

INSTRUCTIONS

IQI AND PSI RATES GENERATED BY THE AHRQ *WINDOWS QI* SOFTWARE

Guidance for Using the *Windows QI* Software and an Example of Output for One Hospital

What is this tool? To work with the Inpatient Quality Indicators (IQIs) and Patient Safety Indicators (PSIs) for assessing its own performance, a hospital needs to calculate rates for these indicators, using the *Windows* software provided by the Agency for Healthcare Research and Quality (AHRQ). This tool provides three sets of information to help you work with the *Windows* software to calculate rates for your hospital and use the output from the software:

- An outline of the steps used to calculate rates for the IQIs and PSIs.
- Notes for analysts and programmers on issues to manage in working with the *Windows* software.
- An example of the output from the *Windows* Software for one hospital.

Who are the target audiences? The primary audience for this tool is the programmers or analysts who will perform the calculations of rates for the IQIs and PSIs.

How can the tool help you? The examples and guidance provided by this tool should help you work more easily with the *Windows* software used to calculate the IQIs and PSIs for your hospital, and to read and use the output from the software.

How does this tool relate to others? This tool should be used together with the B.1 tool on *Applying the Quality Indicators to Hospital Data*, which explains the different types of rates calculated for the IQIs and PSIs.

Software Installation

Before installing and running the Windows QI software, you must first determine whether you have the requisite programs and permissions.

Installation instructions are available on the AHRQ Web site:

www.qualityindicators.ahrq.gov/Downloads/Software/WINQI/V41A/AHRQ%20QI%20Windows%20Installation%20Guide%20V41a.pdf

Reading this file and following the steps listed will address issues related to the installation of the software.

Make sure your Windows OS has the latest Service Pack and updates applied. The Windows QI software has been tested on the following configuration: Microsoft SQL Server 2005 (any edition).

Your information technology (IT) department's policies pertaining to SQL servers may affect your ability to install and use the Windows software. If so, you will need to contact your IT department's personnel for help accessing the server. Because each hospital's IT department's policies differ, we cannot effectively address all the issues that arise during this process.

Indicator Data Generated by the Windows Software

The Windows software provided by AHRQ for calculation of the IQIs and PSIs, as well as documentation on how to use the software, can be found on the AHRQ Web site: www.qualityindicators.ahrq.gov/Software/WinQI.aspx

Once the software is installed, it will guide you through the following steps to produce the rates for both the IQIs and PSIs:

1. Identify outcomes in inpatient records.
2. Identify populations at risk.
3. Calculate observed (raw) indicator rates.
4. Risk adjust the indicator rates (where applicable).
5. Create smoothed rates using multivariate signal extraction (where applicable).

Notes for Analysts and Programmers

The documentation provides guidance on how to set up your file and run the software. However, as is usually the case when applying new software to a data file, several issues have been identified that you will need to manage as you work with the AHRQ Windows QI software. The identified issues are discussed here, to help ease your first application of the software to your data. Once you have run the software successfully, any use of them on subsequent data should proceed smoothly.

Getting Your Data Ready

When preparing data for the Windows QI software program, you should be aware that a few steps are essential for running the program correctly.

1. Format and structure your dataset so that it matches the structure specified in the documentation. If you try to run the program without first structuring and formatting the data to the exact specifications listed, the program will not run properly. All numeric variables must be specified as numeric, and all character variables must be specified as character (string). Diagnosis codes should not have a decimal point (and they will need to be removed prior to importing). Variable names do NOT need to match those in the table.
2. The KEY variable is the unique case identifier. This variable is not required by the software but is useful for merging discharge records in the patient-level report with the input data.
3. Not all variables are required to determine your rates, but some are necessary for stratification and other analyses. See Appendix A to determine whether you have the necessary variables for your intended analyses.

4. Some users found that their datasets were too large to use with the software and their available computing capacity. These individuals found it necessary to use only a subset of their data at a time in order to run the program.
5. An APR-DRG Grouper is built in to the software if your data lack APR-DRG values. Use of this grouper is optional. You may use your institution's APR-DRG values if they are available and you choose to do so.

Running the Software

Once your data are ready, there is an Import Wizard that will allow you to map your variables with those required by the software. This map can be saved so that you do not need to repeat this step the next time you run the program.

There is an option to check the readability of your data to ensure that every row can be read and that every row has the same number of columns.

Rows with missing data for required variables will not be included in the analysis.

Once the variables have been identified and the data have been verified, indicator flags are created by the software. Data can then be saved as a CSV file if desired and will remain until new data are uploaded. Mapping files can also be saved at this time.

The user can then use the toolbar on the left side of the screen to generate reports and rates. Below are examples of two tables that can be created. Many other report options are available in the software that your hospital may find useful, but we only illustrate two basic examples here.

Example of Windows Software Output

An example of the output from the Windows software is provided on the following pages. This output was generated from a run of the program on the data for one large hospital, which had a large set of discharge records that would have the best chance of finding events for the numerators in the observed rates. Even in this case, however, you will see that zero events were found for some of the indicators.

NOTE: Refer to Tool B.1, Applying the QIs, for definitions of the four types of rates.

This output consists of three tables: Quick Report provider level, Quick Report area level, and Provider Report. The Quick Report provides a summary of the numerators, denominators, and observed rates for the uploaded data. This report is generated by the software and can be saved in rich text format (RTF).

The user may customize the Provider Report to include any number of indicators (including Experimental Quality Indicators, Inpatient Quality Indicators, Neonatal Quality Indicators, Pediatric Quality Indicators, and Patient Safety Indicators). Users may also choose to stratify based on a number of variables, including hospital, age category, sex, year, quarter, payer, race, or any other custom indicator they have in their dataset. This sample Provider Report gives the observed numerator, observed denominator, observed rate, expected rate, risk-adjusted rate, and smoothed rate for the PSIs without any stratification. Data and rates generated using the Provider Report option can be saved in comma separated value (CSV) format.

Quick Report

This is a summary of the numerators, denominators and observed rates for your currently loaded data.

Num. (numerator) refers to the number of events. Den. (denominator) refers to the number of individuals in the population at risk for the event. The rate refers to the observed rate. Pop. (population) rate refers to the population rate that is used for risk adjustment.

Filename: C:\Users\Desktop\AHRQinputData.csv
 Number of records: 11244
 Has POA Flags: Y

Provider Level Indicators

Indicator	Name	Num.	Den.	Rate	Pop. Rate
EXP1	Complications of anesthesia (formerly PSI-1)	0	1635	0	0.00083441
EXP2	Obstetric trauma - cesarean section (formerly PSI-20)	0	738	0	-
IQ18	Esophageal resection mortality rate	0	0	-	0.05782609
IQ19	Pancreatic resection mortality rate	0	0	-	0.04762836
IQ111	AAA repair mortality rate	0	0	-	0.04890845
IQ112	CABG mortality rate	0	0	-	0.02928662
IQ113	Craniotomy mortality rate	0	4	0	0.06073791
IQ114	Hip replacement mortality rate	0	10	0	0.00148327
IQ115	Acute myocardial infarction (AMI) mortality rate	0	37	0	0.06872478
IQ116	Congestive heart failure (CHF) mortality rate	0	282	0	0.0344607
IQ117	Acute stroke mortality rate	0	81	0	0.09841038
IQ118	Gastrointestinal (GI) hemorrhage mortality rate	0	83	0	0.02400525
IQ119	Hip fracture mortality rate	0	23	0	0.02915649
IQ120	Pneumonia mortality rate	0	95	0	0.04091564
IQ121	Cesarean section delivery rate	537	2251	0.23856064	0.2899479
IQ122	VBAC rate - uncomplicated	87	353	0.24645892	0.08772981
IQ123	Laparoscopic cholecystectomy rate	62	73	0.84931507	0.81965546
IQ124	Incidental appendectomy among the elderly rate	0	27	0	0.01182616
IQ125	Bilateral cardiac catheterization rate	0	0	-	0.01436937
IQ130	PTCA mortality rate	0	0	-	0.01405951
IQ131	CEA mortality rate	0	0	-	0.00496022
IQ132	AMI mortality rate - without transfers	0	34	0	0.07316109
IQ133	Primary cesarean section delivery rate	271	1898	0.14278188	0.17794005
IQ134	Vaginal birth after Cesarean (VBAC) rate - all	98	438	0.22374429	0.08674978
IQ11	Esophageal resection volume	0	-	-	-
IQ12	Pancreatic resection volume	0	-	-	-

IQI4	Abdominal aortic aneurysm repair (AAA) volume	1	-	-	-
IQI5	Coronary artery bypass graft (CABG) volume	0	-	-	-
IQI6	Percutaneous transluminal coronary angioplasty (PTCA) volume	0	-	-	-
IQI7	Carotid endarterectomy (CEA) volume	0	-	-	-
NQI1	Iatrogenic pneumothorax in neonate (formerly PDI-4)	0	228	0	0.00023101
NQI2	Neonatal Mortality	0	3596	0	0.00280638
NQI3	Blood Stream Infection - Neonates	0	45	0	0.0359009
PDI1	Pediatric accidental puncture or laceration	0	1491	0	0.00071447
PDI2	Pediatric decubitus ulcer	0	74	0	0.00268495
PDI5	Pediatric iatrogenic pneumothorax (non-neonate)	0	1248	0	0.0001522
PDI6	Pediatric heart surgery mortality rate	0	2	0	0.04139353
PDI8	Pediatric post-operative hemorrhage or hematoma	0	0	-	0.00195182
PDI9	Pediatric post-operative respiratory failure	0	0	-	0.01259273
PDI10	Pediatric post-operative sepsis	0	9	0	0.019705
PDI11	Pediatric post-operative wound dehiscence	0	31	0	0.00111718
PDI12	Central Line Associated BSI	0	1339	0	0.00198984
PDI3	Foreign body left in during procedure	0	-	-	-
PDI7	Pediatric heart surgery volume	5	-	-	-
PDI13	Pediatric transfusion reaction	0	-	-	-
PSI2	Death in low mortality DRGs	0	3460	0	0.00030438
PSI3	Pressure Ulcers	5	968	0.00516529	0.0184474
PSI4	Death in surgical inpatients	0	28	0	0.12615413
PSI6	Iatrogenic pneumothorax	0	3864	0	0.00047054
PSI7	Central Line Associated BSI	6	5213	0.00115097	0.00160917
PSI8	Post-operative hip fracture	0	415	0	0.00016055
PSI9	Post-operative hemorrhage or hematoma	0	825	0	0.00257363
PSI10	Post-operative physiologic and metabolic derangements	0	0	-	0.00099887
PSI11	Post-operative respiratory failure	0	0	-	0.00923224
PSI12	Post-operative pulmonary embolism or deep vein thrombosis	5	824	0.00606796	0.01017671
PSI13	Post-operative sepsis	0	0	-	0.01237541
PSI14	Post-operative wound dehiscence	0	200	0	0.00219979
PSI15	Accidental puncture or laceration	4	4019	0.00099527	0.0030562
PSI17	Birth trauma - Injury to Neonate	5	3571	0.00140017	0.00219363
PSI18	Obstetric trauma - vaginal with instrument	11	79	0.13924051	0.14218951
PSI19	Obstetric trauma - vaginal without instrument	36	1814	0.01984564	0.02442768
PSI5	Foreign body left in during procedure	0	-	-	-
PSI16	Transfusion reaction	0	-	-	-

Provider indicator population rates used in risk adjustment are based on the pooled discharges from the 2008 SID database. Population rates are only included for those indicators that use these rates in risk adjustment. One-year empirical rates for indicators that are not risk adjusted may be found in the QI documentation.

Area Level Indicators

Indicator	Name	Num.	Pop. Rate
IQI26	CABG rate	0	0.00154343383
IQI27	PTCA rate	0	0.00435743772
IQI28	Hysterectomy rate	29	0.00325102366
IQI29	Laminectomy rate	7	0.00214355446
PDI14	Pediatric asthma admission rate	8	0.00108749139
PDI15	Pediatric diabetes short-term complication admission rate	3	0.00024522001
PDI16	Pediatric gastroenteritis admission rate	23	0.00115086604
PDI17	Pediatric perforated appendix admission rate	7	0.30583199065
PDI18	Pediatric urinary tract infection admission rate	24	0.00035114831
PDI90	PDI Composite - Overall	11	0.00155078246
PDI91	PDI Composite - Acute Conditions	2	0.00052665281
PDI92	PDI Composite - Chronic Conditions	9	0.00102412965
PQI1	Diabetes short-term complication admission rate	49	0.00046885377
PQI2	Perforated appendix admission rate	19	0.28969988497
PQI3	Diabetes long-term complication admission rate	61	0.00101342697
PQI5	Chronic obstructive pulmonary disease admission rate	53	0.00156559754
PQI7	Hypertension admission rate	13	0.00049384662
PQI8	Congestive heart failure admission rate	274	0.00317614364
PQI9	Low birth weight rate	245	-
PQI10	Dehydration admission rate	18	0.00086987481
PQI11	Bacterial pneumonia admission rate	81	0.00292038888
PQI12	Urinary tract infection admission rate	61	0.00150491064
PQI13	Angina without procedure admission rate	10	0.00023632951
PQI14	Uncontrolled diabetes admission rate	4	0.00017472199
PQI15	Adult asthma admission rate	69	0.00093888243
PQI16	Rate of lower extremity amputation among patients with diabetes	14	0.00028257571
PQI90	PQI Composite - Overall	700	0.01348328529
PQI91	PQI Composite - Acute Conditions	160	0.00529517433
PQI92	PQI Composite - Chronic Conditions	540	0.00818882116
PSI21	Foreign body left in during procedure	1	-
PSI22	Iatrogenic pneumothorax	1	-
PSI23	Hospital acquired venous catheter related infections	14	-
PSI24	Post-operative wound dehiscence	0	-
PSI25	Accidental puncture or laceration	6	-
PSI26	Transfusion reaction	0	-
PSI27	Post-operative hemorrhage or hematoma - Area	5	-

Area indicator population rates used in risk adjustment are based on the pooled discharges from the 2008 SID database. Population rates are only provided for those indicators that use these rates for risk adjustment. One-year empirical rates for indicators that are not risk adjusted may be found in the QI documentation. The rates displayed are without SES decile adjustment.

You may view observed rates for area-level indicators by selecting the appropriate population and stratification options in the Report Wizard.

Provider Level Report

Report from 15-Aug-11 4:23:41 PM

Provider report created 15-Aug-11 4:23:54 PM

Report from 15-Aug-11 4:23:41 PM Rates per case

NOTE: Refer to Tool B.1, Applying the QIs, for definitions of the four types of rates.

Module	Indicator Number	Name	Observed Numerator	Observed Denominator	Observed Rate	Expected Rate	Risk Adjusted Rate	Smoothed Rate
PSI	2	Death in low mortality DRGs	0	3460	0	0.000176965	0	0.000220374
PSI	3	Pressure Ulcers	5	968	0.005165289	0.028709269	0.003319003	0.00425046
PSI	4	Death in surgical inpatients	0	28	0	0.093695773	0	0.105367561
PSI	5	Foreign body left in during procedure						
PSI	6	Iatrogenic pneumothorax	0	3864	0	0.000473859	0	0.000267425
PSI	7	Central Line Associated BSI	6	5213	0.001150969	0.001531488	0.001209351	0.001294374
PSI	8	Post-operative hip fracture	0	415	0	0.000140612	0	0.000157796
PSI	9	Post-operative hemorrhage or hematoma	0	825	0	0.003181112	0	0.001841112
PSI	10	Post-operative physiologic and metabolic derangements						
PSI	11	Post-operative respiratory failure						
PSI	12	Post-operative pulmonary embolism or deep vein thrombosis	5	824	0.006067961	0.014917602	0.004139531	0.005027474
PSI	13	Post-operative sepsis						
PSI	14	Post-operative wound dehiscence	0	200	0	0.001681961	0	0.002018468
PSI	15	Accidental puncture or laceration	4	4019	0.000995272	0.002266159	0.001342248	0.00179367
PSI	16	Transfusion reaction						
PSI	17	Birth trauma- Injury to Neonate	5	3571	0.001400168	0.002193626	0.001400168	
PSI	18	Obstetric trauma - vaginal with instrument	11	79	0.139240506	0.142189506	0.139240506	
PSI	19	Obstetric trauma -vaginal without instrument	36	1814	0.019845645	0.024427683	0.019845645	