



**INPATIENT QUALITY INDICATORS (IQI)
LOG OF ICD-9-CM AND DRG CODING
UPDATES AND REVISIONS TO IQI
DOCUMENTATION AND SOFTWARE
through
Version 5.0**

Prepared for:

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Table of Contents

1.0 Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software.....	1
Appendix A – Abdominal and Pelvic Surgery Procedure Codes as of February 2009.....	43
Appendix B – Diagnosis Codes for Indications for Right Heart Catheterization as of February 2009.....	47

1.1 Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software

The following table summarizes the revisions made to the Inpatient Quality Indicators (IQI) software, software documentation and the technical specification documents since the original release of the software and documents in June 2002. It also reflects changes to indicator specifications based on updates to ICD-9-CM and MS-DRG codes through Fiscal Year 2015 (effective October 1, 2014) and incorporates coding updates that were implemented in both versions of the Inpatient Quality Indicators (IQI) software (both SAS and Windows).

The table lists the version and revision number, the date the revision was made, the component(s) affected by the change and a short summary of the changes that were made. The nature of the change is categorized into one of three types:

- 1) Fiscal year (FY) coding change: occurs because of changes to the most recent fiscal year codes dictated by the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS) and Centers for Medicare & Medicaid Services (CMS),
- 2) Specification/ Calculation change: may impact the measure result that is something other than the most recent fiscal year coding change, and
- 3) Software/ Documentation change: alteration to the software code to calculate the measure as specified, or to the documentation to clarify the measure intent or functionality.

For convenience and ease of use, the changes are listed in reverse chronological order with the most recent changes appearing first in the table. Please note that changes prior to version 4.4 are not classified according to the currently defined types of changes. In addition, each type of change has varied shading to enhance readability.

All changes noted below have been incorporated into the software programming code, software documentation and the IQI technical specifications. With this software update, the IQI software now incorporates ICD-9-CM and DRG/MS-DRG codes valid from October 1, 1994 through September 30, 2014.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V5.0	March 2015	Pancreatic Resection Volume (IQI 02)	Specification/Calculation	Logic was modified to ensure that strata are mutually exclusive.
V5.0	March 2015	Pancreatic Resection Volume (IQI 02)	Specification/Calculation	Acute mumps pancreatitis (072.3) was added to the numerator exclusion for acute pancreatitis.
V5.0	March 2015	Abdominal Aortic Aneurysm Repair Volume (IQI 04)	Specification/Calculation	Stratification priority was modified from relative prevalence in the reference population to prior probability of death
V5.0	March 2015	Pancreatic Resection Mortality Rate (IQI 09)	Specification/Calculation	Logic was modified to ensure that strata are mutually exclusive.
V5.0	March 2015	Pancreatic Resection Mortality Rate (IQI 09)	Specification/Calculation	Acute mumps pancreatitis (072.3) was added to the denominator exclusion for acute pancreatitis.
V5.0	March 2015	Abdominal Aortic Aneurysm Repair Mortality Rate (IQI 11)	Specification/Calculation	Stratification priority was modified from relative prevalence in the reference population to prior probability of death
V5.0	March 2015	Acute Stroke Mortality Rate (IQI 17)	Specification/Calculation	Stratification priority was modified from relative prevalence in the reference population to prior probability of death

AHRQ Quality Indicators™

Inpatient Quality Indicators (IQI), Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V5.0	March 2015	Gastrointestinal Hemorrhage Mortality Rate (IQI 18)	Specification/Calculation	Esophageal varices in dis classified elsewhere w bleeding (456.20) and GI laceration/hemorrhage syndrome (530.7) were added to the denominator specification.
V5.0	March 2015	Pneumonia Mortality Rate (IQI 20)	Specification/Calculation	Influenza virus due to identified avian influenza virus (488.01), H1N1 virus (488.11), or identified novel influenza virus with pneumonia (488.81) were added to the denominator specification.
V5.0	March 2015	Bilateral Cardiac Catheterization Rate (IQI 25)	Specification/Calculation	Rheumatic chorea without heart involvement (392.9) was removed from numerator exclusion for indications for right sided catheterization.
V5.0	March 2015	IQSASA3	Specification/Calculation	Age/Sex risk-adjustment models were updated with the 2012 reference population file; the code was revised to use new regression coefficients.
V5.0	March 2015	IQSASP3	Specification/Calculation	Risk adjustment models were updated using the 2012 reference population file; The code was revised to use new regression coefficients.
V5.0	March 2015	All IQI	Software/Documentation	Version 32 of the 3M limited-license APR-DRG grouper has been incorporated into the AHRQ QI software and will be run with and without POA.
V5.0	March 2015	IQI Composite	Specification/Calculation	Weights for the measures that make up the Composite measure were updated using the 2012 reference population.
V5.0	March 2015	All IQI	Specification/Calculation	The reference population was updated based on 2012 HCUP SIDS data.

AHRQ Quality Indicators™

Inpatient Quality Indicators (IQI), Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V5.0	March 2015	All IQI	Specification/Calculation	The population file was updated with US Census County estimates for 2014.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5a	July 2014	IQI 02	Specification/Calculation	To ensure that the strata are mutually exclusive within each indicator, strata were prioritized according to their relative prevalence in the reference population. Order of priority for IQI 2 is Strata A, B.
V4.5a	July 2014	IQI 04	Specification/Calculation	To ensure that the strata are mutually exclusive within each indicator, strata were prioritized according to their relative prevalence in the reference population. Order of priority for IQI 4 is Strata A, C, B, D.
V4.5a	July 2014	IQI 09	Specification/Calculation	To ensure that the strata are mutually exclusive within each indicator, strata were prioritized according to their relative prevalence in the reference population. Order of priority for IQI 9 is Strata A, B.
V4.5a	July 2014	IQI 11	Specification/Calculation	To ensure that the strata are mutually exclusive within each indicator, strata were prioritized according to their relative prevalence in the reference population. Order of priority for IQI 11 is Strata A, C, B, D.
V4.5a	July 2014	IQI 17	Specification/Calculation	To ensure that the strata are mutually exclusive within each indicator, strata were prioritized according to their relative prevalence in the reference population. Order of priority for IQI 17 is Strata B, A, C.
V4.5a	Nov 3013	All IQI	Specification/Calculation	Version 31 (FY14) of the 3M limited-license APR-DRG grouper has been incorporated into the AHRQ QI software.
V4.5a	July 2014	All IQIs	Software (WinQI, V4.6)	A denominator adjustment added to SAS for Version 4.4 has been added to WinQI. This applies to the census population counts when certain combinations of strata are zero.
V4.5a	July 2014	IQI 04, IQI 11	Software (SAS, V4.5a)	Erroneous program comments in IQSAS1.SAS describing the strata for IQI 04 and IQI 11 have been corrected.
V4.5a	July 2014	All IQIs	Software (SAS, V4.5a)	To improve output of results in a better format, the PROC MEANS statement was modified.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	All area IQI	Specification/Calculation	Updated data are used for population estimates (i.e., through 2013). The population data are used to calculate the denominator for the area-level IQI.
V4.5	May 2013	All IQI	Specification/Calculation	Updated reference population rates were calculated using 44 state files from the 2010 State Inpatient Databases (SID). New risk adjustment coefficients were calculated using the updated reference population.
V4.5	May 2013	Esophageal Resection Volume (IQI 1)	Specification/Calculation	Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion
V4.5	May 2013	Pancreatic Resection Volume (IQI 2)	Specification/Calculation	<p>1. Add numerator inclusion codes for any procedure of partial pancreatic resection:</p> <p>5251 PROXIMAL PANCREATECTOMY 5252 DISTAL PANCREATECTOMY 5253 RAD SUBTOT PANCREATECTOM 5259 PARTIAL PANCREATECT NEC</p> <p>2. Add numerator exclusion codes for any diagnosis code of acute pancreatitis:</p> <p>5770 ACUTE PANCREATITIS</p> <p>3. Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion</p> <p>4. Stratified into two categories:</p> <ul style="list-style-type: none"> • Stratum A: Any diagnosis code of pancreatic cancer • Stratum B: All other cases <p>The software reports an observed rate, an expected rate, a risk-adjusted rate, and confidence limits around the risk-adjusted rate for each stratum. The smoothed rate and posterior standard deviation are not reported for the strata. All results for the measure aggregated across the strata are still reported.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	AAA Repair Volume (IQI 4)	Specification/Calculation	<p>1. Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion</p> <p>2. Stratified into four categories:</p> <ul style="list-style-type: none"> • Stratum A: Any diagnosis code of unruptured AAA and any procedure code for open AAA repair • Stratum B: Any diagnosis code of ruptured AAA and any procedure code for open AAA repair • Stratum C: Any diagnosis code of unruptured AAA and any procedure code for endovascular AAA repair • Stratum D: Any diagnosis code of ruptured AAA and any procedure code for endovascular AAA repair <p>The software reports an observed rate, an expected rate, a risk-adjusted rate, and confidence limits around the risk-adjusted rate for each stratum. The smoothed rate and posterior standard deviation are not reported for the strata. All results for the measure aggregated across the strata are still reported.</p>
V4.5	May 2013	Coronary Artery Bypass Graft Volume (IQI 5)	Specification/Calculation	Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion
V4.5	May 2013	Percutaneous Coronary Intervention Volume (IQI 6)	Specification/Calculation	Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion
V4.5	May 2013	Carotid Endarterectomy Volume (IQI 7)	Specification/Calculation	Drop MDC 14 (pregnancy, childbirth, and puerperium) numerator exclusion

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	Pancreatic Resection Mortality Rate (IQI 9)	Specification/Calculation	<p>1. Add denominator inclusion codes for any procedure of partial pancreatic resection:</p> <p>5251 PROXIMAL PANCREATECTOMY 5252 DISTAL PANCREATECTOMY 5253 RAD SUBTOT PANCREATECTOM 5259 PARTIAL PANCREATECT NEC</p> <p>2. Drop denominator inclusion codes for any diagnosis code of pancreatic cancer:</p> <p>1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS</p> <p>3. Add denominator exclusion codes for any diagnosis code of acute pancreatitis:</p> <p>5770 ACUTE PANCREATITIS</p> <p>4. Stratified into two categories:</p> <ul style="list-style-type: none"> • Stratum A: Any diagnosis code of pancreatic cancer • Stratum B: All other cases <p>The software reports an observed rate, an expected rate, a risk-adjusted rate, and confidence limits around the risk-adjusted rate for each stratum. The smoothed rate and posterior standard deviation are not reported for the strata. All results for the measure aggregated across the strata are still reported.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	AAA Repair Mortality Rate (IQI 11)	Specification/Calculation	<p>Stratified into four categories:</p> <ul style="list-style-type: none"> • Stratum A: Any diagnosis code of unruptured AAA and any procedure code for open AAA repair • Stratum B: Any diagnosis code of ruptured AAA and any procedure code for open AAA repair • Stratum C: Any diagnosis code of unruptured AAA and any procedure code for endovascular AAA repair • Stratum D: Any diagnosis code of ruptured AAA and any procedure code for endovascular AAA repair <p>The software reports an observed rate, an expected rate, a risk-adjusted rate, and confidence limits around the risk-adjusted rate for each stratum. The smoothed rate and posterior standard deviation are not reported for the strata. All results for the measure aggregated across the strata are still reported.</p>
V4.5	May 2013	Acute Stroke Mortality Rate (IQI 17)	Specification/Calculation	<p>Stratified into three categories:</p> <ul style="list-style-type: none"> • Stratum A: Subarachnoid stroke • Stratum B: Hemorrhagic stroke • Stratum C: Ischemic stroke <p>The software reports an observed rate, an expected rate, a risk-adjusted rate, and confidence limits around the risk-adjusted rate for each stratum. The smoothed rate and posterior standard deviation are not reported for the strata. All results for the measure aggregated across the strata are still reported.</p>
V4.5	May 2013	All mortality IQI	Specification/Calculation	<p>Modify the parameters in the analysis module for measures that are never present on admission (this is, where P=0 for all cases) by increasing the estimated precision threshold, i.e., modify the precision parameter in the analysis module to less than 1×10^9. This change only affected the software. The user will not see the change in parameters as they are embedded in the regression intercept and coefficients that are used by the prediction module.</p> <p>Rationale: Effect will be to change the reference population rate used for shrinkage to be closer to empirically estimated reference population rate given P=0.</p>

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V4.5	May 2013	All IQI	Software/Documentation	The Limited License edition of the 3M™ APR DRG Grouper was updated from Version 29 to Version 30. In addition, the APR DRG Grouper software embedded in the AHRQ QI v4.5 software is compatible with AHRQ QI software designed for the 32-bit and 64-bit environment.
V4.5	May 2013	All IQI	Software/Documentation	Respiratory complications diagnosis codes – Corrections were made to assure that three specific diagnosis codes were present in both the SAS and WinQI software. This change only affected the software.
V4.5	May 2013	All IQI	Software/Documentation	In WinQI there was an error in the smoothed rate calculation involving the noise variance and signal variance. This error was not previously observed because it only became significant in particular cases with relatively unusual variances. This issue was fixed in WinQI Version 4.5.
V4.5	May 2013	All IQI	Software/Documentation	The variable DISCWT in SAS QI v4.5 was set equal to 1 and the variable DISCWT was removed from the KEEP statement associated with the input file. This change ensures that the SAS programs do not account for complex sampling design when calculating QI estimates and standard errors. The SAS QI software, beginning with Version 4.1, does not support weighted QI estimates or standard errors for weighted estimates. The WinQI software has never supported weighted QI estimates or standard errors for weighted estimates.
V4.5	May 2013	All IQI	Software/Documentation	The installation packages have been improved for Version 4.5 of the SAS and WinQI software, including the Prediction Module and 3M™ APR DRG software. Both the SAS and WinQI software are available in Version 4.5 as either 32-bit or 64-bit applications. The 32-bit applications are targeted for Windows XP operating systems, and the 64-bit applications are targeted for Windows 7 operating systems.

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V4.5	May 2013	All IQI	Software/Documentation	<p>The WinQI software was corrected to address the following issues:</p> <ol style="list-style-type: none"> 1. On Step 2 of the Sampling Wizard dialog, the Sample Data File text box was not working correctly. Users were not able to save the file specified using the Browse explorer function. This issue has been fixed in WinQI Version 4.5. 2. Denominators were not being adjusted (i.e., dividing by the number of discharge quarters) when the calculations were being stratified by quarter. This issue has been fixed in WinQI Version 4.5. 3. On the WinQI Additional Options for Data Analysis screen of the Report Wizard, if the “<i>Ref. Pop. Rate</i>” is deselected, and then the expected rate and O/E ratio are reported incorrectly. These rates should be disabled on this screen if “<i>Ref. Pop. Rate</i>” is not selected. This issue has been included in the software documentation. 4. The compiled C# program was named AHRQ.exe, and this was the same name used for the compiled Prediction Module C++ program. This potential conflict has been fixed in WinQI Version 4.5. 5. Excel files with an .xlsx extension were not recognized. MS Access file types also needed to be updated. These issues were fixed in WinQI Version 4.5.
V4.5	May 2013	AAA Repair Volume (IQI 4)	Software/Documentation	<p>IQI #4 Technical Specification and SAS syntax – An error was corrected in the Technical Specification and SAS syntax for IQI #4 related to the handling of missing discharge disposition (DISP) codes. This change affected both the software and documentation.</p>
V4.5	May 2013	Cesarean Delivery Rate (IQI 21)	Software/Documentation	<p>Rename indicator to Cesarean Delivery Rate, Uncomplicated. This change affected both the software and documentation.</p>

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V4.5	May 2013	Incidental Appendectomy in the Elderly Rate (IQI 24)	Software/Documentation	<p>1. Drop numerator inclusion codes for any procedure of incidental appendectomy: 4382 LAP VERTICAL GASTRECTOMY This change only affected the documentation.</p> <p>2. Add denominator inclusion codes for any procedure of incidental appendectomy: 4382 LAP VERTICAL GASTRECTOMY This change only affected the documentation.</p>
V4.5	May 2013	Bilateral Cardiac Catheterization Rate (IQI 25)	Software/Documentation	SAS Version 4.4 is missing the right heart catheterization diagnosis code 41512. This code has been added to SAS Version 4.5. This change only affected the software.
V4.5	May 2013	Primary Cesarean Delivery Rate (IQI 33)	Software/Documentation	Rename indicator to Primary Cesarean Delivery Rate, Uncomplicated. This change affected both the software and documentation.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	Cesarean Delivery Rate, Uncomplicated (IQI 21) Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated (IQI 22) Incidental Appendectomy in the Elderly Rate (IQI 24) Bilateral Cardiac Catheterization Rate (IQI 25) Primary Cesarean Delivery Rate, Uncomplicated (IQI 33) Vaginal Birth After Cesarean (VBAC) Rate, All (IQI 34)	Software/Documentation	Expected rates, risk-adjusted rates, and smoothed rates are no longer reported for these measures. These measures are not risk-adjusted, so only the numerators, denominators, and observed rates are reported by the software.
V4.4	March 2012	All Area IQI	Specification/Calculation	Updated data are used for population estimates (i.e., through 2012). The population data are used to calculate the denominator for the area-level IQI. The comparative data tables have been updated using Version 4.4 of the software. Because the risk adjustment models and reference population have not changed for Version 4.4, the Risk Adjustment Coefficients remain as they were in Version 4.3.
V4.4	March 2012	Abdominal Aortic Aneurysm Repair Volume (IQI 4)	Fiscal Year Coding	Add numerator codes: 3977 TEMP ENDOVSC OCCLS VESSEL 3978 ENDOVAS IMPLN GRFT AORTA

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V4.4	March 2012	Abdominal Aortic Aneurysm Repair Mortality Rate (IQI 11)	Fiscal Year Coding	Add numerator codes: 3977 TEMP ENDOVASC OCCLS VESSEL 3978 ENDOVASC IMPLN GRFT AORTA
V4.4	March 2012	Incidental Appendectomy in the Elderly Rate (IQI 24)	Fiscal Year Coding	Add numerator code: 4382 LAP VERTICAL GASTRECTOMY
V4.4	March 2012	Bilateral Cardiac Catheterization Rate (IQI 25)	Fiscal Year Coding	1. Add numerator exclusion codes: 41513 SADDLE EMBOL PULMON ART 42511 HYPERTROPHIC OBST CARDIOMY 42518 OTH HYPERTROPHIC CARDIOMY 74731 PULMON ART COARCT/ATRES 2. Add denominator inclusion code: 4144 COR ATH D/T CALC COR LSN
V4.4	March 2012	Percutaneous Transluminal Coronary Angioplasty (PTCA) Volume (IQI 6)	Software/Documentation	Rename indicator to Percutaneous Coronary Intervention (PCI) Volume Rationale: Percutaneous coronary intervention encompasses other interventions that do not involve the use of balloons.
V4.4	March 2012	Congestive Heart Failure (CHF) Mortality Rate (IQI 16)	Software/Documentation	Rename indicator to Heart Failure Mortality Rate Rationale: Many patients with heart failure do not experience congestion of the lungs.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Percutaneous Transluminal Coronary Angioplasty (PTCA) Rate (IQI 27)	Software/Documentation	Rename indicator to Percutaneous Coronary Intervention (PCI) Rate Rationale: Percutaneous coronary intervention encompasses other interventions that do not involve the use of balloons.
V4.4	March 2012	Percutaneous Transluminal Coronary Angioplasty (PTCA) Mortality (IQI 30)	Software/Documentation	Rename indicator to Percutaneous Coronary Intervention (PCI) Mortality Rationale: Percutaneous coronary intervention encompasses other interventions that do not involve the use of balloons.
V4.4	March 2012	Hip Replacement Mortality Rate (IQI 14)	Software/Documentation	ICD-9-CM Osteoarthritis diagnosis codes 71500 and 71509 have the same short description by corresponding to “Osteoarthritis, generalized, site unspecified” and “Osteoarthritis, generalized, multiple sites”, respectively. In the specification ‘NOS’ and ‘MULT’, respectively, were added to the short description in the specification.
V4.4	March 2012	Software	Software/ Documentation	SAS v4.3 did not properly handle stratifications where the user requested a two-way stratification that overlapped with a one-way stratification (e.g., Age-by-Gender at the same time as Age by itself). This issue was in fixed in v4.4 of SAS.
V4.4	March 2012	Software	Software/ Documentation	Changes were made to the SAS and WinQI software to implement a re-estimation of the signal variance in order to correct the fact that the smoothed rates in v4.3 of the software were constant for all providers for four indicators (IQI-11 and IQI-14).
V4.4	March 2012	Software	Software/ Documentation	IQSASA2.SAS program was revised to include denominator adjustment when the population count for certain combination of strata was zero.
V4.4	March 2012	Software	Software/ Documentation	New version of 3M™ APR™ DRG Limited License Grouper (V29) from 3M was used.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Software	Software/ Documentation	WinQI v4.3 was missing the PRPED5D code set and codes 7454 and 7455. This issue was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentation	The WinQI v4.3 patient-level report showed incorrect POA exclusions in some cases. This issue was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentation	WinQI v4.3 did not properly implement a user selection of year 2010 during report generation. This issue was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentation	WinQI v4.3 was not properly calculating quarterly rates when requested by the user. This issue was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentation	Both SAS and WinQI v4.3 were improperly truncating the (Observed rate) / (Expected rate) ratio and associated upper confidence bound (95%) to be ≤ 1.0 in cases where a stratification of the rates was being implemented. This issue was fixed in WinQI and partially fixed in SAS so that this truncation only applies in cases where no stratification is being performed. In SAS, (Observed rate) / (Expected rate) ratio upper confidence bounds for provider-level, non-risk-adjusted IQI and provider-level, non-risk-adjusted PSI are still truncated to be ≤ 1.0 in cases where a stratification of the rates is being implemented. This issue will be fixed in v4.5. Users may obtain the upper confidence bound (95%) using the following formula: upper confidence bound = $(2 * \text{ratio}) - \text{lower confidence bound}$.
V4.4	March 2012	Software	Software/ Documentation	SAS v4.3 did not properly handle stratifications where the user requested a two-way stratification that overlapped with a one-way stratification (e.g., Age-by-Gender at the same time as Age by itself). This issue was fixed in v4.4 of SAS.
V4.4	March 2012	Software	Software/ Documentation	Miscellaneous software related issues and minor coding errors have been corrected in the SAS software for the IQI-90 and IQI-91 provider composite QI.

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V4.4	March 2012	Software	Software/ Documentation	WinQI v4.3 and v4.4 do not check for a possible issue with user-defined composite weighting – users must set weights for all possible individual indicators, including zero weights for indicators that are not to be included in the composite. This requirement has been included in the software documentation.
V4.4	March 2012	Software	Software/ Documentation	SAS and WinQI v4.4 remain 32-bit applications developed on a Windows XP operating system. Some limited testing has been performed to ensure that these applications will run successfully under a 64-bit, Windows 7 environment. One additional installation requirement related to administrator rights has been included in the software documentation.
V4.3	June 30, 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	IQI #1 and 8: Dropped numerator inclusion for esophageal cancer (151.0), added numerator inclusion for gastrointestinal-related cancer (151.0), modified logic to exclude cases with neither a diagnosis code specific to esophageal cancer nor esophageal resection.
V4.3	June 30, 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	IQI #15: Add denominator inclusion for Ami diagnosis (410.00-410.90) to harmonize with CMS 30-day mortality indicator in Hospital Compare
V4.3	June 30, 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	Surgical DRG: Added numerator inclusion codes 014 and 015 which were previously assigned to 009.
V4.3	June 30, 2011	Guide	Software/ Documents	Revised and updated all sections of the guide document to reflect current state of indicators, software and body of evidence.
V4.2	September 30, 2010	Incidental Appendectomy Rate in the Elderly (IQI 24) Denominator (Exclusion, cancer adj to appendix)	Coding	Add: 209.74 Secondary neuroendocrine tumor of peritoneum

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V4.2	September 30, 2010	Multiple IQI Indicators	Coding	Add MS-DRG code: 265 Acid lead procedures
V4.1	December 2, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #21-25 and 33-34: Risk adjustment has been removed because for process measures the standard practice is not to risk adjust the measure, but to exclude from the denominator patients that are not indicated for the measure (that is, where the process measure is not considered appropriate.)
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #1 and IQI #8 – Esophageal resection volume and mortality – added Other total gastrectomy (43.99) procedure code to denominator inclusion criteria for esophageal resection only if accompanied by selected principal diagnosis codes
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #13 – Craniotomy mortality – added denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007)
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #14 – Hip replacement mortality – added denominator exclusion for diagnosis of hip fracture
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #19 – Hip fracture mortality – added denominator exclusion for diagnosis of periprosthetic fracture (996.44)
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #21 – Cesarean Section Delivery – added denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007)
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #22 – VBAC – 1) added denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007); 2) added numerator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007)

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V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #24 – Incidental appendectomy – 1) replaced the DRG denominator inclusion for Intra-Abdominal Procedure with a procedure code denominator inclusion for abdominal and pelvic surgery; 2) added denominator exclusion for surgical removal of the colon (colectomy) or pelvic evisceration; 3) added denominator exclusion for diagnosis of cancer involving or adjacent to the appendix
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	IQI #25 – Bilateral catheterization – added diagnosis codes to denominator exclusion for indications for right heart catheterization
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	Implement UB-04 – The UB-04 (effective October 1, 2007) changes were implemented including new data elements for point-of-origin and present on admission
V4.0	June 30, 2009	Software (SAS and Windows), and Documentation	Software/ Documents	Update Benchmarking Data to 2007 – used data from the 2007 SID for computation of benchmarks
V4.0	February 20, 2009	Pneumonia Mortality Rate (IQI 20) Denominator (Inclusion, pneumonia)	Coding	Modify code: 482.41 Methicillin susceptible pneumonia due to Staphylococcus aureus Add code: 482.42 Methicillin resistant pneumonia due to Staphylococcus aureus
V4.0	February 20, 2009	Cesarean Section Delivery (IQI 21) Denominator (Exclusion, problem deliveries)	Coding	Add codes: 678.10 Fetal conjoined twins, unspecified as to episode of care or not applicable 678.11 Fetal conjoined twins, delivered, with or without mention of antepartum condition 678.13 Fetal conjoined twins, antepartum condition or complication

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Incidental appendectomy (IQI 24) Denominator (Inclusion, abdominal and pelvic surgery)	Coding	Add codes: 17.11 Laparoscopic repair of direct inguinal hernia with graft or prosthesis 17.12 Laparoscopic repair of indirect inguinal hernia with graft or prosthesis 17.13 Laparoscopic repair of inguinal hernia with graft or prosthesis, NOS 17.21 Laparoscopic bilateral repair of direct inguinal hernia with graft or prosthesis 17.22 Laparoscopic bilateral repair of indirect inguinal hernia with graft or prosthesis 17.23 Laparoscopic bilateral repair of inguinal hernia, one direct and one indirect, with graft or prosthesis 17.24 Laparoscopic bilateral repair of inguinal hernia with graft or prosthesis, NOS 48.40 Pull through resection of rectum, NOS 48.42 Lap pull-through resection of rectum 48.43 Open pull-through resection of rectum 48.50 Abdominoperineal resection of rectum, NOS 48.51 Laparoscopic abdominoperineal resection of rectum 48.52 Open abdominoperineal resection of rectum 48.59 Other abdominoperineal resection of rectum 53.42 Laparoscopic repair of umbilical hernia with graft or prosthesis 53.43 Other laparoscopic umbilical herniorrhaphy 53.62 Laparoscopic incisional hernia repair with graft or prosthesis 53.63 Other laparoscopic repair of other hernia of anterior abdominal wall with graft or prosthesis 53.71 Lap repair of diaphragmatic hernia, abdominal approach 53.72 Other and open repair of diaphragmatic hernia, abdominal approach 53.75 Repair of diaphragmatic hernia, abdominal approach, NOS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Incidental appendectomy (IQI 24) Denominator (Exclusion, surgical removal of colon or pelvic evisceration)	Coding	Add codes: 17.31 Laparoscopic multiple segmental resection of large intestine 17.32 Laparoscopic cecectomy 17.33 Laparoscopic right hemicolectomy 17.34 Laparoscopic resection of transverse colon 17.35 Laparoscopic left hemicolectomy 17.36 Laparoscopic sigmoidectomy 17.39 Other laparoscopic partial excision of large intestine 45.81 Laparoscopic total intra-abdominal colectomy 45.82 Open total intra-abdominal colectomy 45.83 Other and unspecified total intra-abdominal colectomy
V4.0	February 20, 2009	Bilateral Catheterization Rate (IQI 25) Denominator (Inclusion, coronary artery disease)	Coding	Add code: 414.3 Coronary atherosclerosis due to lipid rich plaque

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Esophageal Resection Volume (IQI 1) Denominator (Inclusion, esophageal resection)	Indicator Specification Change	<p>Add procedure code to denominator inclusion criteria for esophageal resection (\$PRESO2P) only if accompanied by selected <i>principal</i> diagnosis codes (\$PRESOPD and \$PRESO2D)</p> <p>Add code: 43.99 Other total gastrectomy</p> <p>ONLY if codes: 150.1 Malignant neoplasm of esophagus, cervical 150.2 Malignant neoplasm of esophagus, thoracic 150.3 Malignant neoplasm of esophagus, abdominal 150.4 Malignant neoplasm of esophagus, upper third of 150.5 Malignant neoplasm of esophagus, middle third of 150.6 Malignant neoplasm of esophagus, lower third of 150.8 Malignant neoplasm of esophagus, other specified part 150.9 Malignant neoplasm of esophagus, unspecified 151.0 Malignant neoplasm of stomach, cardia 197.8 Secondary malignant neoplasm of respiratory and digestive systems, other digestive organs and spleen 230.1 Carcinoma in situ of digestive organs, Esophagus 235.5 Neoplasm of uncertain behavior of digestive and respiratory systems, other and unspecified digestive organs</p> <p>Add diagnosis code to denominator inclusion criteria for esophageal resection (\$PRESOPD)</p> <p>Add code: 151.0 Malignant neoplasm of stomach, cardia</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Esophageal Resection Mortality (IQI 8) Denominator (Inclusion, esophageal resection)	Indicator Specification Change	<p>Add procedure code to denominator inclusion criteria for esophageal resection (\$PRESO2P) only if accompanied by selected <i>principal</i> diagnosis codes (\$PRESOPD and \$PRESO2D)</p> <p>Add code: 43.99 Other total gastrectomy</p> <p>ONLY if codes: 150.1 Malignant neoplasm of esophagus, cervical 150.2 Malignant neoplasm of esophagus, thoracic 150.3 Malignant neoplasm of esophagus, abdominal 150.4 Malignant neoplasm of esophagus, upper third of 150.5 Malignant neoplasm of esophagus, middle third of 150.6 Malignant neoplasm of esophagus, lower third of 150.8 Malignant neoplasm of esophagus, other specified part 150.9 Malignant neoplasm of esophagus, unspecified 151.0 Malignant neoplasm of stomach, cardia 197.8 Secondary malignant neoplasm of respiratory and digestive systems, other digestive organs and spleen 230.1 Carcinoma in situ of digestive organs, Esophagus 235.5 Neoplasm of uncertain behavior of digestive and respiratory systems, other and unspecified digestive organs</p> <p>Add diagnosis code to denominator inclusion criteria for esophageal resection (\$PRESOPD)</p> <p>Add code: 151.0 Malignant neoplasm of stomach, cardia</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Craniotomy Mortality (IQI 13) Denominator (Inclusion, discharges after 2007Q4)	Indicator Specification Change	<p>Add denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007)</p> <p>Add codes:</p> <ul style="list-style-type: none"> 020 Intracranial vascular procedures with PDX hemorrhage w MCC 021 Intracranial vascular procedures with PDX hemorrhage w CC 022 Intracranial vascular procedures with PDX hemorrhage w/o CC/MCC 023 Craniotomy w major device implant or acute complex CNS PDX w MCC 024 Craniotomy w major device implant or acute complex CNS PDX w/o MCC 025 Craniotomy & endovascular intracranial procedures w MCC 026 Craniotomy & endovascular intracranial procedures w CC 027 Craniotomy & endovascular intracranial procedures w/o CC/MCC 031 Ventricular shunt procedures with MCC 32 Ventricular shunt procedures w CC 33 Ventricular shunt procedures w/o CC/MCC
V4.0	February 20, 2009	Hip Replacement Mortality (IQI 14) Denominator (Exclusion, diagnosis of hip fracture)	Indicator Specification Change	Add denominator exclusion for diagnosis of hip fracture (\$MTHIPFD)
V4.0	February 20, 2009	Hip Fracture Mortality (IQI 19) Denominator (Exclusion, diagnosis of periprosthetic fracture)	Indicator Specification Change	<p>Add denominator exclusion for diagnosis of periprosthetic fracture (\$MTHIP2D)</p> <p>Add code:</p> <ul style="list-style-type: none"> 996.44 Mechanical complication of internal orthopedic device, implant, and graft, periprosthetic fracture around prosthetic joint

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Cesarean Section Delivery (IQI 21) Denominator (Inclusion, discharges after 2007Q4)	Indicator Specification Change	Add denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007) Add codes: 765 Cesarean section w CC/MCC 766 Cesarean section w/o CC/MCC 767 Vaginal delivery w sterilization &/or D&C 768 Vaginal delivery w O.R. proc except steril &/or D&C 774 Vaginal delivery w complicating diagnoses 775 Vaginal delivery w/o complicating diagnoses
V4.0	February 20, 2009	VBAC (IQI 22) Denominator (Inclusion, discharges after 2007Q4)	Indicator Specification Change	Add denominator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007) Add codes: 765 Cesarean section w CC/MCC 766 Cesarean section w/o CC/MCC 767 Vaginal delivery w sterilization &/or D&C 768 Vaginal delivery w O.R. proc except steril &/or D&C 774 Vaginal delivery w complicating diagnoses 775 Vaginal delivery w/o complicating diagnoses
V4.0	February 20, 2009	VBAC (IQI 22) Numerator (Inclusion, discharges after 2007Q4)	Indicator Specification Change	Add numerator inclusion criteria for MS-DRGs for discharges after 2007Q4 (effective October 1, 2007) Add codes: 767 Vaginal delivery w sterilization &/or D&C 768 Vaginal delivery w O.R. proc except steril &/or D&C 774 Vaginal delivery w complicating diagnoses 775 Vaginal delivery w/o complicating diagnoses
V4.0	February 20, 2009	Incidental Appendectomy (IQI 24) Denominator (Inclusion)	Indicator Specification Change	Replace the DRG denominator inclusion for Intra-Abdominal Procedure (PRAPPNG) with a procedure code denominator inclusion for abdominal and pelvic surgery (\$PRAPP2P). See Appendix A for abdominal and pelvic surgery procedure codes as of February 2009.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Incidental Appendectomy (IQI 24) Denominator (Exclusion, surgical removal of the colon or pelvic evisceration)	Indicator Specification Change	Add denominator exclusion for surgical removal of the colon (colectomy) or pelvic evisceration (\$PRAPP3P) Add codes: 45.71 Multiple Segmental Resection of Large Intestine Cecectomy 45.73 Right Hemicolectomy 45.74 Resection Of Transverse Colon 45.75 Left Hemicolectomy 45.76 Sigmoidectomy 45.79 Other Partial Excision of Large Intestine 45.8 Total intra-abdominal colectomy (no longer valid) 68.8 Pelvic evisceration

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 20, 2009	Incidental Appendectomy (IQI 24) Denominator (Exclusion, diagnosis of cancer involving or adj to appendix)	Indicator Specification Change	<p>Add denominator exclusion for diagnosis of cancer involving or adjacent to the appendix (PRAPPND)</p> <p>Add codes:</p> <p>153.4 Malignant neoplasm of colon, cecum 153.5 Malignant neoplasm of colon, appendix 153.6 Malignant neoplasm of colon, ascending colon 153.8 Malignant neoplasm of colon, other specified sites of large intestine 153.9 Malignant neoplasm of colon, NOS 158.8 Malignant neoplasm of retroperitoneum and peritoneum, specified parts of peritoneum 158.9 Malignant neoplasm of retroperitoneum and peritoneum, peritoneum, unspecified 159.0 Malignant neoplasm of other and ill-defined sites within the digestive organs and peritoneum, intestinal tract, part unspecified 159.8 Malignant neoplasm of other and ill-defined sites within the digestive organs and peritoneum, other sites of digestive system and intra-abdominal organs 159.9 Malignant neoplasm of other and ill-defined sites within the digestive organs and peritoneum, ill-defined 195.2 Malignant neoplasm of other and ill-defined sites, abdomen 197.5 Secondary malignant neoplasm of respiratory and digestive systems, large intestine and rectum 197.6 Secondary malignant neoplasm of respiratory and digestive systems, retroperitoneum and peritoneum</p>
V4.0	February 20, 2009	Bilateral Catheterization (IQI 25) Denominator (Exclusion, indications for right heart catheterization)	Indicator Specification Change	<p>Add diagnosis codes to denominator exclusion for indications for right heart catheterization (\$PRCAT2D). See Appendix B for diagnosis codes for indications for right heart catheterization as of February 2009.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V3.2	March 10, 2008	Bilateral Cardiac Catheterization Rate (IQI 25) Numerator (Inclusion, indication)	Coding	Added new code 415.12 SEPTIC PULMONARY EMBOLISM
V3.2	March 10, 2008	Hysterectomy Area Rate (IQI 28) Denominator (Exclusion, genital cancer)	Coding	Added new codes 233.30 CA IN SITU FEM GEN NOS, 233.31 CARCINOMA IN SITU VAGINA, 233.32 CARCINOMA IN SITU VULVA and 233.39 CA IN SITU FEM GEN NEC
V3.2	March 10, 2008	Multiple PSI and PDI Indicators	Coding	Updated DRG to Version 25.0
V3.2	March 10, 2008	SAS Software and Documentation	Software/ Documents	IQI #19 (Hip Fracture Mortality Rate) – Revised the inclusion criteria from discharges 18 and older to discharges age 65 and older
V3.1a	March 16, 2007	SAS Software and Documentation	Software/ Documents	Added program to calculate the IQI composite measures. The new files are IQI_COMPOSITE.SAS and MSXIQ31.TXT.
V3.1a	March 16, 2007	SAS Software (IQSASA2)	Software/ Documents	Amended the aggregation algorithm to correctly sum the numerator and denominator counts across stratifiers.
V3.1	March 12, 2007	Software (SAS and Windows), Software Documentation, Guide, and Technical Specifications	Software/ Documents	Pneumonia mortality (IQI #20) added code 487.0 and dropped codes 507.0, 510.0, 510.9, 511.0 and 513.0 from the inclusion criteria for denominator in order to align indicator with CMS 30-day mortality indicator. Impact: The rate increases by about 25%

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V3.1	March 12, 2007	Guide	Software/ Documents	Moved average volume, provider rates, and population rates into separate document, <i>Inpatient Quality Indicators Comparative Data</i> .
V3.1	March 12, 2007	Software (SAS and Windows)	Software/ Documents	Age-, race-, gender- and county-specific population estimates used for AHRQ QI area rates were updated to use revised post-censal estimates for years 2001 through 2005 and projections for the years 2006 and 2007. The syntax will compute risk-adjusted rates and observed-to-expected ratios for the pre-defined set of stratification variables (e.g., age, gender, payer, race). When stratifications other than hospital or area are selected, the RPIQxx variables and their confidence intervals are observed/expected ratios to avoid confounding with risk adjustment variables
V 3.1	March 12, 2007	Software (SAS and Windows) and Documentation	Software/ Documents	Added capability to apply weight value to each discharge. Added data element DISCWT to hold weight to assign to discharge. Added an option to incorporate the Present on Admission (POA) indicator into risk adjustment and Added Data Elements DXATADMIT1 – DXATADMIT30 to indicate whether the corresponding diagnosis (i.e., DX1 – DX30) was Present on Admission.
V 3.1	March 12, 2007	SAS Software and Documentation	Software/ Documents	Added alternative POA parameter files of risk-adjustment covariates and population rates using 2002-2004 SID data from California and New York.
V3.1	March 12, 2007	Software (SAS and Windows), and Covariates document	Software/ Documents	Based on recommendations of the Risk Adjustment and Hierarchical Modeling (RAHM) Workgroup, computed covariates using logistic regression model with a hospital random effect instead of the existing simple logistic model. Because the AHRQ QI use a large sample, the impact on the covariates of using the hierarchical model (and hence the impact on the risk-adjusted rates) is minor. Updated the coefficients used in the calculation of expected and risk-adjusted rates to the reference population, based on the 2002-2004 State Inpatient Data (SID). Updated Covariates document to include the POA coefficients.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V3.0	February 20, 2006	PTCA Volume (IQI #6) Denominator (Inclusion, PTCA)	Coding	Added new code 00.66 (Percutaneous Transluminal Coronary Angioplasty) to the inclusion criteria. Expected impact on rate: negligible
V3.0	February 20, 2006	Hip Replacement Mortality (IQI #14) Denominator (Inclusion, Hip Replacement)	Coding	Added new codes 00.70, 00.71, 00.72 and 00.73 (Other hip procedures) to inclusion criteria. Expected impact on rate: negligible
V3.0	February 20, 2006	PTCA Utilization (IQI #27) Numerator (Inclusion, PTCA)	Coding	Added new code 00.66 (Percutaneous Transluminal Coronary Angioplasty) to the inclusion criteria. Expected impact on rate: negligible
V3.0	February 20, 2006	PTCA Mortality (IQI #30) Denominator (Inclusion, PTCA)	Coding	Added new code 00.66 (Percutaneous Transluminal Coronary Angioplasty) to the inclusion criteria. Expected impact on rate: negligible
V3.0	February 20, 2006	Guide	Software/ Documents	Moved Appendix A into new document <i>Inpatient Quality Indicators Technical Specifications</i> . Removed Appendix B. Added new section "Using Different Types of QI Rates." Added explanation of changes to area definitions and new stratification options. Changed "MSA" to "Metro Area" throughout the document.
V3.0	February 20, 2006	Guide, Software Documentation, and Technical Specification	Software/ Documents	Removed Appendices that were copies of Change Log and Indicator Changes documents. Added Appendix of Links to all IQI documents and additional resources.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V3.0	February 20, 2006	Software (SAS and SPSS), Software Documentation, Guide, and Technical Specifications	Software/ Documents	<p>Dropped pediatric heart surgery indicators IQI #3 (volume) and IQI #10 (mortality), which are being moved into the new Pediatric Quality Indicators module.</p> <p>Revised multiple indicators to exclude pediatric populations (age less than 18). Specifically, IQIs #1-2, 4-9, 11, 14, 23, 25-27, and 31.</p> <p>Added procedure codes 42.4, 42.5, 42.5x, 42.6, 42.6x to inclusion criteria for IQI #1 (Esophageal Resection Volume) and IQI #8 (Esophageal Resection Mortality).</p> <p>Dropped esophageal cancer diagnosis codes from the inclusion criteria for IQI #1 (Esophageal Resection Volume).</p> <p>Dropped pancreatic cancer diagnosis codes from the inclusion criteria IQI#2 (Pancreatic Resection Volume).</p> <p>Added procedure code 39.71 (Endovascular implantation of graft in abdominal aorta) to inclusion criteria for IQI #4 (AAA Repair Volume) and IQI #11 (AAA Repair Mortality).</p> <p>Dropped procedure code 36.06 from inclusion criteria for IQI #6 (PTCA Volume), IQI #27 (PTCA Utilization) and IQI #30 (PTCA Mortality).</p> <p>Changed references from 3M APR-DRG Version 15.0 to Version 20.0.</p>
V3.0	February 20, 2006	Software Documentation (SAS and SPSS)	Software/ Documents	<p>Amended Table 2 to add variables for expected, lower and upper CI levels, and standard error of smoothed rate.</p> <p>Amended Table 3 to include the new 1995-2006 census data (POP95TO06.TXT).</p> <p>Removed section "Interpreting the Results".</p> <p>Replaced example printouts with tables explaining contents of columns in printouts.</p>
V3.0	February 20, 2006	Software (SAS and SPSS)	Software/ Documents	<p>Added the 1995-2006 Census data (e.g., POP95TO06.TXT).</p> <p>Updated the covariates to 3M APR-DRG Version 20.0 (i.e., COVIQP30.TXT).</p> <p>Changed the computation of the risk-adjusted rate to use a proportional formula for indirect standardization.</p> <p>Added a computation of exact confidence limits.</p> <p>Changed name of data element HOSPSTCO to PSTCO.</p> <p>Added parameter POPYEAR to specify year for Census data.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V3.0	February 20, 2006	Software (SAS and SPSS), Software Documentation and Covariates document	Software/ Documents	Updated the coefficients used in the calculation of expected and risk-adjusted rates to the 2003 reference population.
V2.1 R4a	May 18, 2005	Software (SAS and SPSS) and Covariate Table	Software/ Documents	Updated the 2002 reference population coefficients used in the calculation of expected and risk-adjusted rates.
V2.1 R4a	May 18, 2005	Software (SPSS)	Software/ Documents	Corrected Pediatric Heart Surgery (IQI #3 and #10) exclusion for single procedure of vessel repair or occlusion (impacts less than 0.5% of cases)
V2.1 R4	December 22, 2004	Craniotomy Mortality (IQI #13) Denominator (Inclusion, Craniotomy)	Coding	New DRG code (FY 2005) 543 (Craniotomy w/ implant of chemo agent or acute complex CNS principal diagnosis) was added to the denominator definition of craniotomy. Expected impact on rate: negligible
V2.1 R4	December 22, 2004	Stroke Mortality (IQI #17) Denominator (Inclusion, Stroke)	Coding	For discharges beginning in FY 2005, ICD-9-CM code 436 “acute, but ill-defined cerebrovascular disease” is dropped from the denominator definition of stroke because the code inclusion terms exclude “cerebrovascular accident (CVA) NOS, Stroke.” Note: Revision 4 adds optional data elements YEAR (year of patient discharge) and DQTR (calendar quarter of patient discharge) to the input data file specifications. If available, these data elements are used to exclude ICD-9-CM code 436 from the denominator for discharges occurring on or after 10/1/2004. However, ICD-9 code 436 will be retained in the denominator if the data elements year and quarter of discharge are not available or if the user selects the option to retain code 436 for purposes of trending over time or to maintain historical continuity in the rate. However, users are encouraged to transition to the new definition as soon as possible. Expected impact on rate: may result in a decrease in the denominator and resulting increase in the rate. The decrease may be larger in the short-term depending on how quickly coders adapt to the new guidelines.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R4	December 22, 2004	Guide	Software/ Documents	<p>Corrected the low volume threshold (10) for AAA mortality (IQI #4) in Table 2.</p> <p>Updated the provider, area and population rates in Table 2 and the detailed evidence section using data from the 2002 HCUP SID files.</p> <p>In the detailed evidence section, added a cross reference from each indicator description to the indicator's detailed definition in Appendix A.</p> <p>Included Appendix A titles of detailed definitions in the Table of Contents.</p>
V2.1 R4	December 22, 2004	Software (SAS and SPSS)	Software/ Documents	<p>Added an explicit age inclusion (age >=18) to Craniotomy mortality (IQI #13). The age inclusion had been implicit in the DRGs 1,2, but not new DRGs 528, 529, 530 (FY 2004) and 543 (FY 2005).</p> <p>Added optional data elements YEAR (year of patient discharge) and DQTR (calendar quarter of patient discharge). If available, these data elements are used to implement a coding change to Stroke mortality (IQI #17) that drops ICD-9-CM code 436 from the denominator for discharges occurring on or after 10/1/2004. However, ICD-9 code 436 will be retained in the denominator if the data elements year and quarter of discharge are not available or if the user selects the option to retain code 436 for purposes of trending over time.</p> <p>Added the calculation and reporting of the expected rate at the stratification level selected by the user. The SAS (IQSASP3.SAS) and SPSS (IQSPSP3.SPS) software now calculates the risk-adjusted rate, the expected rate and the smoothed rate. The rates are saved in the output file. The user also has the option to print the rates or save the rates in a comma-delimited ASCII file. (Note: the parameter file MNSIQP00.TXT is no longer required).</p>
V2.1 R4	December 22, 2004	Software Documentation (SAS and SPSS)	Software/ Documents	<p>Added new user control parameter YEARQTR to CONTROL_IQI.SAS and IQSPS1.SPS. This parameter is set to 1 if the data elements YEAR and DQTR are available on the input data file. Otherwise the parameter is set to 0.</p> <p>Added optional data elements YEAR (year of patient discharge) and DQTR (calendar quarter of patient discharge) to Table 4.</p> <p>Revised text to reflect that calculation of expected rates is now incorporated.</p> <p>Updated flowchart (Figure 1) to eliminate the parameter file MNSIQP00.TXT and include "expected" in the description of the rates calculated.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R3	July 21, 2004	Pediatric Heart Surgery Volume (IQI #3) Numerator (Inclusion, Congenital Heart Disease)	Coding	Code (FY 2004) 37.5 “heart transplantation” was modified to require a fourth digit. As a result, new codes 37.51 “heart transplantation” and 37.52 “implantation of total replacement heart system” were added to the base definition (congenital heart disease procedures 1P) for pediatric heart surgery volume. ICD-9 code 37.5 remains in the definition for compatibility with earlier years of data, but is no longer valid as of October 1, 2003.
V2.1 R3	July 21, 2004	Pediatric Heart Surgery Mortality (IQI #10) Denominator (Exclusion, Heart Transplant)	Coding	Code (FY 2004) 37.5 “heart transplantation” was modified to require a fourth digit. As a result, new codes 37.51 “heart transplantation” and 37.52 “implantation of total replacement heart system” were added to the exclusions for pediatric heart surgery mortality.
V2.1 R3	July 21, 2004	Gastrointestinal Hemorrhage Mortality Rate (IQI #18) Denominator (Inclusion, Gastrointestinal Hemorrhage)	Coding	New code (FY 2004) 530.21 “ulcer of esophagus with bleeding” was added to the denominator definition. This change may result in a comparability issue with preceding years since 530.2 was not previously included in the definition of GI hemorrhage.
V2.1 R3	July 21, 2004	Pneumonia Mortality Rate (IQI #20) Denominator (Inclusion, Pneumonia)	Coding	New code (FY 2004) 480.3 “Pneumonia due to SARS-associated coronavirus” was added to the denominator definition for viral pneumonia.
V2.1 R3	July 21, 2004	Bilateral Cardiac Catheterization Rate (IQI #25) Denominator (Inclusion, Coronary Artery Disease)	Coding	New code (FY 2004) 414.07 “coronary atherosclerosis of bypass graft of transplanted heart” was added to the denominator definition for coronary artery disease.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R3	July 21, 2004	Hysterectomy Area Rate (IQI #28) Numerator (Inclusion, Hysterectomy)	Coding	New category (68.3: subtotal abdominal hysterectomy) and new codes (FY 2004) 68.31 “laparoscopic supracervical hysterectomy” and 68.39 “other subtotal abdominal hysterectomy” were added to the numerator definition for hysterectomy area rate.
V2.1 R3	July 21, 2004	Laminectomy Area Rate (IQI #29) Numerator (Inclusion, Laminectomy)	Coding	New codes (FY 2004) available to specify the number of vertebrae fused (81.62, 81.63 and 81.64) were added to the numerator for laminectomy area rate. These codes should appear when code 81.61 is used, since 81.61 includes a “code also” instruction.
V2.1 R3	July 21, 2004	Guide	Software/ Documents	<p>Implemented changes to IQI #3, Pediatric Heart Surgery Volume Indicator, both in its inclusion criteria and its exclusion criteria. Inclusion is now defined to be discharges with ICD-9-CM procedure codes for congenital heart disease (1P) in any field or non-specific heart surgery (2P) in any field with ICD-9-CM diagnosis of congenital heart disease (2D) in any field. Exclusions now include MDC 14 (pregnancy, childbirth and puerperium); patients with transcatheter interventions (either 3AP, 3BP, 3CP, 3DP, 3EP with 3D, or 3FP) as single cardiac procedures, performed without bypass (5P) but with catheterization (6P); patients with septal defects (4P) as single cardiac procedures without bypass (5P); heart transplant (7P); premature infants (4D) with PDA closure (3D and 3EP) as only cardiac procedure; age less than 30 days with PDA closure as only cardiac procedure; missing discharge disposition (DISP=missing); and transferring to another short-term hospital (DISP=2). These changes were the result of research by the original developers of this indicator¹, and are designed to increase the sensitivity and specificity of the indicator.</p> <p>Note: Due to the large number of changes to the pediatric heart surgery indicators, comparing results with past versions is cautioned.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				<p>Implemented changes to IQI #10, Pediatric Heart Surgery Mortality Indicator, both in its inclusion criteria and its exclusion criteria. Inclusion is now defined to be discharges with ICD-9-CM procedure codes for congenital heart disease (1P) in any field or non-specific heart surgery (2P) in any field with ICD-9-CM diagnosis of congenital heart disease (2D) in any field. Exclusions now include MDC 14 (pregnancy, childbirth and puerperium); patients with transcatheter interventions (either 3AP, 3BP, 3CP, 3DP, 3EP with 3D, or 3FP) as single cardiac procedures, performed without bypass (5P) but with catheterization (6P); patients with septal defects (4P) as single cardiac procedures without bypass (5P); heart transplant (7P); premature infants (4D) with PDA closure (3D and 3EP) as only cardiac procedure; age less than 30 days with PDA closure as only cardiac procedure; missing discharge disposition (DISP=missing); and transferring to another short-term hospital (DISP=2). These changes were the result of research by the original developers of this indicator(see footnote 1Error! Bookmark not defined.), and are designed to increase the sensitivity and specificity of the indicator.</p> <p>Eliminated MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates) from exclusion criteria for IQI #15, Acute Myocardial Infarction (AMI) Mortality Indicator. This change was made since these patients are at low risk for AMI and removing these patients brings the indicator into alignment with other national efforts. The estimated impact is low.</p> <p>Established a new indicator (IQI #32), AMI Mortality Indicator – Without Transfer Cases. Unlike the existing indicator for AMI mortality (IQI #15), it excludes patients transferring from another short-term hospital and patients with missing admission source. This indicator is closely related to the JCAHO indicator for AMI mortality²however it is NOT risk adjusted in the same manner as the JCAHO indicator and does not exclude hospice patients (due to inability to identify hospice patients in hospital discharge data).</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				<p>Implemented a change to IQI #21, Cesarean Section Delivery Rate to exclude patients with abnormal presentation, preterm delivery, fetal death, or multiple gestation. These changes create an indicator that closely mirrors indicators used by Healthy People 2010³</p> <p>Created a new indicator (IQI #33), Primary Cesarean Delivery Rate which closely mirrors the JCAHO measure for Cesarean Delivery⁴. This indicator excludes patients with abnormal presentation, preterm delivery, fetal death, multiple gestation, and patients with a prior Cesarean Section.</p> <p>Implemented a change to IQI #22, Vaginal Birth After Cesarean Section (VBAC), Uncomplicated to exclude patients with diagnoses describing abnormal presentation, preterm delivery, fetal death or multiple gestation.</p> <p>Created new indicator (IQI #34), Vaginal Birth After Cesarean Section (VBAC) All, which does not exclude patients with diagnoses of abnormal presentation, preterm delivery, fetal death, or multiple gestation.</p> <p>Implemented a change to IQI #13, Craniotomy Mortality Rate. Restructuring of the DRGs for craniotomy occurred in FY 2003. As a result, the including definition of craniotomy was revised to include both DRG 001 and DRG 002 (Craniotomy with and without comorbidities and complications, >17 years), DRG 528 (Intracranial vascular procedure with principal diagnosis of hemorrhage), and DRG 529 and 530 (Ventricular shunt procedures with and without comorbidities and complications). To maintain comparability with previous years of data, patients with a principle diagnosis of head trauma are now excluded from this indicator. Empirical analyses demonstrate minimal impact of these changes for this indicator.</p>

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R3	July 21, 2004	Software (SAS and SPSS)	Software/ Documents	<p>Implemented the option to aggregate all area-based indicators by Metropolitan Statistical Area (MSA) and County or just by County. Implemented all syntax changes required to implement the indicator modifications (noted above under Guide) and incorporated the related documentation in the Software manuals.</p> <p>County-based population files are now distributed with the SAS and SPSS software, and the names of the population files now have the letters “cty” in their third, fourth and fifth positions instead of the letters “pop”.</p> <p>Converted mean-centering routine for risk-adjustment to use population case-mix of APR-DRG as reference population for Age-Sex only risk-adjustment. This change resulting in the age-sex only risk adjustment scaling closer to the mean.</p>
V2.1 R3	July 21, 2004	Software (SAS)	Software/ Documents	<p>Implemented changes to all mortality indicators excluding cases for which the value for the variable “disposition of patient” (DISP) is missing, unknown or invalid. The SAS software is now consistent with the SPSS versions that have always excluded cases with missing, unknown, or invalid disposition.</p> <p>Inserted “IQ” in format names for age, sex and APR-DRG aggregations in SAS programs to distinguish these formats from similarly named formats used by other indicator software.</p>
V2.1 R3	September 4, 2003	Pediatric Heart Surgery Volume (IQI 3) Numerator (congenital heart defect, 3D)	Coding	<p>The new code (FY 2003) 747.83, “Persistent fetal circulation” was added to the definition of congenital heart defect (3D).</p>
V2.1 R3	September 4, 2003	Pediatric Heart Surgery Volume (IQI 3) Numerator (Pediatric heart surgery, #2P)	Coding	<p>The new code (FY 2003) 36.07, “Insertion of drug-eluting coronary artery stent(s) / endograft(s) was added to the including definition of pediatric heart surgery (#2P).</p> <p>The new code (FY 2003) 37.28 Intracardiac echocardiography ICE was added to the including definition of pediatric heart surgery (#2P).</p> <p>The new codes (FY 2003) 00.50 – 00.54, “implantation or replacement of transvenous lead” was added to the including definition of pediatric heart surgery (#2P).</p>

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VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R3	September 4, 2003	Pediatric Heart Surgery Mortality (IQI 10) Denominator (congenital heart defect, 3D)	Coding	The new code (FY 2003) 747.83, “Persistent fetal circulation” was added to the denominator exclusion definition of congenital heart defect(3D).
V2.1 R3	September 4, 2003	Pediatric Heart Surgery Mortality (IQI 10) Denominator (Pediatric heart surgery, #2P)	Coding	The new code (FY 2003) 36.07, “Insertion of drug-eluting coronary artery stent(s) / endograft(s) was added to the including definition of pediatric heart surgery (#2P). The new code (FY 2003) 37.28 Intracardiac echocardiography ICE was added to the including definition of pediatric heart surgery(#2P). The new codes (FY 2003) 00.50 – 00.54, “implantation or replacement of transvenous lead” were added to the including definition of pediatric heart surgery (#2P).
V2.1 R3	September 4, 2003	CHF Mortality Rate (IQI 16) Denominator (Congestive heart failure)	Coding	The new codes (FY 2003), 428.20-3, “Systolic heart failure,” 428.30-3, “Diastolic heart failure,” and 428.40-3, “Combined systolic and diastolic heart failure” were added to the including definition of congestive heart failure.
V2.1 R3	September 4, 2003	GI Hemorrhage Mortality Rate (IQI 18) Denominator (Gastrointestinal hemorrhage)	Coding	The new codes (FY 2003), 537.84, “Dieulafoy lesion (hemorrhagic) of stomach and duodenum” and 569.86, “Dieulafoy lesion (hemorrhagic) of intestine” were added to the including definition of gastrointestinal hemorrhage.
V2.1 R3	September 4, 2003	Bilateral Heart Catheterization Rate (IQI 25) Denominator (exclusion, valid indications)	Coding	New code (FY 2003) 747.83, “Persistent fetal circulation” was added to the denominator-exclusion for bilateral heart catheterization rate. New subcodes (FY 2003), 414.06, “Coronary atherosclerosis of coronary artery of transplanted heart” and 414.12, “Dissection of coronary artery,” were added to the denominator definition of Bilateral Heart Catheterization Rate.

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Inpatient Quality Indicators (IQI), Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R3	September 4, 2003	Laminectomy Area Rate (IQI 29) Numerator (laminectomy and/or spinal fusion)	Coding	All codes in the new category (FY 2002), 81.3, “Refusion of spine” was added to the numerator definition of laminectomy and/or spinal fusion. New code (FY 2003) 81.61, “360 degree spinal fusion, single incision approach” was added to the numerator definition of laminectomy and/or spinal fusion. New code (FY 2003) 84.51, “insertion of interbody spinal fusion device,” was added to the numerator definition of laminectomy and/or spinal fusion.
V2.1 R3	September 4, 2003	Software (SAS and SPSS) and Guide	Software/ Documents	<p>Congestive Heart Failure (CHF) Mortality Rate: The denominator exclusion of patients undergoing a cardiac procedure was removed from CHF Mortality Rate. This exclusion was unnecessary due to the use of APR-DRGs for risk adjustment and to provide consistency across indicators (e.g. AMI patients with these procedures are not excluded).</p> <p>Bilateral Heart Catheterization Rate: Codes 404.xx for hypertensive heart disease were added to the denominator exclusion.</p> <p>Pediatric Heart Surgery Volume and Mortality Rate: The code 36.3 was added to numerator including definition of pediatric heart surgery (#2P) to reflect coding before October 1, 1998.</p> <p>Mortality after Hip Replacement: The code 716.69 was deleted from the including definition of osteoarthritis (the fifth digit “9” indicating “multiple sites” is not valid for 716.6x).</p>
V2.1 R2	September 4, 2003	Software (SAS and SPSS)	Software/ Documents	<p>All parameter text files were renamed to refer specifically to the IQI module (e.g., use of IQ in file name). These changes are also reflected in the software documentation.</p> <p>All parameter files were rerun using the updated software and Year 2000 HCUP SID data.</p> <p>Population files for 2000, and 2001 were re-estimated using the latest available census files.</p>

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Inpatient Quality Indicators (IQI), Log of ICD-9-CM and DRG Coding Updates and Revisions to IQI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V2.1 R2	September 4, 2003	Software (SPSS)	Software/ Documents	The treatment of missing data by SPSS was changed to mirror the treatment of missing data by SAS; specifically the software requires confirmation for the assignment of a poor outcome or negative event. For instance, in order to be assigned as a death, each case must actually be coded as a death. Missing data is considered neutral. Missing data for some elements results in the exclusion of that case from the denominator. For a few other elements, the case is retained. Table 5 of the Software Documentation lists the impact of missing data for each data element.

¹Kathy Jenkins et al., Boston Children’s Hospital and Harvard University. See Center-specific differences in mortality: preliminary analyses using the Risk Adjustment in Congenital Heart Surgery (RACHS-1) method. J Thorac Cardiovasc Surg. 2002 Jul;124(1):97-104.

²<http://www.jcaho.org/pms/core+measures/information+on+final+specifications.htm>.

³<http://www.healthypeople.gov/Document/html/tracking/od16.htm#obstetcare>.

⁴<http://www.jcaho.org/pms/core+measures/information+on+final+specifications.htm>.

Appendices

Appendix A – Abdominal and Pelvic Surgery Procedure Codes as of February 2009

412	SPLENOTOMY	4464	GASTROPEXY
413	MARROW & SPLEEN DX PROC*	4465	ESOPHAGOGASTROPLASTY
4141	SPLENIC CYST MARSUPIAL	4466	CREAT ESOPHAGASTR SPHINC
4142	EXC SPLENIC LESION/TISS	4467	LAP CREAT ESOPH SPHINCT
4143	PARTIAL SPLENECTOMY	4468	LAPAROSCOPI GASTROPLASTY
415	TOTAL SPLENECTOMY	4469	GASTRIC REPAIR NEC
4193	EXC OF ACCESSORY SPLEEN	4491	LIGATE GASTRIC VARICES
4194	SPLEEN TRANSPLANTATION	4492	INTRAOP GASTRIC MANIPUL
4195	REPAIR OF SPLEEN	4495	LAP GASTRIC RESTRICT PROC
4199	SPLEEN OPERATION NEC	4496	LAP REV GAST RESTRI PROC
4240	ESOPHAGECTOMY NOS	4497	LAP REM GAST RESTRICT DEV
4241	PARTIAL ESOPHAGECTOMY	4499	GASTRIC OPERATION NEC
4242	TOTAL ESOPHAGECTOMY	4500	INTESTINAL INCISION NOS
4253	THORAC SM BOWEL INTERPOS	4501	DUODENAL INCISION
4254	THORAC ESOPHAGOENTER NEC	4502	SMALL BOWEL INCISION NEC
4255	THORAC LG BOWEL INTERPOS	4503	LARGE BOWEL INCISION
4256	THORAC ESOPHAGOCOLOS NEC	4511	TRANSAB SM BOWEL ENDOSC
4263	STERN SM BOWEL INTERPOS	4515	OPEN SMALL BOWEL BIOPSY
4264	STERN ESOPHAGOENTER NEC	4521	TRANSAB LG BOWEL ENDOSC
4265	STERN LG BOWEL INTERPOS	4526	OPEN LARGE BOWEL BIOPSY
4266	STERN ESOPHAGOCOLOS NEC	4531	OTH EXCISE DUODENUM LES
4291	LIGATION ESOPH VARIX	4532	DESTRUCT DUODEN LES NEC
430	GASTROTOMY	4533	LOCAL EXCIS SM BOWEL NEC
433	PYLOROMYOTOMY	4534	DESTR SM BOWEL LES NEC
4342	LOCAL GASTR EXCISION NEC	4541	EXCISE LG INTESTINE LES
4349	LOCAL GASTR DESTRUCT NEC	4549	DESTRUC LG BOWEL LES NEC
435	PROXIMAL GASTRECTOMY	4550	INTEST SEG ISOLAT NOS
436	DISTAL GASTRECTOMY	4551	SM BOWEL SEGMENT ISOLAT
437	PART GASTREC W JEJ ANAST	4552	LG BOWEL SEGMENT ISOLAT
4381	PART GAST W JEJ TRANSPOS	4561	MULT SEG SM BOWEL EXCIS
4389	OPN/OTH PART GASTRECTOMY	4562	PART SM BOWEL RESECT NEC
4391	TOT GAST W INTES INTERPO	4563	TOTAL REMOVAL SM BOWEL
4399	TOTAL GASTRECTOMY NEC	458	TOT INTRA-ABD COLECTOMY#
4400	VAGOTOMY NOS	4590	INTESTINAL ANASTOM NOS
4401	TRUNCAL VAGOTOMY	4591	SM-TO-SM BOWEL ANASTOM
4402	HIGHLY SELECT VAGOTOMY	4592	SM BOWEL-RECT STUMP ANAS
4403	SELECTIVE VAGOTOMY NEC	4593	SMALL-TO-LARGE BOWEL NEC
4411	TRANSABDOMIN GASTROSCOPY	4594	LG-TO-LG BOWEL ANASTOM
4415	OPEN GASTRIC BIOPSY	4595	ANAL ANASTOMOSIS
4421	DILATE PYLORUS, INCISION	4601	SM BOWEL EXTERIORIZATION
4429	OTHER PYLOROPLASTY	4603	LG BOWEL EXTERIORIZATION
4431	HIGH GASTRIC BYPASS	4610	COLOSTOMY NOS
4438	LAP GASTROENTEROSTOMY	4611	TEMPORARY COLOSTOMY
4439	GASTROENTEROSTOMY NEC	4613	PERMANENT COLOSTOMY
4440	SUTURE PEPTIC ULCER NOS	4614	DELAY OPENING COLOSTOMY
4441	SUT GASTRIC ULCER SITE	4620	ILEOSTOMY NOS
4442	SUTURE DUODEN ULCER SITE	4621	TEMPORARY ILEOSTOMY
445	REVISION GASTRIC ANASTOM	4622	CONTINENT ILEOSTOMY
4461	SUTURE GASTRIC LACERAT	4623	PERMANENT ILEOSTOMY NEC
4463	CLOSE GASTRIC FISTUL NEC	4640	INTEST STOMA REVIS NOS

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Documentation and Software

4641	SM BOWEL STOMA REVISION	5121	OTH PART CHOLECYSTECTOMY
4642	PERICOLEOST HERNIA REPAIR	5122	CHOLECYSTECTOMY
4643	LG BOWEL STOMA REVIS NEC	5123	LAPAROSCOPIC CHOLECYSTEC
4650	INTEST STOMA CLOSURE NOS	5124	LAP PART CHOLECYSTECTOMY
4651	SM BOWEL STOMA CLOSURE	5131	GB-TO-HEPAT DUCT ANAST
4652	LG BOWEL STOMA CLOSURE	5132	GB-TO-INTESTINE ANASTOM
4660	INTESTINAL FIXATION NOS	5133	GB-TO-PANCREAS ANASTOM
4661	SM BOWEL-ABD WALL FIXAT	5134	GB-TO-STOMACH ANASTOMOS
4662	SMALL BOWEL FIXATION NEC	5135	GALLBLADDER ANASTOM NEC
4663	LG BOWEL-ABD WALL FIXAT	5136	CHOLEDOCHOENTEROSTOMY
4664	LARGE BOWEL FIXATION NEC	5137	HEPATIC DUCT-GI ANASTOM
4672	DUODENAL FISTULA CLOSURE	5139	BILE DUCT ANASTOMOS NEC
4673	SMALL BOWEL SUTURE NEC	5141	CDE FOR CALCULUS REMOV
4674	CLOSE SM BOWEL FIST NEC	5142	CDE FOR OBSTRUCTION NEC
4675	SUTURE LG BOWEL LACERAT	5143	CHOLEDOCHOHEPAT INTUBAT
4676	CLOSE LG BOWEL FISTULA	5149	INCIS OBSTR BILE DUC NEC
4679	REPAIR OF INTESTINE NEC	5151	COMMON DUCT EXPLORATION
4680	INTRA-AB BOWEL MANIP NOS	5159	BILE DUCT INCISION NEC
4681	INTRA-ABD SM BOWEL MANIP	5161	EXCIS CYST DUCT REMNANT
4682	INTRA-ABD LG BOWEL MANIP	5162	EXCIS AMPULLA OF VATER
4691	MYOTOMY OF SIGMOID COLON	5163	COMMON DUCT EXCIS NEC
4692	MYOTOMY OF COLON NEC	5169	BILE DUCT EXCISION NEC
4693	REVISE SM BOWEL ANASTOM	5171	SIMPLE SUT-COMMON DUCT
4694	REVISE LG BOWEL ANASTOM	5172	CHOLEDOCHOPLASTY
4697	TRANSPLANT OF INTESTINE	5179	BILE DUCT REPAIR NEC
4699	INTESTINAL OP NEC	5181	SPHINCTER OF ODDI DILAT
4821	TRANSAB PROCTOSIGMOIDOSC	5182	PANCREAT SPHINCTEROTOM
4825	OPEN RECTAL BIOPSY	5183	PANCREAT SPHINCTEROPLAS
4841	SOAVE SUBMUC RECT RESECT	5189	SPHINCT OF ODDI OP NEC
4849	PULL-THRU RECT RESEC NEC	5191	REPAIR GB LACERATION
485	ABD-PERINEAL RECT RESECT#	5192	CLOSURE CHOLECYSTOSTOMY
4871	SUTURE OF RECTAL LACER	5193	CLOS BILIARY FISTUL NEC
4874	RECTORECTOSTOMY	5194	REVIS BILE TRACT ANASTOM
4875	ABDOMINAL PROCTOPEXY	5195	REMOVE BILE DUCT PROSTH
500	HEPATOTOMY	5199	BILIARY TRACT OP NEC
5012	OPEN LIVER BIOPSY	5201	CATH DRAIN-PANCREAT CYST
5014	LAPAROSCOPIC LIVER BX	5209	PANCREATOTOMY NEC
5019	HEPATIC DX PROC NEC	5212	OPEN PANCREATIC BIOPSY
5021	MARSUPIALIZAT LIVER LES	5219	PANCREATIC DX PROC NEC
5022	PARTIAL HEPATECTOMY	5222	OTHER DESTRU PANCREA LES
5023	OPN ABLTN LIVER LES/TISS	523	PANCREAT CYST MARSUPIALI
5025	LAP ABLTN LIVER LES/TISS	524	INT DRAIN PANCREAT CYST
5026	ABLTN LIVER LES/TISS NEC	5251	PROXIMAL PANCREATECTOMY
5029	DESTRUC HEPATIC LES NEC	5252	DISTAL PANCREATECTOMY
503	HEPATIC LOBECTOMY	5253	RAD SUBTOT PANCREATECTOM
504	TOTAL HEPATECTOMY	5259	PARTIAL PANCREATECT NEC
5051	AUXILIARY LIVER TRANSPL	526	TOTAL PANCREATECTOMY
5059	LIVER TRANSPLANT NEC	527	RAD PANCREATICODUODENECT
5061	CLOSURE LIVER LACERAT	528	TRANSPLANT OF PANCREAS*
5069	LIVER REPAIR NEC	5281	REIMPLANT PANCREATIC TIS
5102	TROCAR CHOLECYSTOSTOMY	5282	PANCREATIC HOMOTRANSPLAN
5103	CHOLECYSTOSTOMY NEC	5283	PANCREATIC HETEROTRANSPL
5104	CHOLECYSTOTOMY NEC	5292	CANNULATION PANCREA DUC
5113	OPEN BILIARY TRACT BX	5295	PANCREATIC REPAIR NEC
5119	BILIARY TR DX PROC NEC	5296	PANCREATIC ANASTOMOSIS

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Documentation and Software

5299	PANCREATIC OPERATION NEC	5671	URIN DIVERSION TO BOWEL
5300	UNILAT ING HERN REP NOS	5672	REVIS URETEROENTEROSTOMY
5301	OPN REP DIR ING HERN NEC	5900	RETROPERIT DISSECT NOS
5302	OPN REP IND ING HERN NEC	6501	LAPAROSCOPIC OOPHOROTOMY
5303	OPN DIR ING HERN-GFT NEC	6509	OTHER OOPHOROTOMY
5304	OPN IND ING HERN-GFT NEC	6512	OVARIAN BIOPSY NEC
5305	ING HERNIA REP-GRAFT NOS	6521	OVARIAN CYST MARSUPIALIZ
5310	BILAT ING HERNIA REP NOS	6522	OVARIAN WEDGE RESECTION
5311	OPN BIL DIR ING HERN NEC	6523	LAP MARSUP OVARIAN CYST
5312	OPN BIL IND ING HERN NEC	6524	LAP WEDGE RESECT OVARY
5313	OPN BI DR/IN ING HRN NEC	6525	OTH LAP LOC EXC DEST OVA
5314	OPN BI DR ING HRN-GR NEC	6529	LOCAL DESTR OVA LES NEC
5315	OP BI IN ING HRN-GRF NEC	6531	LAP UNILAT OOPHORECTOMY
5316	OP BI DR/IN IG HR-GR NEC	6539	OTH UNILAT OOPHORECTOMY
5317	BIL ING HRN REP-GRFT NOS	6541	LAP UNI SALPINGO-OOPHOR
5321	UNIL FEMOR HRN REP-GRFT	6549	OTH UNI SALPINGO-OOPHOR
5329	UNIL FEMOR HERN REP NEC	6551	OTH REMOVE BOTH OVARIES
5331	BIL FEM HERN REPAIR-GRFT	6552	OTH REMOVE REMAIN OVARY
5339	BIL FEM HERN REPAIR NEC	6553	LAP REMOVE BOTH OVARIES
5341	OPN REP UMB HRN-GRFT NEC	6554	LAP REMOVE REMAIN OVARY
5349	OPEN REP UMBIL HERN NEC	6561	OTH REMOVE OVARIES/TUBES
5351	INCISIONAL HERNIA REPAIR	6562	OTH REMOVE REM OVA/TUBE
5359	ABD WALL HERN REPAIR NEC	6563	LAP REMOVE OVARIES/TUBES
5361	OPEN INCIS HERN-GRFT NEC	6564	LAP REMOVE REM OVA/TUBE
5369	OPN HERN ANT ABD-GRF NEC	6571	OTH SIMPLE SUTURE OVARY
537	ABD REPAIR-DIAPHR HERNIA#	6572	OTH REIMPLANT OF OVARY
540	ABDOMINAL WALL INCISION	6573	OTH SALPINGO-OOPHOROPLAS
5411	EXPLORATORY LAPAROTOMY	6574	LAP SIMPLE SUTURE OVARY
5412	REOPEN RECENT LAP SITE	6575	LAP REIMPLANT OF OVARY
5419	LAPAROTOMY NEC	6576	LAP SALPINGO-OOPHOROPLAS
5421	LAPAROSCOPY	6579	REPAIR OF OVARY NEC
5422	ABDOMINAL WALL BIOPSY	6581	LAP ADHESIOLYS OVA/TUBE
5423	PERITONEAL BIOPSY	6589	ADHESIOLYSIS OVARY/TUBE
5429	ABD REGION DX PROC NEC	6592	TRANSPLANTATION OF OVARY
543	DESTRUCT ABD WALL LESION	6593	MANUAL RUPT OVARIAN CYST
544	DESTRUCT PERITONEAL TISS	6594	OVARIAN DENERVATION
5451	LAP PERITON ADHESIOLYSIS	6595	OVARIAN TORSION RELEASE
5459	OTH PERITON ADHESIOLYSIS	6599	OVARIAN OPERATION NEC
5461	RECLOSE POST OP DISRUPT	6601	SALPINGOTOMY
5462	DELAYED CLOS ABD WOUND	6602	SALPINGOSTOMY
5463	ABD WALL SUTURE NEC	6611	FALLOPIAN TUBE BIOPSY
5464	PERITONEAL SUTURE	6619	FALLOP TUBE DX PROC NEC
5471	REPAIR OF GASTROSCHISIS	6631	BILAT TUBAL CRUSHING NEC
5472	ABDOMEN WALL REPAIR NEC	6632	BILAT TUBAL DIVISION NEC
5473	PERITONEAL REPAIR NEC	6639	BILAT TUBAL DESTRUCT NEC
5474	OMENTAL REPAIR NEC	664	TOTAL UNILAT SALPINGECT
5475	MESENTERIC REPAIR NEC	6651	REMOVE BOTH FALLOP TUBES
5492	REMOVE FB FROM PERITON	6652	REMOVE SOLITARY FAL TUBE
5493	CREATE CUTANPERITON FIST	6661	DESTROY FALLOP TUBE LES
5494	CREAT PERITONEOVAS SHUNT	6662	REMOV TUBE & ECTOP PREG
5495	PERITONEAL INCISION	6663	BILAT PART SALPINGECT NOS
5651	FORM CUTAN ILEOURETEROST	6669	PARTIAL SALPINGECTOM NEC
5652	REVIS CUTAN ILEOURETEROS	6671	SIMPL SUTURE FALLOP TUBE
5661	FORM CUTAN URETEROSTOMY	6672	SALPINGO-OOPHOROSTOMY
5662	REVIS CUTAN URETEROS NEC	6673	SALPINGO-SALPINGOSTOMY

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Documentation and Software

6674	SALPINGO-UTEROSTOMY	6839	SUBTOTL ABD HYST NEC/NOS
6679	FALLOP TUBE REPAIR NEC	684	TOTAL ABD HYSTERECTOMY#
6692	UNILAT FALLOP TUBE DESTR	6841	LAP TOTAL ABDOMINAL HYST
6693	IMPL FALLOP TUBE PROSTH	6849	TOTAL ABD HYST NEC/NOS
6694	REMOV FALLOP TUBE PROSTH	686	RADICAL ABD HYSTERECTOMY#
6696	FALLOPIAN TUBE DILATION	6861	LAP RADICAL ABDOMNL HYST
6697	BURY FIMBRIAE IN UTERUS	6869	RADICAL ABD HYST NEC/NOS
6699	FALLOPIAN TUBE OP NEC	688	PELVIC EVISCERATION
680	HYSTEROTOMY	689	HYSTERECTOMY NEC/NOS
6813	OPEN UTERINE BIOPSY	6919	DESTRUC UTER SUPPORT NEC
6814	OPEN UTERINE LIGAMENT BX	6921	INTERPOSIT OP UTERIN LIG
6819	UTERUS/ADNEX DX PROC NEC	6922	UTERINE SUSPENSION NEC
6823	ENDOMETRIAL ABLATION	6923	VAG REPAIR INVERS UTERUS
6829	UTERINE LES DESTRUCT NEC	6929	UTERUS/ADNEXA REPAIR NEC
683	SUBTOT ABD HYSTERECTOMY#	693	PARACERV UTERINE DENERV
6831	LAP SCERVIC HYSTERECTOMY	6941	SUTURE UTERINE LACERAT

Appendix B – Diagnosis Codes for Indications for Right Heart Catheterization as of February 2009

4200	AC PERICARDIT IN OTH DIS	4250	ENDOMYOCARDIAL FIBROSIS
42090	ACUTE PERICARDITIS NOS	4251	HYPERTR OBSTR CARDIOMYOP#
42091	AC IDIOPATH PERICARDITIS	4252	OBSC AFRIC CARDIOMYOPATH
42099	ACUTE PERICARDITIS NEC	4253	ENDOCARD FIBROELASTOSIS
4210	AC/SUBAC BACT ENDOCARD	4254	PRIM CARDIOMYOPATHY NEC
4211	AC ENDOCARDIT IN OTH DIS	4255	ALCOHOLIC CARDIOMYOPATHY
4219	AC/SUBAC ENDOCARDIT NOS	4257	METABOLIC CARDIOMYOPATHY
4220	AC MYOCARDIT IN OTH DIS	4258	CARDIOMYOPATH IN OTH DIS
42290	ACUTE MYOCARDITIS NOS	4259	SECOND CARDIOMYOPATH NOS
42291	IDIOPATHIC MYOCARDITIS	4280	CHF NOS
42292	SEPTIC MYOCARDITIS	4281	LEFT HEART FAILURE
42293	TOXIC MYOCARDITIS	42820	SYSTOLIC HRT FAILURE NOS
42299	ACUTE MYOCARDITIS NEC	42821	AC SYSTOLIC HRT FAILURE
4230	HEMOPERICARDIUM	42822	CHR SYSTOLIC HRT FAILURE
4231	ADHESIVE PERICARDITIS	42823	AC ON CHR SYST HRT FAIL
4232	CONSTRUCTIV PERICARDITIS	42830	DIASTOLC HRT FAILURE NOS
4233	CARDIAC TAMPONADE	42831	AC DIASTOLIC HRT FAILURE
4238	PERICARDIAL DISEASE NEC	42832	CHR DIASTOLIC HRT FAIL
4239	PERICARDIAL DISEASE NOS	42833	AC ON CHR DIAST HRT FAIL
4240	MITRAL VALVE DISORDER	42840	SYST/DIAST HRT FAIL NOS
4241	AORTIC VALVE DISORDER	42841	AC SYST/DIASTOL HRT FAIL
4242	NONRHEUM TRICUSP VAL DIS	42842	CHR SYST/DIASTL HRT FAIL
42490	ENDOCARDITIS NOS	42843	AC/CHR SYST/DIA HRT FAIL
42491	ENDOCARDITIS IN OTH DIS	4289	HEART FAILURE NOS
42499	ENDOCARDITIS NEC		