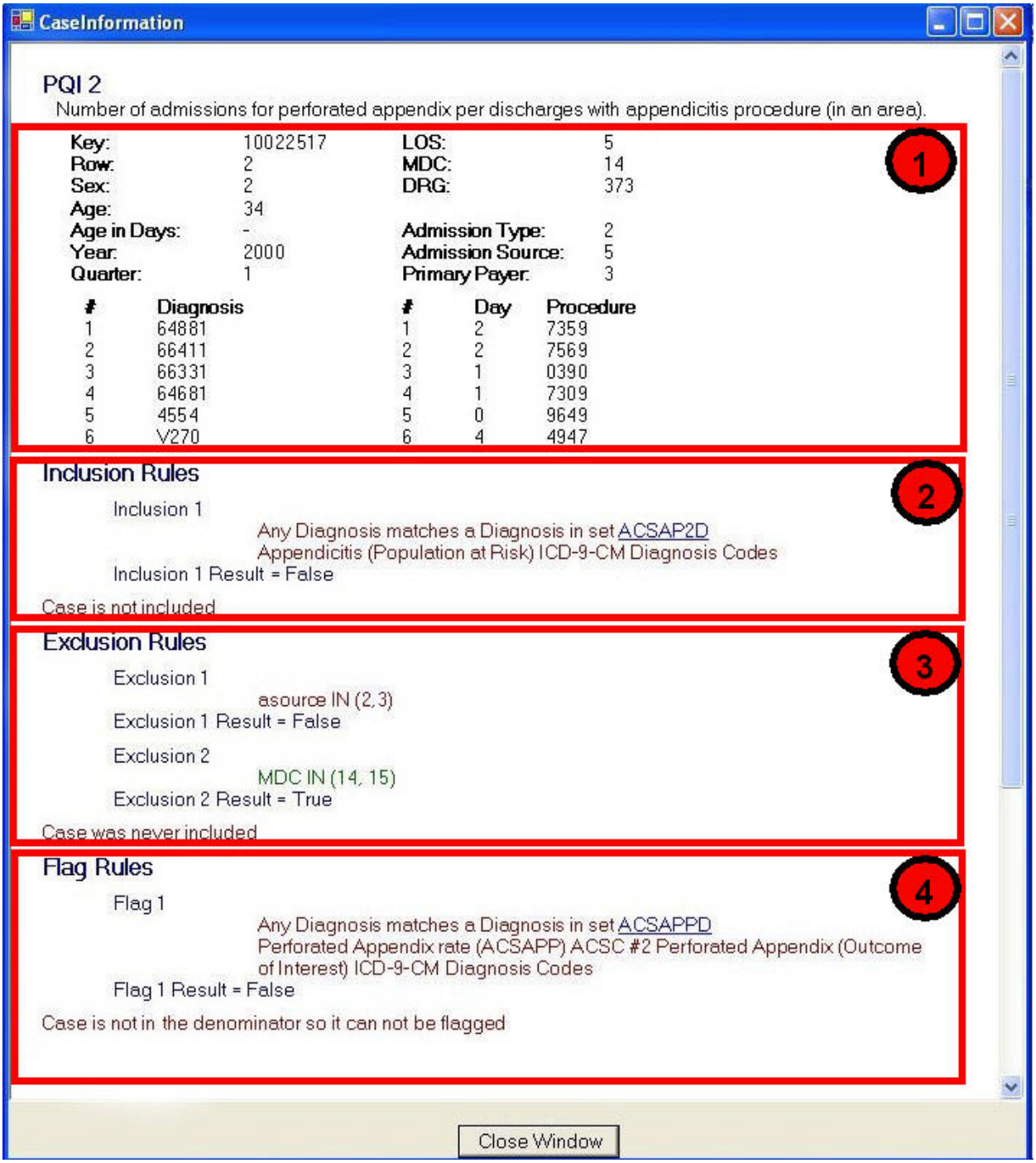
An additional column appears on the report when any of the last three options is selected from the <*Display* > drop-down menu: *Excluded*.

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.**

8.0 Case Details

8.1.1 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.



8.1.2 How is this screen organized?

1

8.1.2.1 Case details

Displays information from the discharge record as loaded into the system.

2

8.1.2.2 Inclusion Rules

Displays the rules for including a case in the denominator of this indicator. This will only be displayed for provider level indicators..

3

8.1.2.3 Exclusion Rules

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

4

8.1.2.4 Flag Rules

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

8.1.3 What do I do here?

You can view one case here. You can also use Ctrl+A to select all text and CTRL+C to copy this information to be pasted (CTRL+V) into another application.

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

8.1.4 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 is more than one clause for a particular rule, the case must satisfy both clauses (AND) in order for the rule to be met.

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.

8.1.5 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.

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 User Guide 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 5.6.4.

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

Indicator Name (Number)	Definition	Risk Adjustment
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
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

Indicator Name (Number)	Definition	Risk Adjustment
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
iArea-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 5.

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 5.6.4.

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)[6] 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.

[6] 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
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.
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 5.6.4.

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 5.6.4.

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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