

# Statistical Brief # 7

## Office of Quality and Patient Safety

### Bureau of Health Informatics

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## New York State All-Payer Inpatient Quality Indicators, 2009-2013

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### Introduction

This statistical brief provides a summary of the Agency of Healthcare Research and Quality (AHRQ) Inpatient Quality Indicators (IQI) volume, mortality rate and utilization rate metrics for all-payer inpatient hospital discharges in New York State (NYS) from January 1, 2009 through December 31, 2013.

Inpatient Quality Indicators are a set of measures that utilize hospital discharge data to provide insight into the quality of inpatient hospital care. IQIs are grouped into four categories including 1) *Volume* of procedures with a possible link between volume and outcomes such as mortality and complications, 2) *Mortality* after certain procedures and medical conditions, 3) *Utilization* of procedures linked by research to issues of overuse, underuse, or misuse; and 4) *Composite* measures. IQIs can highlight potential quality concerns within hospitals as well as across geographical areas in order to improve patient quality of care.

### Methods

IQI computation was performed through the use of the AHRQ Quality Indicators software version 4.5 (May 2013 release) for each of the five years of data. There are a total of 32 IQIs grouped into three categories (volume, mortality, utilization) and two composite measures. Utilization metrics are calculated as procedures per 1,000 discharges at risk and as area rates per 100,000 population at risk.

Each IQI is defined by a specific set of criteria that includes one or more types of the clinical identification of the disease, condition, procedure, or their combination. Definitions could be based on International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) diagnostic and/or procedural codes, Major Diagnostic Categories (MDC), Medicare Severity Diagnosis Related Groups (MS-DRG), or All Patient Refined Diagnosis Related Groups (APR-DRG) developed by 3M.

An IQI indicator is assigned to a discharge after the record is matched to the specific IQI's inclusion and exclusion criteria. All IQI

### Highlights

- Uncomplicated VBAC rates increased by 25%, while Cesarean Delivery rates decreased (All Uncomplicated (Un) by 1.3% and Primary Un by 5.3%) between 2009 and 2013.
- Six of the twelve IQI procedure volume metrics decreased between 2009 and 2013. Two by greater than 40%: IQI04A–Abdominal Aortic Aneurysm (AAA) Ruptured Open Repair 42.0%, IQI04B–AAA Unruptured, Open 52.8%, while Endovascular AAA repair volume increased; Cardiac procedures (CABG and PCI) volume decreased by 20.8 and 30.5% respectively.
- All but two IQI mortality metrics decreased between 2009 and 2013. Ten decreased by more than 20% and five by more than 30%: QI08 – Esophageal Resection 38.0%, IQI09 – Pancreatic Resection (PR) 31.8%, IQI09B – PR without Pancreatic Cancer 39.6%, IQI11D – AAA, Unruptured Endovascular Repair 43.0%, IQI14 – Hip Replacement Mortality Rate 30.9%.
- Applying 2009 rates, cumulatively 3,582 inpatient discharges that could have resulted in death were avoided between 2010 and 2013, if 2009 rates were held constant.
- The statewide value for composite IQI91 – Mortality for Selected Conditions decreased by 8.1% from 2009 to 2013.

denominators exclude inpatient hospital discharges for individuals under the age of 18, transfers to another acute-care hospital, discharges with an MDC14 (pregnancy, childbirth, and puerperium), and discharges with missing information for age, gender, quarter, year, or principal diagnosis. Several IQI rate metrics have additional exclusion criteria beyond these global exclusions. The numerator for each IQI rate metric is calculated by summing the total number of discharges with the specific IQI indicator.

For complete IQI specifications please refer to

[http://www.qualityindicators.ahrq.gov/Modules/IQI\\_TechSpec.aspx](http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx).

Volume Metrics: Volume IQI metrics represent the sum of the number of hospital discharges with procedure codes and diagnoses corresponding to the particular IQI definition for patients ages 18 and older or obstetric patients. Volume metrics are not represented as a rate, but rather as the sum of discharges meeting the IQI criteria. There are 12 IQI Volume metrics (see [Table 1](#)).

Mortality Rates: The denominator for each IQI mortality rate is the number of hospital discharges at risk meeting the inclusion and exclusion criteria for the specific IQI. The numerator is the number of in-hospital deaths among patients meeting the denominator criteria. There are 24 IQI Mortality Rate metrics (see [Table 2](#)).

Utilization Rates: Utilization rates are presented either by discharges at risk or by population at risk. The numerator is the number of discharges meeting specific combinations of procedure and diagnostic criteria applied to the discharges at risk included in the denominator. The denominator for the area IQI rates represents NYS population of a specified age and / or gender in the geographical area defined based on the patient's address and is presented as rate per 100,000 population at risk. There are 7 discharge-based IQI Utilization Rate metrics and 4 population based Utilization Rate metrics (see [Table 2](#)).

Composite Rates: There are 2 IQI Composites – Mortality for Selected Procedures and Mortality for Selected Conditions (see [Table 4](#)). Composite IQI measures represent the weighted average of the observed to expected ratios for the component indicators. There are eight component weights included in composite IQI90 – Mortality for Selected Procedures (IQI08, IQI09, IQI11, IQI12, IQI13, IQI14, IQI30, and IQI131) and six component weights included in composite IQI91 – Mortality for Selected Conditions (IQI15, IQI16, IQI17, IQI18, IQI19, and IQI20). Component weights represent denominator weights and are calculated as the relative frequency within the reference population of the component indicator denominator. Statewide observed to expected ratios for the composite indicators are calculated using national figures as the reference. A value of 1.0 represents an average performance, values higher than 1.0 represent worse than expected performance, and values lower than 1.0 represent better than expected performance. A low rate composites are desirable. For complete methods refer to the [http://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/IQI\\_Composite\\_Development.pdf](http://www.qualityindicators.ahrq.gov/Downloads/Modules/IQI/IQI_Composite_Development.pdf).

The risk adjustment methodology applied to the IQI metrics presented as rates was developed by AHRQ. As part of the methodology, a limited edition 3M APR-DRG grouper was run on all five years of data with the use of Present on Admission (POA) diagnosis indicator. The parameter estimates used to calculate expected values are based on the analysis of the 2010 AHRQ's Cost and Utilization Project (HCUP) State Inpatient Databases (SID). Parameter estimates are the product of the logistic regression models used in the risk adjustment process to account for patient differences across providers or across geographical areas. All IQIs have a unique set of covariates that were identified as potential risk adjusters. They include age, gender, MDC, APR-DRG with risk of mortality (ROM) levels, patient's point of origin and whether the patient was transferred from another facility. Risk adjusted rates were calculated but are not shown in this brief, however they were used for calculations of the expected values in the composite measures.

Inpatient Quality Indicators were calculated for each Article 28 hospital in the NYS for years 2009-2013 and are available on Health Data NY (<https://health.data.ny.gov/>). This statistical brief presents only statewide observed rates that were calculated as part of the process.

## Data Source

The unit of analysis in this brief is a hospital inpatient discharge record submitted from an Article 28 (acute care) hospital within NYS through the Statewide Planning and Research Cooperative System (SPARCS) for the time period January 1, 2009 through December 31, 2013. Established in 1979, SPARCS comprehensively collects patient level data on demographics, diagnoses, treatments, services, and charges for every Article 28 (acute care) hospital discharge, emergency department visit, hospital-based ambulatory surgery and outpatient clinic visit in NYS. SPARCS exists as a cooperation between the health care industry and state government.

## Findings

### *IQI Volume Metrics in New York State, 2009-2013*

Table 1 presents the detailed view of the observed number of hospital discharges for patients ages 18 and older, or obstetric patients, with a procedure code corresponding to the six IQI volume metrics from 2009 through 2013. Two of these metrics were stratified to provide a more detailed view for the type of procedure and that resulted in twelve separate procedure volume IQIs. Volume of the two analyzed resection procedures (Esophageal and Pancreatic) increased from 2009 to 2013 with the most notable change for IQI02A - Pancreatic Resection with Pancreatic Cancer Diagnosis (10.8%), while volume for the IQI02B - Pancreatic Resection without Pancreatic Cancer Diagnosis increased only by 3.4% (Figure 1). Interesting trends were noted for the IQI04 - Abdominal Aortic Aneurysm (AAA) Repair procedures. While an overall decrease of 7.3% for IQI04 - AAA Repair was seen, AAA Open Repair Procedures volume for both ruptured and un-ruptured aneurysm (IQI04A and IQI04B) decreased 42.0% and 52.8% respectively. During the same time period, AAA Endovascular Repair volume for ruptured and un-ruptured aneurysm (IQI04C and IQI04D) increased about 34.0% and 4.4% respectively. The volume decreased for three cardiovascular procedures: IQI05 - Coronary Artery Bypass (20.8%), IQI06 - Percutaneous Coronary Intervention (30.5%), and IQI07 Carotid Endarterectomy (20.1%) between 2009 and 2013.

### *IQI Mortality and Utilization Rate Metrics in New York State, 2009-2013, per 1,000 Discharges*

Details for observed rates for IQI mortality metrics and observed utilization rate metrics across NYS hospitals from 2009 through 2013 and the corresponding national IQI rate for that metric for 2010 are presented in Table 2. The rates were calculated per 1,000 discharges at risk for the particular IQI. The percent change between rates for 2009 and 2013 is presented in Figure 2A. Overall, of the 24 mortality rate metrics (counting additional strata for IQI11 and IQI17) all but two have decreased between 2009 and 2013. Ten mortality rate metrics decreased by more than 20% from 2009 to 2013 with five metrics decreasing more than 30%; including IQI08 - Esophageal Resection Mortality Rate (38.0%, decreasing number of death from 48.88 to 30.39 per 1,000 discharges), IQI09 - Pancreatic Resection Mortality Rate (31.8%), IQI09B - Pancreatic Resection without Pancreatic Cancer Mortality Rate (39.6%), IQI11D - Abdominal Aortic Aneurysm (AAA), Un-ruptured, Endovascular Repair Mortality Rate (43.0%), IQI14 - Hip Replacement Mortality Rate (30.9%). Two mortality metrics that increased between 2009 and 2013 were IQI30 - Percutaneous Coronary Intervention (PCI) mortality rate (84.0%) and IQI11A - AAA, Ruptured Open Repair Mortality Rate (6.2%). Of the 24 mortality rate metrics the statewide IQI mortality rates in 2010 were lower than the national IQI mortality rates for nine metrics, and higher for fifteen metrics when counting all examined strata.

Applying 2009 mortality rates to the number of the discharges at risk for a particular IQI, a cumulative total of 3,582 inpatient discharges that could have resulted in death were avoided between 2010 and 2013, if 2009 rates were held constant.

Of the seven hospital-level procedure utilization rate metrics four decreased and three increased between 2009 and 2013 (Figure 2B). Notably, both metrics related to Cesarean delivery decreased between 2009 and 2013: IQI21 - Cesarean Delivery, Uncomplicated (1.3%) and IQI33 - Primary Cesarean Delivery, Uncomplicated (5.3%). Together, the rate reduction accounted for 9,715 less Cesarean delivery discharges if 2009 rates were held constant. During the same time rates for the Vaginal Birth: IQI22 - Vaginal Birth After Cesarean Delivery (VBAC), Uncomplicated and IQI34 - VBAC, All Rate increased both by about 25%. These

two statewide metrics were also higher than corresponding national rates by more than 25% when comparing rates for 2010. IQI rates that were lower than 2010 national benchmarks by more than 10% were IQI24 – Incidental Appendectomy in the Elderly and IQI25 - Bilateral Cardiac Catheterization Rate. From 2009 to 2013 rates for IQI24 and IQI25 both decreased by 6.3% and 5.7% respectively.

#### *IQI Area Rates for Selected Procedures in New York State, 2009-2013, per 100,000 Population*

IQI area rates per 100,000 population at risk are presented in [Table 3](#) and [Figure 3](#) shows the percent change between examined time points. Between 2009 and 2013 there was a marked decrease in the statewide area rates of the cardiac procedures: IQI26 - Coronary Artery Bypass Graft (CABG) Rate (23.9%) and IQI27 - Percutaneous Coronary Intervention (PCI) Rate (33.5%). CABG rate per 100,000 adults decreased from 129.16 to 74.21 procedures and area utilization rate for PCI declined from 609.24 to 266.87 per 100,000 adults at risk. Statewide rate of Hysterectomy inpatient procedures (IQI28) consistently declined from 210.25 in 2009 to 96.41 in 2013 by 32.9%.

#### *Composite IQI 90 and 91 Metrics and 95% Confidence Intervals in New York State, 2009-2013*

Composite IQI values and 95% confidence intervals for NYS from 2009 through 2013 are presented in [Table 4](#). The value for composite metric IQI90 – Mortality for Selected Procedures decreased from 2009 to 2013, though this decrease was not statistically significant. Statewide values for composite IQI90 for 2009 and 2013 did not reach statistical significance while values for 2010 through 2012 were all statistically significant and below 1.0. The values for this composite should be interpreted with caution as some of the procedures are performed very infrequently and corresponding mortality rates could be unreliable.

The value for composite metric IQI91 – Mortality for Selected Conditions decreased significantly from 2009 to 2013 by 8.1%, though for both time points the statewide values for composite IQI91 were statistically significantly above 1.0: 1.35 and 1.24 respectively. This composite summarizes well the individual metrics for the specific condition mortality most of which are higher than national benchmarks.

## Conclusions

From 2009 through 2013 six of the twelve IQI volume metrics, 21 of the 24 (with additional strata) IQI mortality rate metrics, four of the seven IQI utilization rate, and three of the four area utilization rate metrics decreased. Volume metrics represent the volume of procedures for which there is some evidence that a higher volume of procedures is associated with lower mortality. While a decreasing volume of these measures is undesirable the reason for the observed statewide decrease from 2009 to 2013 could be the result of the overall decrease in the number of inpatient hospital discharges from 2.6 million in 2009 to 2.4 million in 2013.<sup>1</sup> The statewide decrease was observed for IQI mortality rate metrics especially for the mortality for the selected procedures with the exception of the PCI. Inpatient PCI procedure volume declined over the last years nationwide<sup>2</sup> and possibly is driven by a reduction in procedures for patients with stable coronary artery disease, therefore increasing the mortality rate as average case severity increases. The substantial improvements noted for the IQI mortality for specific procedures rate metrics suggests an improvement in the quality of care in NYS hospitals from 2009 to 2013.

IQI Procedure Utilization Rate metrics represent the utilization of procedures where there are questions of overuse, underuse, and misuse. Cesarean deliveries are one of the most common procedures performed in the United States<sup>3</sup> and are associated with higher costs than vaginal births yet there is limited evidence of improved outcomes associated with higher utilization of this procedure<sup>4</sup>. As a result, decreases in IQI21 – Cesarean Delivery Rate, Uncomplicated and IQI33 – Primary Cesarean Delivery Rate as well as increases in

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<sup>1</sup> Complete information on the number of yearly inpatient discharges as well as outpatient and emergency department visits can be found on the NYSDOH SPARCS Website under Audit Reports at <http://www.health.ny.gov/statistics/sparcs/reports/audit.htm>

<sup>2</sup> Kim LK, Feldman DN, Swaminathan RV, et al. Rate of percutaneous coronary intervention for the management of acute coronary syndromes and stable coronary artery disease in the United States (2007-2011). *Am J Cardiol*. 2014; Epub ahead of print.

<sup>3</sup>Elixhauser A, Steiner CA. Most Common Diagnoses and Procedures in U.S. Community Hospitals 1996

<sup>4</sup> Cesarean childbirth: report of the NICHD task force on cesarean childbirth. Bethesda: United States Department of Health and Human Services National Institutes of Health; 1981. Report No.: DHHS publication no. [NIH] 82-2067.

IQI22 – Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated and IQI34 – VBAC, All are desirable. Cesarean delivery IQIs (IQI21 and IQI33) both decreased between 2009 and 2013 although the rates were still higher than the national average. VBAC related IQIs (IQI22 and IQI34) both increased between 2009 and 2013 and were above the national average indicating improving quality of care in NYS and a high statewide standard of care in comparison to the national benchmarks.

Although Laparoscopic Cholecystectomy is a new technology it is now the accepted method of removing the gall bladder and is performed in 75% of uncomplicated cases<sup>5</sup>. The laparoscopic technique leads to lower risks than open cholecystectomy<sup>5</sup>. The statewide value of IQI23 – Laparoscopic Cholecystectomy rate increased by 4.0% from 2009 to 2013 and was above the national average indicating both improving quality of care within NYS and a high statewide standard of care.

Incidental appendectomy is not desirable in the elderly population because of the lower risk of appendicitis<sup>6</sup> and the higher risk of complications<sup>7,8</sup> associated with performing this procedures in the elderly. The statewide values of IQI24 – Incidental Appendectomy in the Elderly rate decreased from 2009 to 2013 and was 28.6% below the nationwide rate in 2010 representing an improvement in quality of care within NYS.

Bi-lateral cardiac catheterization is not recommended for patients unless there is a proper indication<sup>9</sup>. As a result lower rates are desirable and represent better quality of care. The statewide value of IQI25 – Bilateral Cardiac Catheterization Rate decreased by 5.7% from 2009 to 2013 and was below the national average indicating improving quality of care within NYS.

The statewide value of composite IQI90 – Mortality for Selected Procedures was lower than the national value for each of the five years while the statewide value of composite IQI91- Mortality for Selected Conditions was statistically significantly higher than the national value in each of the five years. This demonstrates that less individuals are dying of select procedures in NYS than expected but that more are dying from select conditions than expected based on the national benchmarks. The statistically significant decrease observed for composite IQI191 demonstrates a trend towards improved quality of care.

## Tables and Figures

**Table 1: Statewide Inpatient Quality Indicators Volume Metrics, Discharges per Year, 2009-2013.**

IQI Code	IQI Value	Total Discharges				
		2009	2010	2011	2012	2013
IQI01	Esophageal Resection	410	425	423	366	428
IQI02	Pancreatic Resection	1,249	1,258	1,308	1,347	1,344
IQI02A	Pancreatic Resection with Pancreatic Cancer Diagnosis	697	743	724	732	772
IQI02B	Pancreatic Resection without Pancreatic Cancer Diagnosis	552	515	584	615	572
IQI04	Abdominal Aortic Aneurysm (AAA) Repair	2,451	2,414	2,358	2,335	2,272
IQI04A	Abdominal Aortic Aneurysm (AAA) Repair – Ruptured Open	119	109	101	77	69
IQI04B	Abdominal Aortic Aneurysm (AAA) Repair – Un-Ruptured Open	453	383	328	288	214

<sup>5</sup> Southern Surgeons Club. A prospective analysis of 1518 laparoscopic cholecystectomies. NEJM 1991;324:1073-1078.

<sup>6</sup> Nockerts SR, Detmer DE, Fryback DG. Incidental appendectomy in the elderly? No. Surgery 1980;88(2):301-6.

<sup>7</sup> Warren JL, Penberthy LT, Addiss DG, et al. Appendectomy incidental to cholecystectomy among elderly Medicare beneficiaries. Surg Gynecol Obstet 1993;177(3):288-94.

<sup>8</sup> Wen SW, Hernandez R, Naylor CD. Pitfalls in nonrandomized outcomes studies. The case of incidental appendectomy with open cholecystectomy. JAMA 1995;274(21):1687-91.

<sup>9</sup> Pepine CJ, Allen HD, Bashore TM, et al. ACC/AHA guidelines for cardiac catheterization and cardiac catheterization laboratories. American College of Cardiology/American Heart Association Ad Hoc Task Force on Cardiac Catheterization. Circulation 1991;84(5):2213-47.

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IQI Code	IQI Value	Total Discharges				
		2009	2010	2011	2012	2013
IQI04C	Abdominal Aortic Aneurysm (AAA) Repair – Ruptured Endovascular	103	127	109	128	138
IQI04D	Abdominal Aortic Aneurysm (AAA) Repair – Un-Ruptured Endovascular	1,781	1,799	1,826	1,848	1,859
IQI05	Coronary Artery Bypass (CABG)	13,323	12,294	11,177	10,661	10,546
IQI06	Percutaneous Coronary Intervention (PCI)	47,607	45,046	39,083	34,910	33,104
IQI07	Carotid Endarterectomy	5,320	4,951	4,417	4,398	4,251

**Table 2: Statewide Observed Inpatient Mortality and Utilization Rates Per 1,000 Discharges at Risk, 2009-2013.**

IQI Code	IQI Value	2009	2010	2011	2012	2013	National, Observed, 2010
<b>Inpatient Mortality Rates</b>							
IQI08*	Esophageal Resection Mortality Rate	48.99	33.15	73.65	25.64	30.39	50.06
IQI09*	Pancreatic Resection Mortality Rate	36.12	26.32	26.88	23.86	24.63	34.03
IQI09A	Pancreatic Resection Mortality Rate with Pancreatic Cancer Diagnosis	30.17	27.03	24.93	22.01	23.35	38.74
IQI09B	Pancreatic Resection Mortality Rate without Pancreatic Cancer Diagnosis	43.64	25.29	29.31	26.06	26.36	27.37
IQI11*	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	56.42	49.48	44.37	42.62	41.19	41.23
IQI11A	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate – Ruptured Open	420.17	452.83	434.34	526.32	446.15	374.17
IQI11B	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate – Unruptured Open	71.11	52.36	39.88	45.77	56.87	46.82
IQI11C	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate – Ruptured Endovascular	264.71	224.00	276.19	264.00	264.71	235.21
IQI11D	Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate - Unruptured Endovascular	17.98	14.48	10.44	8.69	10.25	8.25
IQI12*	Coronary Artery Bypass Graft (CABG) Mortality Rate	24.07	22.83	20.01	19.65	19.47	25.80
IQI13*	Craniotomy Mortality Rate	59.44	52.12	52.02	54.62	51.13	57.01
IQI14*	Hip Replacement Mortality Rate	0.99	0.95	0.84	1.02	0.68	0.95
IQI15**	Acute Myocardial Infarction (AMI) Mortality Rate	69.30	69.42	66.89	67.00	64.51	60.69
IQI16**	Heart Failure Mortality Rate	42.95	42.73	43.89	42.78	42.23	33.30
IQI17**	Acute Stroke Mortality Rate, Overall	110.89	107.58	106.94	101.57	95.78	91.31
IQI17A	Acute Stroke Mortality Rate, Subarachnoid	225.63	228.99	213.02	219.19	207.15	226.79
IQI17B	Acute Stroke Mortality Rate, Hemorrhagic	255.03	241.40	239.23	234.62	229.88	234.54
ICI17C	Acute Stroke Mortality Rate, Ischemic	66.38	67.60	69.71	64.77	58.93	51.71

**New York State Department of Health – Office of Quality and Patient Safety**

<b>IQI Code</b>	<b>IQI Value</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>National, Observed, 2010</b>
ICI18**	Gastrointestinal Hemorrhage Mortality Rate	30.37	29.76	30.16	27.25	28.26	24.12
ICI19**	Hip Fracture Mortality Rate	37.43	32.01	34.78	29.48	28.69	27.80
IQI20**	Pneumonia Mortality Rate	50.74	51.52	47.63	45.83	46.07	40.22
IQI30*	Percutaneous Coronary Intervention (PCI) Mortality Rate	6.79	7.40	8.78	10.28	12.50	17.33
IQI31	Carotid Endarterectomy Mortality Rate	5.28	5.07	3.86	4.33	3.78	4.01
IQI32	Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	77.56	78.70	75.59	73.72	69.87	63.95
<b>Utilization Rates</b>							
IQI21	Cesarean Delivery Rate, Uncomplicated	310.76	308.32	304.55	306.13	306.85	300.06
IQI22	Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	107.85	117.74	130.35	131.29	134.83	90.57
IQI23	Laparoscopic Cholecystectomy Rate	835.43	848.24	858.78	866.70	868.53	843.81
IQI24	Incidental Appendectomy in the Elderly Rate	7.85	7.80	6.77	7.22	7.35	10.93
IQI25	Bilateral Cardiac Catheterization Rate	14.21	12.24	12.66	11.41	13.40	14.12
IQI33	Primary Cesarean Delivery Rate, Uncomplicated	202.78	199.34	192.43	191.48	191.97	179.47
IQI34	Vaginal Birth After Cesarean (VBAC) Rate, All	104.40	113.49	125.69	127.88	131.28	89.95

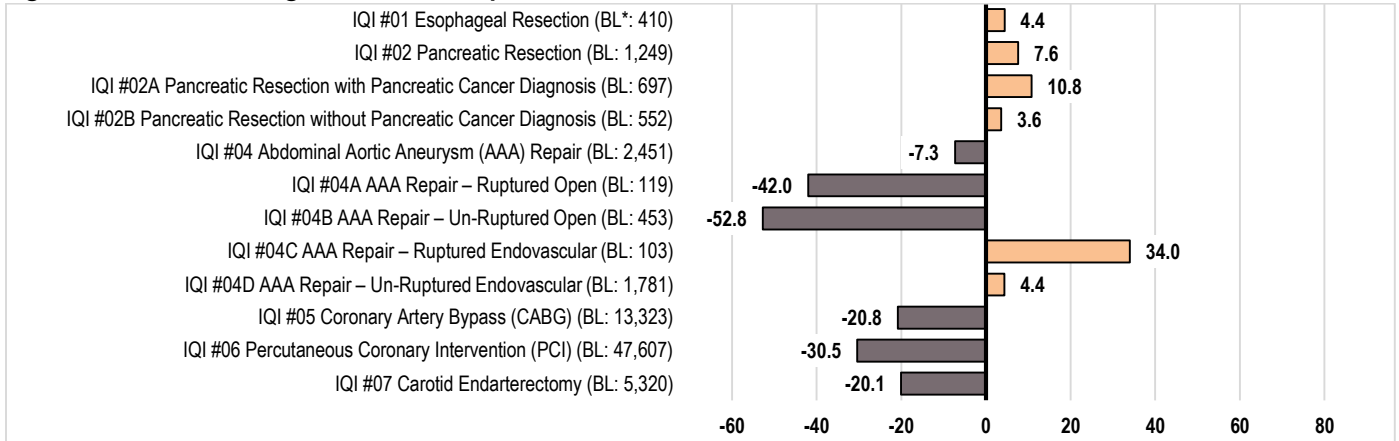
\* - Components of the IQI90 Composite: Mortality for Selected Procedures.

\*\* - Components of the IQI91 Composite: Mortality for Selected Conditions.

**Table 3: Statewide Observed Population Based Rates for Selected Procedures, Per 100,000 Population at Risk, 2009-2013.**

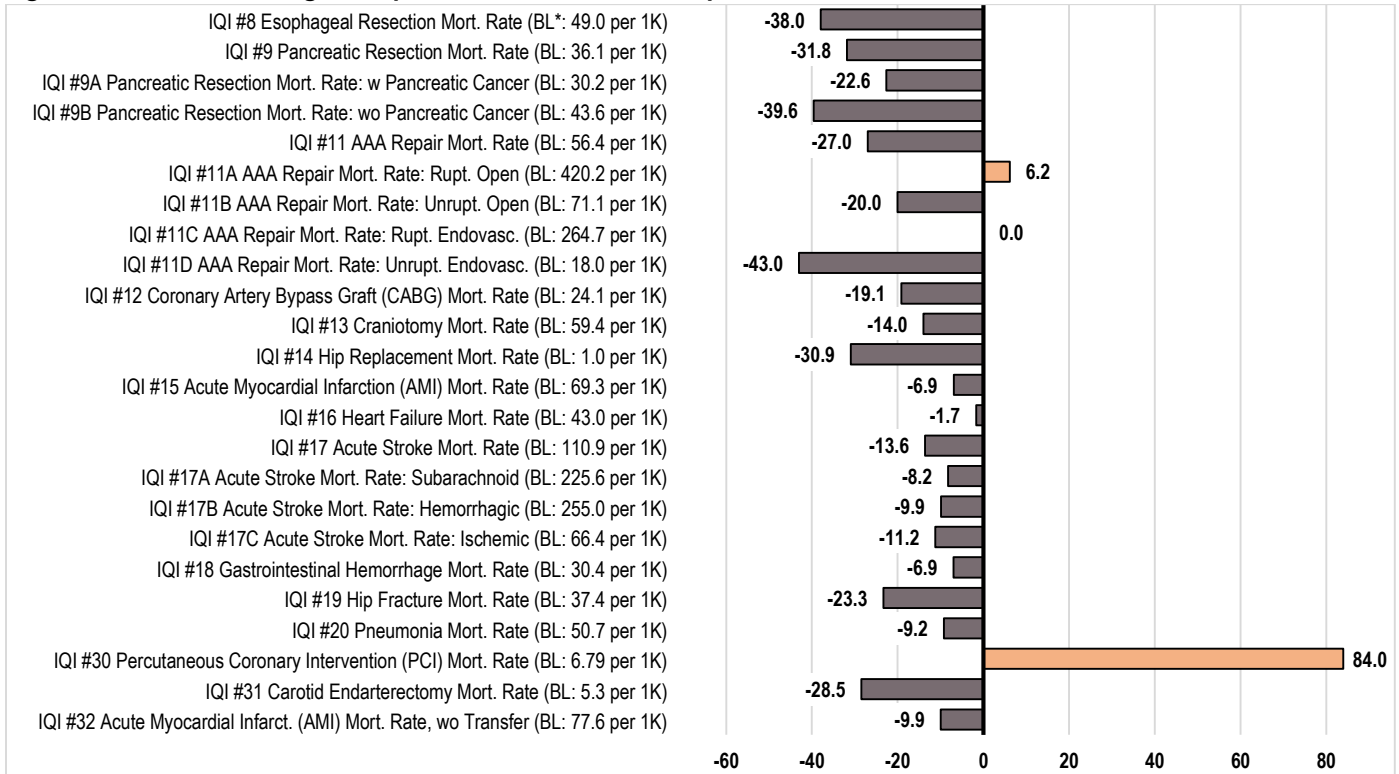
<b>IQI Code</b>	<b>IQI Value</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>National, Observed, 2010</b>
IQI26	Coronary Artery Bypass Graft (CABG) Rate	129.16	106.94	86.01	77.19	74.21	152.83
IQI27	Percutaneous Coronary Intervention (PCI) Rate	609.24	529.67	388.16	302.40	266.87	407.14
IQI28	Hysterectomy Rate	210.25	197.80	162.24	125.53	96.41	300.27
IQI29	Laminectomy or Spinal Fusion Rate	131.17	142.74	152.07	160.45	157.62	259.58

**Figure 1. Percent Change in Selected Inpatient Procedures Volume, Statewide, 2009 - 2013.**



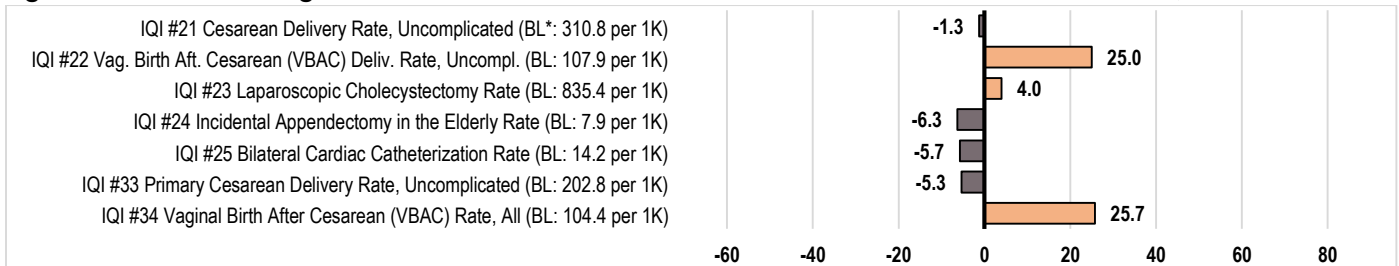
BL – Base line volume value.

**Figure 2A. Percent Change in Inpatient Observed Mortality Rates, Statewide, 2009 - 2013.**



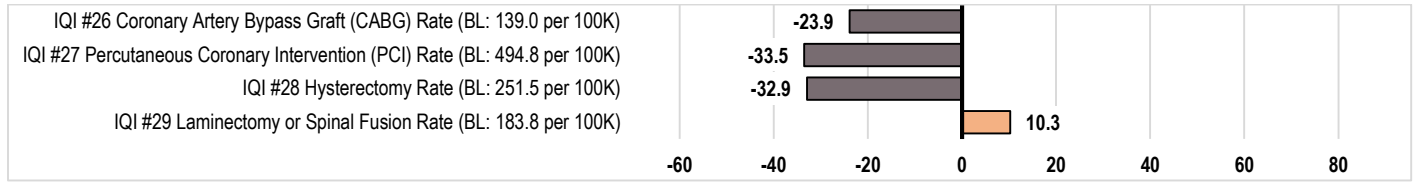
BL – Base line Observed Rate value.

**Figure 2B. Percent Change in Observed Utilization Rates for Selected Procedures and Conditions, 2009 - 2013.**



BL – Base line Observed Rate value.

**Figure 3. Percent Change in Observed Population Based Rates for Selected Procedures<sup>1</sup>, Statewide, 2009 - 2013.**



1 – Rates per 100,000 NYS population at risk, based on U.S. Census estimated numbers for each year.

**Table 4: Statewide Composite IQI Values and 95% Confidence Intervals, 2009-2013.**

IQI Code	IQI Value	2009	2010	2011	2012	2013
IQI90	Mortality for Selected Procedures	0.93 (0.82, 1.04)	0.88 (0.78, 0.99)	0.83 (0.73, 0.94)	0.85 (0.75, 0.96)	0.90 (0.80, 1.01)
IQI91	Mortality for Selected Conditions	1.35 (1.33, 1.37)	1.27 (1.25, 1.29)	1.22 (1.20, 1.24)	1.13 (1.11, 1.15)	1.24 (1.22, 1.26)

## Definitions:

- **SPARCS:** The Statewide Planning and Research Cooperative System (SPARCS) is a comprehensive data reporting system established in 1979 as a result of cooperation between the health care industry and government. Initially created to collect information on discharges from hospitals, SPARCS currently collects patient level detail on patient characteristics, diagnoses and treatments, services, and charges for every Article 28 (acute care) hospital discharge, ambulatory surgery, emergency room visits, and visits to hospital-based outpatient clinics in New York State. More information on SPARCS may be found at the following direct link: <http://www.health.ny.gov/statistics/sparcs/>.
- **AHRQ:** The Agency for Healthcare Research and Quality's (AHRQ) was originally created as the Agency for Health Care Policy and Research (AHCPR) on December 19, 1989, under the Omnibus Budget Reconciliation Act of 1989, as a Public Health Service Agency in the U.S. Department of Health and Human Services (HHS). The Agency was reauthorized with a name change as the Agency for Healthcare Research and Quality on December 6, 1999, under the Healthcare Research and Quality Act of 1999. The AHRQ mission is to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work within the U.S. Department of Health and Human Services and with other partners to make sure that the evidence is understood and used. For more information follow direct link: <http://www.ahrq.gov/>.
- **HCUP:** The Healthcare Cost and Utilization Project (HCUP) includes the largest collection of longitudinal hospital care data in the United States. Sponsored by AHRQ, HCUP includes largest all-payer encounter level health care data (inpatient, emergency department and ambulatory surgery records) in the U.S., beginning in 1988. HCUP is a Federal-State-Industry partnership that brings together data collection efforts of many organizations to create a national health care information resource. For more information follow direct link: <http://www.hcup-us.ahrq.gov/>
- **Unit of Analysis:** The unit of analysis for this report is the hospital inpatient discharge, not the patient. Therefore, if a single person was admitted to the hospital multiple times in a single year they would be counted as three distinct hospital inpatient discharges. Data is presented on the statewide level.
- **Health Data NY** is a New York State Department of Health sponsored data site that provides health care providers, researchers, academics, and the general public with access to valuable health data. The data site allows users to download and analyze data in a variety of formats, create visualizations of the data and review metadata and can be accessed <https://health.data.ny.gov>.

## Contact Information

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