



## **Comparison of Observed Rates of All Indicators between ICD-9-CM v5.0 and v6.0**

**Prepared for:**

Agency for Healthcare Research and Quality  
U.S. Department of Health and Human Services  
5600 Fishers Lane  
Rockville, MD 20857  
<http://www.qualityindicators.ahrq.gov>

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## Introduction

The data presented in this document are comparisons of nationwide observed rates for all Quality Indicators™ (QIs) by module, comparing Agency for Healthcare Research and Quality (AHRQ) QI SAS® Software Version 5.0 to Version 6.0 for ICD-9-CM. The rates for v6.0 of the software are based on analysis States from AHRQ's 2013 Healthcare Cost and Utilization Project (HCUP<sup>3</sup>) State Inpatient Databases (SID). The rates for v5.0 are based on published benchmark results using the 2012 HCUP SID.

HCUP is a family of powerful health care databases, software tools, and products for advancing research. Sponsored by the Agency for Healthcare Research and Quality (AHRQ), HCUP includes the largest all-payer encounter-level collection of longitudinal health care data (inpatient, ambulatory surgery, and emergency department) in the United States, beginning in 1988. HCUP is a Federal-State-Industry Partnership<sup>2</sup> that brings together the data collection efforts of many organizations—such as State data organizations, hospital associations, private data organizations, and the Federal government—to create a national information resource.

The analytic dataset used to generate the tables in this document consists of the same hospital discharge records that comprise the reference population for Version 6.0 of the AHRQ QI software. This reference population file was limited to community hospitals and also excludes rehabilitation and long-term acute care (LTAC) hospitals. Information on the type of hospital was obtained by the American Hospital Association (AHA) Annual Survey of Hospitals. AHA

<sup>1</sup> States in the POA reference population for 2013 include: AR, AZ, CA, CO, FL, GA, HI, IA, IL, IN, KS, KY, MD, MI, MN, MT, NC, ND, NE, NJ, NM, NV, NY, OH, OR, PA, SC, SD, TN, TX, VA, VT, WA, WI.

<sup>2</sup> Reference: Healthcare Cost and Utilization Project (HCUP) 2013 State Inpatient Databases (SID). Agency for Healthcare Research and Quality, Rockville, MD.

<sup>3</sup> The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID: **Alaska** State Hospital and Nursing Home Association, **Arizona** Department of Health Services, **Arkansas** Department of Health, **California** Office of Statewide Health Planning and Development, **Colorado** Hospital Association, **Connecticut** Hospital Association, **Florida** Agency for Health Care Administration, **Georgia** Hospital Association, **Hawaii** Health Information Corporation, **Illinois** Department of Public Health, **Indiana** Hospital Association, **Iowa** Hospital Association, **Kansas** Hospital Association, **Kentucky** Cabinet for Health and Family Services, **Louisiana** Department of Health and Hospitals, **Maine** Health Data Organization, **Maryland** Health Services Cost Review Commission, **Massachusetts** Center for Health Information and Analysis, **Michigan** Health & Hospital Association, **Minnesota** Hospital Association (provides data for Minnesota and North Dakota), **Mississippi** Department of Health, **Missouri** Hospital Industry Data Institute, **Montana** MHA - An Association of Montana Health Care Providers, **Nebraska** Hospital Association, **Nevada** Department of Health and Human Services, **New Hampshire** Department of Health & Human Services, **New Jersey** Department of Health, **New Mexico** Department of Health, **New York** State Department of Health, **North Carolina** Department of Health and Human Services, **North Dakota** (data provided by the Minnesota Hospital Association), **Ohio** Hospital Association, **Oklahoma** State Department of Health, **Oregon** Association of Hospitals and Health Systems, **Oregon** Health Policy and Research, **Pennsylvania** Health Care Cost Containment Council, **Rhode Island** Department of Health, **South Carolina** Budget & Control Board, **South Dakota** Association of Healthcare Organizations, **Tennessee** Hospital Association, **Texas** Department of State Health Services, **Utah** Department of Health, **Vermont** Association of Hospitals and Health Systems, **Virginia** Health Information, **Washington** State Department of Health, **West Virginia** Health Care Authority, **Wisconsin** Department of Health Services, **Wyoming** Hospital Association.

defines community hospitals as “all non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions.” Included among community hospitals are specialty hospitals such as obstetrics-gynecology, ear-nose-throat, orthopedic, and pediatric institutions. Also included are public hospitals and academic medical centers.

The 2013 HCUP SID includes information on all inpatient discharges from hospitals in 40 participating States. In 2013, 34 of the SID include indicators of the diagnoses being present on admission (POA<sup>1</sup>) and included the PRDAY data element. Edit checks on POA were developed during an HCUP evaluation of POA coding in the 2011 SID at hospitals that were required to report POA to CMS. The edits identify general patterns of suspect reporting of POA. The edits do not evaluate whether a valid POA value (e.g., Y or N) is appropriate for the specific diagnosis. There are three hospital-level edit checks:

1. Indication that a hospital has POA reported as Y on all diagnoses on all discharges
2. Indication that a hospital has POA reported as missing on all non-Medicare discharges
3. Indication that a hospital reported POA as missing on all nonexempt diagnoses for 15 percent or more of discharges. The cut-point of 15 percent was determined by 2 times the standard deviation plus the mean of the percentage for hospitals that are required to report POA to CMS.

Additional information on the reference population and the risk adjustment process may be found in Quality Indicator Empirical Methods, available on the AHRQ QITM website (<http://www.qualityindicators.ahrq.gov/modules/Default.aspx>).

The QI observed rates for provider-level indicators are scaled to the rate per 1,000 persons at risk and the area-level indicators are per 100,000 population. Volume and count indicator results are listed as simple counts with no scaling at all. Cell sizes less than 11 are suppressed due to confidentiality; and are designated by an asterisk (\*). When only one datapoint in a series must be suppressed due to cell sizes, another datapoint is provided as a range to disallow calculation of the masked variable. In some cases, numerators, denominators or rates are not applicable for the category due to the exclusion criteria in the specification of the indicator, and are designated by dashes (--).

Area level denominators use the AHRQ 2013 population estimates based U.S. Census intercensal and postcensal estimates of county-level population covering the years 1995 through 2015. For additional information see 2015 Population File For Use With AHRQ Quality Indicators™ Version 6.0 ([https://www.qualityindicators.ahrq.gov/Downloads/Software/SAS/V60/AHRQ\\_QI\\_Population\\_File\\_V60.pdf](https://www.qualityindicators.ahrq.gov/Downloads/Software/SAS/V60/AHRQ_QI_Population_File_V60.pdf))

**Table 1. Prevention Quality Indicators (PQIs) Comparison of Observed Rates: v6.0 and v5.0 for ICD-9-CM**

INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 100,000	v5.0 OBSERVED RATE PER 100,000
PQI 01	Diabetes Short-Term Complications Admission Rate	1.09	68.94	63.23
PQI 02†	Perforated Appendix Admission Rate	1.00	351.36	351.39
PQI 03	Diabetes Long-Term Complications Admission Rate	1.09	101.57	93.10
PQI 05	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	1.09	480.94	441.99
PQI 07	Hypertension Admission Rate	1.09	49.19	45.08
PQI 08	Heart Failure Admission Rate	1.09	321.57	294.73
PQI 09*	Low Birth Weight Rate	--	--	6,274.27
PQI 10	Dehydration Admission Rate	1.09	130.12	119.26
PQI 11	Bacterial Pneumonia Admission Rate	1.09	249.65	228.52
PQI 12	Urinary Tract Infection Admission Rate	1.09	155.57	142.51
PQI 13**	Angina Without Procedure Admission Rate	--	--	13.80
PQI 14	Uncontrolled Diabetes Admission Rate	1.09	13.15	12.05
PQI 15	Asthma in Younger Adults Admission Rate	1.09	41.13	37.69
PQI 16	Lower-Extremity Amputation among Patients with Diabetes Rate	1.18	17.15	14.58
PQI 90	Prevention Quality Overall Composite	1.08	1,411.87	1304.74
PQI 91	Prevention Quality Acute Composite	1.09	535.28	490.25
PQI 92	Prevention Quality Chronic Composite	1.08	876.97	814.82
PQI 93 ***	Prevention Quality Diabetes Composite	--	193.16	--

\* PQI 09 suppressed in v6.0 of software

\*\* PQI 13 retired in v6.0 of Quality Indicators and software

\*\*\* PQI 93 new composite introduced in v6.0 Quality Indicators and software

† PQI 02 Observed Rate is per 1,000 admissions

-- Indicates Not Applicable

**Table 2. Patient Safety Indicators (PSIs) Comparison of Observed Rates: v6.0 and v5.0 for ICD-9-CM**

INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
<b>PROVIDER-LEVEL INDICATORS</b>				
PSI 02	Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	1.00	0.35	0.35
PSI 03	Pressure Ulcer Rate	0.54	0.27	0.50
PSI 04	Death Rate among Surgical Inpatients with Serious Treatable Conditions	1.02	120.23	118.30
PSI 05	Retained Surgical Item or Unretrieved Device Fragment Count	1.00	1000.00	1000.00
PSI 06	Iatrogenic Pneumothorax Rate	1.00	0.32	0.32
PSI 07	Central Venous Catheter-Related Blood Stream Infection Rate	1.00	0.15	0.15
PSI 08	In Hospital Fall with Hip Fracture Rate	2.06	0.08	0.04
PSI 09	Perioperative Hemorrhage or Hematoma Rate	0.93	4.52	4.83
PSI 10	Postoperative Acute Kidney Injury Requiring Dialysis Rate	1.04	0.72	0.69
PSI 11	Postoperative Respiratory Failure Rate	0.95	9.13	9.64
PSI 12	Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	0.78	3.72	4.77
PSI 13	Postoperative Sepsis Rate	0.44	4.26	9.67
PSI 14	Postoperative Wound Dehiscence Rate	0.97	1.71	1.77
PSI 15	Unrecognized Abdominopelvic Accidental Puncture or Laceration Rate	0.42	0.73	1.75
PSI 16	Transfusion Reaction Count	1.00	1000.00	1000.00
PSI 18	Obstetric Trauma Rate – Vaginal Delivery With Instrument	1.00	127.87	127.87
PSI 17*	Birth Trauma Rate – Injury to Neonate			
PSI 19	Obstetric Trauma Rate – Vaginal Delivery Without Instrument	1.00	19.97	19.97
<b>AREA-LEVEL INDICATORS</b>				
PSI 21	Retained Surgical Item or Unretrieved Device Fragment Rate	1.09	0.92	0.85
PSI 22	Iatrogenic Pneumothorax Rate	1.09	5.38	4.93
PSI 23	Central Venous Catheter-Related Blood Stream Infection Rate	1.09	4.69	4.31

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INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
PSI 24	Postoperative Wound Dehiscence Rate	1.09	1.41	1.30
PSI 25	Accidental Puncture or Laceration Rate	0.02	0.39	20.31
PSI 26	Transfusion Reaction Rate	1.09	0.07	0.06
PSI 27	Perioperative Hemorrhage or Hematoma Rate	1.00	26.69	26.59

\* PSI 17 will be released with the PDI v6.0 of software.  
 -- Indicates Not Applicable

**Table 3. Inpatient Quality Indicators (IQIs) Comparison of Observed Rates: v6.0 and v5.0 for ICD-9-CM**

INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
<b>PROVIDER-LEVEL INDICATORS</b>				
IQI 01	Esophageal Resection Volume	-	-	-
IQI 02	Pancreatic Resection Volume	-	-	-
IQI 02A	Pancreatic Resection Volume - Stratum A	-	-	-
IQI 02B	Pancreatic Resection Volume - Stratum B	-	-	-
IQI 04	Abdominal Aortic Aneurysm (AAA) Repair Volume	-	-	-
IQI 04A	Abdominal Aortic Aneurysm (AAA) Repair Volume - Stratum A	-	-	-
IQI 04B	Abdominal Aortic Aneurysm (AAA) Repair Volume - Stratum B	-	-	-
IQI 04C	Abdominal Aortic Aneurysm (AAA) Repair Volume - Stratum C	-	-	-
IQI 04D	Abdominal Aortic Aneurysm (AAA) Repair Volume - Stratum D	-	-	-
IQI 05	Coronary Artery Bypass Graft (CABG) Volume	-	-	-
IQI 06	Percutaneous Coronary Intervention (PCI) Volume	-	-	-
IQI 07	Carotid Endarterectomy Volume	-	-	-
IQI 08	Esophageal Resection Mortality Rate, per 1,000 Admissions	1.00	43.15	43.15
IQI 09	Pancreatic Resection Mortality Rate, per 1,000 Admissions	1.00	28.68	28.68
IQI 09A	Pancreatic Resection Mortality Rate, per	1.00	32.86	32.86



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INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
	1,000 Admissions - Stratum A			
IQI 09B	Pancreatic Resection Mortality Rate, per 1,000 Admissions - Stratum B	1.00	24.04	24.04
IQI 11	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate, per 1,000 Admissions	1.00	33.95	33.97
IQI 11A	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate, per 1,000 Admissions - Stratum A	1.00	339.37	339.37
IQI 11B	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate, per 1,000 Admissions - Stratum B	1.00	48.34	48.34
IQI 11C	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate, per 1,000 Admissions - Stratum C	1.00	212.52	212.52
IQI 11D	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate, per 1,000 Admissions - Stratum D	1.00	7.71	7.71
IQI 12	Coronary Artery Bypass Graft (CABG) Mortality Rate, per 1,000 Admissions	1.00	24.23	24.23
IQI 13	Craniotomy Mortality Rate, per 1,000 Admissions	1.00	57.17	57.17
IQI 14	Hip Replacement Mortality Rate, per 1,000 Admissions	1.00	0.52	0.52
IQI 15	Acute Myocardial Infarction (AMI) Mortality Rate, per 1,000 Admissions	1.00	53.71	53.71
IQI 16	Heart Failure Mortality Rate, per 1,000 Admissions	0.99	30.03	30.37
IQI 17	Acute Stroke Mortality Rate, per 1,000 Admissions	1.00	79.42	79.42

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INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
IQI 17A	Acute Stroke Mortality Rate, per 1,000 Admissions - Stratum A	1.00	211.39	211.39
IQI 17B	Acute Stroke Mortality Rate, per 1,000 Admissions - Stratum B	1.00	212.48	212.48
IQI 17C	Acute Stroke Mortality Rate, per 1,000 Admissions - Stratum C	1.00	44.90	44.90
IQI 18	Gastrointestinal Hemorrhage Mortality Rate, per 1,000 Admissions	1.00	22.27	22.27
IQI 19	Hip Fracture Mortality Rate, per 1,000 Admissions	1.00	23.53	23.53
IQI 20	Pneumonia Mortality Rate, per 1,000 Admissions	1.00	34.09	34.09
IQI 21	Cesarean Delivery Rate, per 1,000 Admissions, Uncomplicated	1.00	299.99	299.99
IQI 22	Vaginal Birth After Cesarean (VBAC) Delivery Rate, per 1,000 Admissions, Uncomplicated	1.00	105.33	105.33
IQI 23	Laparoscopic Cholecystectomy Rate, per 1,000 Admissions	1.00	867.49	867.49
IQI 24	Incidental Appendectomy in the Elderly Rate, per 1,000 Admissions	1.00	10.54	10.54
IQI 25	Bilateral Cardiac Catheterization Rate, per 1,000 Admissions	1.00	11.48	11.48
IQI 30	Percutaneous Coronary Intervention (PCI) Mortality Rate, per 1,000 Admissions	1.00	23.07	23.07
IQI 31	Carotid Endarterectomy Mortality Rate, per 1,000 Admissions	1.00	4.31	4.31
IQI 32	Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases, per 1,000 Admissions	1.00	55.43	55.43

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INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
IQI 33	Primary Cesarean Delivery Rate, Uncomplicated, per 1,000 Admissions	1.00	174.85	174.85
IQI 34	Vaginal Birth After Cesarean (VBAC) Rate, All, per 1,000 Admissions	1.00	104.24	104.24
INDICATOR	LABEL	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 100,000	v5.0 OBSERVED RATE PER 100,000
<b>AREA-LEVEL INDICATORS</b>				
IQI 26	Coronary Artery Bypass Graft (CABG) Rate, per 100,000 Population	1.09	120.26	110.51
IQI 27	Percutaneous Coronary Intervention (PCI) Rate, per 100,000 Population	1.09	300.77	276.02
IQI 28	Hysterectomy Rate, per 100,000 Population	1.09	161.27	147.73
IQI 29	Laminectomy or Spinal Fusion Rate, per 100,000 Population	1.09	233.61	214.89

**Table 4. Pediatric Quality Indicators (PDI) Comparison of Observed Rates: v6.0 and v5.0 for ICD-9-CM**

Output Data Set Type	Module	Indicator	Title	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
PROVIDER	PDI	NQI 01	Neonatal Iatrogenic Pneumothorax Rate per 1,000 Neonates	1.00	0.20	0.20
PROVIDER	PDI	NQI 02	Neonatal Mortality Rate per 1,000 Neonates	1.00	2.26	2.26
PROVIDER	PDI	NQI 03	Neonatal Blood Stream Infection Rate per 1,000 Neonates	0.86	18.43	21.46
PROVIDER	PDI	PDI 01	Accidental Puncture or Laceration Rate per 1,000 Discharges	1.00	0.45	0.45
PROVIDER	PDI	PDI 02	Pressure Ulcer Rate per 1,000 Discharges	0.48	0.14	0.28
PROVIDER	PDI	PDI 03	Retained Surgical Item or Unretrieved Device Fragment Count	-	-	-
PROVIDER	PDI	PDI 05	Iatrogenic Pneumothorax Rate per 1,000 Discharges	1.02	0.10	0.10
PROVIDER	PDI	PDI 06	RACHS-1 Pediatric Heart Surgery Mortality Rate per 1,000 Discharges	1.01	29.01	28.78
PROVIDER	PDI	PDI 07	RACHS-1 Pediatric Heart Surgery Volume	-	-	-
PROVIDER	PDI	PDI 08	Perioperative Hemorrhage or Hematoma Rate per 1,000 Discharges	0.89	5.12	5.73

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Output Data Set Type	Module	Indicator	Title	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
PROVIDER	PDI	PDI 09	Postoperative Respiratory Failure Rate per 1,000 Discharges	0.82	10.55	12.80
PROVIDER	PDI	PDI 10	Postoperative Sepsis Rate per 1,000 Discharges	0.40	5.42	13.60
PROVIDER	PDI	PDI 11	Postoperative Wound Dehiscence Rate per 1,000 Discharges	1.00	0.85	0.85
PROVIDER	PDI	PDI 12	Central Venous Catheter-Related Blood Stream Infection Rate per 1,000 Discharges	1.00	0.62	0.62
PROVIDER	PDI	PDI 13	Transfusion Reaction Count	-	-	-
PROVIDER	PDI	PSI 17	Birth Trauma Rate – Injury to Neonate per 1,000 Births	1.03	1.97	1.91
AREA	PDI	PDI 14	Asthma Admission Rate per 100,000 Population	0.97	95.26	97.74
AREA	PDI	PDI 15	Diabetes Short-Term Complications Admission Rate per 100,000 Population	0.99	24.02	24.32
AREA	PDI	PDI 16	Gastroenteritis Admission Rate per 100,000 Population	0.98	50.83	51.63
AREA	PDI	PDI 17	Perforated Appendix Admission Rate per 100,000 Population	1.00	38,527.34	38,436.24

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Output Data Set Type	Module	Indicator	Title	RATIO OF OBSERVED RATES (v6.0/v5.0)	v6.0 OBSERVED RATE PER 1,000	v5.0 OBSERVED RATE PER 1,000
AREA	PDI	PDI 18	Urinary Tract Infection Admission Rate per 100,000 Population	0.98	26.67	27.09
AREA	PDI	PDI 90	Pediatric Quality Overall Composite	0.98	127.08	129.67
AREA	PDI	PDI 91	Pediatric Quality Acute Composite	0.99	38.44	39.02
AREA	PDI	PDI 92	Pediatric Quality Chronic Composite	0.98	88.64	90.65
AREA	PDI	PQI 09	Low Birth Weight Rate per 1,000 Births	1.01	6,347.47	6,297.48