HOSPITAL-ACQUIRED INFECTIONS

New York State

2012

New York State Department of Health, Albany, NY
September 2013

Table of Contents

Executive Summary

Hospital-acquired infections (HAIs) result in prolonged hospital stays and unnecessary deaths, increased antimicrobial resistance, increased costs, and increased emotional and personal costs to patients and their families. This report summarizes HAI rates in New York State (NYS) hospitals in 2012. It is the sixth annual report to be issued since reporting began in 2007 following implementation of Public Health Law 2819. All NYS HAI reports are available at http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/.

Hospitals report to NYS using the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN). This secure, web-based system allows hospitals, NYS, and Federal agencies to concurrently monitor the same data. NHSN is used by almost all hospitals in the United States. All participants use the same surveillance definitions. Additional information about the NHSN can be found at http://www.cdc.gov/nhsn/.

In 2012, all 175 NYS acute care hospitals (excluding Veterans Affairs, Critical Access, psychiatric and long term acute care hospitals) reported HAI data. Table 1 summarizes the types of HAIs that NYS hospitals were required to report in 2012, along with the total number of infections reported and the infection rates.

Table 1: Hospital-acquired infections reported by New York State hospitals in 2012

Type of infection	Number	Rate
Hospital-onset *Clostridium difficile* infections (CDI) among inpatients	9,945	8.3 per 10,000 patient days
Surgical site infections (SSI) following		
Colon surgery	836	5.1 per 100 procedures
Abdominal hysterectomy surgery	415	2.2 per 100 procedures
Hip replacement or revision surgery	311	1.1 per 100 procedures
Coronary artery bypass graft (CABG) - chest site	223	2.1 per 100 procedures
CABG - donor site	58	0.6 per 100 procedures
Central line-associated blood stream infections (CLABSI) among patients in intensive care units	735	1.2 per 1,000 line days
Total	12,523	

Clostridium difficile Infection (CDI) Rates

C. difficile is a type of bacteria that causes gastrointestinal illness ranging from mild diarrhea to potentially fatal colitis. CDI most commonly affects the elderly and those who have recently taken antibiotics. NYS hospitals report all positive *C. difficile* laboratory test results to NHSN. The CDI cases are separated into categories depending on when the stool sample was obtained. Cases termed "community-onset" (CO) are cases in which the positive stool sample was obtained during the first three days of the patient's hospital admission and so was likely acquired before admission. Hospital-onset (HO) cases are cases in which the positive stool sample was obtained on day four or later during the hospital stay and so was likely acquired in the hospital. In 2012, the HO CDI rate was 8.3 infections per 10,000 patient days. CDI rates are impacted by more sensitive molecular tests that make it easier to identify cases. Among 89 hospitals that switched to a more sensitive test between 2010 and 2012, the HO rate increased 14%; among the other 88 hospitals the HO rate decreased 15%.

Surgical Site Infection (SSI) Rates

SSIs are infections that occur after an operation in the part of the body where the surgery took place. Colon SSI rates (5%) are typically higher than hip, hysterectomy, and CABG SSI rates (1% to 2%), because the colon contains more bacteria than the other operative sites. Since reporting began in 2007, hospitals have reported the biggest improvement in CABG SSI rates; chest-site SSI rates have decreased 23% and donor-site SSI rates have decreased 47%. There has been no significant improvement in colon or hip SSI rates since 2008. Hysterectomy SSI rates are reported for the first time in this report. Overall, SSI rates decreased by 16% between 2007 and 2012, resulting in a cost savings estimated to be between $12.1 million and $35.4 million since 2007.

Central Line-Associated Blood Stream Infection (CLABSI) Rates

A central line is a tube that is placed into a large vein, usually in the neck, chest, arm, or groin, that is used to give fluids and medications, withdraw blood, and monitor the patient's condition. A CLABSI occurs when bacteria or other organisms enter the bloodstream through this line. CLABSI rates are monitored in eight types of intensive care units (ICUs). NYS hospitals have demonstrated dramatic improvement in CLABSI rates since reporting began. The 2012 CLABSI rates and progress compared to the NYS 2007 baselines follow:

- Cardiothoracic surgery ICU: 0.9 CLABSI per 1,000 central line days; 48% reduction
- Coronary ICU: 1.3 CLABSI per 1,000 central line days; 32% reduction
- Medical ICU: 1.2 CLABSI per 1,000 central line days; 55% reduction
- Medical-surgical ICU: 1.0 CLABSI per 1,000 central line days; 53% reduction
- Neurosurgical ICU: 1.5 CLABSI per 1,000 central line days; 43% reduction
- Surgical ICU: 1.1 CLABSI per 1,000 central line days; 66% reduction
- Pediatric ICU: 2.0 CLABSI per 1,000 central line days; 39% reduction

- Neonatal ICUs: 1.7 CLABSI per 1,000 central line days; 53% reduction;
    - Regional Perinatal Centers: 1.2 CLABSI per 1,000 central line days; 65% reduction
    - Level 3 ICUs: 2.5 CLABSI per 1,000 central line days; 3% reduction
    - Level 2/3 ICUs: 3.5 CLABSI per 1,000 central line days; 40% reduction

Overall, CLABSI rates decreased by 53% between 2007 and 2012, resulting in a cost savings estimated to be between $18 million and $72 million since 2007.

Data Validation

NYS Department of Health (DOH) ensures the accuracy of the data by reviewing medical records during audits. Between 2007 and 2012, 97%, 89%, 89%, 74%, 68%, and 30% of hospitals were audited, respectively. The intensity of the auditing performed by NYSDOH exceeds the intensity of auditing performed by other states and the Centers for Medicare and Medicaid Services (CMS) in terms of the number of hospitals audited, the number of records audited in each hospital, and the methods used to efficiently target the records most likely to have errors. NYSDOH continues to take advantage of technological developments in healthcare information by performing off-sites audits through remote access to electronic medical records (EMRs) and through the use of regional health information systems (RHIOs), saving travel time and money. In 2011, NYSDOH staff reviewed almost 8,000 records, and agreed with the hospital-reported infection status 94% of the time. Disagreements were discussed and corrected in NHSN. Some inaccuracies continue to arise because of misunderstanding of NHSN definitions, incomplete surveillance, and data entry errors. CDC updated CLABSI and SSI definitions in January 2013 in an attempt to improve the ease and consistency of following surveillance definitions. However, some of the definitions remain open to multiple interpretations.

Infection Surveillance, Prevention, and Control Practices

NYSDOH conducts periodic surveys to measure trends in hospital practices that may impact infection reporting and rates.

- Infection prevention staffing levels have trended up slightly over the past several years. In 2012, the average infection preventionist in NYS was responsible for 127 acute care beds, down from 164 beds in 2007. The reporting demands on IPs have increased over the years as a result of growing state and federal requirements.
- The majority of hospitals have implemented appropriate evidence-based practices to reduce HAIs. Additional improvement may be realized by further developing antimicrobial stewardship programs and by objective monitoring of environmental cleaning.

- Most hospitals continue to manually enter data into NHSN. Incomplete surveillance and data entry errors could be improved by increased use of EMRs for identifying potential HAIs and uploading data to NHSN.

Hospital Rate Summary

The following table (Table 2) summarizes HAI rates by hospital in 2011 and 2012. The 2011 data are included again this year because there have been some modifications as a result of further auditing of the data and in order to visualize patterns of repeated high and low performance.

For SSIs and CLABSIs, this table highlights hospitals that performed significantly better (shaded blue) or worse (shaded red) than the NYS average, after adjusting for differences in patients' risk for infection. For CDI, hospital rates are not compared to the state average because insufficient data exists to perform risk-adjustment. CDI rates are intended to be used by hospitals as a baseline for tracking their own hospital rates over time. Therefore, the 2012 CDI rate for each hospital is compared to that hospital's 2011 rate, and the hospital's 2011 CDI rate was compared to that hospital's 2010 rate. Because of the impact changes in test methods can have on rates, a statistical comparison was not made for hospitals that changed to a more sensitive test during the time period.

Table 2 provides a summary of all the hospital rates at a glance. More detailed figures in the body of this report plot each hospital rate along with a bar showing the precision of the rate; those graphs can make it easier to understand why similar rates may or may not be flagged as significantly different. Generally, only hospitals that perform a lot of procedures or use a lot of central lines can be highlighted as significantly higher or lower than the state average. No hospital was flagged high across the board. It is uncommon for a hospital to be flagged in the same category for multiple years; NYSDOH works with those hospitals to investigate reasons for continued high rates.

Recommendations and Next Steps

CLABSI rates, CABG SSI rates, and CDI rates (among facilities that did not change testing methods) have consistently declined since public reporting began. Many factors have likely contributed to the decline, including the attention drawn to HAIs through public reporting, ongoing efforts by IPs and other healthcare workers in improving infection prevention practices, and the support of external partners including professional societies, government agencies, and other associations. Colon and hip SSI rates have remained steady over the past several years. NYSDOH will continue to consult with advisors to identify additional strategies to reduce these infection rates.

Beginning on July 1, 2013, NYS hospitals began reporting laboratory-identified carbapenem-resistant Enterobacteriaceae (CRE)-*Escherichia coli* and CRE-*Klebsiella* among inpatients, per the recommendations of the CDC and the NYSDOH HAI technical advisory workgroup (TAW). The first six months of reporting will be considered a pilot reporting period. NYSDOH will use the pilot data to: 1) assess state and regional CRE rates; 2) assure the accuracy and completeness of reporting; 3) explore the relationship between differences in laboratory testing methods and CRE rates; and 4) assist facilities in responding to CRE cases and carrying out infection prevention strategies. NYSDOH will evaluate the preliminary results of the pilot before proceeding to publically report hospital-specific rates for a future time period.

Between 2007 and 2012, NYS hospitals decreased CLABSI rates in ICUs by 53%. CLABSI rates in non-ICU areas may be comparable to the rates in ICUs, and many of the CLABSI prevention practices used in ICUs are generalizable to nursing units. NYSDOH agreed with its TAW in November 2012 that most NYS hospitals did not yet have the electronic resources to efficiently collect central line days outside the ICU, data that are required to conduct surveillance of CLABSI rates. NYSDOH recommends that hospitals continue to develop electronic medical records systems capable of collecting HAI data and voluntarily enter CLABSI data from medical, surgical, and medical/surgical nursing units into NHSN in order to continue and expand their outstanding progress in improving patient safety through reducing CLABSIs.

NYSDOH recently developed and disseminated to hospitals a policy describing how NYSDOH will respond when hospitals have high HAI rates for multiple consecutive years (available at http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/). While NYS HAI staff have always communicated with hospitals regarding high rates, the new policy provides consistent and formal guidance to be used by all staff when working with hospitals that are flagged with one, two, three, or four consecutive years of high rates. NYSDOH staff will begin implementing the new policy in August 2013, with the 2012 data published in this report.

NYSDOH entered into a data use agreement with CDC beginning in July 2013. This agreement gives NYSDOH the ability to use non-mandated NHSN data for quality improvement purposes. Examples of these data include catheter-associated urinary tract infections (CAUTI) and methicillin-resistant *Staphylococcus aureus* infections, which are reported to NHSN by almost all NYS hospitals as part of the CMS Hospital Inpatient Quality Reporting Program. As staffing levels allow, NYSDOH will evaluate the burden of other non-mandated HAIs.

NYSDOH will continue to conduct medical record audits to verify appropriate use of surveillance definitions and accurate reporting by hospitals. Variation in audit coverage and thoroughness across the states currently results in inequitable comparison of hospital and state average rates. NYSDOH will continue to discuss audit methodology with CDC and CMS, as the stakeholders hopefully converge on a fair and efficient audit process.

NYSDOH will continue to provide hospitals with education and information about risk factors, strategies, and interventions and to encourage adoption of policies and procedures to reduce risk and enhance patient safety. As CDI impacts the greatest number of patients in NYS, reducing CDI rates continues to be a priority. NYSDOH will continue to work with participating nursing homes on the New York State Long Term Care *C. difficile* Collaborative. NYSDOH will also work with hospitals with the highest infection rates to identify risk factors for infection and opportunities for improvement.

NYSDOH will continue to disseminate data on hospital-specific HAI rates in multiple formats, including annual reports and downloadable spreadsheets. Decisions regarding healthcare quality should not be based on these data alone. Consumers should consult with doctors, healthcare facilities, health insurance carriers, and reputable healthcare websites before deciding where to receive care.

Table 2: Summary of Hospital-Acquired Infection Data by Hospital, New York State 2011-2012

		Surgical Site Infections											Blood Stream Infections																		*C. difficile*	
		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
AO Fox Memorial	11	NA/ NA	NA	NA	NA							* 0.00							1/ 415	2.4									1.88	8/ 15564	5.1
	12	NA/ NA	NA	NA	NA	0/ 24	* 0.0					0.71							0/ 499	* 0.0									* 0.00	5/ 14885	3.4
Adirondack Medical	11	5/ 86	5.8	1/ 49	1.6							1.20							0/ 321	* 0.0									* 0.00	5/ 13988	3.6
	12	2/ 84	2.5	0/ 60	* 0.0	0/ 52	* 0.0					0.41							0/ 456	* 0.0									* 0.00	9/ 12841	7.0
Albany Medical	11	21/ 335	6.7	2/ 302	0.6			3/ 354	0.8	0/ 315	* 0.0	0.91	2/2278	0.9	1/3311	0.3	4/2720	1.5			5/5429	0.9	1/1211	0.8	2/2202	0.9	3/4440	0.7	**0.56	147/173406	8.5
	12	14/ 360	3.9	3/ 397	0.8	2/ 239	0.8	7/ 312	2.1	1/ 282	0.3	0.83	2/2674	0.7	4/3175	1.3	2/3309	0.6			3/5307	0.6	0/1195	* 0.0	1/2173	0.5	0/4041	** 0.0	**0.45	183/183307	10.0
Albany Memorial	11	5/ 76	8.2	0/ 71	* 0.0							1.27							4/ 636	^^ 6.3									^^4.90	11/ 24844	4.4
	12	4/ 68	6.5	1/ 49	2.1	NA	NA					1.45							2/ 642	3.1									3.27	6/ 25549	2.3
Alice Hyde	11	1/ 33	3.0	1/ 24	4.9							1.07							0/ 112	* 0.0									* 0.00	0/ 10971	0.0
	12	NA/ NA	NA	0/ 36	* 0.0	NA	NA					* 0.00							0/ 64	* 0.0									* 0.00	1/ 9830	1.0
Arnot Ogden	11	6/ 76	7.3	3/ 184	1.5			5/ 99	5.8	1/ 84	1.0	1.73							4/3369	1.2							1/1224	1.3	0.81	32/ 51052	6.3
	12	1/ 68	1.3	1/ 168	0.6	0/ 26	* 0.0	2/ 96	2.5	1/ 82	1.1	0.64							3/3671	0.8							0/1019	* 0.0	0.55	38/ 48675	7.8
Auburn Memorial	11	0/ 47	* 0.0	0/ 44	* 0.0							**0.00							0/ 648	* 0.0									* 0.00	8/ 29785	2.7
	12	0/ 33	* 0.0	0/ 48	* 0.0	NA	NA					* 0.00							0/ 688	* 0.0									* 0.00	12/ 26924	4.5
Bellevue Hospital	11	10/ 99	8.9	1/ 66	1.2			3/ 107	2.9	1/ 95	1.4	1.67	5/1006	^^ 5.0	1/1033	1.0	3/1441	2.1			8/1831	^^ 4.4	1/ 688	1.5	0/ 141	* 0.0	1/ 924	1.1	^^1.92	96/224537	4.3
	12	5/ 83	6.1	0/ 48	* 0.0	1/ 127	0.7	1/ 98	1.1	0/ 91	* 0.0	0.77	1/ 953	1.0	0/ 820	* 0.0	3/1177	2.5			2/1590	1.3	2/ 604	3.3	0/ 131	* 0.0	3/ 665	3.9	1.53	61/186976	3.3
Benedictine Hospital	11	0/ 33	* 0.0	0/ 130	* 0.0							**0.00							0/ 154	* 0.0									* 0.00	8/ 19966	4.0
	12	0/ 24	* 0.0	0/ 137	* 0.0							* 0.00							0/ 157	* 0.0									* 0.00	3/ 13896	2.2
Bertrand Chaffee	11												NA	NA															* NA	4/ 3475	11.5
	12	NA/ NA	NA									NA																		2/ 3455	5.8
Beth Israel- Kings	11	3/ 62	4.0	1/ 59	1.5							0.89							4/1331	3.0									2.34	108/ 71392	15.1
	12	3/ 51	5.5	1/ 53	1.2	0/ 40	* 0.0					0.96							1/1108	0.9									0.95	91/ 68914	13.2
Beth Israel- Petrie	11	7/ 274	2.6	1/ 414	0.3			3/ 209	1.6	3/ 186	1.7	0.62	1/ 747	1.3	0/1089	* 0.0	6/3195	1.9			2/1733	1.2			0/ 77	* 0.0	0/ 363	* 0.0	0.82	170/231123	7.4
	12	9/ 262	3.8	5/ 414	1.2	4/ 169	2.1	7/ 175	4.1	0/ 162	* 0.0	1.09	1/ 772	1.3	3/1272	2.4	1/2822	0.4			3/1749	1.7			1/ 115	8.7	0/ 486	* 0.0	0.95	140/229709	6.1
Bon Secours	11	1/ 30	4.3	NA	NA							1.53							0/ 288	* 0.0									* 0.00	7/ 27806	2.5
	12	2/ 25	10.0	NA	NA	NA	NA					2.07							0/ 302	* 0.0									* 0.00	5/ 22411	2.2
Bronx-Lebanon	11	4/ 64	5.9	6/ 65	^^ 6.6							^^2.27	0/ 376	* 0.0					5/3957	1.3							4/ 435	7.2	1.30	58/163115	▼3.6
	12	5/ 80	6.6	1/ 48	1.5	4/ 127	2.4					1.45	0/ 532	* 0.0					5/5121	1.0							1/ 510	1.8	0.87	61/151973	4.0

Hospital SSI and CLABSI rates were compared to the state average. **Significantly lower than state average. ^^Signif. higher than state average. *Zero infections, not signif. NA: Fewer than 20 procedures or 50 line days.
Hospital *C. difficile* rates were compared to hospital rates in previous year if there was no change in laboratory testing methods. ▲Signif. increased. ▼Signif. decreased.

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		Surgical Site Infections											Blood Stream Infections																*C. difficile*	
		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Brookdale Hospital	11	3/ 66	4.2	0/ 27	* 0.0							0.76	1/ 732	1.4			5/2596	1.9			6/1274	^^ 4.7	1/ 681	1.5	0/ 87	* 0.0	3/ 459	7.7	^^1.84	56/105434	5.3
	12	5/ 83	5.2	NA	NA	1/ 61	1.5					1.04	0/ 281	* 0.0			9/2384	^^ 3.8			2/ 522	3.8			0/ 60	* 0.0	2/ 446	4.0	^^2.50	39/ 93857	4.2
Brookhaven Memorial	11	9/ 116	7.9	0/ 91	* 0.0							1.30	3/1234	2.4			1/1252	0.8			3/1839	1.6							1.13	144/ 90835	15.9
	12	3/ 97	2.8	3/ 109	1.8							0.91	3/1467	2.0			2/1586	1.3			0/1754	* 0.0							0.87	159/ 95003	16.7
Brooklyn Hospital Downtown	11	20/ 104	^^16.6	1/ 33	1.9							^^3.19					2/2294	0.9			0/1364	* 0.0			1/ 90	11.1	5/1243	4.0	0.95	85/ 88325	▲9.6
	12	7/ 80	7.9	3/ 70	2.8	5/ 207	2.1					1.66					5/2188	2.3			1/1551	0.6			0/ 244	* 0.0	3/1234	2.4	1.12	78/ 95259	8.2
Brooks Memorial	11	0/ 22	* 0.0	1/ 93	1.4							0.52							0/ 243	* 0.0									* 0.00	6/ 10976	5.5
	12	0/ 21	* 0.0	0/ 78	* 0.0	0/ 25	* 0.0					* 0.00							0/ 345	* 0.0									* 0.00	1/ 11051	0.9
Buffalo General	11	19/ 140	^^12.4	12/ 699	1.5			5/ 357	1.5	1/ 329	0.3	^^1.46	1/ 956	1.0	0/1556	* 0.0	4/3851	1.0			6/2233	2.7							0.94	126/128362	9.8
	12	22/ 166	^^13.3	4/ 735	0.5	NA	NA	8/ 504	1.6	3/ 457	0.8	1.29	1/ 893	1.1	3/3021	1.0	4/4126	1.0			9/2344	^^ 3.8	4/ 985	4.1					^^1.64	168/161899	10.4
Canton-Potsdam	11	4/ 48	7.4	0/ 69	* 0.0							1.09							0/ 111	* 0.0									* 0.00	5/ 14768	3.4
	12	1/ 38	2.6	1/ 56	1.2	NA	NA					0.73							0/ 96	* 0.0									* 0.00	8/ 14599	5.5
Carthage Area	11	NA/ NA	NA									NA																		3/ 6319	4.7
	12	NA/ NA	NA			NA	NA					NA																		0/ 5618	0.0
Catskill Regional	11	1/ 40	2.6	0/ 22	* 0.0							0.46							0/ 448	* 0.0									* 0.00	9/ 16876	5.3
	12	0/ 31	* 0.0	0/ 24	* 0.0	0/ 68	* 0.0					**0.00							0/ 847	* 0.0									* 0.00	13/ 18564	7.0
Cayuga Medical Cntr	11	10/ 66	^^16.1	0/ 103	* 0.0							^^2.39							2/1310	1.5									1.19	13/ 29650	4.4
	12	2/ 64	2.9	2/ 92	1.9	0/ 21	* 0.0					0.89							1/1061	0.9									0.99	6/ 28850	2.1
Champlain Valley	11	4/ 79	5.4	1/ 112	0.8			1/ 97	1.2	0/ 95	* 0.0	0.84							0/2037	* 0.0									* 0.00	17/ 66820	2.5
	12	5/ 89	5.6	2/ 107	1.6	1/ 65	1.8	3/ 85	3.9	0/ 81	* 0.0	1.34							1/1731	0.6									0.61	33/ 63202	5.2
Chenango Memorial	11	NA/ NA	NA	0/ 45	* 0.0							1.77							0/ 106	* 0.0									* 0.00	2/ 8737	2.3
	12	NA/ NA	NA	0/ 48	* 0.0	NA	NA					* 0.00							0/ 126	* 0.0									* 0.00	4/ 7074	5.7
Claxton-Hepburn	11	0/ 23	* 0.0	0/ 21	* 0.0							* 0.00							1/ 358	2.8									2.17	4/ 23027	1.7
	12	0/ 28	* 0.0	0/ 28	* 0.0	0/ 43	* 0.0					* 0.00							0/ 560	* 0.0									* 0.00	8/ 23892	3.3
Clifton Springs	11	6/ 30	^^24.6	2/ 86	3.1							^^4.11							0/ 285	* 0.0									* 0.00	8/ 11941	6.7
	12	2/ 27	8.0	NA	NA							1.65							0/ 291	* 0.0									* 0.00	9/ 9735	9.2
Columbia Memorial	11	2/ 52	4.2	0/ 80	* 0.0							0.58							1/ 657	1.5									1.18	9/ 31688	2.8
	12	3/ 62	5.2	5/ 77	^^ 5.5	5/ 90	^^ 6.9					^^2.72							2/ 585	3.4									3.59	24/ 31630	▲ 7.6

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		Surgical Site Infections											Blood Stream Infections																*C. difficile*	
		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Community Memorial	11	NA/ NA	NA	0/ 194	* 0.0							* 0.00							0/ 53	* 0.0									* 0.00	1/ 6078	1.6
	12	NA/ NA	NA	0/ 208	* 0.0	NA	NA					* 0.00							0/ 55	* 0.0									* 0.00	2/ 5318	3.8
Coney Island	11	2/ 48	3.5	3/ 76	2.4							1.16	0/ 275	* 0.0			4/1397	2.9			5/ 798	^^ 6.3							^^2.51	97/113554	8.5
	12	1/ 31	3.0	1/ 53	1.0	0/ 36	* 0.0					0.60	0/ 198	* 0.0			0/1314	* 0.0			1/ 693	1.4							0.38	63/ 94841	6.6
Corning Hospital	11	0/ 32	* 0.0	0/ 44	* 0.0							* 0.00							0/ 227	* 0.0									* 0.00	7/ 15099	4.6
	12	0/ 22	* 0.0	0/ 52	* 0.0	0/ 27	* 0.0					* 0.00							0/ 287	* 0.0									* 0.00	16/ 15386	10.4
Cortland Reg Med	11	1/ 32	3.1	0/ 27	* 0.0							0.53					2/ 802	2.5											1.67	15/ 21917	6.8
	12	0/ 25	* 0.0	0/ 25	* 0.0	1/ 54	2.5					0.43					0/ 501	* 0.0											* 0.00	9/ 20944	4.3
Crouse Hospital	11	7/ 243	2.8	1/ 264	0.4							0.53							4/3117	1.3							6/3443	1.8	0.99	58/ 87241	6.6
	12	7/ 259	2.7	3/ 259	1.4	9/ 550	2.0					0.89							1/2967	0.3							6/3038	2.0	1.08	59/ 83769	7.0
DeGraff Memorial	11	2/ 37	5.8	0/ 30	* 0.0							0.98							1/ 319	3.1									2.44	25/ 17336	14.4
	12	2/ 35	6.1	0/ 36	* 0.0							1.09							0/ 449	* 0.0									* 0.00	24/ 16158	14.9
Eastern Long Island	11	NA/ NA	NA	NA	NA							* 0.00							0/ 83	* 0.0									* 0.00	0/ 19605	0.0
	12	NA/ NA	NA	NA	NA							1.73							0/ 70	* 0.0									* 0.00	4/ 19005	2.1
Ellis Hospital	11	7/ 205	3.8	2/ 260	0.6			0/ 207	** 0.0	0/ 196	* 0.0	**0.51							3/4949	0.6									0.47	43/ 96003	4.5
	12	8/ 193	4.3	0/ 225	* 0.0	2/ 231	1.1	4/ 233	2.0	1/ 224	0.6	0.77							9/5624	1.6									1.68	49/ 97289	5.0
Elmhurst	11	2/ 55	3.6	1/ 54	1.2							0.82	0/ 300	* 0.0			3/ 921	3.3			4/1229	3.3					6/ 630	9.5	^^2.07	50/141003	3.5
	12	4/ 44	9.0	1/ 67	0.8	2/ 94	2.0					1.40	0/ 369	* 0.0			5/1132	^^ 4.4			6/ 956	^^ 6.3					0/ 352	* 0.0	^^2.51	65/ 87256	▲7.4
Erie Medical Center	11	2/ 66	2.9	0/ 154	* 0.0			4/ 90	4.5	0/ 66	* 0.0	0.79	2/ 549	3.6	0/ 643	* 0.0	3/2890	1.0											0.88	108/ 70369	15.3
	12	5/ 74	6.6	1/ 182	0.4	NA	NA	0/ 75	* 0.0	1/ 53	2.3	0.94			1/ 769	1.3	7/2474	2.8											2.18	90/ 77584	11.6
FF Thompson	11	4/ 32	13.9	2/ 136	2.0							2.31							1/ 481	2.1									1.62	12/ 34387	3.5
	12	2/ 20	10.4	1/ 139	0.9	0/ 28	* 0.0					1.22							0/ 499	* 0.0									* 0.00	14/ 25728	5.4
Faxton St. Lukes	11	4/ 94	3.9	3/ 124	1.7							1.00	2/2580	0.8					0/1898	* 0.0									0.33	105/ 74570	14.1
	12	5/ 139	3.3	2/ 127	1.1	4/ 83	5.3					1.10	7/2402	2.9					3/1828	1.6									^^2.12	145/ 74304	19.5
Flushing Hospital	11	4/ 72	5.5	1/ 37	2.3							1.21	3/ 516	5.8			7/1323	^^ 5.3			2/ 629	3.2					3/1407	2.3	^^2.28	93/ 74073	12.6
	12	5/ 58	8.5	0/ 29	* 0.0	4/ 188	2.6					1.64	2/ 483	4.1			4/1326	3.0			0/ 497	* 0.0					1/1131	1.1	1.38	62/ 70425	8.8
Forest Hills Hospital	11	5/ 134	3.7	1/ 120	0.6							0.70							4/3156	1.3									0.99	102/ 80024	12.7
	12	4/ 103	3.3	0/ 110	* 0.0	0/ 131	* 0.0					0.43							1/2578	0.4									0.41	89/ 73730	12.1

Hospital SSI and CLABSI rates were compared to the state average. **Significantly lower than state average. ^^Signif. higher than state average. *Zero infections, not signif. NA: Fewer than 20 procedures or 50 line days.
Hospital *C. difficile* rates were compared to hospital rates in previous year if there was no change in laboratory testing methods. ▲Signif. increased. ▼Signif. decreased.

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		Surgical Site Infections											Blood Stream Infections																				*C. difficile*	
		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Franklin	11	2/ 81	2.4	1/ 95	1.0							0.57							3/2393	1.3									0.98	58/ 63893	9.1
	12	1/ 71	1.5	2/ 125	1.2	NA	NA					0.60							3/2506	1.2									1.26	51/ 61615	8.3
Geneva General	11	3/ 70	4.0	1/ 86	0.9							0.81							1/ 614	1.6									1.27	15/ 16868	8.9
	12	1/ 53	1.7	0/ 129	* 0.0	0/ 35	* 0.0					0.23							0/ 664	* 0.0									* 0.00	16/ 17691	9.0
Glen Cove Hospital	11	1/ 41	2.4	1/ 486	0.2							0.29							0/1543	* 0.0									* 0.00	32/ 63000	5.1
	12	1/ 34	2.6	5/ 458	1.3							1.05							0/1449	* 0.0									* 0.00	29/ 59663	4.9
Glens Falls	11	4/ 164	3.1	3/ 181	1.6							0.83							0/1840	* 0.0									* 0.00	16/ 73490	2.2
	12	5/ 184	3.4	6/ 154	^^ 3.8	2/ 58	3.8					1.42							1/2114	0.5									0.50	37/ 81488	4.5
Good Samaritan Suffern	11	1/ 82	1.1	1/ 68	1.8			3/ 147	2.0	3/ 138	1.9	0.88			0/ 913	* 0.0	2/1401	1.4			0/ 702	* 0.0							0.51	38/ 59930	▼ 6.3
	12	1/ 90	1.0	2/ 111	1.9	0/ 37	* 0.0	2/ 133	1.5	1/ 127	0.7	0.62			0/ 622	* 0.0	3/1085	2.8			2/ 753	2.7							1.84	36/ 59753	6.0
Good Samaritan W Islip	11	13/ 229	6.0	4/ 117	2.5							1.36							6/5022	1.2					1/ 216	4.6	0/ 490	* 0.0	0.85	99/130118	7.6
	12	10/ 196	5.6	2/ 115	1.0	4/ 302	1.5					1.09							3/4467	0.7					0/ 109	* 0.0	1/ 509	1.6	0.66	194/122721	15.8
Harlem Hospital	11	1/ 55	1.6	NA	NA							0.31	0/ 244	* 0.0					3/1664	1.8					0/ 127	* 0.0	0/ 633	* 0.0	0.70	17/ 65498	2.6
	12	5/ 48	10.2	NA	NA	0/ 55	* 0.0					1.49	0/ 154	* 0.0					0/1090	* 0.0					NA	NA	0/ 265	* 0.0	* 0.00	23/ 68437	3.4
Highland Hospital	11	5/ 174	2.9	5/ 766	0.7							0.60							3/2801	1.1									0.83	85/ 74993	11.3
	12	5/ 189	2.9	3/ 742	0.5	15/ 690	2.4					0.93							6/2755	2.2									2.29	75/ 76234	9.8
Hospital for Special Surgery	11			11/4068	** 0.4							**0.38																		20/ 52664	3.8
	12			12/4336	** 0.5							**0.46																		31/ 55144	5.6
Hudson Valley	11	4/ 50	8.3	0/ 120	* 0.0							0.91							1/1537	0.7									0.51	5/ 34220	▼1.5
	12	1/ 57	1.6	0/ 135	* 0.0	0/ 27	* 0.0					0.19							0/1359	* 0.0									* 0.00	27/ 34730	▲7.8
Huntington	11	5/ 130	4.0	5/ 214	2.4							1.16	2/ 709	2.8					0/1087	* 0.0									0.83	70/ 80596	8.7
	12	6/ 93	5.6	2/ 217	0.9	0/ 199	* 0.0					0.85	2/ 516	3.9					0/ 977	* 0.0									1.27	43/ 76362	▼5.6
Intercommunity Newfane	11	NA/ NA	NA	NA	NA							NA							0/ 69	* 0.0									* 0.00	8/ 9868	8.1
	12	NA/ NA	NA	NA	NA	NA	NA					NA							0/ 314	* 0.0									* 0.00	3/ 8644	3.5
Interfaith Medical	11	4/ 39	9.1	NA	NA							1.76							9/2237	^^ 4.0									^^3.13	15/ 92127	1.6
	12	2/ 24	7.7	NA	NA	0/ 21	* 0.0					1.15							2/2236	0.9									0.94	25/ 87975	2.8
Ira Davenport	11	NA/ NA	NA									NA					NA	NA											* NA	0/ 2405	0.0
	12	NA/ NA	NA									NA					NA	NA											* NA	2/ 2390	8.4

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
JT Mather	11	6/ 125	5.2	2/ 68	3.0							1.24	1/ 952	1.1					1/1444	0.7									0.62	56/ 61757	9.1
	12	2/ 73	2.9	0/ 71	* 0.0	2/ 50	4.3					0.83	3/ 781	3.8					1/1307	0.8									1.81	34/ 60589	▼5.6
Jacobi Medical	11	2/ 41	4.4	0/ 47	* 0.0							0.67	0/ 591	* 0.0			3/1673	1.8			0/ 780	* 0.0			0/ 356	* 0.0	10/1554	^^ 6.4	1.62	63/135000	4.7
	12	2/ 30	5.8	2/ 62	1.6	3/ 78	2.6					1.48	1/ 650	1.5			1/1378	0.7			0/ 396	* 0.0			0/ 170	* 0.0	3/1583	1.6	0.91	100/135207	7.4
Jamaica Hospital	11	2/ 51	3.7	3/ 51	3.2							1.33					6/2203	2.7			9/1712	^^ 5.3					4/ 630	7.2	^^2.72	59/ 88386	6.7
	12	2/ 44	4.4	1/ 40	1.7	2/ 107	1.9					1.14					4/2257	1.8			9/1549	^^ 5.8					4/ 553	6.5	^^2.81	42/ 83795	5.0
Jones Memorial	11	NA/ NA	NA									NA							0/ 276	* 0.0									* 0.00	3/ 7947	3.8
	12	NA/ NA	NA			NA	NA					* 0.00							0/ 373	* 0.0									* 0.00	3/ 6723	4.5
Kenmore Mercy	11	6/ 120	5.6	5/ 383	2.0							1.35							1/1472	0.7									0.53	36/ 36531	9.9
	12	7/ 136	5.5	2/ 389	0.8	NA	NA					1.07							1/1385	0.7									0.76	37/ 38356	9.6
Kings County	11	5/ 63	6.8	NA	NA							1.36	4/1159	3.5			5/1376	3.6			5/1222	4.1	5/1089	^^ 4.6	0/ 99	* 0.0	8/1168	6.4	^^2.16	23/101877	2.3
	12	2/ 54	3.1	1/ 59	0.9	5/ 135	3.0					1.18	3/ 994	3.0			0/1125	* 0.0			0/ 956	* 0.0	2/ 754	2.7	1/ 99	10.1	3/ 805	3.2	1.10	29/107924	2.7
Kingsbrook Jewish	11	0/ 39	* 0.0	NA	NA							* 0.00	1/1100	0.9					1/1597	0.6									0.55	19/ 53545	▼3.5
	12	NA/ NA	NA	0/ 22	* 0.0	1/ 45	2.3					0.49	5/ 953	^^ 5.2					4/1433	2.8									^^3.54	26/ 52637	4.9
Kingston Hospital	11	0/ 84	** 0.0	0/ 53	* 0.0							**0.00							1/1847	0.5									0.42	48/ 45667	▲10.5
	12	0/ 72	** 0.0	1/ 42	1.8	NA	NA					0.23							0/1609	* 0.0									* 0.00	20/ 40485	▼4.9
Lawrence	11	5/ 89	6.7	0/ 101	* 0.0							1.03					11/1923	^^ 5.7											^^3.82	59/ 41604	14.2
	12	5/ 82	6.2	1/ 126	0.8	1/ 40	3.3					1.28					3/2306	1.3											1.08	56/ 36305	15.4
Lenox Hill	11	6/ 138	4.7	5/ 596	0.9			6/ 321	1.9	1/ 239	0.4	0.87	3/1391	2.2	2/1826	1.1			7/2833	2.5	6/1977	3.0					5/ 960	5.4	^^1.64	82/133478	6.1
	12	3/ 145	2.2	8/ 659	1.2	4/ 339	1.2	10/ 295	3.4	1/ 229	0.4	1.00	0/1041	* 0.0	1/2069	0.5			6/2643	2.3	0/1711	* 0.0					2/ 764	3.0	0.91	81/135557	6.0
Lewis County	11	0/ 22	* 0.0	NA	NA							* 0.00							0/ 129	* 0.0									* 0.00	1/ 6033	1.7
	12	NA/ NA	NA	NA	NA	0/ 20	* 0.0					* 0.00							0/ 128	* 0.0									* 0.00	1/ 5681	1.8
Lincoln Medical	11	2/ 69	2.2	NA	NA							0.43	0/ 951	* 0.0			0/1689	* 0.0			1/ 992	1.0			NA	NA	1/ 894	0.8	**0.24	7/ 92884	▼0.8
	12	0/ 32	* 0.0	1/ 25	2.9	1/ 66	1.2					0.60	1/ 755	1.3			0/1490	* 0.0			3/1154	2.6			NA	NA	6/1166	4.1	1.29	18/ 92317	▲1.9
Lockport Memorial	11	0/ 26	* 0.0	NA	NA							* 0.00							0/ 244	* 0.0									* 0.00	12/ 18479	6.5
	12	1/ 30	3.3	NA	NA	0/ 52	* 0.0					0.43							1/ 436	2.3									2.41	17/ 17749	9.6
Long Beach	11	NA/ NA	NA	NA	NA							0.81							1/ 529	1.9									1.47	46/ 19793	23.2
	12	NA/ NA	NA	NA	NA							NA							0/ 384	* 0.0									* 0.00	26/ 12402	21.0

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Long Island Jewish	11	9/ 326	2.6	6/ 284	1.5			8/ 217	3.3	0/ 177	* 0.0	0.83	0/ 669	* 0.0	1/1306	0.8	3/2318	1.3			0/2180	** 0.0			3/2540	1.2	4/4607	0.9	**0.49	245/197578	12.4
	12	10/ 329	2.7	8/ 295	^^ 2.5	6/ 403	1.3	4/ 251	1.6	4/ 235	^^ 2.1	0.95	1/ 647	1.5	0/1377	* 0.0	4/2183	1.8			0/2009	* 0.0			2/3034	0.7	5/4216	1.2	0.66	213/204730	10.4
Lutheran Medical	11	5/ 152	3.2	3/ 151	1.7							0.81					7/2328	3.0			1/1892	0.5							1.31	103/100266	10.3
	12	6/ 165	3.3	3/ 148	1.5	0/ 166	* 0.0					0.70					4/2053	1.9			0/2253	* 0.0							0.79	130/112217	11.6
Maimonides	11	3/ 93	3.2	4/ 152	1.7			3/ 318	0.8	1/ 300	0.3	0.66	2/ 557	3.6	1/2250	0.4	1/3525	0.3			2/1512	1.3			0/ 341	* 0.0	4/2028	1.8	0.67	229/203207	11.3
	12	4/ 79	5.5	2/ 133	0.8	2/ 248	0.8	6/ 312	1.8	3/ 291	1.1	0.94	0/ 881	* 0.0	0/2285	* 0.0	0/2831	** 0.0			1/1537	0.7			1/ 625	1.6	0/2432	** 0.0	**0.16	159/202035	▼7.9
Mary Imogene Bassett	11	4/ 96	3.7	2/ 217	0.7			0/ 82	* 0.0	0/ 71	* 0.0	0.57							2/2848	0.7									0.55	24/ 49616	4.8
	12	8/ 77	9.9	5/ 216	1.4	0/ 66	* 0.0	1/ 109	1.0	1/ 101	0.9	1.36							3/2278	1.3									1.38	35/ 48987	7.1
Massena Memorial	11	NA/ NA	NA	NA	NA							NA							NA	NA									* NA	10/ 10302	9.7
	12	NA/ NA	NA	NA	NA	0/ 26	* 0.0					* 0.00							NA	NA									* NA	11/ 10210	10.8
Medina Memorial	11	NA/ NA	NA	NA	NA							1.84							1/ 161	6.2									4.84	11/ 24498	4.5
	12	NA/ NA	NA	NA	NA							NA							0/ 165	* 0.0									* 0.00	6/ 19276	3.1
Memorial Sloan Kettering	11	32/ 547	5.1	2/ 89	1.1							1.02							10/5239	1.9									1.49	241/136227	17.7
	12	42/ 575	^^ 6.7	5/ 101	2.2	7/ 614	** 0.7					1.17																		265/144473	18.3
Mercy Buffalo	11	20/ 306	7.5	1/ 179	0.4			9/ 446	2.4	3/ 403	0.9	1.31	5/1373	3.6	0/1289	* 0.0			6/2337	2.6									1.80	77/ 91552	8.4
	12	15/ 282	6.1	1/ 151	0.5	3/ 279	1.6	9/ 361	2.8	3/ 321	1.3	1.28	6/2050	2.9	0/1513	* 0.0			4/2722	1.5									1.55	86/ 94311	9.1
Mercy Medical	11	4/ 94	3.8	1/ 107	1.3							0.83							1/1556	0.6							0/ 447	* 0.0	0.36	39/ 43547	9.0
	12	8/ 83	9.4	2/ 61	3.5	3/ 101	4.0					^^2.29							0/1462	* 0.0							0/ 317	* 0.0	* 0.00	67/ 40382	16.6
Metropolitan	11	NA/ NA	NA	1/ 24	3.8							1.61					3/1242	2.4			0/ 273	* 0.0					1/ 471	2.2	0.94	18/ 77815	2.3
	12	2/ 32	5.5	0/ 27	* 0.0	2/ 49	4.3					1.51					0/1031	* 0.0			0/ 406	* 0.0					2/ 304	6.9	0.73	6/ 81964	▼0.7
Millard Fillmore Suburban	11	8/ 154	5.7	5/ 354	1.5							1.20							7/3275	2.1									1.66	84/ 76752	10.9
	12	21/ 301	6.8	3/ 461	0.8	8/ 619	1.6					1.22							2/2516	0.8									0.83	87/ 73167	11.9
Montefiore-Einstein	11	6/ 96	5.4	1/ 181	0.5			8/ 256	3.2	2/ 203	1.0	1.21			1/1789	0.6			7/2529	2.8							5/2170	2.2	1.44	125/120746	▲10.4
	12	6/ 86	6.3	0/ 219	** 0.0	10/ 253	2.6	9/ 182	4.3	0/ 113	* 0.0	1.34			1/1991	0.5	4/2317	1.7									4/2313	1.6	1.18	134/122153	11.0
Montefiore-Moses	11	7/ 142	4.7	3/ 149	1.4			5/ 229	2.0	0/ 200	* 0.0	0.95	0/1217	* 0.0	3/2835	1.1	1/4191	** 0.2			4/2344	1.7			4/2373	1.7			0.63	335/260082	12.9
	12	6/ 176	3.3	0/ 137	* 0.0	6/ 167	3.4	13/ 248	^^ 4.5	1/ 226	0.5	1.28	1/1363	0.7	0/2914	* 0.0	1/4075	0.2			1/2420	0.4			7/2593	2.7			0.59	323/254200	12.7
Montifiore North	11	4/ 27	14.2	0/ 38	* 0.0							2.07							0/2955	** 0.0							4/ 628	6.3	0.61	70/ 59746	11.7
	12	1/ 23	4.1	1/ 31	2.6	3/ 166	1.8					1.19							0/3412	** 0.0							1/ 573	1.8	0.19	58/ 60434	9.6

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Mount Sinai	11	2/ 158	** 1.3	10/ 318	2.2			25/ 467	^^ 5.3	5/ 467	1.0	^^1.66	4/1947	2.1	5/3789	1.3	2/3224	0.6			4/3952	1.0	0/1991	* 0.0	8/2441	3.3	10/3255	3.1	1.09	248/256328	9.7
	12	30/ 705	4.4	10/ 356	1.8	2/ 453	** 0.4	17/ 486	^^ 3.5	1/ 486	0.2	1.04	3/2130	1.4	5/3619	1.4	1/3457	0.3			1/3890	0.3	4/2098	1.9	4/2113	1.9	8/1774	^^ 4.1	1.09	273/262304	10.4
Mount Sinai Queens	11	8/ 84	9.6	2/ 61	2.5							1.97							1/1587	0.6									0.49	81/ 54674	14.8
	12	3/ 68	3.9	3/ 67	2.8	1/ 48	2.4					1.33							2/1634	1.2									1.28	68/ 54458	12.5
Mount St. Marys	11	2/ 58	3.3	3/ 91	2.9							1.19					0/ 396	* 0.0											* 0.00	13/ 25846	5.0
	12	5/ 71	7.2	0/ 97	* 0.0	4/ 31	^^12.4					1.70					0/ 476	* 0.0											* 0.00	6/ 24309	2.5
Mount Vernon	11	NA/ NA	NA	NA	NA							* 0.00							0/ 304	* 0.0									* 0.00	17/ 22893	7.4
	12	NA/ NA	NA	NA	NA	1/ 45	2.8					1.39							0/ 424	* 0.0									* 0.00	20/ 23735	8.4
NY Community Brooklyn	11	0/ 36	* 0.0	0/ 48	* 0.0							* 0.00							0/ 616	* 0.0									* 0.00	43/ 44736	9.6
	12	0/ 36	* 0.0	0/ 79	* 0.0	NA	NA					**0.00							1/ 603	1.7									1.74	34/ 45906	7.4
NY Downtown	11	3/ 52	5.1	1/ 58	1.0							0.99							1/2997	0.3									0.26	39/ 41526	9.4
	12	3/ 32	7.2	2/ 44	2.8	2/ 126	1.3					1.39							4/2039	2.0									2.06	21/ 40054	▼5.2
NY Medical Center Queens	11	28/ 254	^^11.7	5/ 265	1.5			0/ 113	* 0.0	0/ 107	* 0.0	^^1.80	0/1258	* 0.0	0/1068	* 0.0	0/2070	** 0.0			1/1610	0.6			0/ 52	* 0.0	1/ 406	2.3	**0.22	295/158255	18.6
	12	23/ 256	^^ 8.9	5/ 241	1.5	3/ 167	1.4	1/ 119	0.9	0/ 116	* 0.0	^^1.47	1/ 884	1.1	0/1027	* 0.0	0/2298	* 0.0			1/1807	0.6			0/ 92	* 0.0	1/ 235	3.7	0.39	322/174421	18.5
NY Methodist	11	5/ 131	3.7	3/ 169	1.1			5/ 106	4.7	2/ 104	2.2	1.20	1/ 533	1.9	3/1046	2.9			7/4554	1.5					0/ 130	* 0.0	4/1153	2.9	1.35	196/171083	11.5
	12	6/ 152	4.2	4/ 169	1.6	4/ 429	0.9	3/ 101	3.0	0/ 97	* 0.0	0.91	0/ 594	* 0.0	2/1486	1.3			4/4581	0.9					0/ 82	* 0.0	4/1477	2.5	0.95	150/174797	▼8.6
NYP- Allen	11	4/ 43	8.5	2/ 41	3.7							2.03							3/ 727	4.1									3.21	37/ 52016	7.1
	12	1/ 23	4.1	1/ 30	2.7	NA	NA					1.19							1/ 883	1.1									1.19	25/ 49984	5.0
NYP- Columbia	11	12/ 202	5.7	3/ 272	1.2			12/ 618	1.9	2/ 493	0.4	1.00	6/4475	1.3	11/7138	1.5	10/4604	2.2			3/3216	0.9	6/3145	1.9					1.27	280/202697	13.8
	12	16/ 183	^^ 9.0	4/ 329	1.1	3/ 234	1.0	13/ 625	2.0	0/ 523	* 0.0	1.11	5/4837	1.0	13/7631	^^ 1.7	5/4399	1.1			0/3329	** 0.0	2/2843	0.7					0.97	249/201471	12.4
NYP- Morgan Stanley	11	0/ 30	* 0.0									* 0.00													18/6177	2.9	11/7413	1.5	1.10	29/ 56325	5.1
	12	0/ 28	* 0.0			NA	NA					* 0.00													14/5331	2.6	6/6254	1.0	1.14	22/ 55857	3.9
NYP- Weill Cornell	11	20/ 603	3.5	4/ 112	2.1			2/ 314	0.7	2/ 289	0.8	0.76	2/3550	0.6	6/4218	1.4	9/3602	2.5			7/3272	2.1	3/2111	1.4	3/2720	1.1	6/3855	1.5	1.04	232/268341	8.6
	12	17/ 579	3.3	4/ 119	2.0	6/ 247	1.9	6/ 306	2.2	2/ 282	0.9	0.94	2/3210	0.6	6/4309	1.4	3/3402	0.9			8/3078	2.6	6/1775	3.4	1/2776	0.4	0/3740	** 0.0	0.95	274/246630	11.1
NYU Joint Disease	11			10/1117	0.9							0.76																		21/ 31478	6.7
	12			9/1118	1.1							1.05																		5/ 30019	▼1.7
NYU Medical Center	11	10/ 325	2.9	5/ 108	2.6			7/ 214	3.6	2/ 198	0.9	0.97			2/1316	1.5	7/3877	1.8			4/4057	1.0	2/ 824	2.4	4/1434	2.8	9/3045	3.1	1.27	214/194367	11.0
	12	11/ 251	4.3	1/ 108	0.5	3/ 226	1.1	3/ 182	1.8	1/ 143	0.9	0.85			0/1082	* 0.0	5/3027	1.7			8/2895	^^ 2.8	0/ 497	* 0.0	4/1773	2.3	2/1706	1.3	1.36	137/130711	10.5

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Nassau University	11	2/ 35	5.9	0/ 60	* 0.0							0.78	1/ 670	1.5			0/1313	* 0.0			1/ 643	1.6			NA	NA	3/ 623	4.3	1.09	10/ 71006	1.4
	12	2/ 37	5.1	5/ 52	^^ 6.3	3/ 109	2.8					^^2.31	0/ 498	* 0.0			4/1450	2.8			0/ 481	* 0.0			NA	NA	0/ 754	* 0.0	0.85	8/ 68795	1.2
Nathan Littauer	11	NA/ NA	NA	0/ 32	* 0.0							* 0.00							0/ 147	* 0.0									* 0.00	10/ 15207	6.6
	12	NA/ NA	NA	1/ 56	1.9	0/ 22	* 0.0					0.73							0/ 191	* 0.0									* 0.00	11/ 13313	8.3
Newark Wayne	11	0/ 35	* 0.0	2/ 57	4.9							0.99							3/ 963	3.1									2.43	20/ 19001	10.5
	12	3/ 42	7.4	1/ 62	2.6	NA	NA					1.68							3/1160	2.6									2.71	18/ 18597	9.7
Niagara Falls	11	1/ 24	4.1	0/ 24	* 0.0							0.66							0/ 630	* 0.0									* 0.00	6/ 31860	▼1.9
	12	0/ 26	* 0.0	0/ 23	* 0.0	3/ 51	^^ 8.0					1.42							2/ 750	2.7									2.80	11/ 31704	3.5
North Central Bronx	11	NA/ NA	NA									NA							2/ 566	3.5									2.75	9/ 50837	1.8
	12	NA/ NA	NA			NA	NA					1.08							1/ 356	2.8									2.95	13/ 49980	2.6
North Shore	11	22/ 485	4.1	4/ 377	0.9			14/ 466	3.1	5/ 403	1.2	1.03	2/ 950	2.1	5/2776	1.8	6/3648	1.6			8/2863	2.8	3/1850	1.6	1/ 329	3.0	5/2692	1.9	1.42	337/267675	12.6
	12	18/ 465	3.4	3/ 383	0.7	12/ 565	1.9	19/ 409	^^ 4.5	4/ 349	1.1	1.14	1/ 848	1.2	5/2834	1.8	6/3384	1.8			4/2753	1.5	1/1861	0.5	0/ 99	* 0.0	2/2086	0.9	1.17	252/254962	9.9
Northern Dutchess	11	NA/ NA	NA	1/ 200	0.6							0.37							0/ 365	* 0.0									* 0.00	8/ 15144	5.3
	12	NA/ NA	NA	3/ 257	1.4	0/ 52	* 0.0					1.05							0/ 294	* 0.0									* 0.00	9/ 14499	6.2
Northern Westchester	11	6/ 129	5.8	2/ 188	1.2							1.14							0/1153	* 0.0							NA	NA	* 0.00	13/ 44723	2.9
	12	7/ 135	5.7	1/ 172	0.6	3/ 205	2.2					1.15							0/1022	* 0.0							0/ 131	* 0.0	* 0.00	24/ 42762	5.6
Noyes Memorial	11	1/ 21	4.7	0/ 59	* 0.0							0.59							1/ 217	4.6									3.59	3/ 8768	3.4
	12	1/ 20	4.9	0/ 34	* 0.0	0/ 39	* 0.0					0.51							2/ 321	6.2									6.54	2/ 6631	3.0
Nyack Hospital	11	2/ 104	2.1	0/ 121	* 0.0							0.33					1/1459	0.7			3/1032	2.9							1.11	58/ 64885	8.9
	12	3/ 78	4.0	2/ 134	1.4	0/ 61	* 0.0					0.88					4/1635	2.4			2/ 797	2.5							2.08	54/ 58752	9.2
Olean General	11	4/ 67	6.0	1/ 66	1.3							1.20							0/ 865	* 0.0									* 0.00	15/ 35382	4.2
	12	5/ 69	7.3	0/ 69	* 0.0	2/ 94	2.5					1.35							0/ 770	* 0.0									* 0.00	25/ 30271	8.3
Oneida Healthcare	11	2/ 75	3.2	0/ 26	* 0.0							0.61							0/ 404	* 0.0									* 0.00	7/ 13167	5.3
	12	1/ 63	1.8	0/ 21	* 0.0	3/ 52	^^ 9.1					1.25							0/ 296	* 0.0									* 0.00	10/ 12383	8.1
Orange Regional Goshen&Middletown	11	6/ 138	4.4	4/ 203	2.0							1.11							8/3095	2.6									2.01	79/ 82761	▼9.5
	12	6/ 190	3.4	2/ 285	0.8	1/ 128	1.0					0.74							0/3199	** 0.0									**0.00	89/ 77330	11.5
Oswego Hospital	11	1/ 33	2.7	NA	NA							0.47					0/ 511	* 0.0											* 0.00	12/ 22603	5.3
	12	0/ 32	* 0.0	NA	NA	3/ 34	^^ 9.1					1.21					0/ 485	* 0.0											* 0.00	8/ 19698	4.1

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Our Lady of Lourdes	11	6/ 134	4.5	2/ 261	0.6							0.77							2/1659	1.2									0.94	13/ 50452	2.6
	12	5/ 122	4.0	1/ 258	0.4	0/ 42	* 0.0					0.69							0/1619	* 0.0									* 0.00	28/ 46564	6.0
Peconic Bay Medical	11	0/ 58	* 0.0	3/ 211	1.3							0.54							0/ 517	* 0.0									* 0.00	30/ 32396	9.3
	12	0/ 61	* 0.0	3/ 302	0.8	0/ 53	* 0.0					0.38							0/ 437	* 0.0									* 0.00	54/ 31850	▲17.0
Phelps Memorial	11	1/ 68	1.8	1/ 234	0.6							0.42							1/ 722	1.4									1.08	40/ 62289	6.4
	12	1/ 58	2.4	1/ 257	0.6	0/ 55	* 0.0					0.46							0/ 722	* 0.0									* 0.00	37/ 59177	6.3
Plainview Hospital	11	9/ 148	5.9	4/ 137	2.5							1.39							4/3260	1.2									0.96	91/ 63591	14.3
	12	7/ 115	5.3	3/ 149	1.4	1/ 100	1.2					1.15							4/2725	1.5									1.54	65/ 57381	11.3
Putnam Hospital	11	0/ 109	** 0.0	0/ 213	* 0.0							**0.00							0/ 646	* 0.0									* 0.00	23/ 37352	6.2
	12	2/ 104	2.7	0/ 234	* 0.0	1/ 72	2.1					0.49							3/ 501	^^ 6.0									^^6.28	29/ 34218	8.5
Queens Hospital	11	1/ 36	2.5									0.51							2/1320	1.5							3/ 858	2.6	1.15	27/ 51891	5.2
	12	4/ 51	6.9			0/ 128	* 0.0					0.75							2/1445	1.4							3/ 527	5.2	1.76	15/ 54921	2.7
Richmond University	11	5/ 92	5.1	0/ 91	* 0.0							0.82	1/ 605	1.7			2/2378	0.8			0/1365	* 0.0			NA	NA	3/ 927	3.0	0.69	71/ 76604	9.3
	12	1/ 98	1.1	0/ 75	* 0.0	0/ 108	* 0.0					**0.14					0/2861	** 0.0			3/1487	2.0			NA	NA	3/1276	2.0	0.67	63/104041	▼6.1
Rochester General	11	15/ 289	6.3	1/ 368	0.4			2/ 473	** 0.5	1/ 454	0.2	0.73			3/2685	1.1	0/3202	** 0.0			1/1953	0.5							0.40	194/181480	10.7
	12	12/ 317	4.5	7/ 393	2.4	17/ 468	^^ 5.4	5/ 449	1.2	2/ 445	0.6	^^1.39			1/2602	0.4	2/3462	0.6			0/2112	* 0.0							**0.34	144/168483	▼8.5
Rome Memorial	11	2/ 44	4.7	0/ 34	* 0.0							0.79							0/ 919	* 0.0									* 0.00	17/ 17878	9.5
	12	0/ 48	* 0.0	1/ 40	2.2	0/ 29	* 0.0					0.32							0/ 670	* 0.0									* 0.00	24/ 18059	13.3
Roswell Park	11	9/ 143	6.2									1.25							2/1932	1.0									0.81	19/ 35486	5.4
	12	8/ 123	6.2			7/ 282	2.3					1.39							5/2257	2.2									2.32	12/ 39037	3.1
Samaritan- Troy	11	4/ 80	5.6	0/ 58	* 0.0							0.91							2/ 949	2.1									1.64	14/ 46342	3.0
	12	6/ 71	8.5	1/ 51	1.8	0/ 130	* 0.0					1.32							1/1296	0.8									0.81	12/ 46015	2.6
Samaritan- Watertown	11	2/ 77	2.6	0/ 122	* 0.0							0.38							1/ 977	1.0									0.80	11/ 27697	4.0
	12	3/ 76	3.7	1/ 125	0.8	1/ 62	1.9					0.86							0/ 945	* 0.0									* 0.00	12/ 28720	4.2
Saratoga Hospital	11	6/ 98	7.0	2/ 239	0.9							1.18							2/1215	1.6									1.28	6/ 48339	▼1.2
	12	4/ 114	4.0	8/ 244	^^ 4.0	0/ 49	* 0.0					1.67							2/1501	1.3									1.40	14/ 48194	2.9
Seton Health	11	6/ 64	9.4	3/ 94	2.2							1.90							1/ 927	1.1									0.84	24/ 35315	6.8
	12	2/ 57	3.2	1/ 83	1.1	0/ 42	* 0.0					0.68							0/ 945	* 0.0									* 0.00	12/ 31242	3.8

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		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
Sisters of Charity	11	1/ 107	1.0	2/ 170	1.4							0.44							3/1915	1.6							2/1113	1.9	1.02	16/ 49153	3.3
	12	4/ 87	4.8	1/ 152	0.9	1/ 309	0.4					0.64							0/1581	* 0.0							6/1204	4.8	1.27	34/ 49251	6.9
Sound Shore Medical	11	6/ 52	11.1	3/ 144	1.9							2.01							1/1282	0.8							0/ 78	* 0.0	0.58	57/ 44724	12.7
	12	1/ 23	4.5	3/ 161	1.7	0/ 72	* 0.0					0.99							1/1059	0.9							0/ 52	* 0.0	0.89	45/ 38849	11.6
South Nassau Comm.	11	16/ 169	^^ 9.0	11/ 342	^^ 2.5							^^1.93							10/2821	^^ 3.5									^^2.76	117/ 98224	▲11.9
	12	15/ 156	^^ 8.5	3/ 329	0.8	3/ 197	1.6					1.42							3/2994	1.0									1.05	157/ 95925	16.4
Southampton	11	2/ 34	6.2	NA	NA							1.13					2/ 996	2.0											1.34	23/ 19403	11.9
	12	2/ 44	3.6	NA	NA	0/ 41	* 0.0					0.61					0/ 750	* 0.0											* 0.00	25/ 20602	12.1
Southside	11	7/ 137	5.3	1/ 160	0.6			7/ 189	3.2	0/ 128	* 0.0	1.10			1/1308	0.8			2/2485	0.8									0.68	50/ 81453	6.1
	12	7/ 128	5.4	1/ 183	0.5	1/ 173	0.7	2/ 170	1.1	1/ 109	0.9	0.85			1/1586	0.6			1/2515	0.4									0.53	73/ 85927	8.5
St Anthony	11	NA/ NA	NA	0/ 31	* 0.0							* 0.00							0/ 493	* 0.0									* 0.00	7/ 11824	▼5.9
	12	NA/ NA	NA	0/ 46	* 0.0	0/ 71	* 0.0					* 0.00							0/ 530	* 0.0									* 0.00	4/ 10870	3.7
St Barnabas	11	4/ 64	5.7	NA	NA							1.04							2/1541	1.3							1/ 386	2.6	0.82	89/ 93722	9.5
	12	2/ 36	4.7	NA	NA	0/ 51	* 0.0					0.57							1/1507	0.7							2/ 635	3.4	0.86	38/ 95871	▼4.0
St Catherine Siena	11	4/ 53	7.7	1/ 84	1.1							1.38	2/1444	1.4					4/1645	2.4									1.44	84/ 84673	9.9
	12	11/ 116	^^ 9.2	6/ 106	^^ 4.5	1/ 95	1.7					^^2.30	0/1062	* 0.0					1/1234	0.8									0.40	81/ 77698	10.4
St Charles Hospital	11	3/ 62	4.3	4/ 182	2.9							1.38					0/1498	* 0.0											* 0.00	6/ 31975	▼1.9
	12	0/ 68	** 0.0	2/ 197	1.3	1/ 47	2.3					0.56					2/1813	1.1											0.91	27/ 35703	7.6
St Elizabeth Medical	11	6/ 87	7.1	0/ 222	* 0.0			8/ 277	2.9	1/ 235	0.4	1.11			1/1808	0.6			1/2309	0.4									0.43	70/ 58045	12.1
	12	9/ 74	^^11.8	1/ 220	0.4	NA	NA	2/ 245	0.8	0/ 207	* 0.0	1.07			0/1739	* 0.0			1/2583	0.4									0.25	106/ 60085	▲17.6
St Francis-Poughkeepsie	11	1/ 47	2.0	0/ 119	* 0.0							0.27							2/1955	1.0									0.80	12/ 56485	2.1
	12	0/ 55	* 0.0	6/ 120	^^ 4.7	NA	NA					1.41							0/1929	* 0.0									* 0.00	7/ 55385	1.3
St Francis- Roslyn	11	6/ 73	9.3	1/ 138	0.6			12/ 997	1.3	11/ 935	1.2	1.04			2/5631	0.4	2/5396	** 0.4			2/3158	0.6							**0.34	119/108571	11.0
	12	8/ 121	8.2	3/ 199	1.2	NA	NA	9/ 846	1.1	10/ 807	1.1	1.05			2/5457	0.4	3/3611	0.8			2/2849	0.7							0.56	107/ 96349	11.1
St James Mercy	11	NA/ NA	NA	NA	NA							NA							0/ 422	* 0.0									* 0.00	0/ 5835	0.0
	12	NA/ NA	NA	NA	NA	0/ 27	* 0.0					0.81							0/ 410	* 0.0									* 0.00	2/ 9905	2.0
St Johns Episcopal	11	2/ 35	5.1	1/ 21	3.4							1.32	3/1009	3.0			2/1305	1.5											1.48	29/ 53152	5.5
	12	2/ 34	5.5	0/ 30	* 0.0	1/ 53	1.8					0.99	2/ 888	2.3			5/1093	^^ 4.6											^^2.89	34/ 61764	5.5

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		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset	
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
St Johns Riverside	11	7/ 78	9.9	1/ 80	1.0							1.71							5/1500	3.3									2.60	30/109651	2.7
	12	1/ 67	1.5	0/ 54	* 0.0	2/ 100	2.5					0.60							1/1596	0.6									0.66	66/105670	▲6.2
St Joseph -Bethpage	11	2/ 60	3.3	0/ 96	* 0.0							0.50							1/2089	0.5									0.37	56/ 36852	15.2
	12	2/ 51	3.8	1/ 101	1.0	NA	NA					0.86							4/2307	1.7									1.82	63/ 34763	18.1
St Joseph Cheektow.	11	4/ 77	5.0	1/ 138	0.9							0.93							2/1534	1.3									1.01	31/ 30104	10.3
	12	6/ 82	6.8	4/ 155	2.6	NA	NA					1.71							4/1230	3.3									3.41	22/ 29776	7.4
St Josephs- Elmira	11	NA/ NA	NA	2/ 37	4.2							2.75							2/ 842	2.4									1.85	20/ 17460	11.5
	12	NA/ NA	NA	1/ 50	1.7	NA	NA					2.41							0/ 667	* 0.0									* 0.00	24/ 19780	12.1
St Josephs- Syracuse	11	18/ 299	6.1	9/ 668	1.5			13/ 539	2.3	0/ 503	** 0.0	1.12					5/3389	1.5			5/5837	0.9					0/ 279	* 0.0	0.70	151/125896	12.0
	12	13/ 246	5.3	8/1022	1.0	4/ 51	^^ 7.3	9/ 561	1.5	1/ 489	0.2	1.02					3/3432	0.9			6/5688	1.1					2/ 108	^^31.2	1.01	114/130638	▼8.7
St Josephs- Yonkers	11	NA/ NA	NA	2/ 21	7.1							3.41							1/ 804	1.2									0.97	24/ 48913	4.9
	12	NA/ NA	NA	0/ 34	* 0.0	NA	NA					* 0.00							3/ 595	^^ 5.0									^^5.29	10/ 44266	▼2.3
St Lukes- Roosevelt	11	9/ 167	5.2	1/ 127	0.6							0.96							1/1611	0.6			1/ 973	1.0	1/ 116	8.6	2/2499	0.9	0.57	52/113293	▼4.6
	12	8/ 187	4.3	3/ 108	2.3	3/ 230	1.3					1.02							0/1422	* 0.0			2/ 602	3.3	1/ 63	15.9	2/2013	1.1	0.73	42/110899	3.8
St Lukes- St Lukes	11	5/ 73	6.6	2/ 134	1.5			3/ 159	1.9	2/ 137	1.5	1.30					5/2187	2.3	3/1581	1.9	0/ 960	* 0.0							1.20	83/121989	6.8
	12	4/ 69	5.3	2/ 197	0.8	1/ 109	1.0	2/ 151	1.2	0/ 136	* 0.0	0.76					8/1974	^^ 4.1	2/1938	1.0	1/ 978	1.0							^^2.06	57/115823	4.9
St Lukes Newburgh&Cornwall	11	0/ 87	** 0.0	9/ 151	^^ 4.3							1.38							4/2023	2.0									1.54	46/ 49895	9.2
	12	3/ 71	4.3	1/ 152	0.6	1/ 51	2.3					0.90							1/1286	0.8									0.82	28/ 47147	5.9
St Marys Amsterdam	11	2/ 42	6.3	2/ 87	3.1							1.73							0/ 173	* 0.0									* 0.00	14/ 29424	4.8
	12	3/ 39	9.7	3/ 70	^^ 5.4	2/ 22	12.4					^^3.56							0/ 120	* 0.0									* 0.00	20/ 29488	6.8
St Peters Hospital	11	15/ 389	4.6	10/ 842	1.6			2/ 403	** 0.5	3/ 388	0.8	0.89	2/1148	1.7	4/2270	1.8			4/2409	1.7							0/1184	* 0.0	1.07	44/112803	3.9
	12	16/ 340	5.6	9/ 847	1.5	16/ 633	2.6	6/ 457	1.2	1/ 419	0.3	1.17	1/1247	0.8	4/2183	1.8			5/2011	2.5							1/ 834	1.3	1.49	67/114488	5.9
Staten Island U N&S	11	16/ 229	6.7	5/ 224	1.7			6/ 331	2.2	2/ 306	0.8	1.31	0/2362	** 0.0	4/2148	1.9			1/4388	** 0.2					0/ 69	* 0.0	2/ 684	2.7	0.55	149/156011	9.6
	12	12/ 209	5.6	3/ 209	1.0	2/ 194	0.8	1/ 213	0.5	0/ 205	* 0.0	0.83	0/2440	** 0.0	1/2188	0.5			0/4687	** 0.0					0/ 77	* 0.0	4/ 387	8.8	0.47	135/158536	8.5
Stony Brook Univ.Hos	11	10/ 173	4.7	4/ 261	1.3			5/ 302	1.6	4/ 270	1.4	1.05	0/1722	* 0.0	2/1740	1.1	2/3363	0.6			0/2351	** 0.0			2/ 985	2.0	3/1897	1.6	**0.51	270/176439	15.3
	12	9/ 177	4.7	4/ 297	1.0	4/ 305	0.9	3/ 271	1.1	0/ 252	* 0.0	0.74	0/1877	* 0.0	1/2115	0.5	3/3617	0.8			2/2322	0.9			2/ 532	3.8	2/2355	0.9	0.67	221/178117	▼12.4
Strong Memorial	11	11/ 294	3.8	0/ 61	* 0.0			3/ 345	0.9	2/ 307	0.7	0.68			4/3642	1.1	4/3100	1.3			4/2879	1.4			5/2880	1.7	6/6060	1.0	0.80	212/209268	▼10.1
	12	5/ 297	** 1.9	2/ 49	2.3	3/ 328	1.3	10/ 357	2.9	4/ 326	1.7	0.95			4/4372	0.9	1/3298	0.3			3/2982	1.0	2/1080	1.9	7/3227	2.2	7/6985	1.0	0.88	240/232827	10.3
Syosset Hospital	11	2/ 43	6.0	1/ 26	3.7							1.52							0/ 832	* 0.0									* 0.00	20/ 21200	9.4
	12	0/ 34	* 0.0	NA	NA	0/ 37	* 0.0					* 0.00							1/ 798	1.3									1.31	13/ 19327	6.7

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Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4	
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3	
TLC Lake Shore	11	NA/ NA	NA	2/ 47	5.4							2.75							NA	NA									NA	2/ 6720	3.0
	12	NA/ NA	NA	0/ 52	* 0.0							* 0.00							0/ 68	* 0.0									* 0.00	4/ 5962	6.7
U Health Bing/Wilson	11	6/ 94	7.7	6/ 262	2.4			3/ 201	1.6	0/ 197	* 0.0	1.31	1/1410	0.7	0/2166	* 0.0			0/ 465	* 0.0							1/ 352	3.1	0.33	40/ 75704	5.3
	12	1/ 114	1.0	2/ 231	1.0	2/ 106	2.4	3/ 165	2.3	2/ 156	2.0	0.90	0/1562	* 0.0	0/1927	* 0.0			0/ 468	* 0.0							0/ 139	* 0.0	**0.00	52/ 76570	6.8
U Hosp Brooklyn LICH	11	8/ 74	8.9	1/ 61	1.1							1.64	4/ 564	^^ 7.1					1/2460	0.4					NA	NA	5/ 944	5.4	1.25	53/ 57164	▼9.3
	12	3/ 57	4.6	1/ 71	0.8	5/ 187	1.9					1.04	0/ 401	* 0.0					3/2139	1.4					NA	NA	5/ 869	5.7	1.41	40/ 64540	6.2
U Hosp SUNYDownstate	11	0/ 42	* 0.0	0/ 55	* 0.0			1/ 87	0.8	0/ 80	* 0.0	**0.16	0/ 363	* 0.0	1/1141	0.9			2/1914	1.0					2/ 286	7.0	2/1219	1.5	1.00	29/ 99534	2.9
	12	0/ 36	* 0.0	0/ 53	* 0.0	3/ 192	1.0	0/ 64	* 0.0	0/ 59	* 0.0	**0.31	1/ 414	2.4	2/1101	1.8			6/2062	^^ 2.9					0/ 103	* 0.0	2/ 907	1.8	^^2.20	39/ 99509	3.9
United Memorial	11	NA/ NA	NA	3/ 85	3.3							2.63							0/ 602	* 0.0									* 0.00	31/ 22524	13.8
	12	3/ 30	10.5	2/ 89	2.2	1/ 43	3.2					2.19							0/ 430	* 0.0									* 0.00	11/ 16713	6.6
Unity Hosp Rochester	11	1/ 109	1.0	12/ 638	^^ 2.4							1.21							2/3116	0.6									0.50	90/ 73326	12.3
	12	1/ 176	** 0.6	3/ 571	0.6	4/ 248	2.1					0.51							1/2842	0.4									0.37	83/ 67532	12.3
Upst. Community Gen	11	4/ 115	3.4	0/ 408	** 0.0							0.44							1/1307	0.8									0.60	34/ 40799	8.3
	12	9/ 84	9.6	1/ 150	0.8	0/ 145	* 0.0					1.37							0/ 757	* 0.0									* 0.00	14/ 35585	▼3.9
Upst. Univ.Hosp.SUNY	11	5/ 148	3.1	6/ 157	3.0			2/ 194	0.9	1/ 149	0.6	0.90	0/1270	* 0.0	0/2317	* 0.0	5/3488	1.4	1/ 539	1.9	0/2733	** 0.0	1/2100	0.5	6/ 765	^^ 7.8			0.72	138/116690	11.8
	12	5/ 163	2.8	1/ 84	0.8	NA	NA	4/ 151	2.2	0/ 133	* 0.0	0.68	1/1323	0.8	3/3218	0.9	4/4069	1.0	1/ 672	1.5	2/3317	0.6	1/2402	0.4	0/ 672	* 0.0			0.65	127/124068	10.2
Vassar Brothers	11	2/ 69	2.5	0/ 33	* 0.0			0/ 294	** 0.0	1/ 294	0.3	**0.22	0/1257	* 0.0	0/ 962	* 0.0			0/1577	* 0.0							0/ 397	* 0.0	**0.00	58/ 94033	6.2
	12	3/ 104	2.6	2/ 107	1.9	0/ 231	** 0.0	0/ 273	** 0.0	3/ 273	0.6	**0.42	1/1104	0.9	1/ 904	1.1			1/1487	0.7							2/ 507	3.7	0.92	89/ 92485	9.6
Westchester Medical	11	7/ 89	6.5	2/ 91	1.2			8/ 306	2.3	0/ 295	* 0.0	1.08	3/ 797	3.8	3/2887	1.0	6/2806	2.1			0/1116	* 0.0	1/1722	0.6	3/1848	1.6	6/6110	1.0	0.83	147/175828	8.4
	12	3/ 61	4.2	0/ 91	* 0.0	15/ 153	^^ 6.0	5/ 259	1.6	0/ 244	* 0.0	1.33	1/ 771	1.3	3/2549	1.2	0/2429	* 0.0			2/1114	1.8	1/1196	0.8	3/1436	2.1	6/6757	0.9	0.78	124/165451	7.5
White Plains	11	5/ 90	7.1	0/ 218	* 0.0							0.87							4/2587	1.5							0/ 262	* 0.0	1.02	77/ 78000	9.9
	12	2/ 108	2.2	0/ 176	* 0.0	2/ 153	1.7					0.52							0/2845	* 0.0							0/ 224	* 0.0	**0.00	62/ 72545	8.5
Winthrop University	11	8/ 305	2.7	2/ 228	0.7			11/ 372	3.1	2/ 334	0.6	0.85					6/2270	2.6			2/4314	0.5	0/ 721	* 0.0	0/ 333	* 0.0	5/2101	2.3	0.87	151/157671	9.6
	12	5/ 325	** 1.6	1/ 286	0.3	2/ 417	0.5	6/ 316	1.9	0/ 260	* 0.0	**0.43					5/2493	2.0			2/4308	0.5	0/1392	* 0.0	0/ 564	* 0.0	2/1701	1.1	0.69	140/155987	9.0
Woman and Childrens	11	0/ 26	* 0.0									* 0.00													3/2341	1.3	15/5152	2.9	1.26	8/ 35317	2.3
	12	0/ 27	* 0.0			0/ 79	* 0.0					* 0.00													10/2162	^^ 4.6	14/5980	^^ 2.3	^^2.07	10/ 34966	2.9
Womans Christian	11	2/ 49	4.3	1/ 76	1.1							0.89							3/ 999	3.0									2.34	23/ 27114	8.5
	12	5/ 47	12.3	3/ 93	2.8	NA	NA					^^2.61							2/ 888	2.3									2.36	8/ 27852	▼2.9

Hospital SSI and CLABSI rates were compared to the state average. **Significantly lower than state average. ^^Signif. higher than state average. *Zero infections, not signif. NA: Fewer than 20 procedures or 50 line days.
Hospital *C. difficile* rates were compared to hospital rates in previous year if there was no change in laboratory testing methods. ▲Signif. increased. ▼Signif. decreased.

Table 2: Summary of Hospital-Acquired Infection Data by Hospital, New York State 2011-2012

		Surgical Site Infections											Blood Stream Infections																				*C. difficile*	
		Colon		Hip		Hysterectomy		CABG Chest		CABG Donor		All SSI	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		All BSI	Hospital Onset				
Hospital	Yr	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SSI/ procs	Adj. Rate	SIR	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Adj rate	SIR	C.diff/patdays	Rate		
State average	11	5.0		1.2		NA		1.9		0.6		1.0	1.4		0.9		1.5		1.3		1.4		1.3		2.1		RPC/Lev3/Lev2-3 1.8/2.3/4.4		1.0	8.4			
	12	4.5		1.0		1.6		2.0		0.6		1.0	1.2		0.9		1.2		1.0		1.1		1.4		1.9		1.2/2.5/3.5		1.0	8.3			
Woodhull Medical	11	14/ 49	^^23.1	NA	NA							^^4.73							4/2838	1.4							0/ 513	* 0.0	0.68	31/100129	▲3.1		
	12	6/ 56	9.0	NA	NA	2/ 82	2.8					1.82							7/2093	^^ 3.3							2/ 467	4.2	^^2.45	34/ 98776	3.4		
Wyckoff Heights	11	3/ 48	5.8	0/ 20	* 0.0							0.99							8/2163	^^ 3.7							1/ 293	3.2	^^2.57	66/ 82222	8.0		
	12	3/ 43	6.2	0/ 21	* 0.0	4/ 121	2.6					1.37							2/2306	0.9							0/ 264	* 0.0	0.67	30/ 75803	4.0		
Wyoming County Comm.	11	1/ 25	4.2	2/ 21	5.3							1.85							0/ 51	* 0.0									* 0.00	10/ 13414	7.5		
	12	NA/ NA	NA	0/ 35	* 0.0	NA	NA					* 0.00							0/ 68	* 0.0									* 0.00	5/ 11872	4.2		

Data reported as of July 25, 2013.

SSI notes: SSI: surgical site infection; Procs: procedures; Adj. Rate: risk adjusted rate (# infections per 100 procedures if the state had the same risk distribution as the hospital). SSI data exclude non-readmitted cases identified using post discharge surveillance.
Colon data adjusted using ASA score, duration, wound class, and laparoscope.
Hip data adjusted using ASA score, duration, trauma, and type of procedure.
Hysterectomy data adjusted using ASA score, duration, and laparoscope.
CABG chest data adjusted using diabetes, body mass index, gender, end stage renal disease, congestive heart failure, peripheral artery disease, and duration.
CABG donor data adjusted using body mass index, duration, and blood transfusion.
SIR: standardized infection ratio: compares observed number of colon, CABG, hysterectomy, and hip infections to the statistically expected number of infections based on the NYS average in the given year, after adjusting for the risk factors listed above.

CLABSI notes: CLABSI: central line-associated blood stream infection; CLDays: central line days. CLABSI data exclude cases in which multiple blood cultures were obtained, only one specimen was positive, the one positive was considered a contaminant and no treatment was given. Adult CLABSI rates are # infections per 1000 line days; no additional adjustment is performed because the data are stratified by ICU type. Neonatal CLABSI rates include umbilical catheter-associated blood stream infections. Neonatal CLABSI rates are adjusted by birth weight. SIR: compares observed number of CLABSI to statistically expected number of infections based on the NYS average infection rate in each ICU/birth weight group in the given year.

C. difficile notes: *C. difficile:* Number of hospital-onset infections; Patdays = Inpatient days, excluding newborns and NICU; Rate is per 10,000 patient days.

Each hospital-specific adjusted SSI and CLABSI rate should only be compared with the New York State average in that category in that year.
Each hospital-specific *C. difficile* rate should only be compared with the *C. difficile* rate for that hospital in the previous year.

Hospital SSI and CLABSI rates were compared to the state average. **Significantly lower than state average. ^^Signif. higher than state average. *Zero infections, not signif. NA: Fewer than 20 procedures or 50 line days.
Hospital *C. difficile* rates were compared to hospital rates in previous year if there was no change in laboratory testing methods. ▲Signif. increased. ▼Signif. decreased.

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Background

Hospital-acquired infections (HAIs) are a significant cause of morbidity and mortality, affecting approximately 1 out of every 20 inpatients[1]. In accordance with Public Health Law 2819, New York State (NYS) has been tracking HAIs since 2007. This law was created to provide the public with fair, accurate, and reliable HAI data to compare hospital infection rates and to support quality improvement and infection prevention activities in hospitals.

Hospitals report to NYS using the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN). This online system allows hospitals, NYS, and CDC to concurrently monitor the same data. All states follow the same surveillance methods. Additional information about the NHSN can be found at http://www.cdc.gov/nhsn/.

NYSDOH evaluates which HAI indicators should be reported annually with the help of a technical advisory workgroup (TAW), a panel of experts in the prevention and reporting of HAIs. In 2007, hospitals were required to report central line-associated blood stream infections (CLABSIs) in intensive care units (ICUs) and surgical site infections (SSIs) following colon and coronary artery bypass graft (CABG) surgeries. In 2008, hip SSIs were added. 2010 was the first complete year of reporting *Clostridium difficile* (*C. difficile*) infections. In 2012, abdominal hysterectomy SSIs were added. Table 3 summarizes the progression of reporting through 2012.

This report summarizes HAI rates in 175 acute care hospitals in NYS in 2012. This report, as well as reports from previous years, is available on the NYSDOH website, at:

http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/.

Table 3: Hospital Acquired Infections Reported by New York State Hospitals, by Year

Type of Infection	2007	2008	2009	2010	2011	2012
ICU central line-associated blood stream infections	✓	✓	✓	✓	✓	✓
Colon surgical site infections	✓	✓	✓	✓	✓	✓
Coronary artery bypass graft surgical site infections	✓	✓	✓	✓	✓	✓
Hip replacement surgical site infections		✓	✓	✓	✓	✓
Clostridium difficile infections				✓	✓	✓
Abdominal hysterectomy surgical site infections						✓

Hospital-Acquired Surgical Site Infections (SSIs)

Surgical site infections (SSIs) are infections that occur after an operation in the part of the body where the surgery took place. Most SSIs only involve the skin surrounding the incision; others may be deeper and more serious. Infections related to the following types of surgery were reported by NYS hospitals:

- Colon: Colon surgery is a procedure performed on the lower part of the digestive tract, which is called the large intestine or colon. Colon SSIs, regardless of the extent/depth, are infections that occur within 30 days of the initial procedure.

- Coronary artery bypass graft (CABG): CABG surgery is a procedure performed for heart disease in which a vein or artery from the chest or another part of the body (termed the "donor site") is used to create an alternate path for blood to flow to the heart, bypassing a blocked artery. CABG SSIs that involve the skin surrounding the chest and donor site incisions are reported if they occur within 30 days of the initial procedure. Chest incision SSIs that extend to deeper tissues below superficial skin are reported if they occur within one year* from the initial procedure.

- Hip: Hip replacement or revision surgery involves removing damaged cartilage and bone from the hip joint and replacing or resurfacing them with new, man-made parts. SSIs that involve the skin surrounding the incision are reported if they occur within 30 days of the initial procedure. SSIs that extend to deeper tissues below the superficial skin are reported if they occur within one year* from the initial procedure.

- Abdominal hysterectomy is the surgical removal of a woman's uterus through an incision in the abdominal wall. SSIs are reported if they occur within 30 days of the initial procedure.

  * *Note: For CABG and hip procedures performed on or after January 1, 2013, surveillance will end after 90 days.*

These surgeries were selected because of the frequency of infections, severity of infection-related complications, ability to perform risk adjustment, and potential for quality improvement.

NYSDOH periodically surveys hospitals on surveillance and prevention practices that may be related to infection rates. According to the most recent survey, infection preventionists (IPs) use many sources to identify SSIs, such as laboratory data (97%), readmissions (89%), return to surgery (80%), doctor/nurse self-reporting (62%), post-discharge surveillance (55%), daily rounds (49%), antibiotic data (48%), discharge coding from medical records (43%), temperature records (19%), extended length of stay (19%), infection liaison on unit (18%), and data mining

(14%). The biggest improvements were for using antibiotic data (7% in 2008 to 48% in 2011), doctor/nurse self-reporting (45% to 62%), and discharge coding from medical records (30% to 43%). Approximately 80% of hospitals continue to manually enter procedural data into NHSN, although automated electronic methods are available.

For each type of SSI, the following pages describe:

- statewide time trends;
- severity (depth) of infections;
- microorganisms involved; and
- individual hospitals' risk-adjusted infection rates compared to the state average.

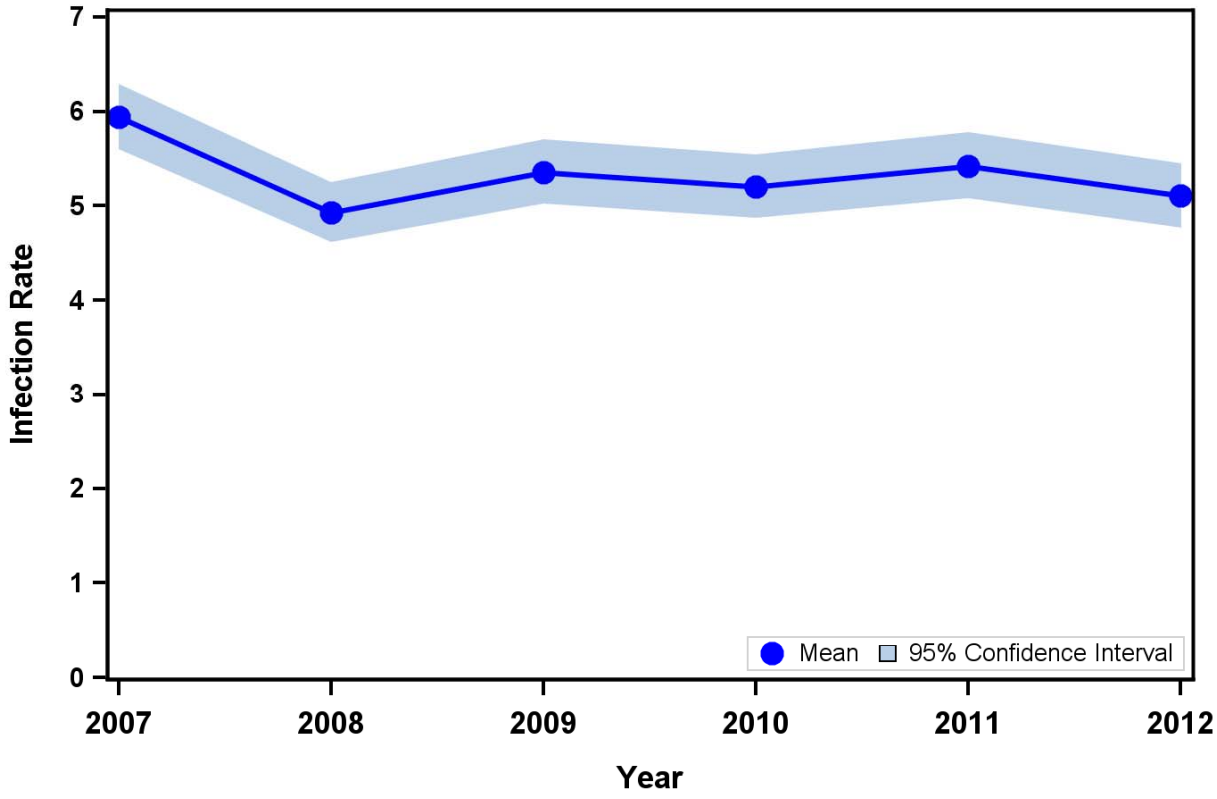
At the end of this section, overall trends in SSIs are summarized.

Colon Surgical Site Infections

Time Trends in Colon SSIs

In 2012, 173 hospitals reported colon surgical procedures. Between 2007 and 2012, the NYS colon surgical site infection rate declined 14%, from 5.9 infections per 100 procedures in 2007, to 5.1 infections per 100 procedures in 2012 (Figure 1). The decrease occurred during the second year of reporting, and rates have remained at approximately 5% for the past five years.

Figure 1. Trend in Colon Surgical Site Infection Rates, New York State 2007-2012



Year	# Hospitals	# Infections	# Procedures	Infection Rate and 95% Confidence Interval
2007	183	1,067	17,965	5.94 (5.60, 6.29)
2008	179	894	18,135	4.93 (4.62, 5.25)
2009	174	934	17,439	5.36 (5.03, 5.70)
2010	173	878	16,880	5.20 (4.87, 5.55)
2011	173	880	16,239	5.42 (5.08, 5.78)
2012	173	836	16,377	5.10 (4.77, 5.45)

New York State Data reported as of July 25, 2013. Infection rate is the number of infections divided by the number of procedures, multiplied by 100. Includes non-readmitted cases identified using post discharge surveillance.
Due to continued auditing of the data, the 2011 infection rate reported in the previous annual report increased from 5.34 to 5.42.

Depth of Colon SSIs

Of the 836 colon SSIs reported in 2012, 47% were superficial, 18% were deep, and 35% were organ/space (Table 4). The majority of the SSIs (54%) were detected during the initial hospitalization; 31% were identified upon readmission to the same hospital; 4% involved readmission to another hospital; and 11% were detected in outpatient locations. The majority of the infections detected in outpatient locations were superficial. Detection of SSIs in outpatient locations (using post discharge surveillance [PDS]) is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 92 infections for hospital-specific comparisons. The detection and depth of colon SSIs is consistent with previous published NYS HAI public reports.

Table 4. Method of Detection of Colon Surgical Site Infection by Depth of Infection, New York State 2012

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Detected in Outpatient Settings**	**Total**
Superficial Incisional	222 (56.8%) (48.9%)	80 (20.5%) (31.1%)	10 (2.6%) (30.3%)	79 (20.2%) (85.9%)	391 (46.8%)
Deep Incisional	78 (51.3%) (17.2%)	58 (38.2%) (22.6%)	3 (2.0%) (9.1%)	13 (8.6%) (14.1%)	152 (18.2%)
Organ/Space	154 (52.6%) (33.9%)	119 (40.6%) (46.3%)	20 (6.8%) (60.6%)	0 (0.0%) (0.0%)	293 (35.0%)
Total	454 (54.3%)	257 (30.7%)	33 (3.9%)	92 (11.0%)	836

New York State data reported as of July 25, 2013.

Microorganisms Associated with Colon SSIs

In NYS, the most common microorganisms associated with colon SSIs were Enterococci and *Escherichia coli.* (Table 5). The distribution of microorganisms associated with colon SSIs is consistent with previously published NYS HAI public reports.

Table 5. Microorganisms Identified in Colon Surgical Site Infections, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Enterococci	240	28.7
(VRE)	(50)	(6.0)
Escherichia coli	209	25.0
Staphylococcus aureus	92	11.0
(MRSA)	(61)	(7.3)
(MSSA)	(26)	(3.1)
Pseudomonas spp.	79	9.4
Klebsiella spp.	57	6.8
(CRE-Klebsiella)	(4)	(0.5)
(CephR-Klebsiella)	(4)	(0.5)
Bacteroides	55	6.6
Coagulase negative Staphylococci	55	6.6
Enterobacter spp.	46	5.5
Streptococci	39	4.7
Yeast	26	3.1
Proteus spp.	20	2.4
Citrobacter spp.	18	2.2
Clostridia spp.	11	1.3
Morganella morganii	10	1.2
Gram-negative bacilli	8	1.0
Acinetobacter spp.	2	0.2
(MDRO-*Acinetobacter*)	(2)	(0.2)
Other	32	3.8

New York State data reported as of July 25, 2013. Out of 836 infections (includes post-discharge surveillance), no microorganisms identified for 199 infections.
VRE: vancomycin-resistant enterococcus; CephR: cephalosporin-resistant;
CRE: carbapenem-resistant Enterobacteriaceae; MDRO: multidrug-resistant;
MRSA: methicillin-resistant *Staphylococcus aureus;* MSSA: methicillin-susceptible *Staphylococcus aureus; spp*: multiple species

Risk-Adjustment for Colon SSIs

In 2012, after excluding SSIs reported as part of PDS methods that did not result in hospitalization, the following risk factors were associated with SSIs, and included in the risk-adjustment model.

- Patients with an American Society of Anesthesiologists (ASA) score of 3, 4, or 5 were 1.2 times more likely to develop an SSI than patients with an ASA score of 1 or 2.
- Procedures with duration greater than approximately 3 hours were 1.4 times more likely to result in SSI than procedures of shorter duration.
- Procedures on contaminated or dirty intraoperative surgical sites were 1.4 times more likely to result in SSI than procedures on clean-contaminated sites.

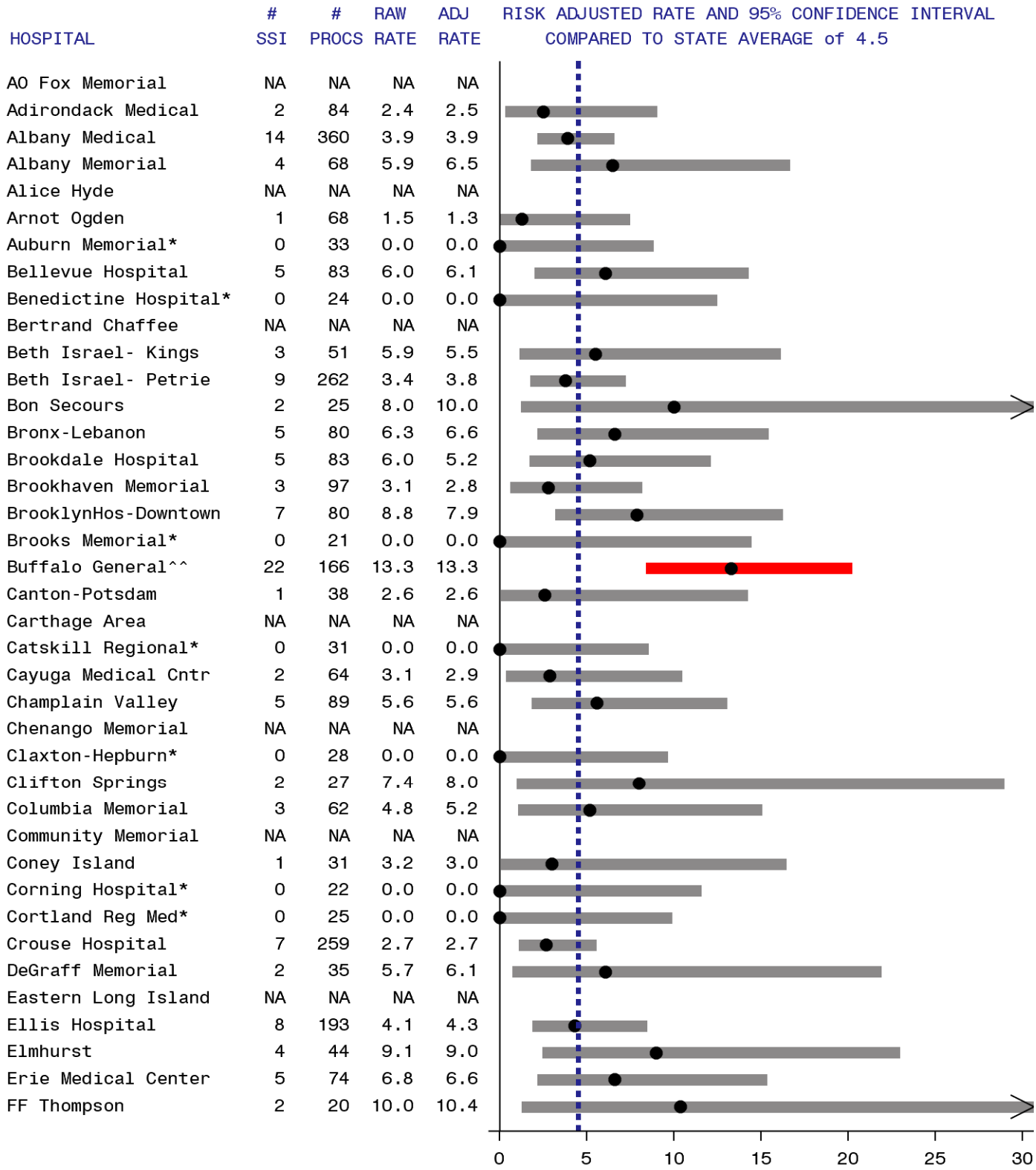
- Procedures that used traditional surgical incisions were 1.4 times more likely to result in SSI than procedures performed entirely with a laparoscopic instrument.

Hospital-Specific Colon SSI Rates

Risk-adjusted hospital-specific colon SSI rates were calculated after deleting the 92 infections that were detected using PDS and did not result in hospitalization. This changed the NYS colon SSI rate from 5.10% to 4.54%.

Hospital-specific colon SSI rates are provided in Figure 2. Refer to Appendix 3, Figure 19 for more information about reading Figure 2. Seven hospitals (5%) had colon SSI rates that were statistically higher than the state average. Five hospitals (3%) had rates that were statistically lower than the state average; Kingston Hospital was significantly lower for three years in a row (2010-2012).

Figure 2. Colon Surgical Site Infection Rates, New York 2012 (page 1 of 5)

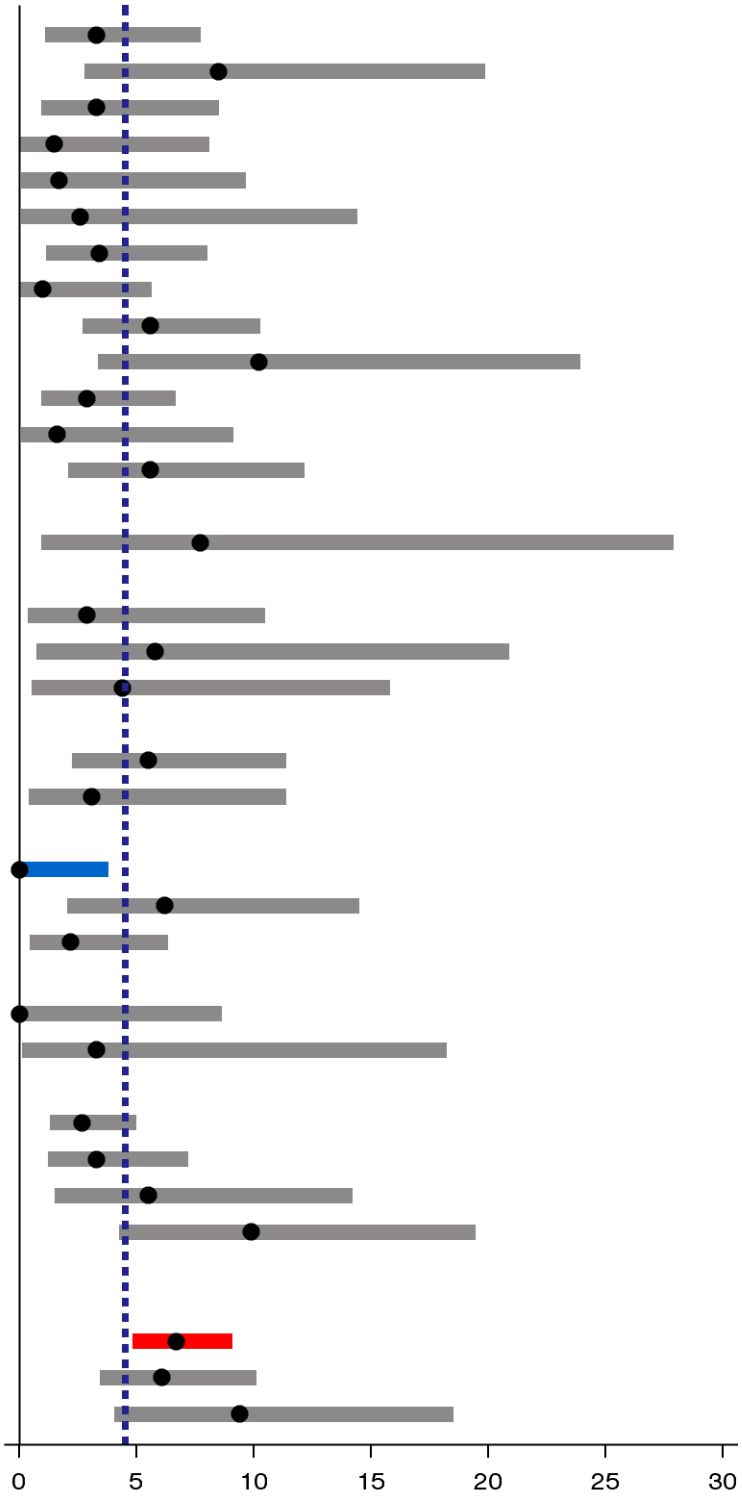


HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
AO Fox Memorial	NA	NA	NA	NA
Adirondack Medical	2	84	2.4	2.5
Albany Medical	14	360	3.9	3.9
Albany Memorial	4	68	5.9	6.5
Alice Hyde	NA	NA	NA	NA
Arnot Ogden	1	68	1.5	1.3
Auburn Memorial*	0	33	0.0	0.0
Bellevue Hospital	5	83	6.0	6.1
Benedictine Hospital*	0	24	0.0	0.0
Bertrand Chaffee	NA	NA	NA	NA
Beth Israel- Kings	3	51	5.9	5.5
Beth Israel- Petrie	9	262	3.4	3.8
Bon Secours	2	25	8.0	10.0
Bronx-Lebanon	5	80	6.3	6.6
Brookdale Hospital	5	83	6.0	5.2
Brookhaven Memorial	3	97	3.1	2.8
BrooklynHos-Downtown	7	80	8.8	7.9
Brooks Memorial*	0	21	0.0	0.0
Buffalo General^^	22	166	13.3	13.3
Canton-Potsdam	1	38	2.6	2.6
Carthage Area	NA	NA	NA	NA
Catskill Regional*	0	31	0.0	0.0
Cayuga Medical Cntr	2	64	3.1	2.9
Champlain Valley	5	89	5.6	5.6
Chenango Memorial	NA	NA	NA	NA
Claxton-Hepburn*	0	28	0.0	0.0
Clifton Springs	2	27	7.4	8.0
Columbia Memorial	3	62	4.8	5.2
Community Memorial	NA	NA	NA	NA
Coney Island	1	31	3.2	3.0
Corning Hospital*	0	22	0.0	0.0
Cortland Reg Med*	0	25	0.0	0.0
Crouse Hospital	7	259	2.7	2.7
DeGraff Memorial	2	35	5.7	6.1
Eastern Long Island	NA	NA	NA	NA
Ellis Hospital	8	193	4.1	4.3
Elmhurst	4	44	9.1	9.0
Erie Medical Center	5	74	6.8	6.6
FF Thompson	2	20	10.0	10.4

State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, contamination of intraoperative site, and laparoscope.

Figure 2. Colon Surgical Site Infection Rates, New York 2012 (page 2 of 5)

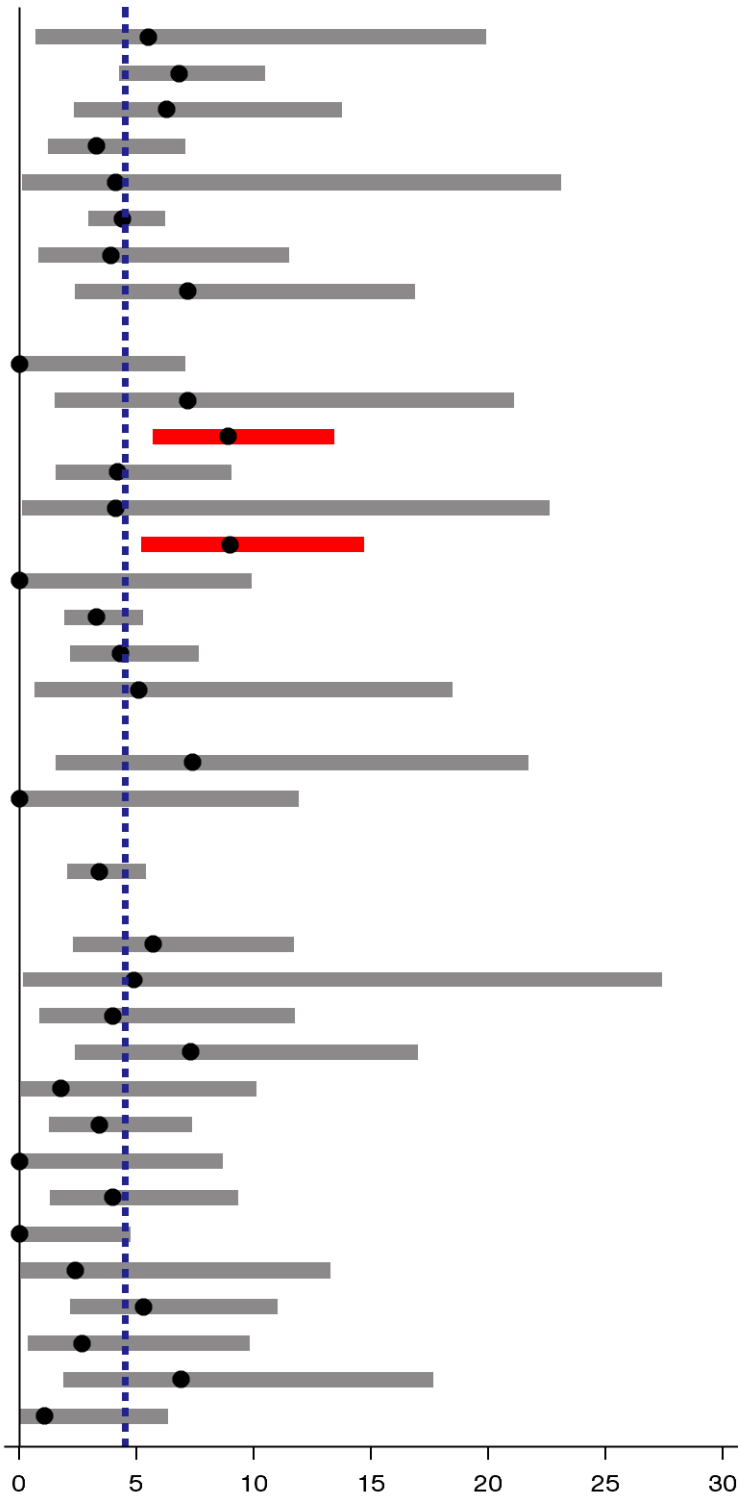
HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Faxton St. Lukes	5	139	3.6	3.3
Flushing Hospital	5	58	8.6	8.5
Forest Hills Hosp	4	103	3.9	3.3
Franklin	1	71	1.4	1.5
Geneva General	1	53	1.9	1.7
Glen Cove Hospital	1	34	2.9	2.6
Glens Falls	5	184	2.7	3.4
Good Samar. Suffern	1	90	1.1	1.0
Good Samar. W Islip	10	196	5.1	5.6
Harlem Hospital	5	48	10.4	10.2
Highland Hospital	5	189	2.6	2.9
Hudson Valley	1	57	1.8	1.6
Huntington	6	93	6.5	5.6
Intercomm. Newfane	NA	NA	NA	NA
Interfaith Medical	2	24	8.3	7.7
Ira Davenport	NA	NA	NA	NA
JT Mather	2	73	2.7	2.9
Jacobi Medical	2	30	6.7	5.8
Jamaica Hospital	2	44	4.5	4.4
Jones Memorial	NA	NA	NA	NA
Kenmore Mercy	7	136	5.1	5.5
Kings County	2	54	3.7	3.1
Kingsbrook Jewish	NA	NA	NA	NA
Kingston Hospital**	0	72	0.0	0.0
Lawrence	5	82	6.1	6.2
Lenox Hill	3	145	2.1	2.2
Lewis County	NA	NA	NA	NA
Lincoln Medical*	0	32	0.0	0.0
Lockport Memorial	1	30	3.3	3.3
Long Beach	NA	NA	NA	NA
Long Island Jewish	10	329	3.0	2.7
Lutheran Medical	6	165	3.6	3.3
Maimonides	4	79	5.1	5.5
Mary Imogene Bassett	8	77	10.4	9.9
Massena Memorial	NA	NA	NA	NA
Medina Memorial	NA	NA	NA	NA
Mem. Sloan Kettering^^	42	575	7.3	6.7
Mercy Buffalo	15	282	5.3	6.1
Mercy Medical	8	83	9.6	9.4



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, contamination of intraoperative site, and laparoscope.

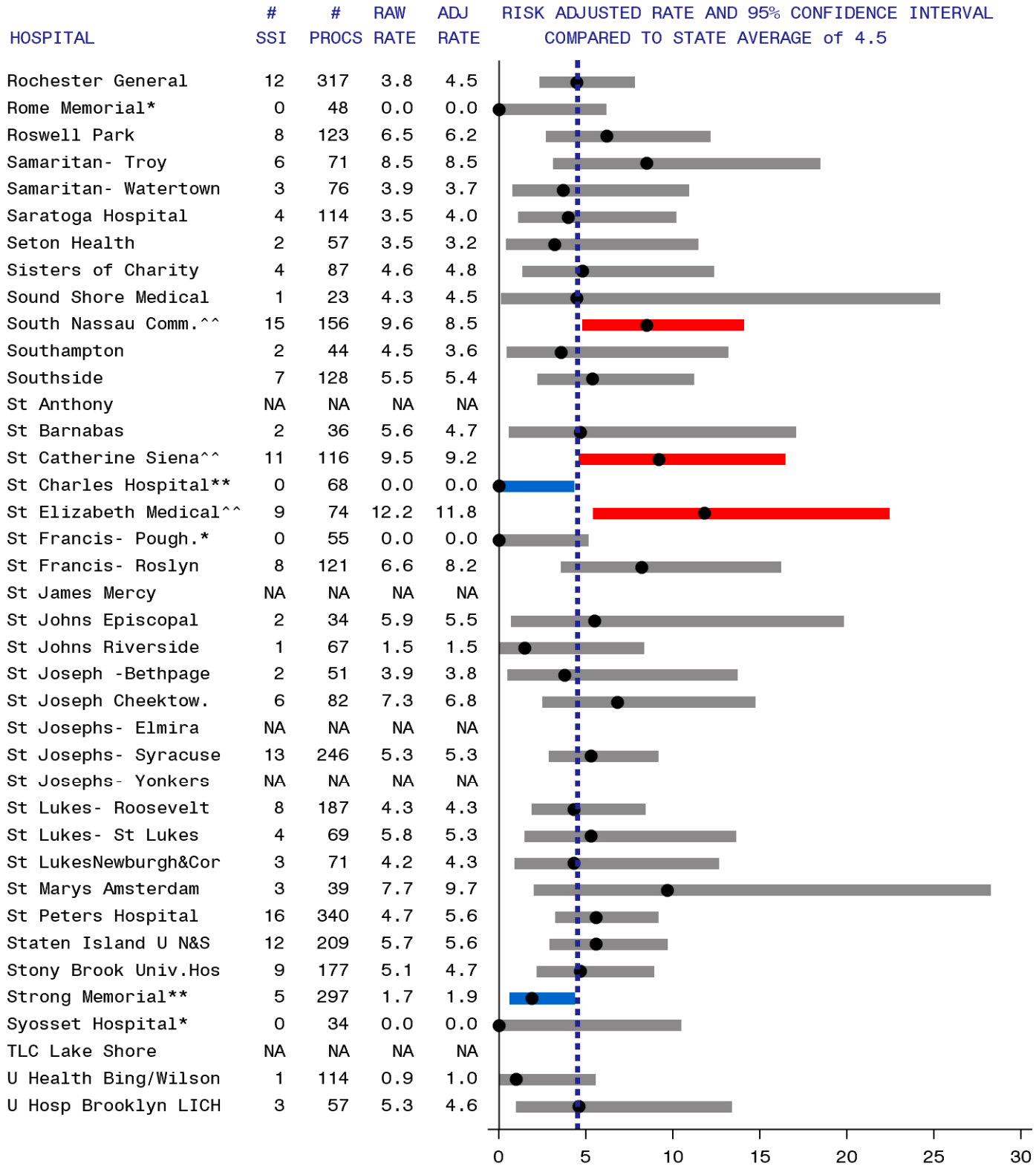
Figure 2. Colon Surgical Site Infection Rates, New York 2012 (page 3 of 5)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Metropolitan	2	32	6.3	5.5
Millard Fill. Suburb	21	301	7.0	6.8
Montefiore-Einstein	6	86	7.0	6.3
Montefiore-Moses	6	176	3.4	3.3
Montifiore North	1	23	4.3	4.1
Mount Sinai	30	705	4.3	4.4
Mount Sinai Queens	3	68	4.4	3.9
Mount St. Marys	5	71	7.0	7.2
Mount Vernon	NA	NA	NA	NA
NY Community Bklyn*	0	36	0.0	0.0
NY Downtown	3	32	9.4	7.2
NY Med Ctr Queens^^	23	256	9.0	8.9
NY Methodist	6	152	3.9	4.2
NYP- Allen	1	23	4.3	4.1
NYP- Columbia^^	16	183	8.7	9.0
NYP- Morgan Stanley*	0	28	0.0	0.0
NYP- Weill Cornell	17	579	2.9	3.3
NYU Medical Center	11	251	4.4	4.3
Nassau University	2	37	5.4	5.1
Nathan Littauer	NA	NA	NA	NA
Newark Wayne	3	42	7.1	7.4
Niagara Falls*	0	26	0.0	0.0
North Central Bronx	NA	NA	NA	NA
North Shore	18	465	3.9	3.4
Northern Dutchess	NA	NA	NA	NA
Northern Westchester	7	135	5.2	5.7
Noyes Memorial	1	20	5.0	4.9
Nyack Hospital	3	78	3.8	4.0
Olean General	5	69	7.2	7.3
Oneida Healthcare	1	63	1.6	1.8
OrangeReg Goshen&Mid	6	190	3.2	3.4
Oswego Hospital*	0	32	0.0	0.0
Our Lady of Lourdes	5	122	4.1	4.0
Peconic Bay Medical*	0	61	0.0	0.0
Phelps Memorial	1	58	1.7	2.4
Plainview Hospital	7	115	6.1	5.3
Putnam Hospital	2	104	1.9	2.7
Queens Hospital	4	51	7.8	6.9
Richmond Univ	1	98	1.0	1.1



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, contamination of intraoperative site, and laparoscope.

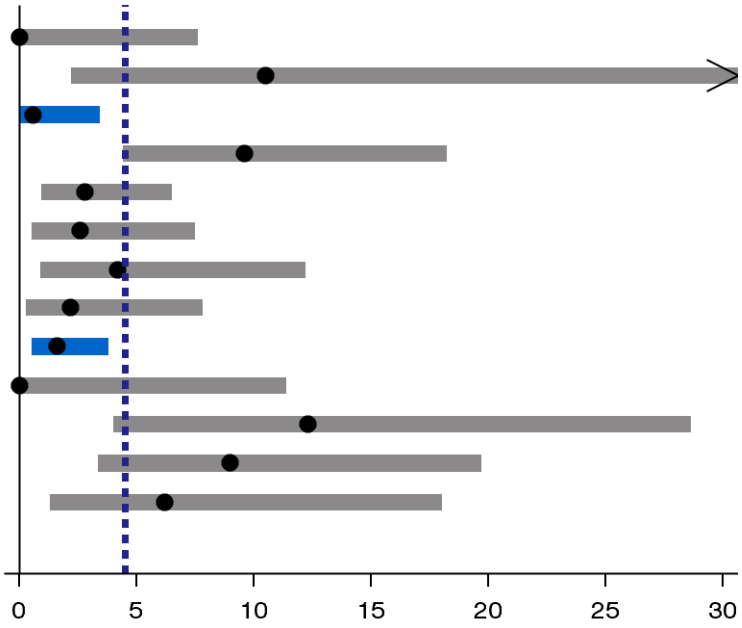
Figure 2. Colon Surgical Site Infection Rates, New York 2012 (page 4 of 5)



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, contamination of intraoperative site, and laparoscope.

Figure 2. Colon Surgical Site Infection Rates, New York 2012 (page 5 of 5)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
U Hosp SUNYDownstate*	0	36	0.0	0.0
United Memorial	3	30	10.0	10.5
Unity Hosp Rochester**	1	176	0.6	0.6
Upst. Community Gen	9	84	10.7	9.6
Upst. Univ.Hosp.SUNY	5	163	3.1	2.8
Vassar Brothers	3	104	2.9	2.6
Westchester Medical	3	61	4.9	4.2
White Plains	2	108	1.9	2.2
Winthrop University**	5	325	1.5	1.6
Woman and Childrens*	0	27	0.0	0.0
Womans Christian	5	47	10.6	12.3
Woodhull Medical	6	56	10.7	9.0
Wyckoff Heights	3	43	7.0	6.2
Wyoming County Comm.	NA	NA	NA	NA



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, contamination of intraoperative site, and laparoscope.

Coronary Artery Bypass Graft (CABG) Surgical Site Infections

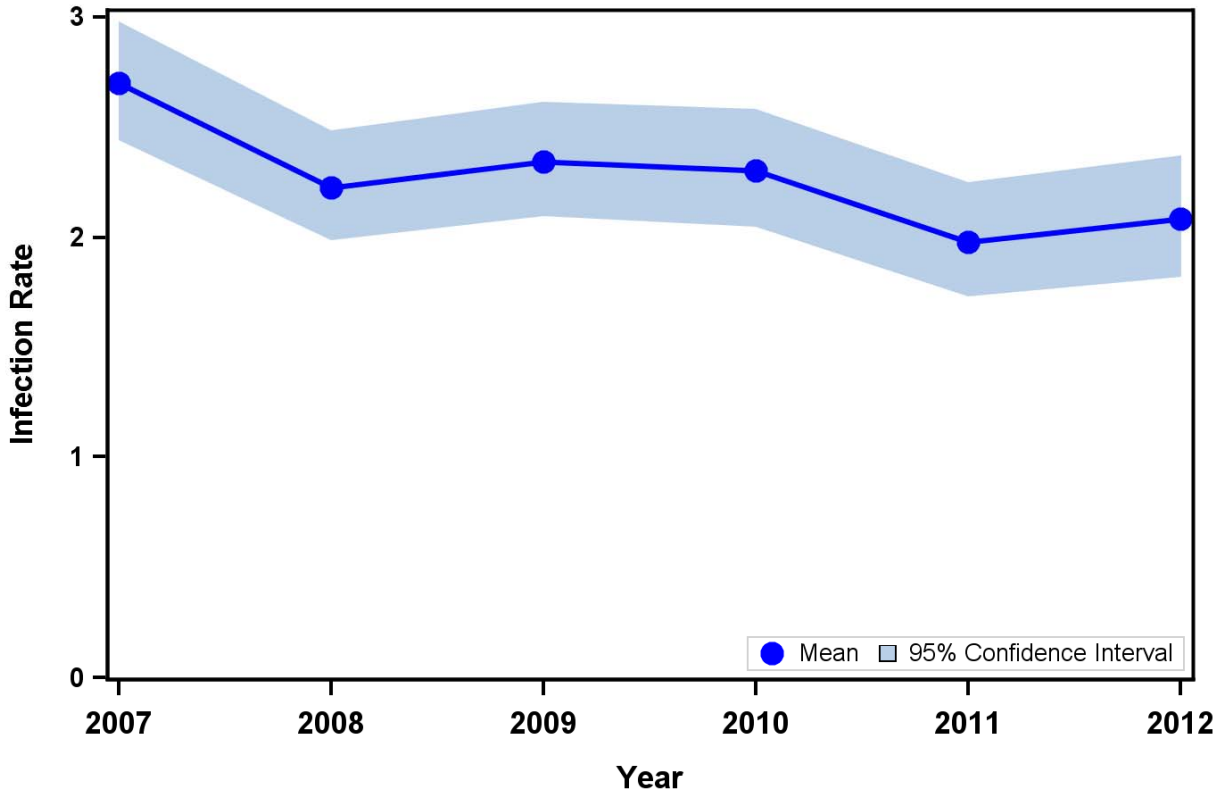
CABG surgery usually involves two surgical sites: a chest incision and a separate site to harvest "donor" vessels. Because infections can occur at either incision site the SSI rates are presented separately.

CABG Chest Infections

Time Trends in CABG Chest SSIs

In 2012, 39 hospitals performed CABG procedures. Between 2007 and 2012, the NYS CABG chest incision SSI rate significantly declined 23%, from 2.70 infections per 100 procedures in 2007, to 2.08 infections per 100 procedures in 2012 (Figure 3).

Figure 3. Trend in Coronary Artery Bypass Graft Chest Site Infection Rates, New York State 2007-2012



Year	# Hospitals	# Infections	# Procedures	Infection Rate and 95% Confidence Interval
2007	40	385	14,266	2.70 (2.44, 2.98)
2008	40	311	13,967	2.23 (1.99, 2.49)
2009	40	315	13,438	2.34 (2.09, 2.61)
2010	39	286	12,409	2.30 (2.05, 2.58)
2011	40	228	11,526	1.98 (1.73, 2.25)
2012	39	223	10,704	2.08 (1.82, 2.37)

New York State Data reported as of July 25, 2013. Infection rate is the number of infections divided by the number of procedures, multiplied by 100. Includes non-readmitted cases identified using post discharge surveillance. Due to continued auditing of the data and newly identified infections occurring up to one year after the procedure, the 2011 infection rate reported in the previous annual report increased from 1.92 to 1.98.

Depth of CABG Chest SSIs

Of the 223 CABG Chest SSIs reported in 2012, 33% were superficial, 42% were deep, and 25% were organ/space. The majority of the SSIs (68%) were detected during readmission to the same hospital, 23% were identified during the initial hospitalization, 6% involved readmission to another hospital, and 4% were detected in outpatient locations. Most infections detected in outpatient locations were superficial. Detection of SSIs in outpatient locations using PDS is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these eight infections (Table 6) in hospital-specific comparisons.

Table 6. Method of Detection of Coronary Artery Bypass Graft Chest Site Infection by Depth of Infection, New York State 2012

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Detected in Outpatient Settings**	**Total**
Superficial Incisional	24 (32.4%) (47.1%)	38 (51.4%) (25.2%)	5 (6.8%) (38.5%)	7 (9.5%) (87.5%)	74 (33.2%)
Deep Incisional	15 (16.1%) (29.4%)	70 (75.3%) (46.4%)	7 (7.5%) (53.8%)	1 (1.1%) (12.5%)	93 (41.7%)
Organ/Space	12 (21.4%) (23.5%)	43 (76.8%) (28.5%)	1 (1.8%) (7.7%)	0 (0.0%) (0.0%)	56 (25.1%)
Total	51 (22.9%)	151 (67.7%)	13 (5.8%)	8 (3.6%)	223

New York State data reported as of July 25, 2013.

Microorganisms Associated with CABG Chest SSIs

In NYS, the most common microorganisms associated with CABG Chest SSIs were *Staphylococcus aureus* and coagulase-negative Staphylococci (Table 7). The distribution of microorganisms associated with CABG chest SSIs is similar to previously published NYS HAI public reports.

Table 7. Microorganisms Identified in Coronary Artery Bypass Chest Site Infections, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	67	30.0
(MRSA)	(23)	(10.3)
(MSSA)	(40)	(17.9)
Coagulase negative Staphylococci	51	22.9
Pseudomonas spp.	17	7.6
Enterococci	16	7.2
(VRE)	(4)	(1.8)
Serratia spp.	16	7.2
Klebsiella spp.	14	6.3
Escherichia coli	12	5.4
Enterobacter spp.	11	4.9
Proteus spp.	11	4.9
Streptococci	8	3.6
Corynebacteria	6	2.7
Other	13	5.8

New York State data reported as of July 25, 2013. Out of 223 infections (includes post-discharge surveillance). No microorganisms identified for 29 infections. VRE: vancomycin-resistant enterococcus; MRSA: methicillin-resistant *Staphylococcus aureus;* MSSA: methicillin-susceptible *Staphylococcus aureus; spp*: multiple species

Trends in Infection Prevention Practices Surrounding CABG Surgery

Between the 2008 and 2011 NYSDOH HAI hospital surveys, there were several noticeable changes in infection prevention practices:

- The percent of hospitals using pre-operative chlorhexidine gluconate (CHG) increased from 70% to 97%.
- The percent of hospitals using post-operative CHG increased from 10% to 26%.
- The percent of hospitals using post-operative mupirocin increased from 28% to 49%.

Risk Adjustment for CABG Chest SSIs

Certain patient and procedure-specific risk factors increased the risk of developing a chest SSI following CABG surgery. In 2012, after excluding SSIs reported through PDS methods that did not result in hospitalization, the following risk factors were associated with SSI. These variables had the following impacts on hospital-specific rates and were included in the risk-adjustment:

- Patients with diabetes were 1.6 times more likely to develop an SSI than patients without diabetes.
- Very obese patients (with body mass index [BMI] greater than or equal to 40) were 3.0 times more likely to develop an SSI, and obese patients (with BMI between 30 and 39) were 1.6 times more likely to develop an SSI than patients with BMI less than 30.

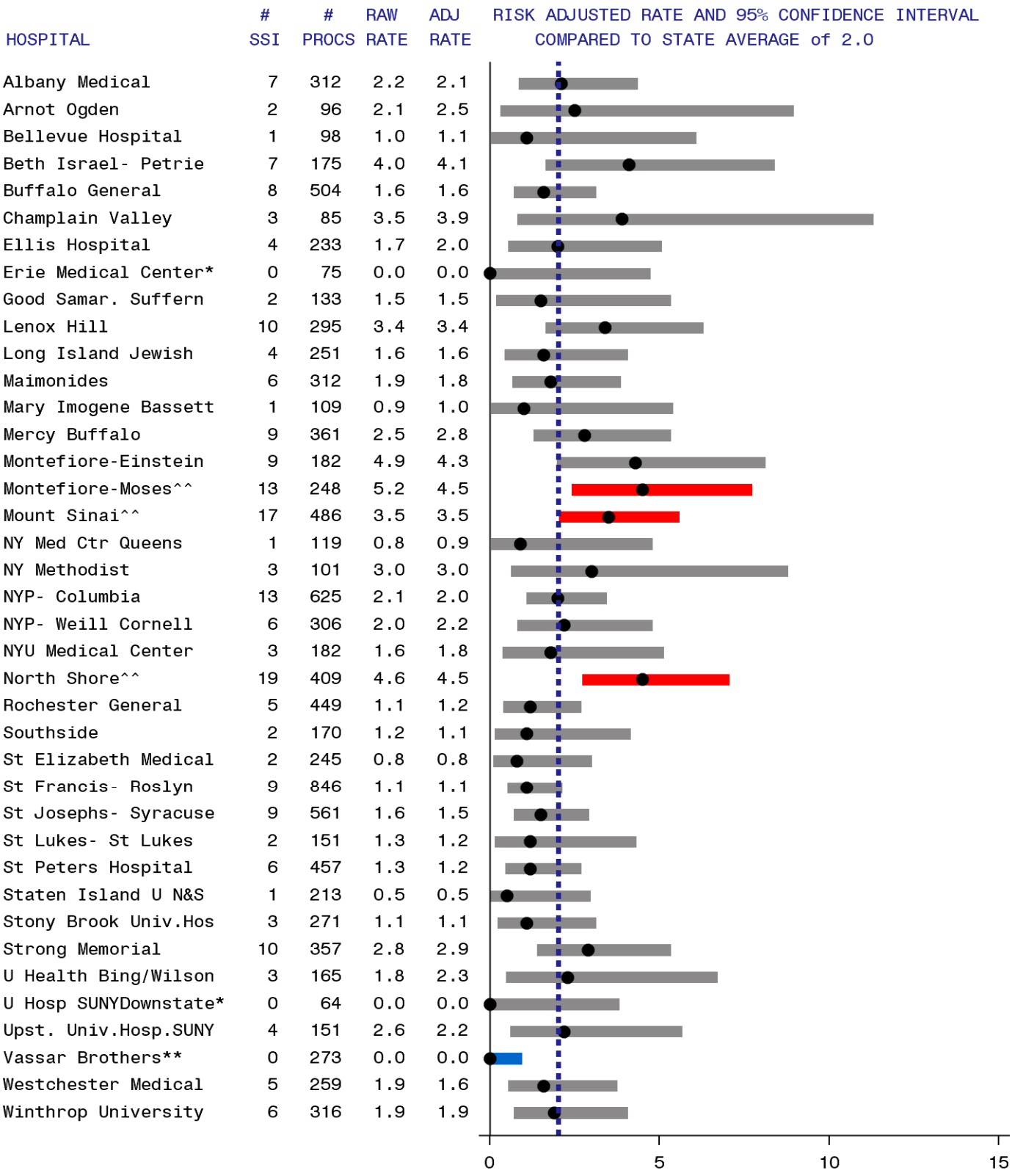
- Females were 2.1 times more likely to develop an SSI than males.
- Patients with renal failure were 2.4 times more likely to develop an SSI than patients without renal failure.
- Patients with congestive heart failure (CHF) were 1.5 times more likely to develop an SSI than patients without CHF.
- Patients with peripheral artery disease (PAD) were 1.4 times more likely to develop an SSI than patients without PAD.
- Patients who underwent procedures with a total duration longer than approximately 5 hours (exact time depending on whether a separate donor incision was used) were 1.5 times more likely to develop an SSI than patients undergoing shorter procedures.

Hospital-Specific CABG Chest SSI Rates

Risk-adjusted hospital-specific CABG chest SSI rates were calculated after deleting the 8 infections that were detected using PDS and did not result in hospitalization. This changed the State CABG chest SSI rate from 2.08% to 2.01%.

Hospital-specific CABG chest SSI rates are provided in Figure 4. Refer to Appendix 3, Figure 19 for more information about reading Figure 4. In 2012 of the 39 reporting hospitals, three (8%) had CABG chest SSI rates that were statistically higher than the state average; Mount Sinai Hospital was significantly higher for the previous four years as well. Vassar Brothers Medical Center had a rate statistically lower than the state average for four years in a row (2009-2012).

Figure 4. Coronary Artery Bypass Graft Chest Site Infection Rates, New York 2012 (page 1 of 1)



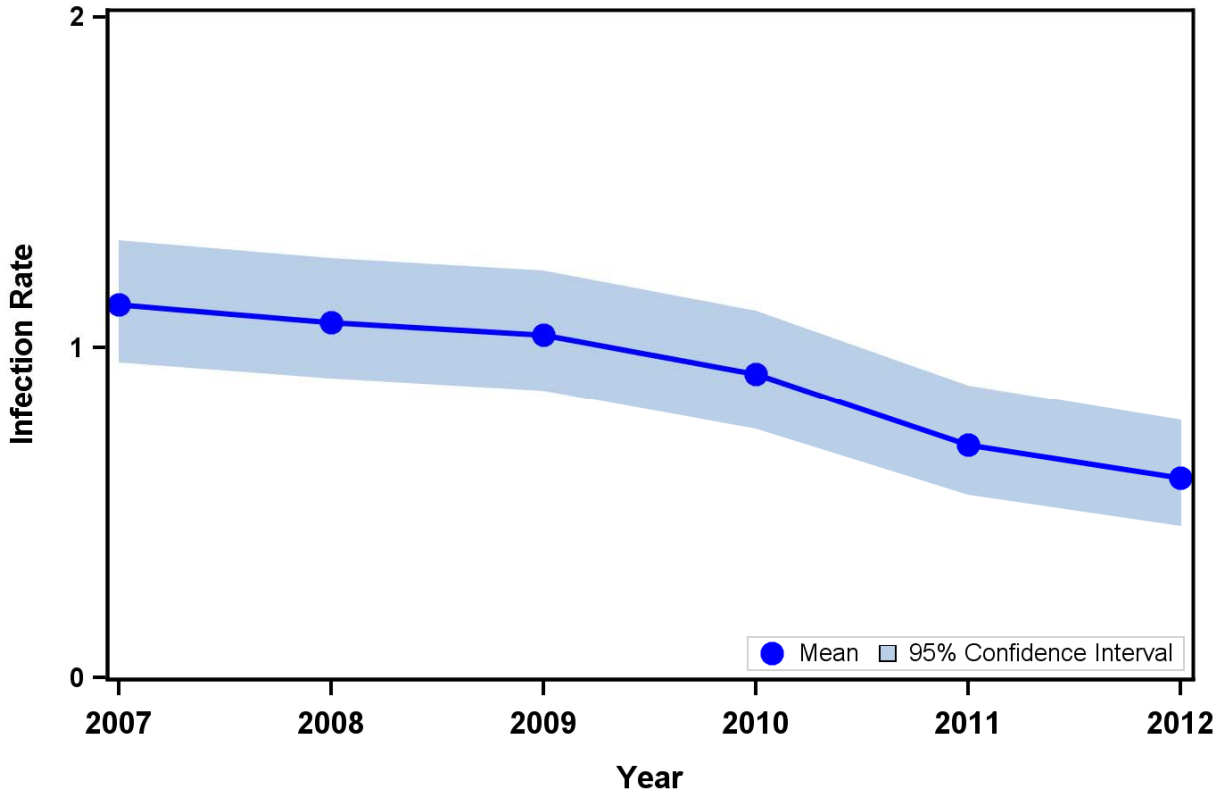
State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 35, 2013. NHSN Codes CBGB and CBGC. Excludes non-readmitted cases identified using post discharge surveillance. Adjusted using diabetes, body mass index, gender, end stage renal disease, CHF, peripheral artery disease, and duration.

CABG Donor Site infections

Time Trends in CABG Donor SSIs

Between 2007 and 2012, the NYS CABG donor surgical site infection rate significantly declined 47%, from 1.1 infections per 100 procedures in 2007 to 0.6 infections per 100 procedures in 2012 (Figure 5).

Figure 5. Trend in Coronary Artery Bypass Graft Donor Site Infection Rates, New York State 2007-2012



Year	# Hospitals	# Infections	# Procedures	Infection Rate and 95% Confidence Interval
2007	40	149	13,203	1.13 (0.96, 1.32)
2008	40	139	12,905	1.08 (0.91, 1.27)
2009	40	129	12,416	1.04 (0.87, 1.23)
2010	39	105	11,429	0.92 (0.75, 1.11)
2011	40	73	10,365	0.70 (0.55, 0.88)
2012	39	58	9,636	0.60 (0.46, 0.78)

New York State Data reported as of July 25, 2013. Infection rate is the number of infections divided by the number of procedures, multiplied by 100. Includes non-readmitted cases identified using post discharge surveillance. Due to continued auditing of the data, the 2011 infection rate reported in the previous annual report increased from 0.69 to 0.70.

Severity of CABG Donor SSIs

Of the 58 CABG donor SSIs reported in 2012, 76% were superficial, while 24% were deep. The majority of the SSIs (62%) were detected during readmission to the same hospital, 19% were identified during the initial hospitalization, 10% involved readmission to another hospital, and 9% were detected in outpatient locations. The majority of infections detected in outpatient locations were superficial. Detection of SSIs in outpatient locations using PDS is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these five infections (Table 8) in hospital-specific comparisons.

Table 8. Method of Detection for Coronary Artery Bypass Graft Donor Site Infection by Depth of Infection, New York State 2012

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Detected in Outpatient Settings**	**Total**
Superficial Incisional	8 (18.2%) (72.7%)	27 (61.4%) (75.0%)	5 (11.4%) (83.3%)	4 (9.1%) (80.0%)	44 (75.9%)
Deep Incisional	3 (21.4%) (27.3%)	9 (64.3%) (25.0%)	1 (7.1%) (16.7%)	1 (7.1%) (20.0%)	14 (24.1%)
Total	11 (19.0%)	36 (62.1%)	6 (10.3%)	5 (8.6%)	58

New York State data reported as of July 25, 2013.

Microorganisms Associated with CABG Donor SSIs

In NYS, the most common microorganisms associated with CABG donor SSIs were *Staphylococcus aureus,* coagulase-negative Staphylococci, and Enterococci (Table 9). The distribution of microorganisms associated with CABG donor site SSIs is similar to previous NYS HAI public reports.

Table 9. Microorganisms Identified in Coronary Artery Bypass Donor Site Infections, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	16	27.6
(MRSA)	(6)	(10.3)
(MSSA)	(10)	(17.2)
Pseudomonas spp.	12	20.7
Escherichia coli	9	15.5
Enterococci	8	13.8
(VRE)	(2)	(3.4)
Coagulase negative Staphylococci	7	12.1
Proteus spp.	6	10.3
Klebsiella spp.	2	3.4
(CephR-*Klebsiella*)	(1)	(1.7)
Other	8	13.8

New York State data reported as of July 25, 2013. Out of 58 infections (includes post-discharge surveillance). No microorganisms identified for 10 infections.
MRSA: methicillin-resistant *Staphylococcus aureus;* MSSA: methicillin-susceptible *Staphylococcus aureus;* VRE: vancomycin-resistant enterococcus;
CephR: cephalosporin-resistant; *spp*: multiple species.

Risk Adjustment for CABG Donor SSIs

Certain patient and procedure-specific factors increased the risk of developing a donor-site SSI following CABG surgery. In 2012, after excluding SSIs identified using PDS that did not result in hospitalization, the following risk factors were associated with SSI. These variables were used to risk-adjust hospital-specific rates:

- Obese patients (with BMI greater than or equal to 30) were 5.6 times more likely to develop an SSI than patients with BMI less than 30.
- Procedures with a total duration longer than approximately 5 hours were 2.1 times more likely to result in an SSI than shorter procedures.
- Patients undergoing non-autologous intraoperative blood transfusion were 2.6 times more likely to develop an SSI than patients without this type of transfusion.

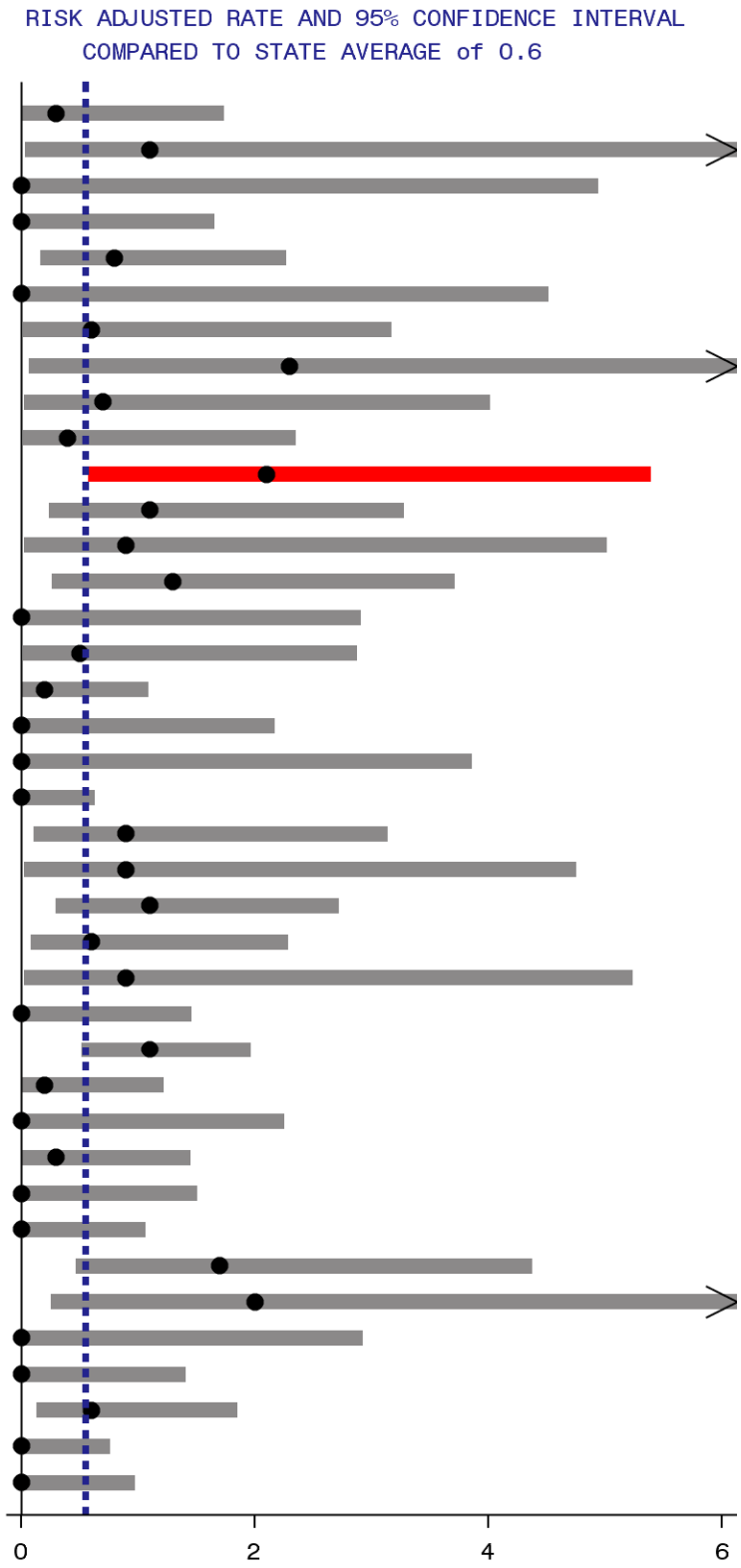
Hospital-Specific CABG Donor SSI rates

Risk-adjusted hospital-specific CABG donor SSI rates were calculated after deleting the five infections that were detected using PDS and did not result in hospitalization. This changed the State CABG donor site SSI rate from 0.60% to 0.55%.

Hospital-specific CABG donor-site SSI rates are provided in Figure 6. Refer to Appendix 3, Figure 19 for more information about reading Figure 6. In 2012, of the 39 hospitals reporting, one (3%) had a CABG donor-site SSI rate that was statistically higher than the state average.

Figure 6. Coronary Artery Bypass Graft Donor Site Infection Rates, New York 2012 (page 1 of 1)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Albany Medical	1	282	0.4	0.3
Arnot Ogden	1	82	1.2	1.1
Bellevue Hospital*	0	91	0.0	0.0
Beth Israel- Petrie*	0	162	0.0	0.0
Buffalo General	3	457	0.7	0.8
Champlain Valley*	0	81	0.0	0.0
Ellis Hospital	1	224	0.4	0.6
Erie Medical Center	1	53	1.9	2.3
Good Samar. Suffern	1	127	0.8	0.7
Lenox Hill	1	229	0.4	0.4
Long Island Jewish^^	4	235	1.7	2.1
Maimonides	3	291	1.0	1.1
Mary Imogene Bassett	1	101	1.0	0.9
Mercy Buffalo	3	321	0.9	1.3
Montefiore-Einstein*	0	113	0.0	0.0
Montefiore-Moses	1	226	0.4	0.5
Mount Sinai	1	486	0.2	0.2
NY Med Ctr Queens*	0	116	0.0	0.0
NY Methodist*	0	97	0.0	0.0
NYP- Columbia*	0	523	0.0	0.0
NYP- Weill Cornell	2	282	0.7	0.9
NYU Medical Center	1	143	0.7	0.9
North Shore	4	349	1.1	1.1
Rochester General	2	445	0.4	0.6
Southside	1	109	0.9	0.9
St Elizabeth Medical*	0	207	0.0	0.0
St Francis- Roslyn	10	807	1.2	1.1
St Josephs- Syracuse	1	489	0.2	0.2
St Lukes- St Lukes*	0	136	0.0	0.0
St Peters Hospital	1	419	0.2	0.3
Staten Island U N&S*	0	205	0.0	0.0
Stony Brook Univ.Hos*	0	252	0.0	0.0
Strong Memorial	4	326	1.2	1.7
U Health Bing/Wilson	2	156	1.3	2.0
U Hosp SUNYDownstate*	0	59	0.0	0.0
Upst. Univ.Hosp.SUNY*	0	133	0.0	0.0
Vassar Brothers	3	273	1.1	0.6
Westchester Medical*	0	244	0.0	0.0
Winthrop University*	0	260	0.0	0.0



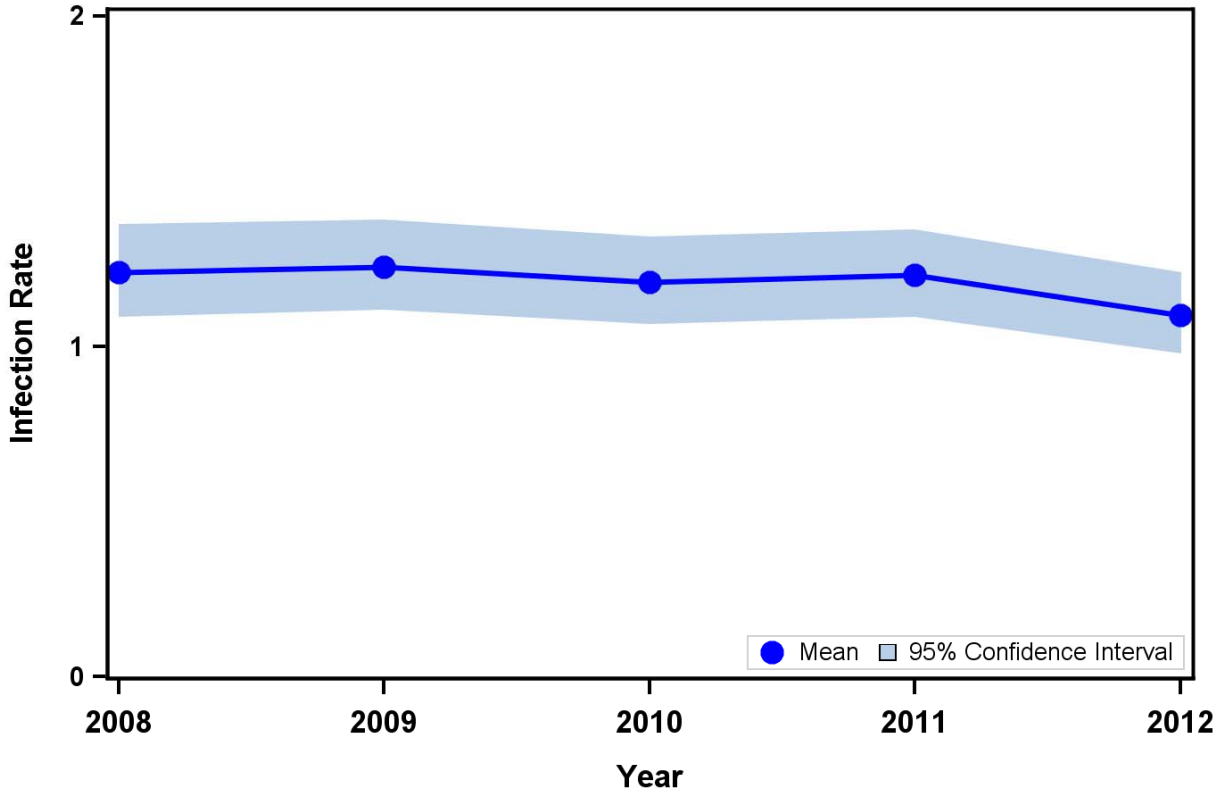
State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures. Only one donor site infection per person is counted.
Data Reported as of July 25, 2013. NHSN Code CBGB. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using body mass index, duration, and transfusion.

Hip Replacement/Revision Surgical Site Infections

Time Trends in Hip SSIs

In 2012, 165 hospitals reported both total and partial hip joint replacement/revision procedures. Between 2008 and 2012, there was no significant change in the NYS hip replacement/revision surgical site infection rate of 1 infection per 100 procedures (Figure 7).

Figure 7. Trend in Hip Surgical Site Infection Rates, New York State 2008-2012



Year	# Hospitals	# Infections	# Procedures	Infection Rate and 95% Confidence Interval
2008	172	298	24,357	1.22 (1.09, 1.37)
2009	169	321	25,847	1.24 (1.11, 1.38)
2010	167	314	26,287	1.19 (1.07, 1.33)
2011	167	332	27,303	1.22 (1.09, 1.35)
2012	165	311	28,395	1.10 (0.98, 1.22)

New York State data reported as of July 25, 2013. Infection rate is the number of infections divided by the number of procedures, multiplied by 100. Includes non-readmitted cases identified using post discharge surveillance.
Due to continued auditing of the data and newly identified infections occurring up to one year after the procedure, the 2011 infection rate reported in the previous annual report increased from 1.18 to 1.22.

Depth of Hip Replacement/Revision SSIs

Of the 311 hip SSI reported in 2012, 28% were superficial, 44% were deep, and 28% were organ/space. The majority of the SSIs (80%) were detected upon readmission to the same hospital, 7% were identified during the initial hospitalization, 9% involved readmission to another hospital, and 5% were detected in outpatient settings. Detection of SSIs in outpatient locations using PDS is labor intensive and is not standardized across hospitals; therefore, NYSDOH did not include these 15 infections (Table 10) in hospital-specific comparisons.

Table 10. Method of Detection of Hip Surgical Site Infection by Depth of Infection, New York State 2012

Extent (Row%) (Column%)	When Detected				
	Initial Hospitalization	Readmitted to the Same Hospital	Readmitted to Another Hospital	Detected in Outpatient Settings	Total
Superficial Incisional	9 (10.3%) (42.9%)	62 (71.3%) (25.0%)	10 (11.5%) (37.0%)	6 (6.9%) (40.0%)	87 (28.0%)
Deep Incisional	11 (8.0%) (52.4%)	105 (76.6%) (42.3%)	14 (10.2%) (51.9%)	7 (5.1%) (46.7%)	137 (44.1%)
Organ/Space	1 (1.1%) (4.8%)	81 (93.1%) (32.7%)	3 (3.4%) (11.1%)	2 (2.3%) (13.3%)	87 (28.0%)
Total	21 (6.8%)	248 (79.7%)	27 (8.7%)	15 (4.8%)	311

New York State data reported as of July 25, 2013.

Microorganisms Associated with Hip SSIs

The most common microorganisms associated with hip SSIs were *Staphylococcus aureus,* coagulase-negative Staphylococci, and Enterococci (Table 11). The distribution of microorganisms associated with hip replacement SSIs is consistent with previous NYS HAI public reports

Table 11. Microorganisms Identified in Hip Replacement Surgical Site Infections, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	162	52.1
(MRSA)	(66)	(21.2)
(MSSA)	(86)	(27.7)
Coagulase negative Staphylococci	40	12.9
Enterococci	34	10.9
(VRE)	(7)	(2.3)
Pseudomonas spp.	20	6.4
Escherichia coli	19	6.1
Proteus spp.	18	5.8
Streptococci	15	4.8
Klebsiella spp.	12	3.9
(CephR-*Klebsiella*)	(2)	(0.6)
Enterobacter spp.	11	3.5
Morganella morganii	7	2.3
Acinetobacter spp.	6	1.9
(MDRO-*Acinetobacter*)	(1)	(0.3)
Other	18	5.8

New York State data reported as of July 25, 2013. Out of 311 infections (includes post-discharge surveillance). No microorganisms identified for 22 infections.
VRE: vancomycin-resistant enterococcus; CephR: cephalosporin-resistant;
MDRO: multidrug-resistant; MRSA: methicillin-resistant *Staphylococcus aureus;*
MSSA: methicillin-susceptible *Staphylococcus aureus; spp*: multiple species

Trends in Infection Prevention Practices Surrounding Hip Surgery

Between the 2008 and 2011 NYSDOH HAI hospital surveys, there were several noticeable changes in infection prevention practices:

- The percent of hospitals using pre-operative chlorhexidine gluconate (CHG) increased from 32% to 62%.
- The percent of hospitals performing pre-operative nasal screening increased from 16% to 43%.
- The percent of hospitals using pre-operative mupirocin on some or all patients increased from 6% to 36%.

- The percent of hospitals using post-operative mupirocin on some or all patients increased from 2% to 12%.

Risk Adjustment for Hip Surgical Site Infections

Certain patient and procedure-specific factors increased the risk of developing an SSI following hip surgery. In 2012, after excluding SSIs identified using PDS that did not result in hospitalization, the following risk factors were associated with SSIs. These variables were used to risk-adjust hospital-specific rates.

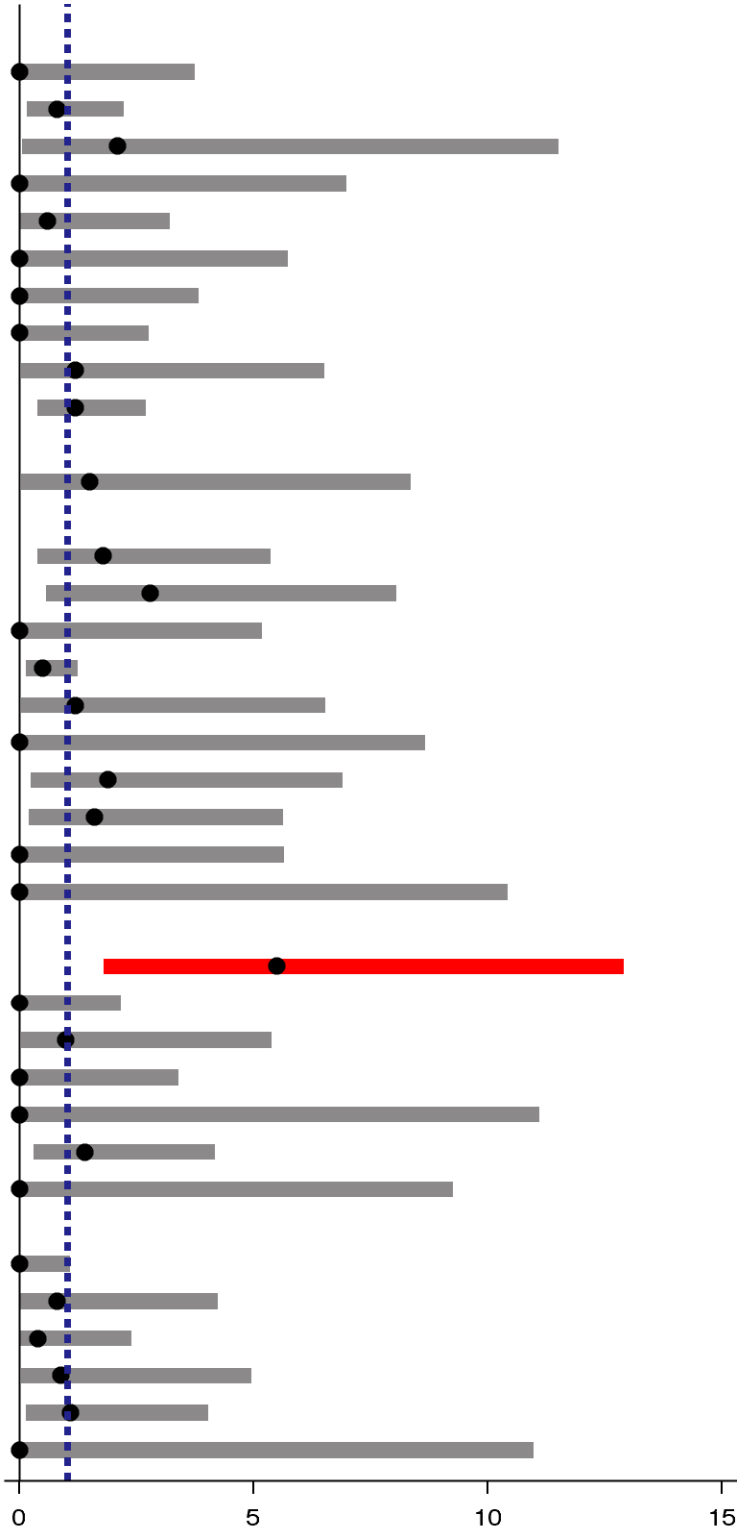
- Patients with an ASA score of 3, 4, or 5 were 2.8 times more likely to develop an SSI than patients with an ASA score of 1 or 2.
- The risk of SSI varied by type of hip procedure. Compared to total and partial primary hip replacement procedures, partial and total revisions were 1.8 times more likely to result in an SSI.
- Procedures with duration longer than the 75th percentile (by type of hip procedure) were 2.4 times more likely to result in an SSI than procedures of shorter duration.
- Procedures that were the result of a broken hip bone/joint or other traumatic injury to the patient were 1.4 times more likely to result in an SSI than elective surgeries.

Hospital-Specific Hip SSI Rates

Risk-adjusted hospital-specific hip SSI rates were calculated after deleting the 15 infections that were detected using PDS and did not result in hospitalization. This changed the NYS hip replacement/revision SSI rate from 1.10% to 1.04%. Hospital-specific hip SSI rates are provided in Figure 8. Refer to Appendix 3, Figure 19 for more information about reading Figure 8. In 2012, eight hospitals (5%) had hip SSI rates that were statistically higher than the state average. Two hospitals (1%) had SSI rates that were significantly lower than the state average; Hospital for Special Surgery was significantly lower in all of the past five years (2008-2012).

Figure 8. Hip Replacement Surgical Site Infection Rates, New York 2012 (page 1 of 5)

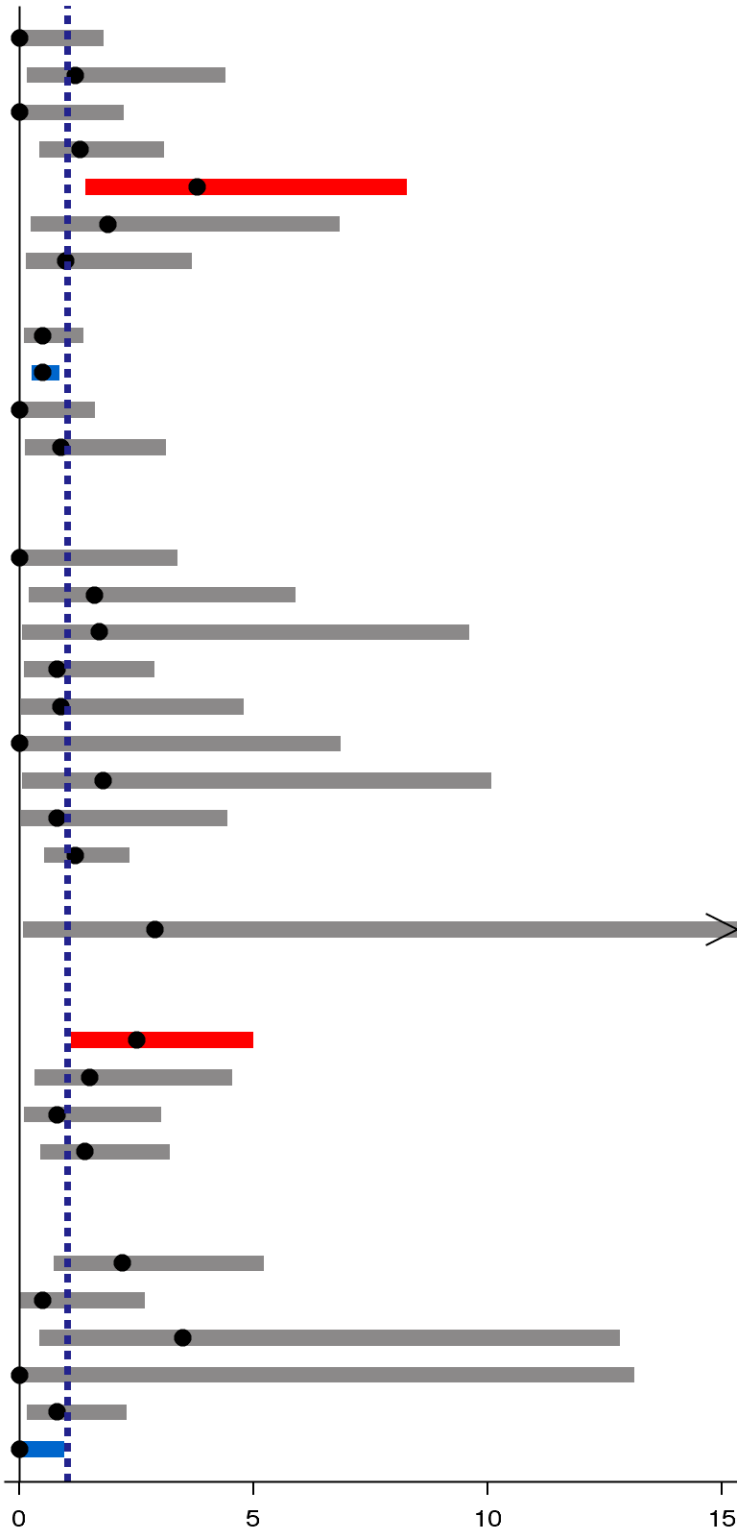
HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
AO Fox Memorial	NA	NA	NA	NA
Adirondack Medical*	0	60	0.0	0.0
Albany Medical	3	397	0.8	0.8
Albany Memorial	1	49	2.0	2.1
Alice Hyde*	0	36	0.0	0.0
Arnot Ogden	1	168	0.6	0.6
Auburn Memorial*	0	48	0.0	0.0
Bellevue Hospital*	0	48	0.0	0.0
Benedictine Hospital*	0	137	0.0	0.0
Beth Israel- Kings	1	53	1.9	1.2
Beth Israel- Petrie	5	414	1.2	1.2
Bon Secours	NA	NA	NA	NA
Bronx-Lebanon	1	48	2.1	1.5
Brookdale Hospital	NA	NA	NA	NA
Brookhaven Memorial	3	109	2.8	1.8
BrooklynHos-Downtown	3	70	4.3	2.8
Brooks Memorial*	0	78	0.0	0.0
Buffalo General	4	735	0.5	0.5
Canton-Potsdam	1	56	1.8	1.2
Catskill Regional*	0	24	0.0	0.0
Cayuga Medical Cntr	2	92	2.2	1.9
Champlain Valley	2	107	1.9	1.6
Chenango Memorial*	0	48	0.0	0.0
Claxton-Hepburn*	0	28	0.0	0.0
Clifton Springs	NA	NA	NA	NA
Columbia Memorial^^	5	77	6.5	5.5
Community Memorial*	0	208	0.0	0.0
Coney Island	1	53	1.9	1.0
Corning Hospital*	0	52	0.0	0.0
Cortland Reg Med*	0	25	0.0	0.0
Crouse Hospital	3	259	1.2	1.4
DeGraff Memorial*	0	36	0.0	0.0
Eastern Long Island	NA	NA	NA	NA
Ellis Hospital*	0	225	0.0	0.0
Elmhurst	1	67	1.5	0.8
Erie Medical Center	1	182	0.5	0.4
FF Thompson	1	139	0.7	0.9
Faxton St. Lukes	2	127	1.6	1.1
Flushing Hospital*	0	29	0.0	0.0



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, procedure type (initial/revision, total/partial), duration, and trauma.

Figure 8. Hip Replacement Surgical Site Infection Rates, New York 2012 (page 2 of 5)

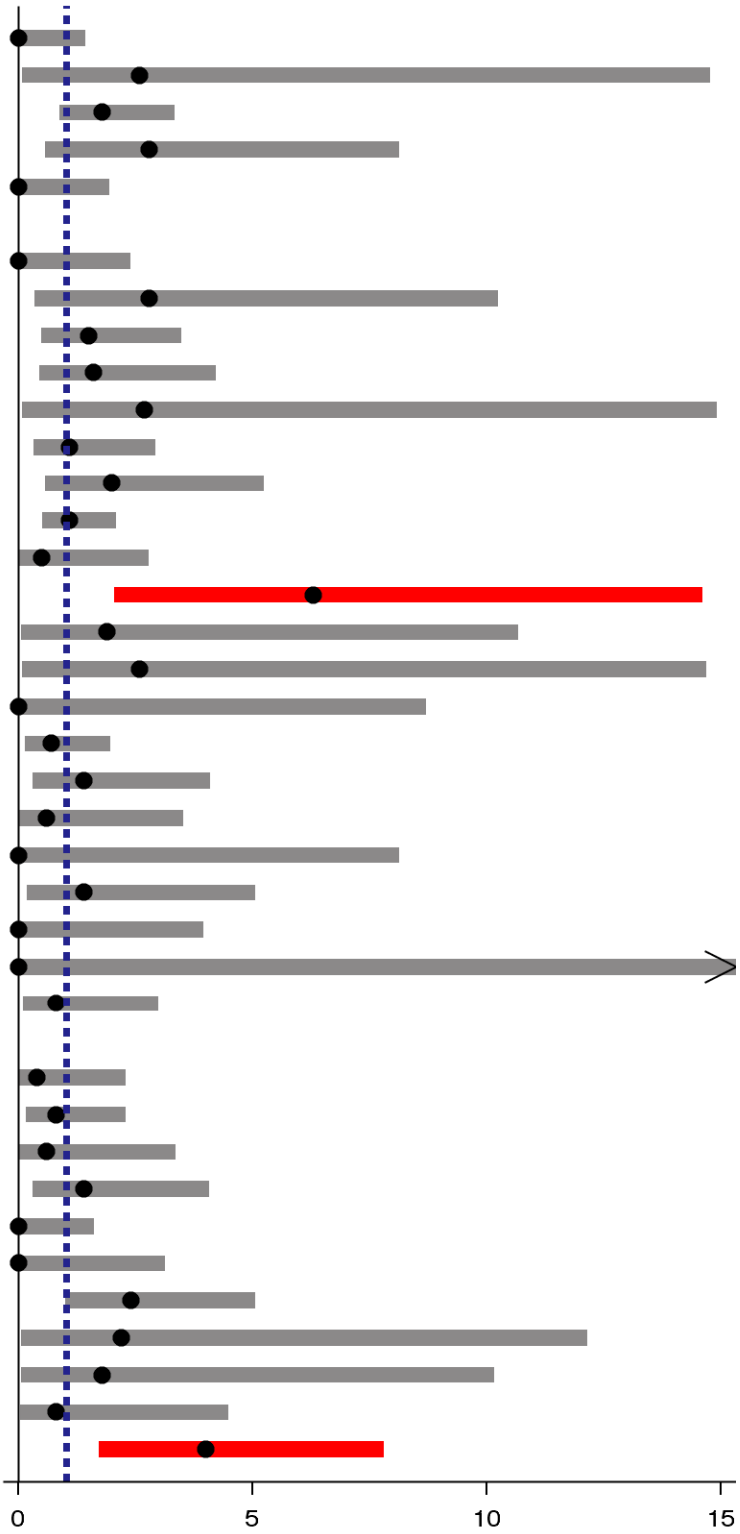
HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Forest Hills Hosp*	0	110	0.0	0.0
Franklin	2	125	1.6	1.2
Geneva General*	0	129	0.0	0.0
Glen Cove Hospital	5	458	1.1	1.3
Glens Falls^^	6	154	3.9	3.8
Good Samar. Suffern	2	111	1.8	1.9
Good Samar. W Islip	2	115	1.7	1.0
Harlem Hospital	NA	NA	NA	NA
Highland Hospital	3	742	0.4	0.5
Hosp for Spec Surg**	12	4336	0.3	0.5
Hudson Valley*	0	135	0.0	0.0
Huntington	2	217	0.9	0.9
Intercomm. Newfane	NA	NA	NA	NA
Interfaith Medical	NA	NA	NA	NA
JT Mather*	0	71	0.0	0.0
Jacobi Medical	2	62	3.2	1.6
Jamaica Hospital	1	40	2.5	1.7
Kenmore Mercy	2	389	0.5	0.8
Kings County	1	59	1.7	0.9
Kingsbrook Jewish*	0	22	0.0	0.0
Kingston Hospital	1	42	2.4	1.8
Lawrence	1	126	0.8	0.8
Lenox Hill	8	659	1.2	1.2
Lewis County	NA	NA	NA	NA
Lincoln Medical	1	25	4.0	2.9
Lockport Memorial	NA	NA	NA	NA
Long Beach	NA	NA	NA	NA
Long Island Jewish^^	8	295	2.7	2.5
Lutheran Medical	3	148	2.0	1.5
Maimonides	2	133	1.5	0.8
Mary Imogene Bassett	5	216	2.3	1.4
Massena Memorial	NA	NA	NA	NA
Medina Memorial	NA	NA	NA	NA
Mem. Sloan Kettering	5	101	5.0	2.2
Mercy Buffalo	1	151	0.7	0.5
Mercy Medical	2	61	3.3	3.5
Metropolitan*	0	27	0.0	0.0
Millard Fill. Suburb	3	461	0.7	0.8
Montefiore-Einstein**	0	219	0.0	0.0



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, procedure type (initial/revision, total/partial), duration, and trauma.

Figure 8. Hip Replacement Surgical Site Infection Rates, New York 2012 (page 3 of 5)

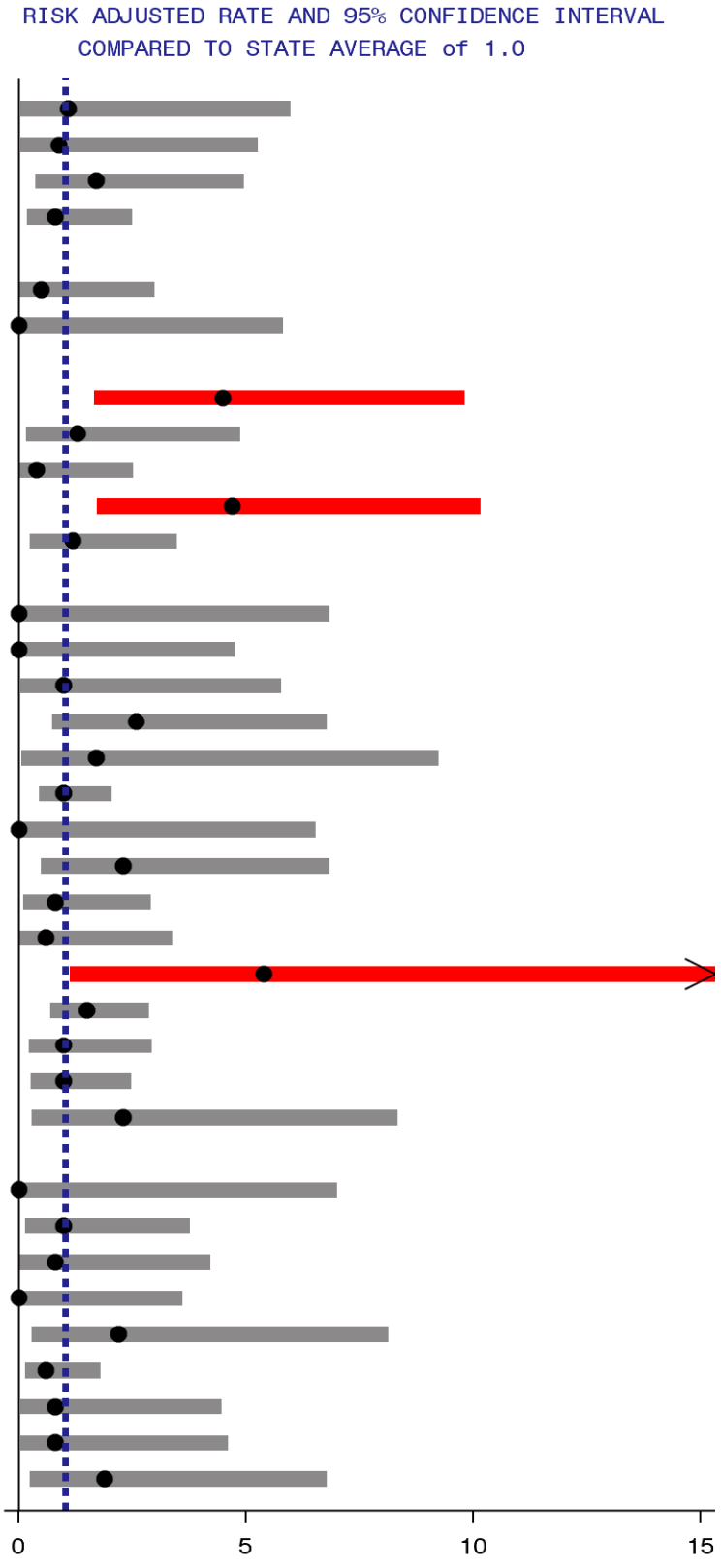
HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Montefiore-Moses*	0	137	0.0	0.0
Montifiore North	1	31	3.2	2.6
Mount Sinai	10	356	2.8	1.8
Mount Sinai Queens	3	67	4.5	2.8
Mount St. Marys*	0	97	0.0	0.0
Mount Vernon	NA	NA	NA	NA
NY Community Bklyn*	0	79	0.0	0.0
NY Downtown	2	44	4.5	2.8
NY Med Ctr Queens	5	241	2.1	1.5
NY Methodist	4	169	2.4	1.6
NYP- Allen	1	30	3.3	2.7
NYP- Columbia	4	329	1.2	1.1
NYP- Weill Cornell	4	119	3.4	2.0
NYU Joint Disease	9	1118	0.8	1.1
NYU Medical Center	1	108	0.9	0.5
Nassau University^^	5	52	9.6	6.3
Nathan Littauer	1	56	1.8	1.9
Newark Wayne	1	62	1.6	2.6
Niagara Falls*	0	23	0.0	0.0
North Shore	3	383	0.8	0.7
Northern Dutchess	3	257	1.2	1.4
Northern Westchester	1	172	0.6	0.6
Noyes Memorial*	0	34	0.0	0.0
Nyack Hospital	2	134	1.5	1.4
Olean General*	0	69	0.0	0.0
Oneida Healthcare*	0	21	0.0	0.0
OrangeReg Goshen&Mid	2	285	0.7	0.8
Oswego Hospital	NA	NA	NA	NA
Our Lady of Lourdes	1	258	0.4	0.4
Peconic Bay Medical	3	302	1.0	0.8
Phelps Memorial	1	257	0.4	0.6
Plainview Hospital	3	149	2.0	1.4
Putnam Hospital*	0	234	0.0	0.0
Richmond Univ*	0	75	0.0	0.0
Rochester General	7	393	1.8	2.4
Rome Memorial	1	40	2.5	2.2
Samaritan- Troy	1	51	2.0	1.8
Samaritan- Watertown	1	125	0.8	0.8
Saratoga Hospital^^	8	244	3.3	4.0



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, procedure type (initial/revision, total/partial), duration, and trauma.

Figure 8. Hip Replacement Surgical Site Infection Rates, New York 2012 (page 4 of 5)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Seton Health	1	83	1.2	1.1
Sisters of Charity	1	152	0.7	0.9
Sound Shore Medical	3	161	1.9	1.7
South Nassau Comm.	3	329	0.9	0.8
Southampton	NA	NA	NA	NA
Southside	1	183	0.5	0.5
St Anthony*	0	46	0.0	0.0
St Barnabas	NA	NA	NA	NA
St Catherine Siena^^	6	106	5.7	4.5
St Charles Hospital	2	197	1.0	1.3
St Elizabeth Medical	1	220	0.5	0.4
St Francis- Pough.^^	6	120	5.0	4.7
St Francis- Roslyn	3	199	1.5	1.2
St James Mercy	NA	NA	NA	NA
St Johns Episcopal*	0	30	0.0	0.0
St Johns Riverside*	0	54	0.0	0.0
St Joseph -Bethpage	1	101	1.0	1.0
St Joseph Cheektow.	4	155	2.6	2.6
St Josephs- Elmira	1	50	2.0	1.7
St Josephs- Syracuse	8	1022	0.8	1.0
St Josephs- Yonkers*	0	34	0.0	0.0
St Lukes- Roosevelt	3	108	2.8	2.3
St Lukes- St Lukes	2	197	1.0	0.8
St LukesNewburgh&Cor	1	152	0.7	0.6
St Marys Amsterdam^^	3	70	4.3	5.4
St Peters Hospital	9	847	1.1	1.5
Staten Island U N&S	3	209	1.4	1.0
Stony Brook Univ.Hos	4	297	1.3	1.0
Strong Memorial	2	49	4.1	2.3
Syosset Hospital	NA	NA	NA	NA
TLC Lake Shore*	0	52	0.0	0.0
U Health Bing/Wilson	2	231	0.9	1.0
U Hosp Brooklyn LICH	1	71	1.4	0.8
U Hosp SUNYDownstate*	0	53	0.0	0.0
United Memorial	2	89	2.2	2.2
Unity Hosp Rochester	3	571	0.5	0.6
Upst. Community Gen	1	150	0.7	0.8
Upst. Univ.Hosp.SUNY	1	84	1.2	0.8
Vassar Brothers	2	107	1.9	1.9



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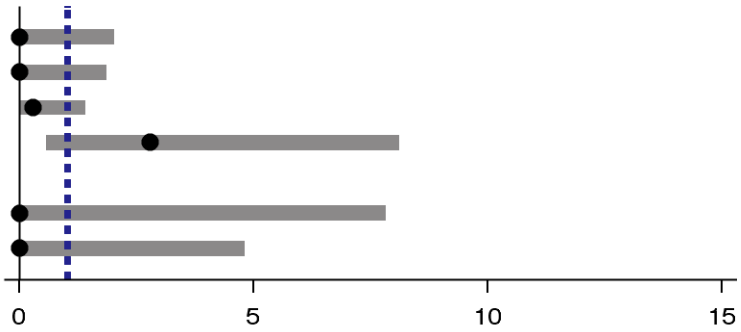
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, procedure type (initial/revision, total/partial), duration, and trauma.

Figure 8. Hip Replacement Surgical Site Infection Rates, New York 2012 (page 5 of 5)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Westchester Medical*	0	91	0.0	0.0
White Plains*	0	176	0.0	0.0
Winthrop University	1	286	0.3	0.3
Womans Christian	3	93	3.2	2.8
Woodhull Medical	NA	NA	NA	NA
Wyckoff Heights*	0	21	0.0	0.0
Wyoming County Comm.*	0	35	0.0	0.0



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, procedure type (initial/revision, total/partial), duration, and trauma.

Abdominal Hysterectomy Surgical Site Infections

Abdominal hysterectomy SSIs were reported for the first time in 2012. Two out of every 100 hysterectomies performed in NYS developed a SSI (Table 12).

Table 12. Hysterectomy Surgical Site Infection Rates, New York State 2012

Year	# Hospitals	# Infections	# Procedures	Infection Rate and 95% Confidence Interval
2012	162	415	19,048	2.18 (1.98, 2.40)

New York State data reported as of July 25, 2013. Infection rate is the number of infections divided by the number of procedures, multiplied by 100. Includes non-readmitted cases identified using post discharge surveillance.

Depth of Hysterectomy SSIs

Of the 415 hysterectomy SSI reported in 2012, 41% were superficial, 17% were deep, and 42% were organ/space. Half of the SSIs (51%) were detected upon readmission to the same hospital, 25% were detected in outpatient settings, 18% were identified during the initial hospitalization, and 6% involved readmission to another hospital. Detection of SSIs in outpatient locations using PDS is labor intensive and is not standardized across hospitals; therefore, NYSDOH did not include these 105 infections (Table 13) in hospital-specific comparisons.

Table 13. Method of Detection of Hysterectomy Surgical Site Infection by Depth of Infection, New York State 2012

	When Detected				
Extent (Row%) (Column%)	Initial Hospitalization	Readmitted to the Same Hospital	Readmitted to Another Hospital	Detected in Outpatient Settings	Total
Superficial Incisional	30 (17.6%) (40.0%)	58 (34.1%) (27.2%)	6 (3.5%) (25.0%)	76 (44.7%) (73.8%)	170 (41.0%)
Deep Incisional	16 (23.2%) (21.3%)	35 (50.7%) (16.4%)	5 (7.2%) (20.8%)	13 (18.8%) (12.6%)	69 (16.6%)
Organ/Space	29 (16.5%) (38.7%)	120 (68.2%) (56.3%)	11 (6.3%) (50.0%)	16 (9.1%) (15.2%)	176 (42.4%)
Total	75 (18.1%)	213 (51.3%)	22 (5.3%)	105 (25.3%)	415

New York State data reported as of July 25, 2013.

Microorganisms Associated with Hysterectomy SSIs

The most common microorganisms associated with hysterectomy SSIs were *Staphylococcus aureus,* coagulase-negative Staphylococci, and Enterococci (Table 14).

Table 14. Microorganisms Identified in Hysterectomy Surgical Site Infections, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Enterococci	59	14.2
(VRE)	(7)	(1.7)
Staphylococcus aureus	58	14.0
(MRSA)	(25)	(6.0)
(MSSA)	(31)	(7.5)
Escherichia coli	53	12.8
(CRE-*Ecoli*)	(1)	(0.2)
Coagulase negative Staphylococci	52	12.5
Streptococci	29	7.0
Enterobacter spp.	19	4.6
Pseudomonas spp.	19	4.6
Proteus spp.	17	4.1
Klebsiella spp.	14	3.4
Corynebacteria	13	3.1
Bacteroides	11	2.7
Yeast	11	2.7
Morganella morganii	5	1.2
Peptostreptococci spp.	5	1.2
Other	43	10.4

New York State data reported as of July 25, 2013.Out of 415 infections (includes post-discharge surveillance). No microorganisms identified for 130 infections.
VRE: vancomycin-resistant enterococcus; CRE: carbapenem-resistant Enterobacteriaceae; MDRO: multidrug-resistant; MRSA: methicillin-resistant *Staphylococcus aureus;* MSSA: methicillin-susceptible *Staphylococcus aureus; spp*: multiple species

Risk Adjustment for Hysterectomy Surgical Site Infections

Certain patient and procedure-specific factors increased the risk of developing an SSI following hip surgery. In 2012, after excluding SSIs identified using PDS that did not result in hospitalization, the following risk factors were associated with SSIs. These variables were used to risk-adjust hospital-specific rates.

- Patients with an ASA score of 3, 4, or 5 were 2.1 times more likely to develop an SSI than patients with an ASA score of 1 or 2.
- Procedures with duration longer 3 hours were 2.1 times more likely to result in an SSI than procedures of shorter duration.

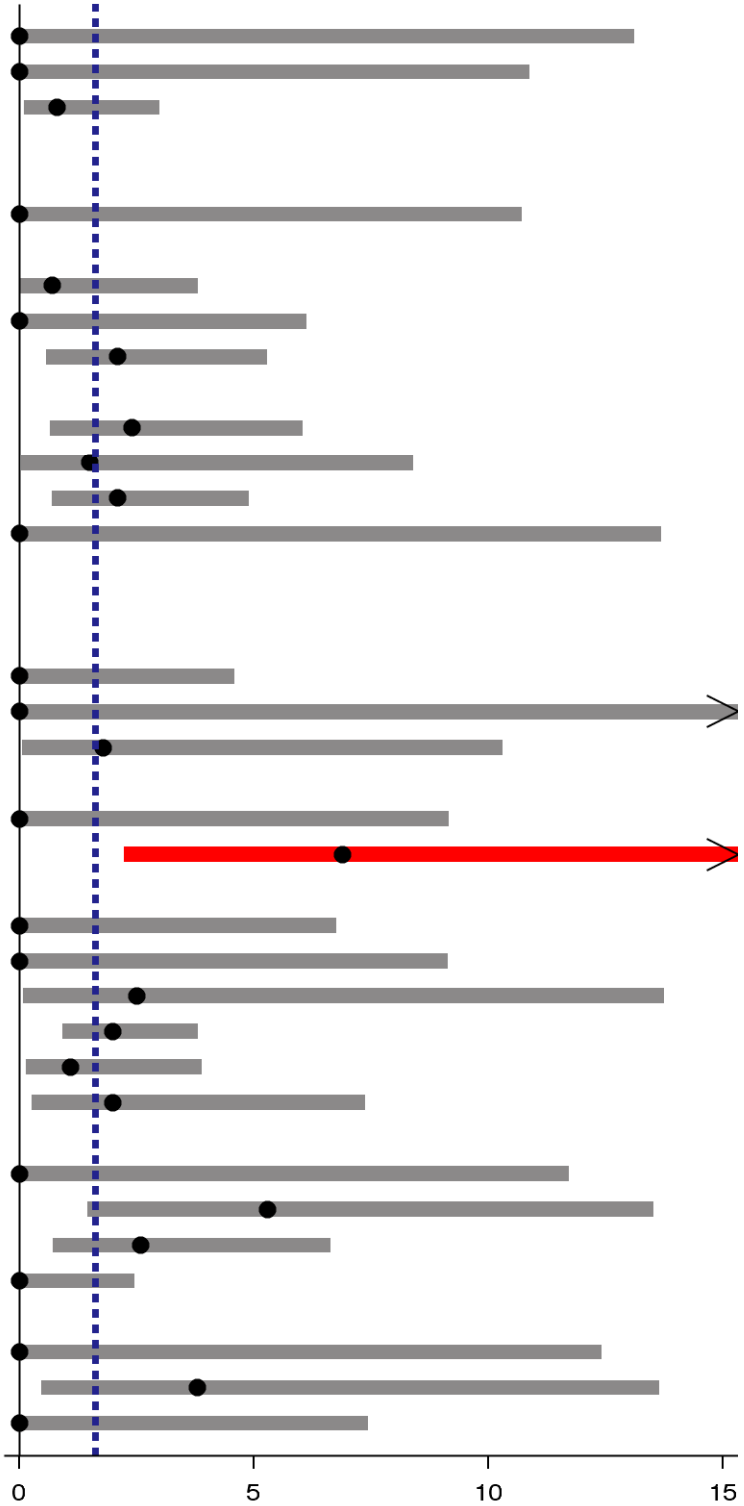
- Procedures that involved traditional surgical incisions 1.6 times more likely to result in SSI than procedures performed entirely with a laparoscopic instrument.

Hospital-Specific Hysterectomy SSI Rates

Risk-adjusted hospital-specific hysterectomy SSI rates were calculated after deleting the 105 infections that were detected using PDS and did not result in hospitalization. This changed the NYS hysterectomy SSI rate from 2.18% to 1.64%. Hospital-specific hysterectomy SSI rates are provided in Figure 9. Refer to Appendix 3, Figure 19 for more information about reading Figure 9. In 2012, eight hospitals (5%) had hysterectomy SSI rates that were statistically higher than the state average. Three hospitals (2%) had SSI rates that were significantly lower than the state average.

Figure 9. Hysterectomy Surgical Site Infection Rates, New York 2012 (page 1 of 4)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
AO Fox Memorial*	0	24	0.0	0.0
Adirondack Medical*	0	52	0.0	0.0
Albany Medical	2	239	0.8	0.8
Albany Memorial	NA	NA	NA	NA
Alice Hyde	NA	NA	NA	NA
Arnot Ogden*	0	26	0.0	0.0
Auburn Memorial	NA	NA	NA	NA
Bellevue Hospital	1	127	0.8	0.7
Beth Israel- Kings*	0	40	0.0	0.0
Beth Israel- Petrie	4	169	2.4	2.1
Bon Secours	NA	NA	NA	NA
Bronx-Lebanon	4	127	3.1	2.4
Brookdale Hospital	1	61	1.6	1.5
BrooklynHos-Downtown	5	207	2.4	2.1
Brooks Memorial*	0	25	0.0	0.0
Buffalo General	NA	NA	NA	NA
Canton-Potsdam	NA	NA	NA	NA
Carthage Area	NA	NA	NA	NA
Catskill Regional*	0	68	0.0	0.0
Cayuga Medical Cntr*	0	21	0.0	0.0
Champlain Valley	1	65	1.5	1.8
Chenango Memorial	NA	NA	NA	NA
Claxton-Hepburn*	0	43	0.0	0.0
Columbia Memorial^^	5	90	5.6	6.9
Community Memorial	NA	NA	NA	NA
Coney Island*	0	36	0.0	0.0
Corning Hospital*	0	27	0.0	0.0
Cortland Reg Med	1	54	1.9	2.5
Crouse Hospital	9	550	1.6	2.0
Ellis Hospital	2	231	0.9	1.1
Elmhurst	2	94	2.1	2.0
Erie Medical Center	NA	NA	NA	NA
FF Thompson*	0	28	0.0	0.0
Faxton St. Lukes	4	83	4.8	5.3
Flushing Hospital	4	188	2.1	2.6
Forest Hills Hosp*	0	131	0.0	0.0
Franklin	NA	NA	NA	NA
Geneva General*	0	35	0.0	0.0
Glens Falls	2	58	3.4	3.8
Good Samar. Suffern*	0	37	0.0	0.0



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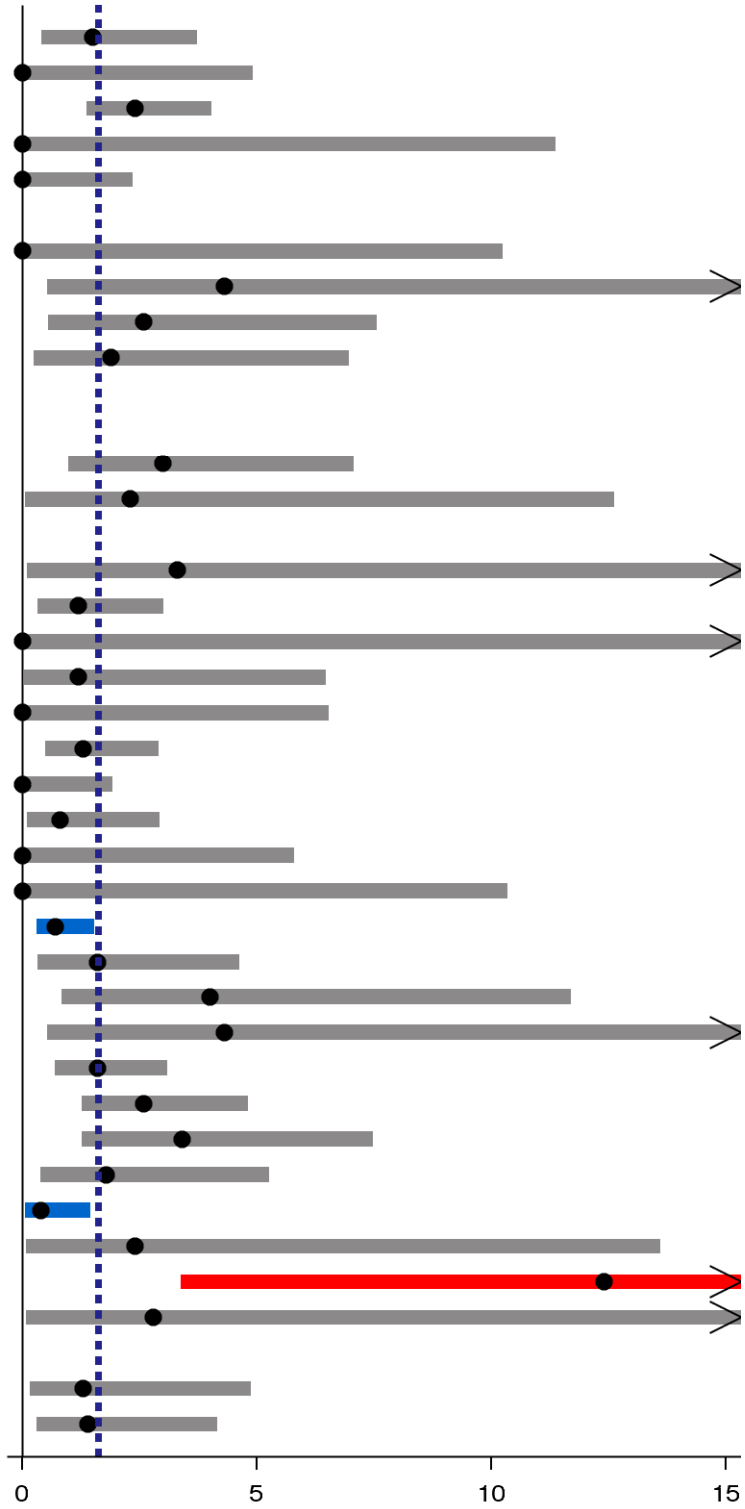
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, and endoscope.

Figure 9. Hysterectomy Surgical Site Infection Rates, New York 2012 (page 2 of 4)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
Good Samar. W Islip	4	302	1.3	1.5
Harlem Hospital*	0	55	0.0	0.0
Highland Hospital	15	690	2.2	2.4
Hudson Valley*	0	27	0.0	0.0
Huntington*	0	199	0.0	0.0
Intercomm. Newfane	NA	NA	NA	NA
Interfaith Medical*	0	21	0.0	0.0
JT Mather	2	50	4.0	4.3
Jacobi Medical	3	78	3.8	2.6
Jamaica Hospital	2	107	1.9	1.9
Jones Memorial	NA	NA	NA	NA
Kenmore Mercy	NA	NA	NA	NA
Kings County	5	135	3.7	3.0
Kingsbrook Jewish	1	45	2.2	2.3
Kingston Hospital	NA	NA	NA	NA
Lawrence	1	40	2.5	3.3
Lenox Hill	4	339	1.2	1.2
Lewis County*	0	20	0.0	0.0
Lincoln Medical	1	66	1.5	1.2
Lockport Memorial*	0	52	0.0	0.0
Long Island Jewish	6	403	1.5	1.3
Lutheran Medical*	0	166	0.0	0.0
Maimonides	2	248	0.8	0.8
Mary Imogene Bassett*	0	66	0.0	0.0
Massena Memorial*	0	26	0.0	0.0
Mem. Sloan Kettering**	7	614	1.1	0.7
Mercy Buffalo	3	279	1.1	1.6
Mercy Medical	3	101	3.0	4.0
Metropolitan	2	49	4.1	4.3
Millard Fill. Suburb	8	619	1.3	1.6
Montefiore-Einstein	10	253	4.0	2.6
Montefiore-Moses	6	167	3.6	3.4
Montifiore North	3	166	1.8	1.8
Mount Sinai**	2	453	0.4	0.4
Mount Sinai Queens	1	48	2.1	2.4
Mount St. Marys^^	4	31	12.9	12.4
Mount Vernon	1	45	2.2	2.8
NY Community Bklyn	NA	NA	NA	NA
NY Downtown	2	126	1.6	1.3
NY Med Ctr Queens	3	167	1.8	1.4



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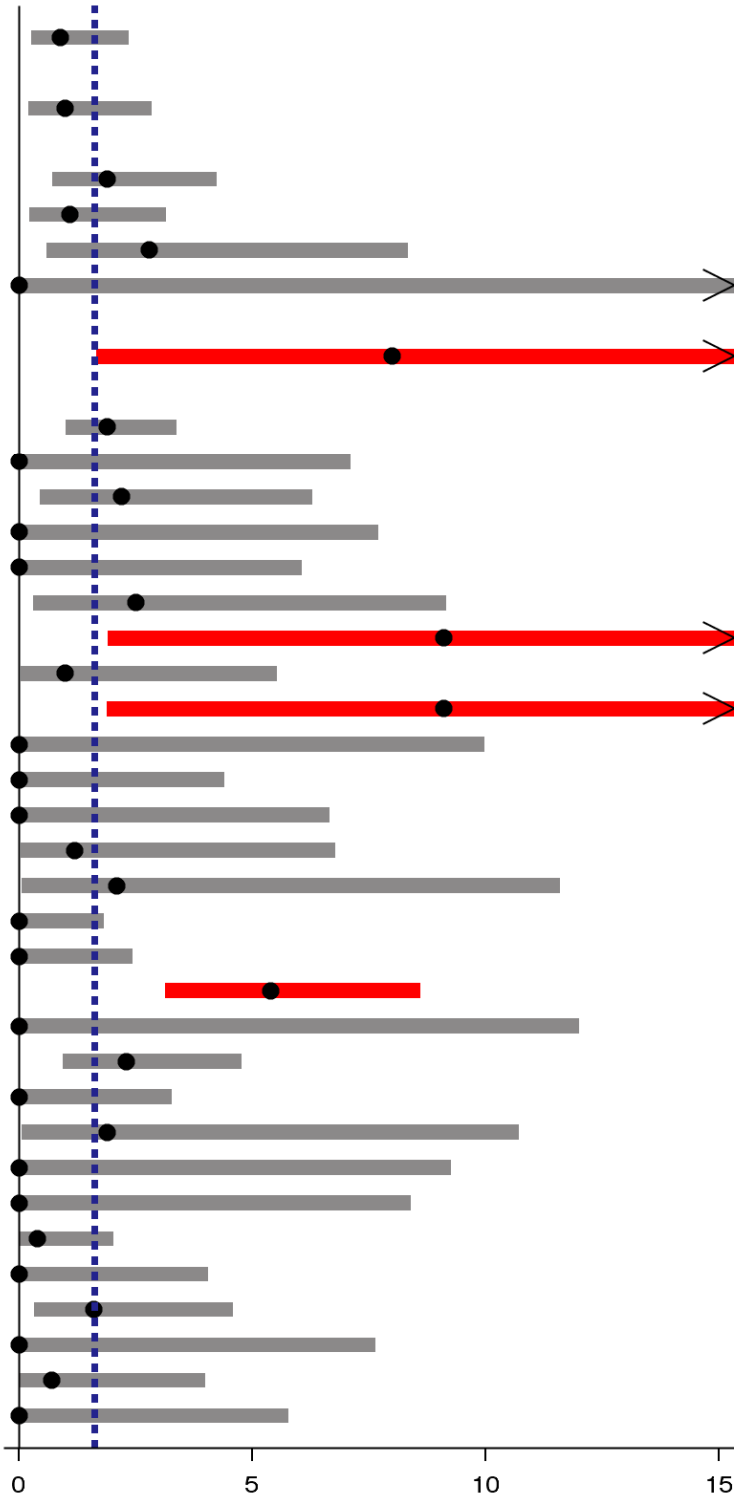
Adjusted using ASA score, duration, and endoscope.

Figure 9. Hysterectomy Surgical Site Infection Rates, New York 2012 (page 3 of 4)

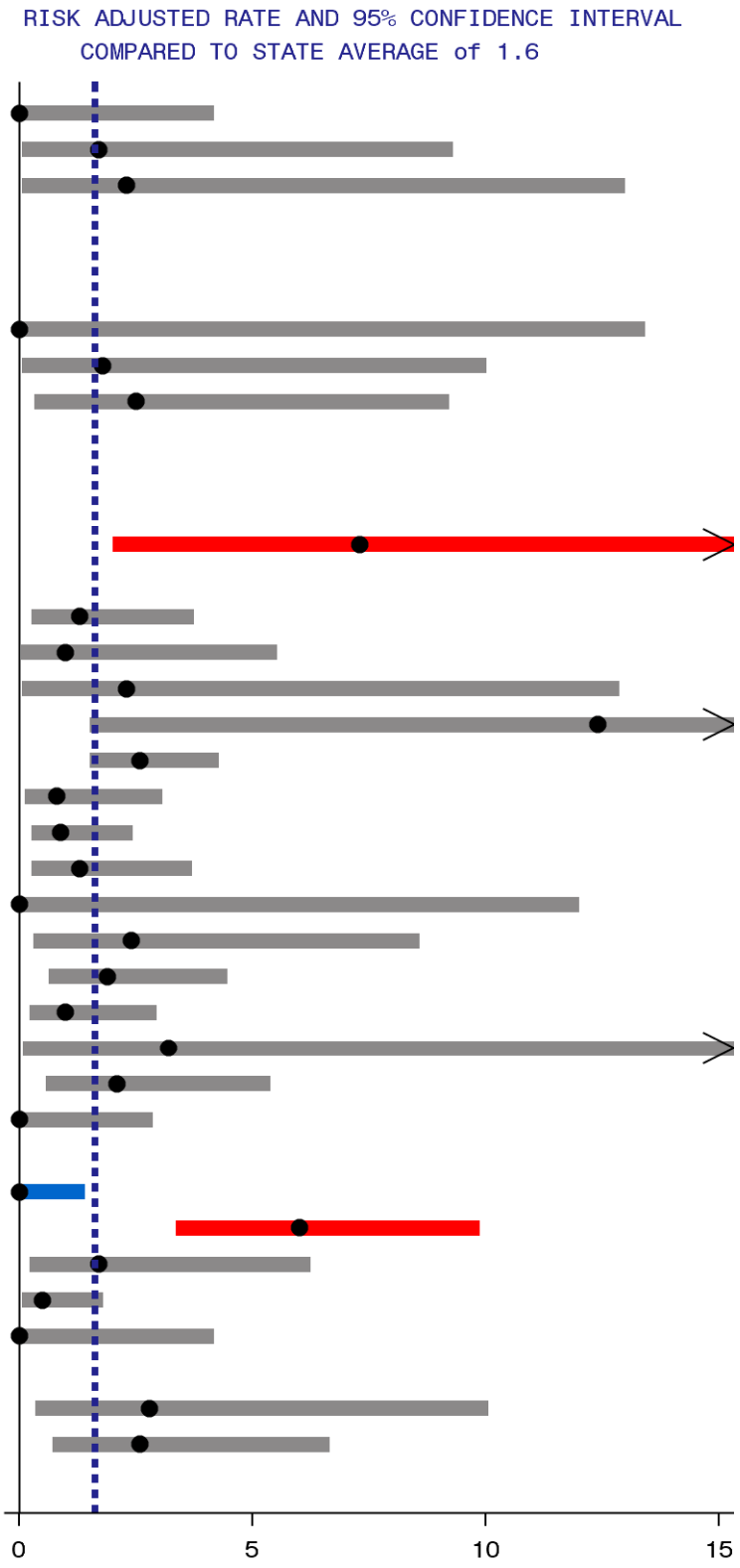
HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
NY Methodist	4	429	0.9	0.9
NYP- Allen	NA	NA	NA	NA
NYP- Columbia	3	234	1.3	1.0
NYP- Morgan Stanley	NA	NA	NA	NA
NYP- Weill Cornell	6	247	2.4	1.9
NYU Medical Center	3	226	1.3	1.1
Nassau University	3	109	2.8	2.8
Nathan Littauer*	0	22	0.0	0.0
Newark Wayne	NA	NA	NA	NA
Niagara Falls^^	3	51	5.9	8.0
North Central Bronx	NA	NA	NA	NA
North Shore	12	565	2.1	1.9
Northern Dutchess*	0	52	0.0	0.0
Northern Westchester	3	205	1.5	2.2
Noyes Memorial*	0	39	0.0	0.0
Nyack Hospital*	0	61	0.0	0.0
Olean General	2	94	2.1	2.5
Oneida Healthcare^^	3	52	5.8	9.1
OrangeReg Goshen&Mid	1	128	0.8	1.0
Oswego Hospital^^	3	34	8.8	9.1
Our Lady of Lourdes*	0	42	0.0	0.0
Peconic Bay Medical*	0	53	0.0	0.0
Phelps Memorial*	0	55	0.0	0.0
Plainview Hospital	1	100	1.0	1.2
Putnam Hospital	1	72	1.4	2.1
Queens Hospital*	0	128	0.0	0.0
Richmond Univ*	0	108	0.0	0.0
Rochester General^^	17	468	3.6	5.4
Rome Memorial*	0	29	0.0	0.0
Roswell Park	7	282	2.5	2.3
Samaritan- Troy*	0	130	0.0	0.0
Samaritan- Watertown	1	62	1.6	1.9
Saratoga Hospital*	0	49	0.0	0.0
Seton Health*	0	42	0.0	0.0
Sisters of Charity	1	309	0.3	0.4
Sound Shore Medical*	0	72	0.0	0.0
South Nassau Comm.	3	197	1.5	1.6
Southampton*	0	41	0.0	0.0
Southside	1	173	0.6	0.7
St Anthony*	0	71	0.0	0.0



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, and endoscope.

Figure 9. Hysterectomy Surgical Site Infection Rates, New York 2012 (page 4 of 4)

HOSPITAL	# SSI	# PROCS	RAW RATE	ADJ RATE
St Barnabas*	0	51	0.0	0.0
St Catherine Siena	1	95	1.1	1.7
St Charles Hospital	1	47	2.1	2.3
St Elizabeth Medical	NA	NA	NA	NA
St Francis- Pough.	NA	NA	NA	NA
St Francis- Roslyn	NA	NA	NA	NA
St James Mercy*	0	27	0.0	0.0
St Johns Episcopal	1	53	1.9	1.8
St Johns Riverside	2	100	2.0	2.5
St Joseph -Bethpage	NA	NA	NA	NA
St Joseph Cheektow.	NA	NA	NA	NA
St Josephs- Elmira	NA	NA	NA	NA
St Josephs- Syracuse^^	4	51	7.8	7.3
St Josephs- Yonkers	NA	NA	NA	NA
St Lukes- Roosevelt	3	230	1.3	1.3
St Lukes- St Lukes	1	109	0.9	1.0
St LukesNewburgh&Cor	1	51	2.0	2.3
St Marys Amsterdam	2	22	9.1	12.4
St Peters Hospital	16	633	2.5	2.6
Staten Island U N&S	2	194	1.0	0.8
Stony Brook Univ.Hos	4	305	1.3	0.9
Strong Memorial	3	328	0.9	1.3
Syosset Hospital*	0	37	0.0	0.0
U Health Bing/Wilson	2	106	1.9	2.4
U Hosp Brooklyn LICH	5	187	2.7	1.9
U Hosp SUNYDownstate	3	192	1.6	1.0
United Memorial	1	43	2.3	3.2
Unity Hosp Rochester	4	248	1.6	2.1
Upst. Community Gen*	0	145	0.0	0.0
Upst. Univ.Hosp.SUNY	NA	NA	NA	NA
Vassar Brothers**	0	231	0.0	0.0
Westchester Medical^^	15	153	9.8	6.0
White Plains	2	153	1.3	1.7
Winthrop University	2	417	0.5	0.5
Woman and Childrens*	0	79	0.0	0.0
Womans Christian	NA	NA	NA	NA
Woodhull Medical	2	82	2.4	2.8
Wyckoff Heights	4	121	3.3	2.6
Wyoming County Comm.	NA	NA	NA	NA



State average. ●Risk-adjusted infection rate. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average. **Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with less than 20 procedures.
SSI: surgical site infections. Procs: procedures. Rates are per 100 procedures.
Data reported as of July 25, 2013. Excludes non-readmitted cases identified using post discharge surveillance.
Adjusted using ASA score, duration, and endoscope.

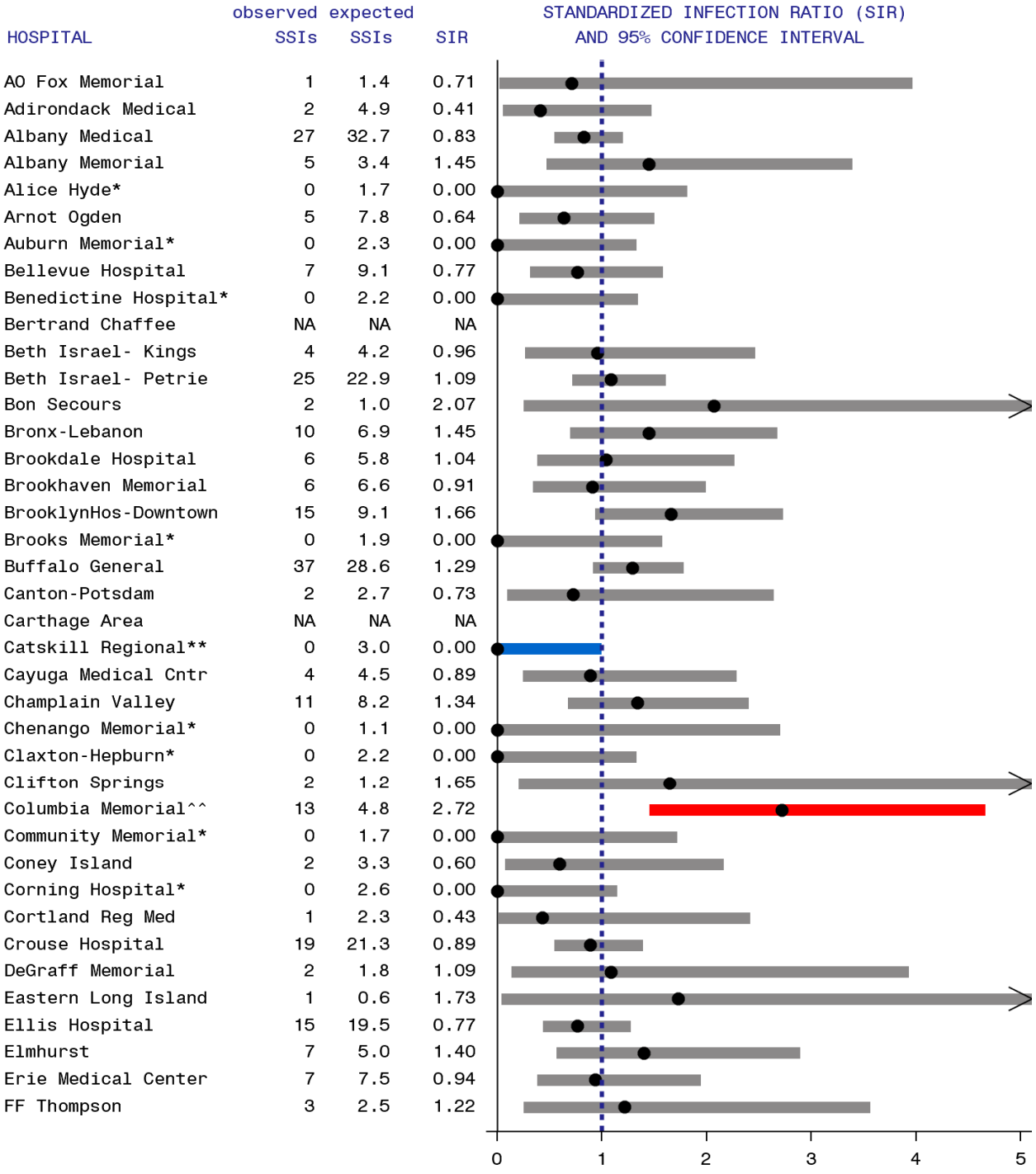
Surgical Site Infection Standardized Infection Ratios

The standardized infection ratio (SIR) is a summary measure used to compare infection data from one population to data from a "standard" population. When calculating hospital-specific SIRs in NYS reports, the standard population is all NYS hospitals reporting data to NHSN in the current year. The SSI SIR is calculated by dividing the observed number of infections in the hospital by the statistically predicted number of infections, which is calculated using the risk adjustment models described for each type of SSI.

- A SIR of 1.0 means the observed number of infections is equal to the number of predicted infections.
- A SIR above 1.0 means that the infection rate is higher than that found in the standard population. The difference above 1.0 is the percentage by which the infection rate exceeds that of the standard population.
- A SIR below 1.0 means that the infection rate is lower than that of the standard population. The difference below 1.0 is the percentage by which the infection rate is lower than that experienced by the standard population.

Figure 10 provides hospital-specific SSI SIRs for each hospital. Since the SSI SIRs combine results across the five different types of SSIs, it shows the average performance of each hospital for SSIs. In four cases, hospitals that received no individual area performance flag were significantly lower than the state average overall; combining data results in narrower confidence intervals, so hospitals that perform slightly better in many areas may look significantly better than the state average overall. Similarly, two hospitals that received no individual area performance flag were significantly higher than the state average overall. On the other hand, twenty-three hospitals (13%) that received a performance flag for one type of procedure had average SIRs; combining data can smooth away unusual performance in one area.

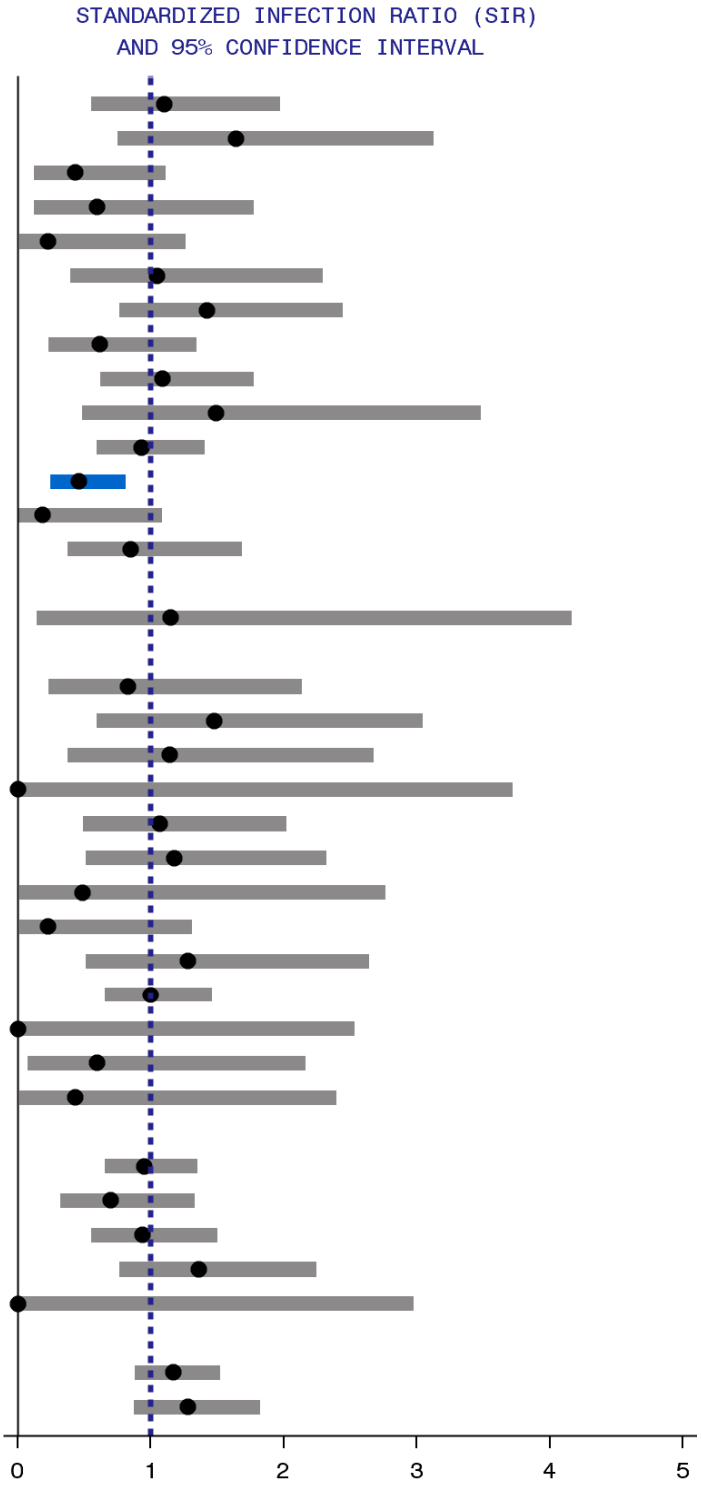
Figure 10. Surgical Site Infection (SSI) Summary for Colon, Coronary Artery, Hip, and Hysterectomy Procedures Standardized Infection Ratio (SIR), New York 2012 (page 1 of 5)



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero Infections, not significant. NA: Hospitals with < 20 procedures.
Data reported as of July 25, 2013. Expected based on NYS 2012 average, adjusting for patient risk factors.
Excludes non-readmitted cases identified using post discharge surveillance.

Figure 10. Surgical Site Infection (SSI) Summary for Colon, Coronary Artery, Hip, and Hysterectomy Procedures Standardized Infection Ratio (SIR), New York 2012 (page 2 of 5)

HOSPITAL	observed SSIs	expected SSIs	SIR
Faxton St. Lukes	11	10.0	1.10
Flushing Hospital	9	5.5	1.64
Forest Hills Hosp	4	9.2	0.43
Franklin	3	5.0	0.60
Geneva General	1	4.4	0.23
Glen Cove Hospital	6	5.7	1.05
Glens Falls	13	9.1	1.42
Good Samar. Suffern	6	9.8	0.62
Good Samar. W Islip	16	14.7	1.09
Harlem Hospital	5	3.4	1.49
Highland Hospital	23	24.7	0.93
Hosp for Spec Surg**	12	25.9	0.46
Hudson Valley	1	5.2	0.19
Huntington	8	9.4	0.85
Intercomm. Newfane	NA	NA	NA
Interfaith Medical	2	1.7	1.15
Ira Davenport	NA	NA	NA
JT Mather	4	4.8	0.83
Jacobi Medical	7	4.7	1.48
Jamaica Hospital	5	4.4	1.14
Jones Memorial*	0	0.8	0.00
Kenmore Mercy	9	8.4	1.07
Kings County	8	6.8	1.18
Kingsbrook Jewish	1	2.0	0.49
Kingston Hospital	1	4.3	0.23
Lawrence	7	5.5	1.28
Lenox Hill	26	26.1	1.00
Lewis County*	0	1.2	0.00
Lincoln Medical	2	3.3	0.60
Lockport Memorial	1	2.3	0.43
Long Beach	NA	NA	NA
Long Island Jewish	32	33.6	0.95
Lutheran Medical	9	12.9	0.70
Maimonides	17	18.1	0.94
Mary Imogene Bassett	15	11.0	1.36
Massena Memorial*	0	1.0	0.00
Medina Memorial	NA	NA	NA
Mem. Sloan Kettering	54	46.2	1.17
Mercy Buffalo	31	24.2	1.28



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero Infections, not significant. NA: Hospitals with < 20 procedures.
Data reported as of July 25, 2013. Expected based on NYS 2012 average, adjusting for patient risk factors.
Excludes non-readmitted cases identified using post discharge surveillance.

Figure 10. Surgical Site Infection (SSI) Summary for Colon, Coronary Artery, Hip, and Hysterectomy Procedures Standardized Infection Ratio (SIR), New York 2012 (page 3 of 5)

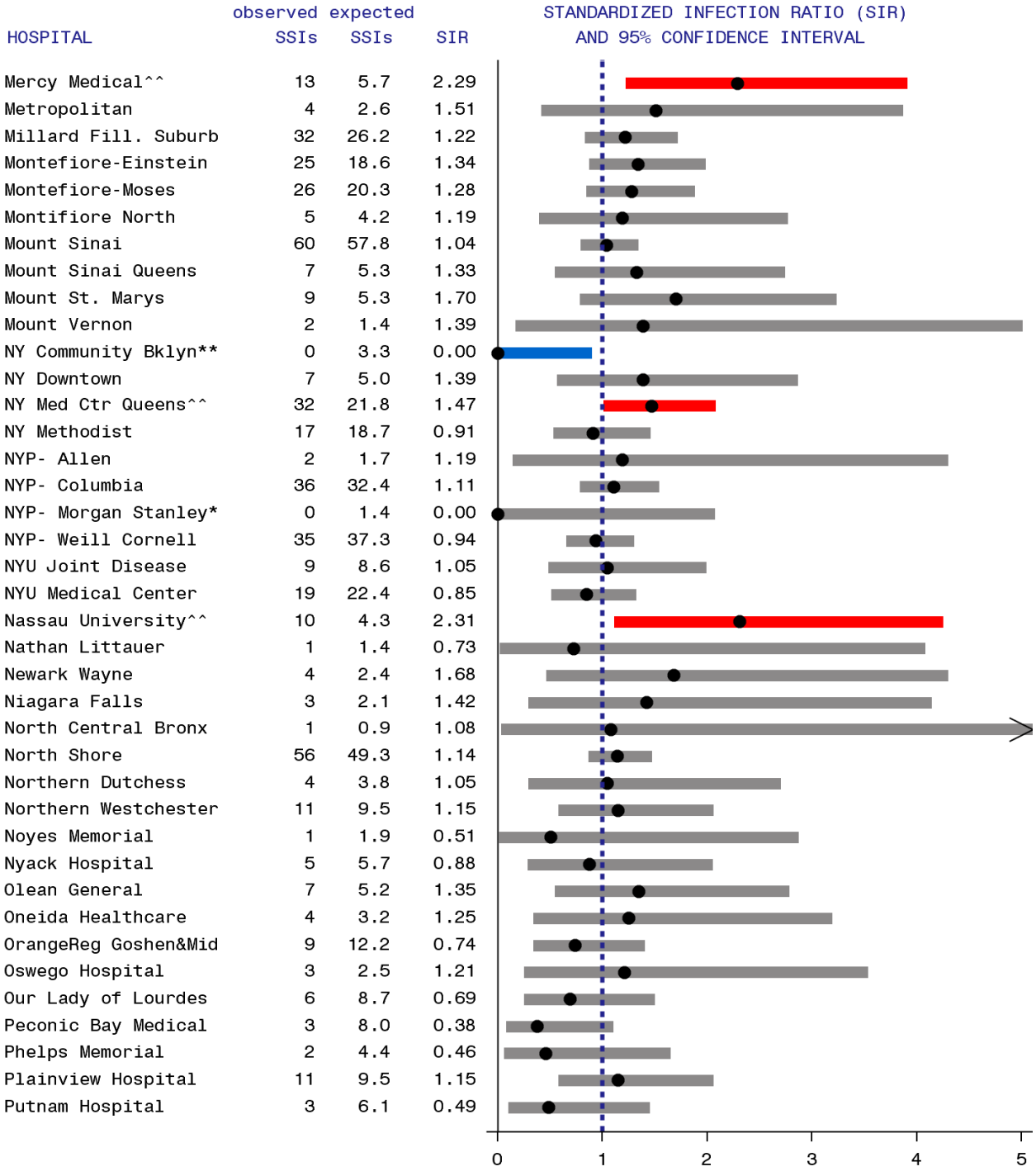


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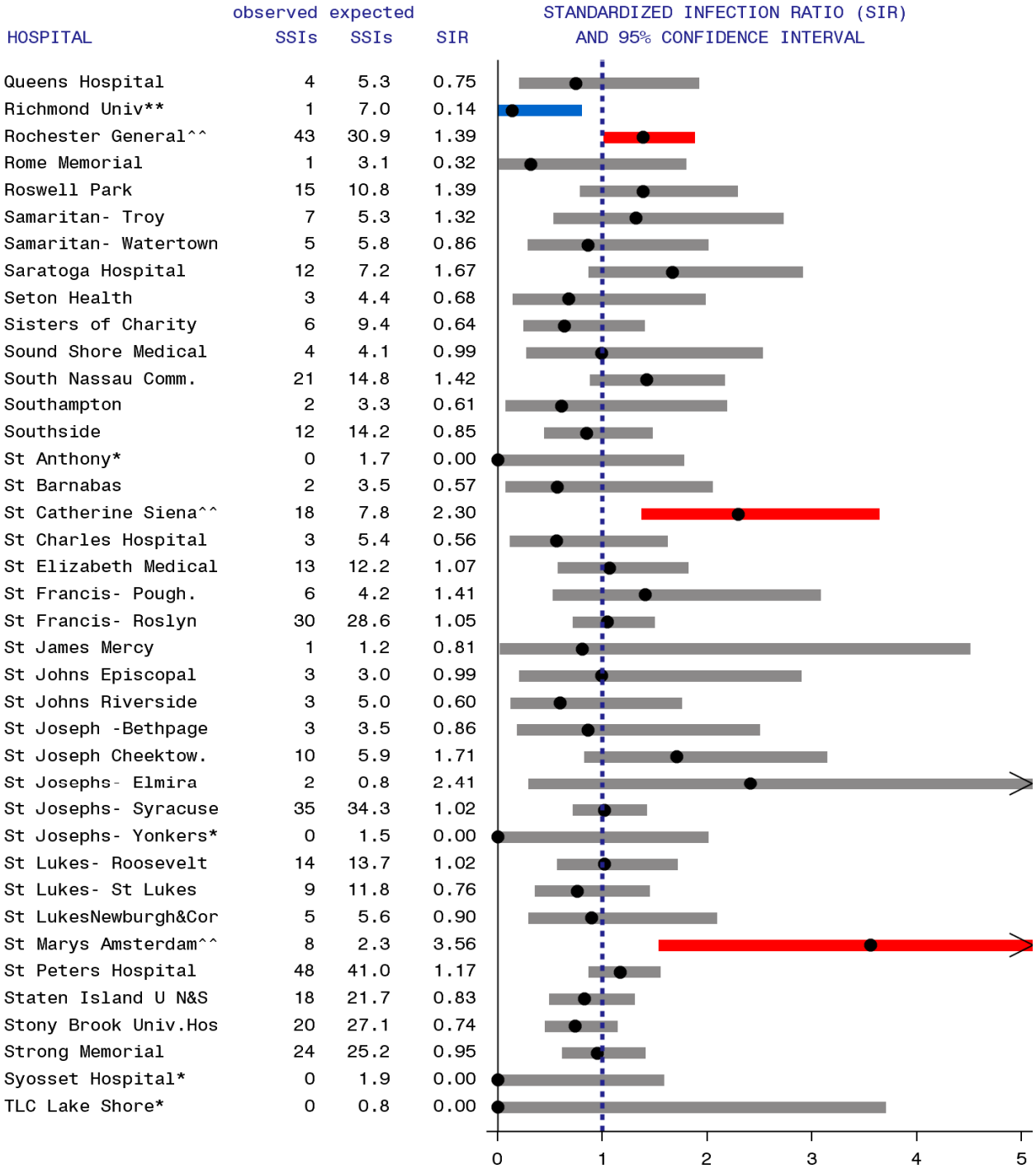
Figure 10. Surgical Site Infection (SSI) Summary for Colon, Coronary Artery, Hip, and Hysterectomy Procedures Standardized Infection Ratio (SIR), New York 2012 (page 4 of 5)



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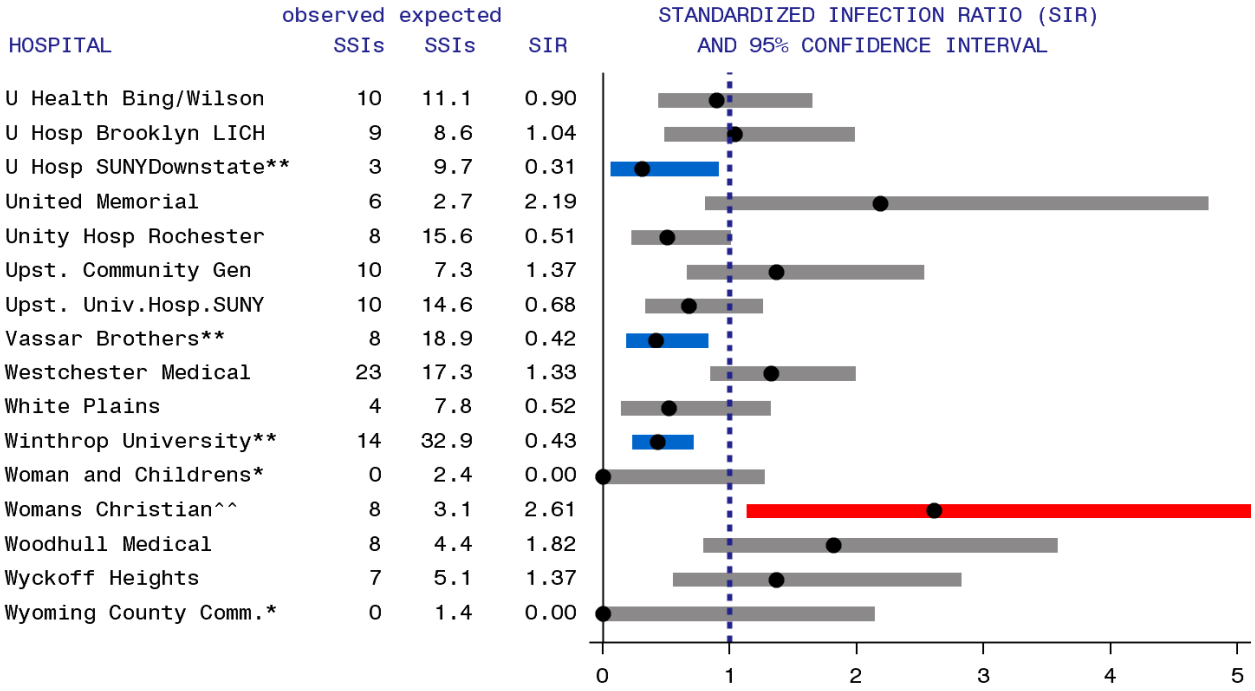
Excludes non-readmitted cases identified using post discharge surveillance.

Figure 10. Surgical Site Infection (SSI) Summary for Colon, Coronary Artery, Hip, and Hysterectomy Procedures Standardized Infection Ratio (SIR), New York 2012 (page 5 of 5)



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. —*Zero Infections, not significant. NA: Hospitals with < 20 procedures.
Data reported as of July 25, 2013. Expected based on NYS 2012 average, adjusting for patient risk factors.
Excludes non-readmitted cases identified using post discharge surveillance.

Central Line-Associated Blood Stream Infections (CLABSIs)

A central line (CL) is a tube that is placed into a large vein, usually in the neck, chest, arm or groin that is used to give fluids and medications, withdraw blood, and monitor the patient's condition. A CL is different than a standard intravenous line because it goes farther into the body, terminating near the heart, and because it may be used for weeks or even months. In newborns, a CL is sometimes initially inserted into the umbilical cord or may also be inserted in another large vein. A bloodstream infection can occur when microorganisms (e.g., bacteria, fungi) travel around or through the tube, attach and multiply on the tubing or in fluid administered through the tubing, and then enter the blood.

CLABSIs are not reported throughout the hospital, but rather, in selected intensive care units (ICUs). ICUs are hospital units that provide intensive observation and treatment for patients either suffering from, or at risk of developing, life threatening problems. ICUs are described by the types of patients in the unit. In 2012, 169 hospitals reported CLABSIs from one to several types of ICUs as follows:

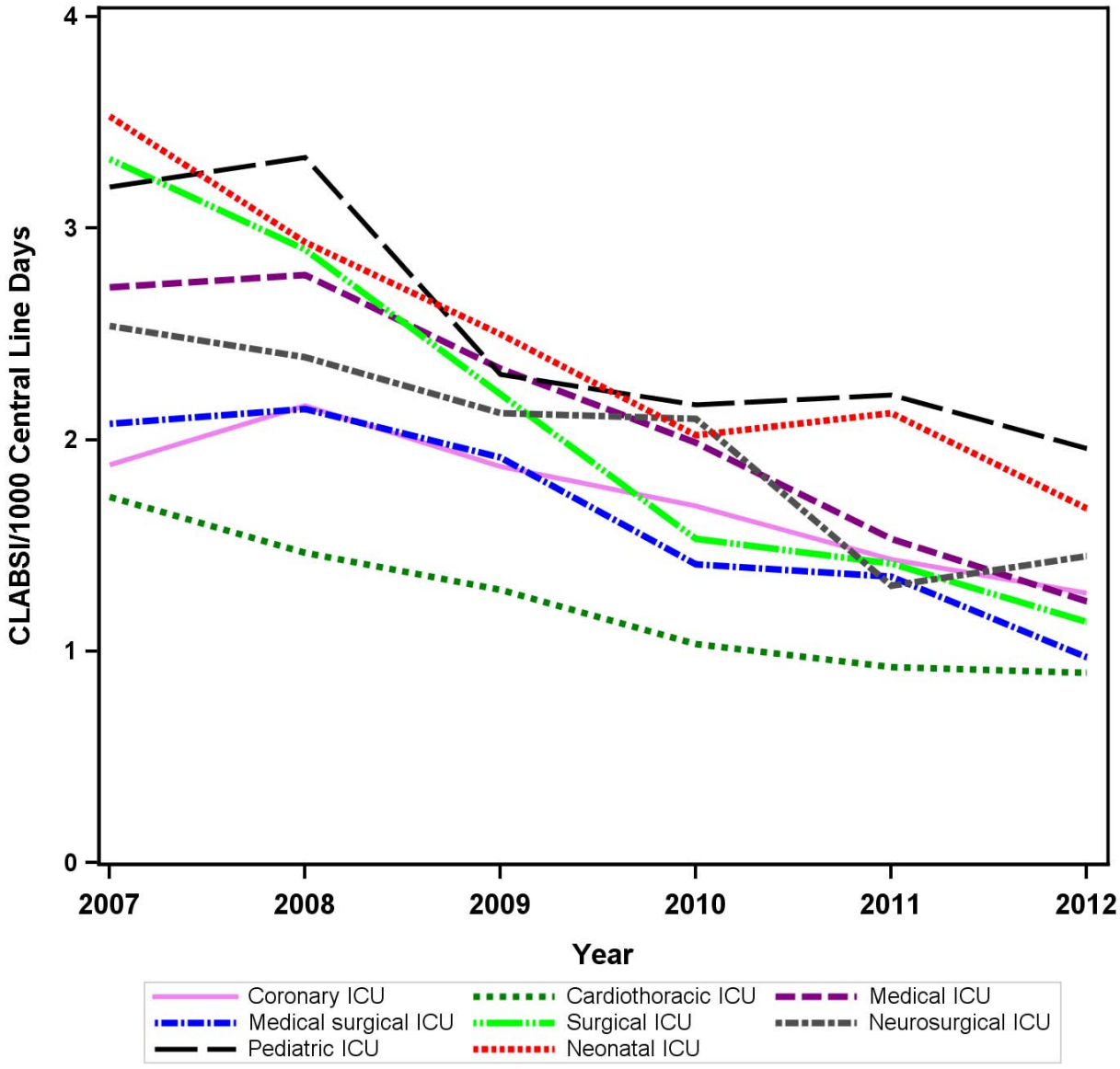
- Cardiothoracic Surgery (32 ICUs)
- Coronary (42)
- Medical (49)
- Medical-surgical (119)
- Neurosurgical (14)
- Pediatric (32)
- Surgical (40)
- Neonatal (53)

Newborns may need different levels of intensive care and are placed in one of three designated NICU types: Regional Perinatal Center (RPC, 18 hospitals), Level III (23 hospitals) or combined Level II/III (12 hospitals). Each hospital has only one type of designated NICU. Data on CLABSIs and umbilical catheter-associated blood stream infections (UCABSIs) are collected from all NICUs. The combined CLABSI plus UCABSI rate is called a CLABSI rate in this report, and is grouped by one of the three NICU types.

Time Trends for Intensive Care Unit CLABSIs

In 2012, 735 CLABSIs were reported from medical, surgical, medical/surgical, coronary, cardiothoracic, neurosurgical, pediatric, and neonatal ICUs. Time trends in CLABSI rates are summarized in Figure 11 and Table 15. Significant decreases occurred in all types of ICUs except Level 3 NICUs.

Figure 11. Trend in Central Line-Associated Blood Stream Infection Rates in Intensive Care Units, New York State 2007-2012



New York State data reported as of July 25, 2013.

Table 15. Central Line Associated Blood Stream Infection Data Summary, New York State 2007-2012

	Coronary ICU				Cardiothoracic ICU				Neurosurgical ICU				Pediatric ICU			
Year	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate
2007	45	74	39,344	1.88	30	109	62,962	1.73	13	37	14,580	2.54	30	90	28,173	3.19
2008	47	110	50,858	2.16	32	108	73,679	1.47	15	42	17,577	2.39	30	99	29,698	3.33
2009	46	95	50,707	1.87	33	97	75,195	1.29	15	40	18,798	2.13	30	71	30,738	2.31
2010	45	85	50,327	1.69	32	77	74,555	1.03	14	39	18,577	2.10	31	65	30,001	2.17
2011	45	72	50,236	1.43	33	68	73,359	0.93	14	26	19,847	1.31	32	70	31,630	2.21
2012	42	62	48,540	1.28	32	68	75,757	0.90	14	28	19,284	1.45	32	60	30,593	1.96

	Medical ICU				Medical Surgical ICU				Surgical ICU			
Year	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate
2007	42	191	70,157	2.72	139	439	211,551	2.08	37	221	66,400	3.33
2008	43	244	87,785	2.78	134	477	222,166	2.15	37	219	75,544	2.90
2009	47	231	98,917	2.34	129	387	201,772	1.92	40	171	77,169	2.22
2010	47	203	102,097	1.99	124	261	185,139	1.41	40	123	80,350	1.53
2011	49	170	110,910	1.53	122	238	175,941	1.35	40	116	81,917	1.42
2012	49	133	107,618	1.24	119	158	162,633	0.97	40	90	79,108	1.14

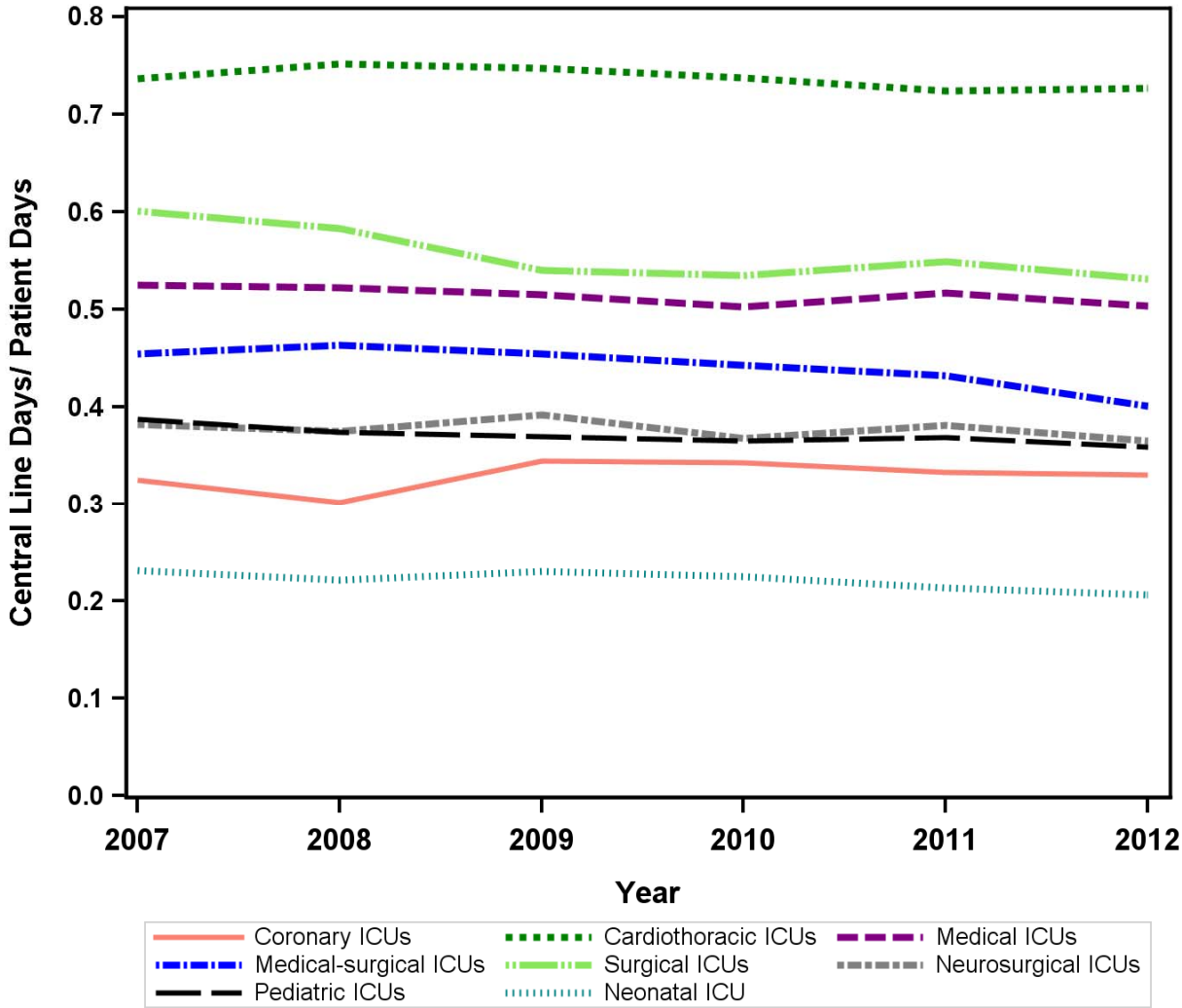
	Level II/III NICU				Level III NICU				Regional Perinatal Center NICU			
Year	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate	# Hosp	# CLABSI	# CLDays	Rate
2007	13	32	5,958	5.37	21	30	11,678	2.57	18	216	61,096	3.54
2008	14	50	10,386	4.81	22	33	16,892	1.95	18	175	60,670	2.88
2009	14	39	10,122	3.85	22	60	17,801	3.37	18	136	66,152	2.06
2010	12	28	7,423	3.77	23	50	19,916	2.51	18	110	65,614	1.68
2011	12	31	7,091	4.37	23	42	17,973	2.34	18	112	61,965	1.81
2012	12	21	6,009	3.49	23	42	16,528	2.54	18	73	58,533	1.25

New York State data as of July 25, 2013. Rates are per 1,000 central line days.
The number of central line days is lower in 2007 because hospitals with four or more adult and pediatric ICUs were only required to perform BSI surveillance for three consecutive months in each ICU; the majority of facilities chose to report the entire year. Beginning in 2008, BSI surveillance in all ICUs was required for the entire year. State summary includes cases in which multiple blood cultures were obtained, only one specimen was positive, the one positive was considered a contaminant and no treatment was given.

Central Line Device Utilization

The device utilization (DU) ratio is the number of central line days divided by the number of patient days. This ratio is helpful in evaluating the frequency of central line usage in a specific patient care unit and monitoring increasing or decreasing CLABSI rates. DU ratios have several purposes but can be helpful in assessing whether CLABSI rates have been impacted as a result of implementing infection prevention patient care practices or as a result of increased or decreased usage of CLs. If the DU ratio is constant but the CLABSI rate has decreased, this can signify a positive impact from infection prevention initiatives implemented to reduce CLABSIs. The DU ratio has been remarkably constant in NYS hospitals between 2007 and 2012 (Figure 12), while the CLABSI rates have continued to decline since 2007.

Figure 12. Central Line Utilization Ratio in Intensive Care Units, New York State 2007-2012



New York State data as of July 25, 2013.

Microorganisms Associated with CLABSIs

The most common microorganisms identified in adult/pediatric ICU-related CLABSIs were Enterococci, yeast, and coagulase-negative Staphylococci (Table 16). The distribution of microorganisms associated with CLABSIs is similar to the distribution reported last year.

Table 16. Microorganisms Identified in Central Line-Associated Blood Stream Infections, Adult and Pediatric Intensive Care Units, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Enterococci	136	22.7
(VRE)	(67)	(11.2)
Yeast	113	18.9
Coagulase negative Staphylococci	110	18.4
Klebsiella spp.	68	11.4
(CRE-*Klebsiella*)	(13)	(2.2)
(CephR-*Klebsiella*)	(16)	(2.7)
Staphylococcus aureus	63	10.5
(MRSA)	(27)	(4.5)
(MSSA)	(31)	(5.2)
Pseudomonas spp.	26	4.3
Acinetobacter spp.	25	4.2
(MDRO-*Acinetobacter*)	(14)	(2.3)
Escherichia coli	21	3.5
Enterobacteriaceae	20	3.3
Serratia spp.	13	2.2
Proteus spp.	8	1.3
Stenotrophomonas spp.	7	1.2
Streptococci	6	1.0
Other	27	4.5

New York State data reported as of July 25, 2013. Out of 599 infections.
CephR: cephalosporin-resistant; CRE: carbapenem-resistant Enterobacteriaceae;
MDRO: multidrug-resistant; MRSA: methicillin-resistant *Staphylococcus aureus;*
MSSA: methicillin-susceptible *Staphylococcus aureus*
VRE: vancomycin-resistant Enterococci; *spp*: multiple species

The most common microorganisms identified in NICU-related CLABSIs were *Staphylococcus aureus* and coagulase-negative Staphylococci (Table 17). *Staphylococcus aureus* represented a larger proportion of infections than in previous years.

Table 17. Microorganisms Associated with Central Line-Associated and Umbilical Catheter-Associated Blood Stream Infections, Neonatal Intensive Care Units, New York State 2012

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	42	30.9
(MRSA)	(7)	(5.1)
(MSSA)	(32)	(23.5)
Coagulase negative Staphylococci	33	24.3
Yeast	13	9.6
Escherichia coli	11	8.1
Enterococci	10	7.4
Klebsiella spp.	8	5.9
(CephR-*Klebsiella*)	(2)	(1.5)
Serratia spp.	6	4.4
Pseudomonas spp.	5	3.7
Acinetobacter spp.	4	2.9
Other	9	6.6

New York State data reported as of July 25, 2013. Out of 136 infections.
CephR: cephalosporin-resistant; MRSA: methicillin-resistant *Staphylococcus aureus;* MSSA: methicillin-susceptible *Staphylococcus aureus; spp*: multiple species.

CLABSI Surveillance and Prevention Practices

According to the most recent NYSDOH CLABSI survey (2011 audit data), 87% of hospitals continue to manually collect central line denominator data in ICUs. IPs use multiple sources to identify CLABSIs, including microbiology reports (95%) and data mining programs (15%). In 45% of hospitals, a root-cause analysis is completed for all CLABSIs; in 15% of hospitals root-cause analysis is completed for some CLABSIs. Approximately 92% of hospitals reported using a standardized insertion bundle checklist, while 52% of hospitals reported using a central line maintenance bundle checklist.

Risk Factors for CLABSIs

Hospitals do not collect patient-specific risk factors for CLABSIs in adult and pediatric ICUs; the NHSN requires reporting of only the total number of patient days and total number of central line days per month within each type of ICU. CLABSI rates are stratified by type of ICU. For BSIs in NICUs, the data are collected by birth weight group, since lower birth weight babies are more susceptible to CLABSIs than higher birth weight babies.

Hospital-Specific, ICU-Specific CLABSI Rates

A custom field is included in the reporting system to allow NYS hospitals to document reported CLABSIs that meet NHSN surveillance criteria but are more likely contaminants than CLABSIs. These blood stream events involve situations in which multiple blood cultures were obtained, only one blood specimen was positive for a single pathogen, and no treatment was given. There were 12 contaminants reported in 2012, representing 1.6% of all reported CLABSIs. These contaminants were excluded from NYS hospital-specific rates. However, starting in 2013, NYSDOH will no longer delete these contaminants to be more consistent with national reports.

Within NYS, hospital-specific CLABSI rates were compared to the state average for the specific type of ICU. The following statistically significant differences were seen in 2012 (Table 18):

Table 18. Summary of Variation in Hospital-Specific CLABSI Rates by Type of ICU

Type of ICU (n) = number of hospitals	# (%) significantly higher than state average	# (%) significantly lower than state average
Cardiothoracic (32)	1 (3%)	0 (0%)
Coronary (42)	1 (2%)	1 (2%)
Medical (49)	4 (8%)	2 (4%)
Medical/Surgical (119)	4 (3%)	3 (3%)
Surgical (40)	4 (10%)	1 (2%)
Neurosurgical (14)	0 (0%)	0 (0%)
Pediatric (32)	1 (3%)	0 (0%)
Neonatal (53)	3 (6%)	3 (6%)

One hospital had low rates in a medical/surgical ICU for 5 years in a row. Between 2007 and 2012, the overall percentage of ICUs receiving ‘high’ and ‘low’ flags has decreased.

Summary of Trends in CLABSI Rates

Since reporting began in 2007, there has been a 53% reduction in CLABSI rates, after adjusting for ICU type (and birth weight in NICUs) (Table 19).

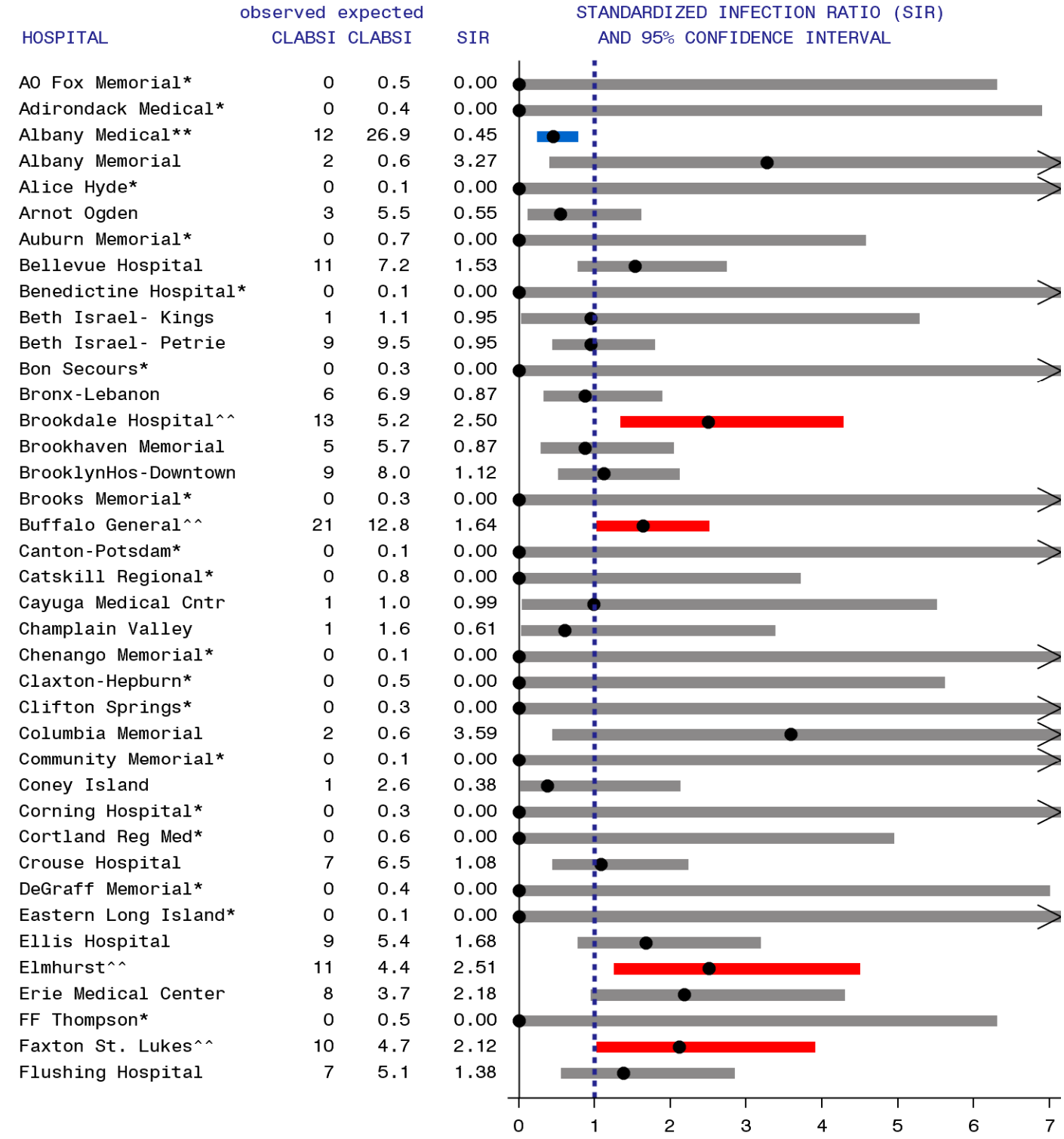
Table 19. Summary of Trend in all NYS CLABSI Data

	Summary of all ICU data listed above			
Year	# observed infections	# expected infections based on NYS Baseline	Standardized Incidence Ratio (95% CI)	Interpretation
2007	1439	N/A	1.0	NYS Baseline
2008	1557	1628.1	0.96 (0.91, 1.01)	4% reduction since 2007
2009	1327	1654.7	0.80 (0.76, 0.85)	20% reduction since 2007
2010	1041	1621.6	0.64 (0.60, 0.68)	36% reduction since 2007
2011	945	1616.1	0.58 (0.55, 0.62)	42% reduction since 2007
2012	735	1548.7	0.47 (0.44, 0.51)	53% reduction since 2007

New York State data as of July 25, 2013.

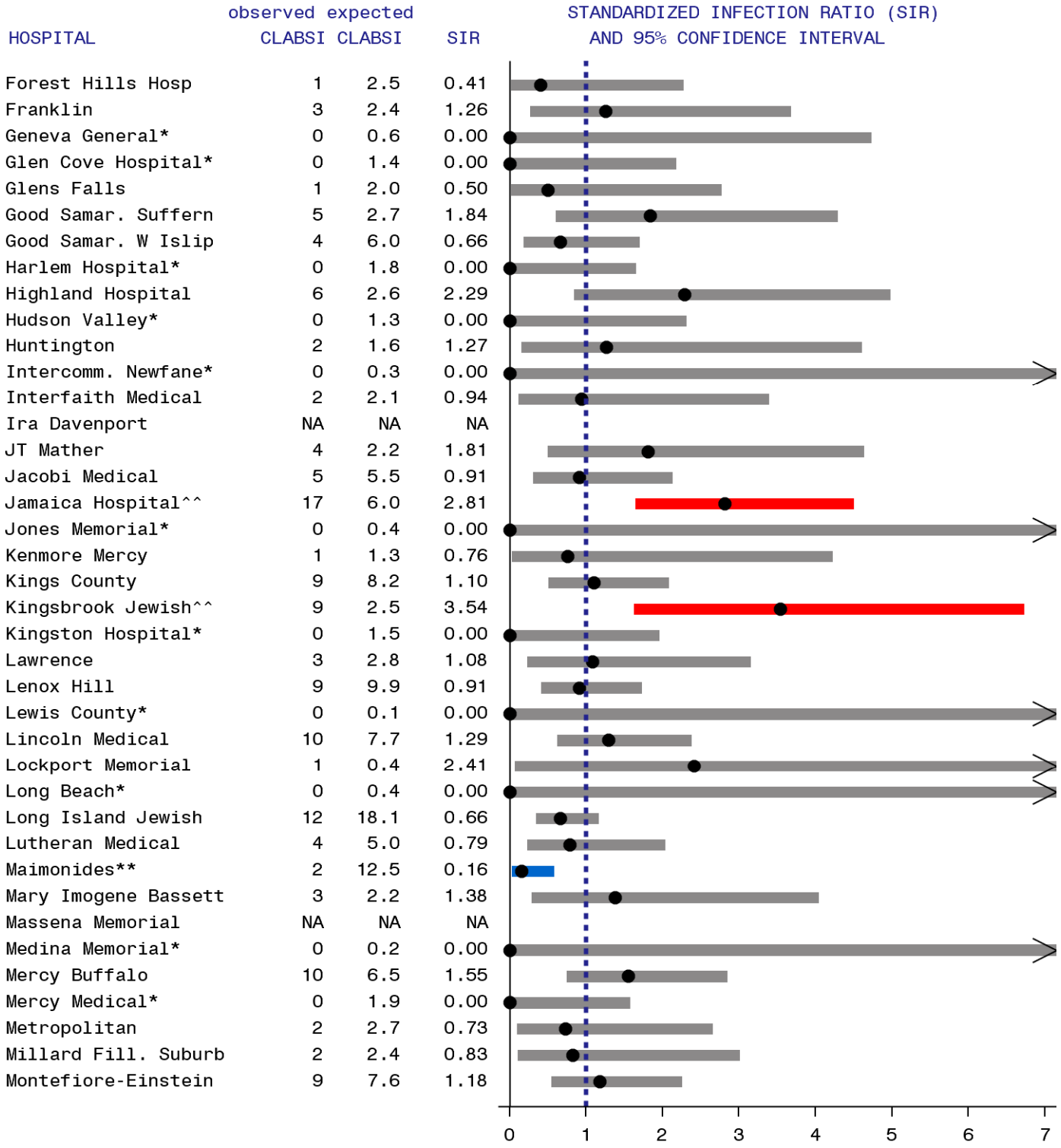
Hospital-specific ICU-specific CLABSI rates are available in Figure 2. Figure 13 provides hospital-specific CLABSI SIRs for each hospital. Since the CLABSI SIRs combine results across the eight different types of ICUs, it shows the average performance of each hospital for CLABSIs. In four cases, hospitals that received no individual area performance flag were significantly higher or lower than the state average overall; combining data results in narrower confidence intervals, so hospitals that perform slightly better in many areas may look significantly better than the state average overall. On the other hand, eight hospitals that received a performance flag for one type of ICU had average SIRs; combining data can smooth away unusual performance in one area. Elmhurst Hospital Center had a significantly high CLABSI SIR for the past four years and Brookdale Hospital had a significantly high CLABSI SIR for the past three years. Albany Medical Center had a significantly low CLABSI SIR for the past four years.

Figure 13. Central Line-Associated Blood Stream Infection (CLABSI) Summary for Adult, Pediatric, and Neonatal ICUs: Standardized Infection Ratio (SIR), New York 2012 (page 1 of 5)



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average.
—**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with <50 central line days.
Data reported as of July 25, 2013. Expected based on NYS 20121 average, adjusting for ICU type and birthweight.
Excludes clinical sepsis and untreated event with single pathogen contaminated specimen.

Figure 13. Central Line-Associated Blood Stream Infection (CLABSI) Summary for Adult, Pediatric, and Neonatal ICUs: Standardized Infection Ratio (SIR), New York 2012 (page 2 of 5)

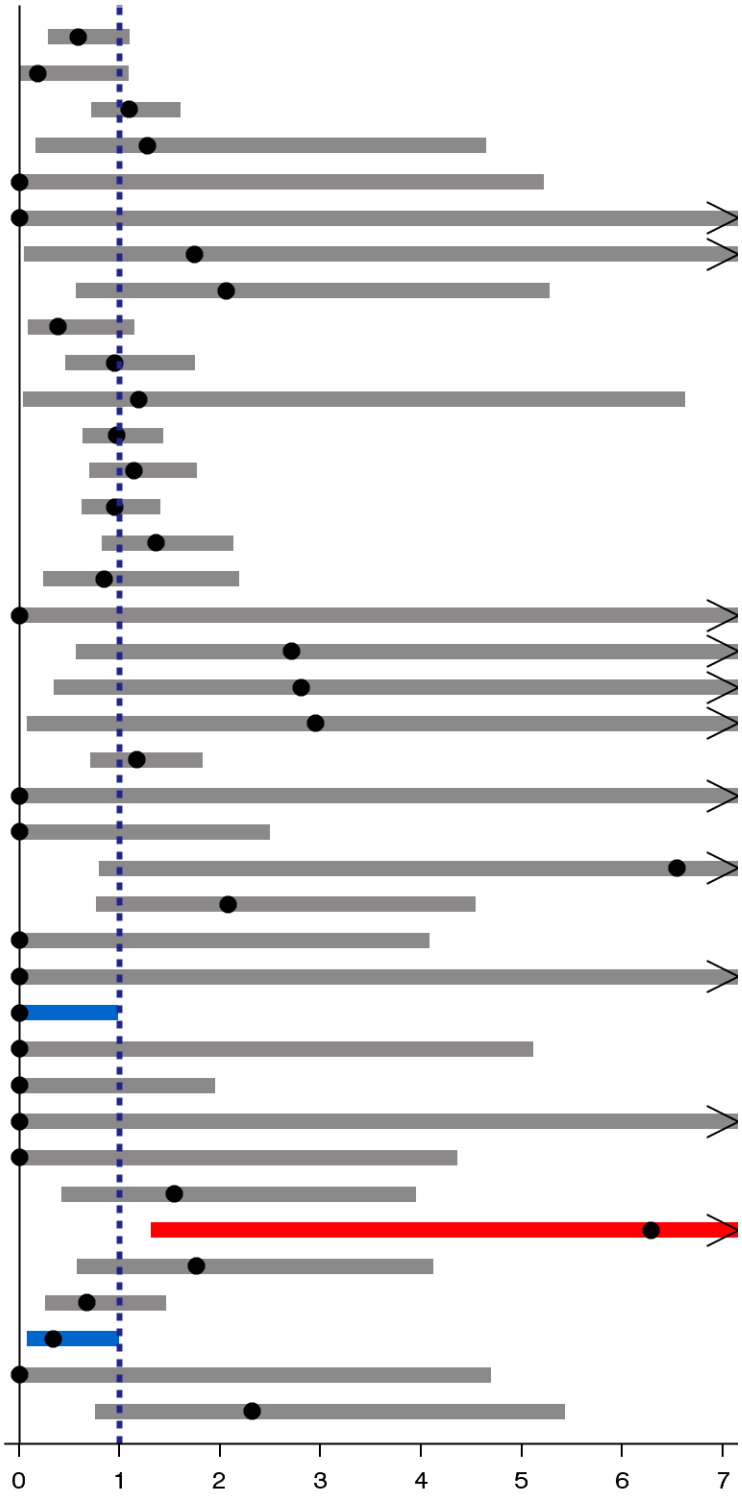


HOSPITAL	observed CLABSI	expected CLABSI	SIR
Forest Hills Hosp	1	2.5	0.41
Franklin	3	2.4	1.26
Geneva General*	0	0.6	0.00
Glen Cove Hospital*	0	1.4	0.00
Glens Falls	1	2.0	0.50
Good Samar. Suffern	5	2.7	1.84
Good Samar. W Islip	4	6.0	0.66
Harlem Hospital*	0	1.8	0.00
Highland Hospital	6	2.6	2.29
Hudson Valley*	0	1.3	0.00
Huntington	2	1.6	1.27
Intercomm. Newfane*	0	0.3	0.00
Interfaith Medical	2	2.1	0.94
Ira Davenport	NA	NA	NA
JT Mather	4	2.2	1.81
Jacobi Medical	5	5.5	0.91
Jamaica Hospital^^	17	6.0	2.81
Jones Memorial*	0	0.4	0.00
Kenmore Mercy	1	1.3	0.76
Kings County	9	8.2	1.10
Kingsbrook Jewish^^	9	2.5	3.54
Kingston Hospital*	0	1.5	0.00
Lawrence	3	2.8	1.08
Lenox Hill	9	9.9	0.91
Lewis County*	0	0.1	0.00
Lincoln Medical	10	7.7	1.29
Lockport Memorial	1	0.4	2.41
Long Beach*	0	0.4	0.00
Long Island Jewish	12	18.1	0.66
Lutheran Medical	4	5.0	0.79
Maimonides**	2	12.5	0.16
Mary Imogene Bassett	3	2.2	1.38
Massena Memorial	NA	NA	NA
Medina Memorial*	0	0.2	0.00
Mercy Buffalo	10	6.5	1.55
Mercy Medical*	0	1.9	0.00
Metropolitan	2	2.7	0.73
Millard Fill. Suburb	2	2.4	0.83
Montefiore-Einstein	9	7.6	1.18

State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average.
—**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with <50 central line days.
Data reported as of July 25, 2013. Expected based on NYS 20121 average, adjusting for ICU type and birthweight.
Excludes clinical sepsis and untreated event with single pathogen contaminated specimen.

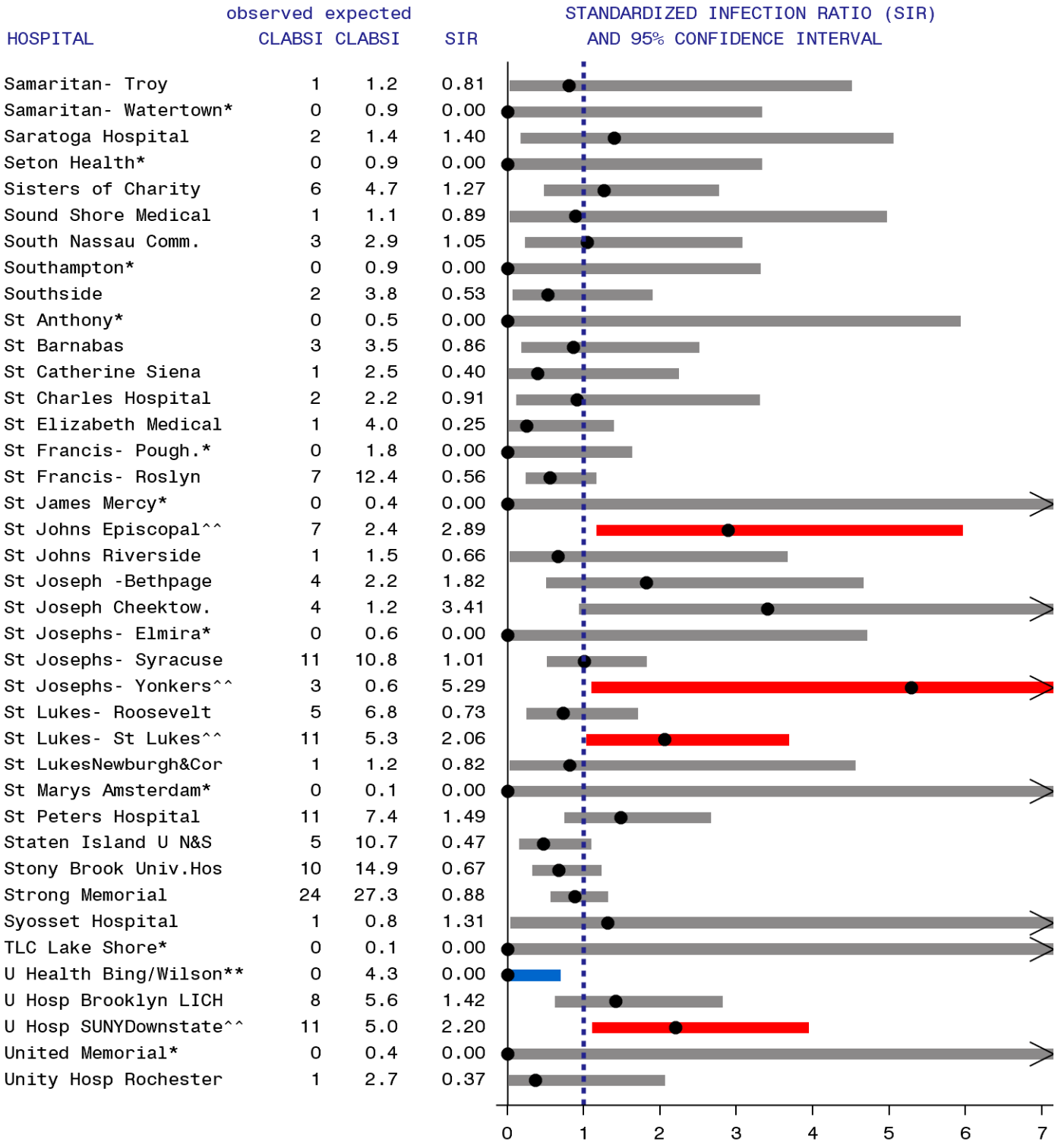
Figure 13. Central Line-Associated Blood Stream Infection (CLABSI) Summary for Adult, Pediatric, and Neonatal ICUs: Standardized Infection Ratio (SIR), New York 2012 (page 3 of 5)

HOSPITAL	observed CLABSI	expected CLABSI	SIR
Montefiore-Moses	10	16.9	0.59
Montifiore North	1	5.2	0.19
Mount Sinai	26	23.8	1.09
Mount Sinai Queens	2	1.6	1.28
Mount St. Marys*	0	0.6	0.00
Mount Vernon*	0	0.4	0.00
NY Community Bklyn	1	0.6	1.74
NY Downtown	4	1.9	2.06
NY Med Ctr Queens	3	7.7	0.39
NY Methodist	10	10.6	0.95
NYP- Allen	1	0.8	1.19
NYP- Columbia	25	25.8	0.97
NYP- Morgan Stanley	20	17.6	1.14
NYP- Weill Cornell	26	27.3	0.95
NYU Medical Center	19	13.9	1.36
Nassau University	4	4.7	0.85
Nathan Littauer*	0	0.2	0.00
Newark Wayne	3	1.1	2.71
Niagara Falls	2	0.7	2.80
North Central Bronx	1	0.3	2.95
North Shore	19	16.3	1.17
Northern Dutchess*	0	0.3	0.00
Northern Westchester*	0	1.2	0.00
Noyes Memorial	2	0.3	6.54
Nyack Hospital	6	2.9	2.08
Olean General*	0	0.7	0.00
Oneida Healthcare*	0	0.3	0.00
OrangeReg Goshen&Mid**	0	3.0	0.00
Oswego Hospital*	0	0.6	0.00
Our Lady of Lourdes*	0	1.5	0.00
Peconic Bay Medical*	0	0.4	0.00
Phelps Memorial*	0	0.7	0.00
Plainview Hospital	4	2.6	1.54
Putnam Hospital^^	3	0.5	6.28
Queens Hospital	5	2.8	1.76
Richmond Univ	6	9.0	0.67
Rochester General**	3	8.9	0.34
Rome Memorial*	0	0.6	0.00
Roswell Park	5	2.2	2.32



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average.
—**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with <50 central line days.
Data reported as of July 25, 2013. Expected based on NYS 20121 average, adjusting for ICU type and birthweight.
Excludes clinical sepsis and untreated event with single pathogen contaminated specimen.

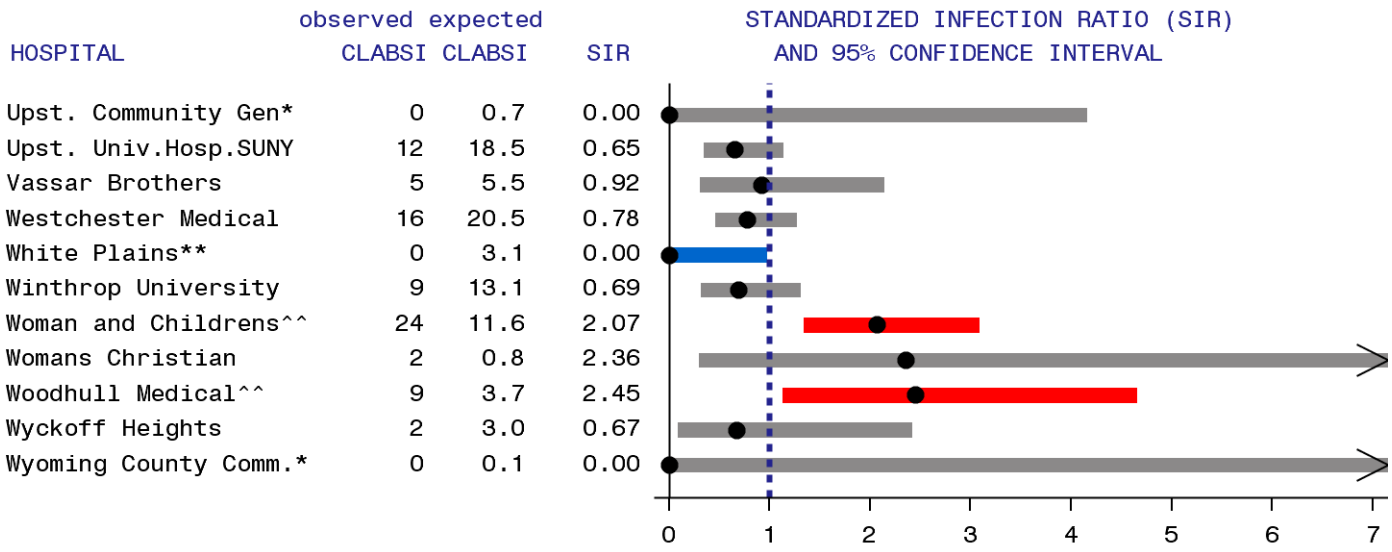
Figure 13. Central Line-Associated Blood Stream Infection (CLABSI) Summary for Adult, Pediatric, and Neonatal ICUs: Standardized Infection Ratio (SIR), New York 2012 (page 4 of 5)



HOSPITAL	observed CLABSI	expected CLABSI	SIR
Samaritan- Troy	1	1.2	0.81
Samaritan- Watertown*	0	0.9	0.00
Saratoga Hospital	2	1.4	1.40
Seton Health*	0	0.9	0.00
Sisters of Charity	6	4.7	1.27
Sound Shore Medical	1	1.1	0.89
South Nassau Comm.	3	2.9	1.05
Southampton*	0	0.9	0.00
Southside	2	3.8	0.53
St Anthony*	0	0.5	0.00
St Barnabas	3	3.5	0.86
St Catherine Siena	1	2.5	0.40
St Charles Hospital	2	2.2	0.91
St Elizabeth Medical	1	4.0	0.25
St Francis- Pough.*	0	1.8	0.00
St Francis- Roslyn	7	12.4	0.56
St James Mercy*	0	0.4	0.00
St Johns Episcopal^^	7	2.4	2.89
St Johns Riverside	1	1.5	0.66
St Joseph -Bethpage	4	2.2	1.82
St Joseph Cheektow.	4	1.2	3.41
St Josephs- Elmira*	0	0.6	0.00
St Josephs- Syracuse	11	10.8	1.01
St Josephs- Yonkers^^	3	0.6	5.29
St Lukes- Roosevelt	5	6.8	0.73
St Lukes- St Lukes^^	11	5.3	2.06
St LukesNewburgh&Cor	1	1.2	0.82
St Marys Amsterdam*	0	0.1	0.00
St Peters Hospital	11	7.4	1.49
Staten Island U N&S	5	10.7	0.47
Stony Brook Univ.Hos	10	14.9	0.67
Strong Memorial	24	27.3	0.88
Syosset Hospital	1	0.8	1.31
TLC Lake Shore*	0	0.1	0.00
U Health Bing/Wilson**	0	4.3	0.00
U Hosp Brooklyn LICH	8	5.6	1.42
U Hosp SUNYDownstate^^	11	5.0	2.20
United Memorial*	0	0.4	0.00
Unity Hosp Rochester	1	2.7	0.37

State average. ●SIR. > Upper confidence limit exceeds graph area. ^^Significantly higher than state average.
**Significantly lower than state average. Average. *Zero infections, not significant. NA: Hospitals with <50 central line days.
Data reported as of July 25, 2013. Expected based on NYS 20121 average, adjusting for ICU type and birthweight.
Excludes clinical sepsis and untreated event with single pathogen contaminated specimen.

Figure 13. Central Line-Associated Blood Stream Infection (CLABSI) Summary for Adult, Pediatric, and Neonatal ICUs: Standardized Infection Ratio (SIR), New York 2012 (page 5 of 5)



State average. ●SIR. > Upper confidence limit exceeds graph area. —^^Significantly higher than state average.
—**Significantly lower than state average. —Average. —*Zero infections, not significant. NA: Hospitals with <50 central line days.
Data reported as of July 25, 2013. Expected based on NYS 20121 average, adjusting for ICU type and birthweight.
Excludes clinical sepsis and untreated event with single pathogen contaminated specimen.

Clostridium difficile Infections (CDI)

Clostridium difficile (C. difficile) is a type of bacteria that is a common cause of diarrhea in healthcare settings. In a small percentage of people, *C. difficile* lives along with other types of bacteria normally found in the intestinal tract and does not cause any symptoms or problems. However, when the *C. difficile* bacteria crowd out the other naturally occurring bacteria, they excrete a toxin into the intestines that may result in symptoms ranging from abdominal cramping and mild diarrhea to severe diarrhea and intestinal damage, which in some instances can result in death. The elderly and those who have recently taken antibiotics are at the greatest risk for developing *C. difficile* infection (CDI). When people take antibiotics, good germs that protect against infection may be destroyed along with the bad germs for several months. During this time, patients can get sick from *C. difficile* acquired from contaminated surfaces or health care providers' hands.

To identify and report inpatient CDI cases, hospitals follow the NHSN *C. difficile* Laboratory ID (LabID) surveillance protocol (http://www.cdc.gov/nhsn). Hospitals count CDI cases in all inpatient areas of the hospital except newborn nurseries, because babies may naturally carry the bacteria without symptoms. The diagnosis of CDI is made by performing a laboratory test on a liquid stool sample. Patients are not tested for *C. difficile* unless they have symptoms of infection. Each month, hospitals enter the number of CDI cases, the number of admissions, and the number of patient days into NHSN.

Categories of CDI

Laboratory identified CDI cases are separated into reporting categories depending upon whether the onset of illness occurred in the community or in a hospital. Cases termed "community-onset not my hospital" (CO-NMH) are cases in which the positive stool sample was obtained during the first three days of the patient's hospital admission and more than 4 weeks after any previous discharge from that same hospital. These cases are presumed unrelated to the patient's stay in that hospital. Cases termed "community-onset possibly related to my hospital" (CO-PMH) are cases in which a patient who was discharged from the same hospital within the previous 4 weeks is readmitted to that hospital and has a positive *C. difficile* test during the first three days of the re-admission. In CO-PMH cases, it is not certain whether the CDI occurred as a result of the recent hospitalization or whether it is related to other exposures outside of the hospital. Hospital-onset (HO) cases are cases in which the positive stool sample was obtained on day four or later during the hospital stay. HO and CO-PMH cases may be combined into one category called "hospital-associated" (HA) cases, as the "worst case" estimate of the CDI cases associated with that facility.

In 2012, NYS hospitals reported 21,367 cases of CDI. Approximately half of the cases were community-onset, and half were hospital-onset. Ninety-three percent of cases were incident (cases occurring more than 8 weeks after a previous positive test in the same patient at the same hospital), while 7% were recurrent (cases occurring more than 2 weeks and less than 8 weeks after a previous positive test in the same person at the same hospital) (Table 20).

Table 20: Classification of *C. difficile* infections, New York State 2012

	# Community onset - Not my hospital	# Community onset - Possibly my hospital	# Hospital Onset	Total
Incident	6,910	3,070	9,945	19,925 (93%)
Recurrent	256	623	563	1,442 (7%)
Total	7,166 (34%)	3,693 (17%)	10,508 (49%)	21,367

New York State data reported as of July 25, 2013.

Laboratory Testing for CDI

Several CDI laboratory testing methods are available. The methods vary in sensitivity (ability to detect a true positive), specificity (ability to detect a true negative), timeliness, and cost. Testing methods may have a large impact on observed CDI rates, with a substantially increased number of cases detected with a change to a more sensitive test.[2,3,4]

Table 21 summarizes the primary test methods used by NYS hospitals in 2012. NYSDOH categorized the methods into two general groups according to whether they will likely result in higher or lower reported CDI rates. Within these groups, and even within test method, there are variations in precision depending on the test manufacturer and lab technique.

Table 21: *C. difficile* laboratory methods used by NYS hospitals in 2012

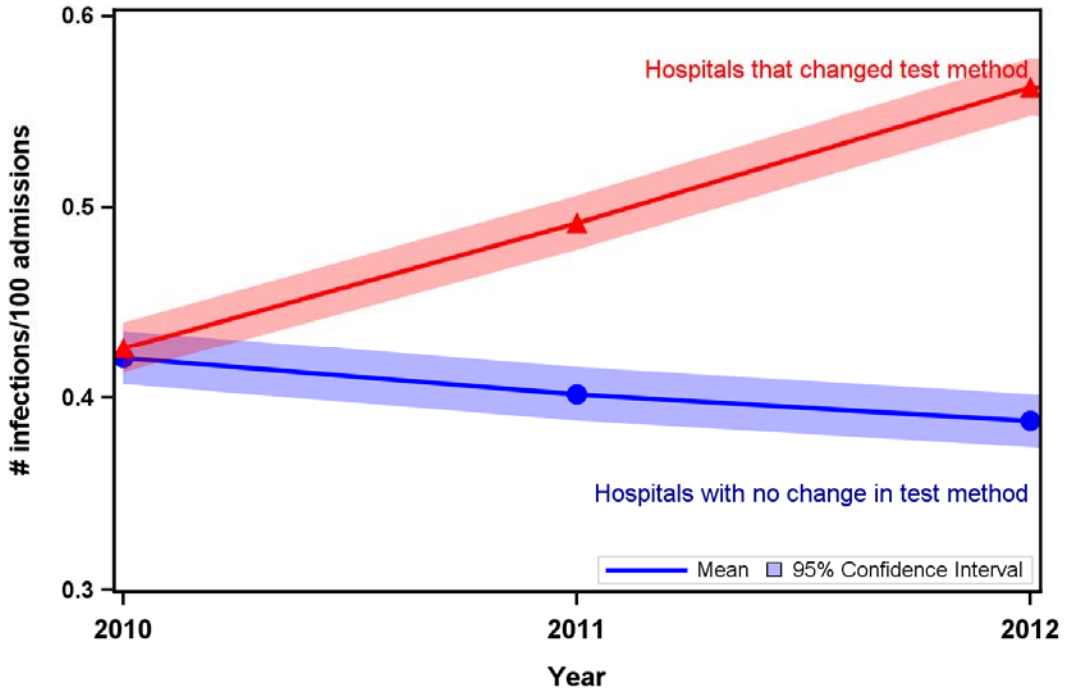
NYSDOH classification	Laboratory Method used for majority of 2012	# hospitals (%)
Less sensitive (lower CDI rates)	EIA for Toxin A and B	66 (38%)
	EIA for Toxin A alone	5 (3%)
	GDH antigen and toxin EIA (report if GDH+ and EIA+)	11 (6%)
More sensitive (higher CDI rates)	GDH antigen and toxin EIA, plus confirm discrepancies with NAAT/culture	26 (15%)
	NAAT	67 (38%)

EIA: enzyme immunoassay; GDH: glutamate dehydrogenase; NAAT: nucleic acid amplification test (e.g. polymerase chain reaction (PCR) and loop-mediated isothermal amplification (LAMP))
As reported by hospitals in March 2013 NYSDOH survey.

Time Trends in Community Onset (CO) CDI

In 2012, almost 5 out of every 1000 patients tested positive for CDI within the first three days of admission. Statewide CO trends were impacted by the adoption of more sensitive testing methods. Among the 89 hospitals that changed to a more sensitive test during this time period, the CO rate increased 32%, while the CO rate decreased 8% among the other hospitals (Figure 14).

Figure 14. Trend in *C. difficile* Community-onset rate, New York State 2010-2012



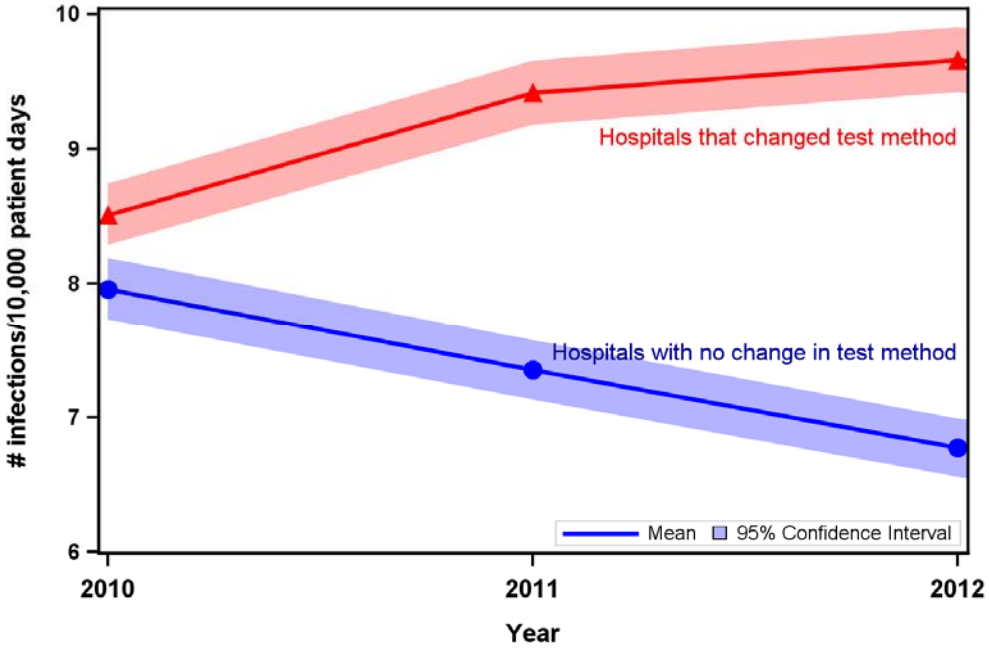
Year	# Hospitals	Total # Community Onset Cases	Total # Admissions	Community Onset Rate	CO rate in 88 hospitals that did not change to more sensitive test*	CO rate in 89 hospitals that changed to more sensitive test*
2010	177	9,820	2,317,274	0.424	0.421	0.426
2011	177	10,400	2,307,993	0.451	0.402	0.492
2012	175	10,859	2,247,222	0.483	0.388	0.563

Community Onset (CO) rate = total # CO-NMH and CO-PMH cases per 100 admissions
NMH = not my hospital, PMH = possibly my hospital
*Change to more sensitive test (i.e. nucleic acid amplification test (NAAT) or multistep screening with confirmation with NAAT or culture) between March 1, 2010 and Oct 31, 2012.

Time Trends in Hospital Onset (HO) CDI

NYS inpatients developed CDI in the hospital at a rate of 8.3 cases per 10,000 patient days in 2012. The longer a person stays in the hospital, the higher the total risk of acquiring an infection in the hospital, so incidence rates are reported using a denominator of patient days rather than admissions. Statewide HO trends were impacted by the adoption of more sensitive testing methods. Among the 89 hospitals that changed to a more sensitive test during this time period, the HO rate increased 14%, while the HO rate decreased 15% among the other hospitals. (Figure 15).

Figure 15. Trend in incidence of hospital onset *C. difficile*, New York State 2010-2012



Year	# Hospitals	Total # Hospital Onset Infections	Total # Patient Days	Total Hospital Onset Rate	Total Hospital Associated Rate	HO rate in 88 hospitals that did not change to more sensitive test*	HO rate in 89 hospitals that changed to more sensitive test*
2010	177	10,186	12,348,002	8.25	10.73	7.96	8.51
2011	177	10,388	12,299,914	8.45	10.84	7.35	9.41
2012	175	9,945	11,948,043	8.32	10.89	6.77	9.66

New York State data reported as of July 25, 2013.
Hospital onset (HO) rate is the number of new cases per 10,000 patient days. New cases occur more than 8 weeks after a previous positive test at the same hospital.
Hospital associated rate = # HO plus community-onset-possibly-my-hospital cases (CO-PMH) per 10,000 patient days *Change to more sensitive test (i.e. nucleic acid amplification test (NAAT) or multistep screening with confirmation with NAAT or culture) between March 1, 2010 and Oct 31, 2012.

Hospital-Specific CDI Rates

The LabID CDI rates are intended to be used by hospitals for tracking CDI within their own hospital over time. These data should not be used to compare rates between hospitals or to the state average. Some of the reasons are as follows:

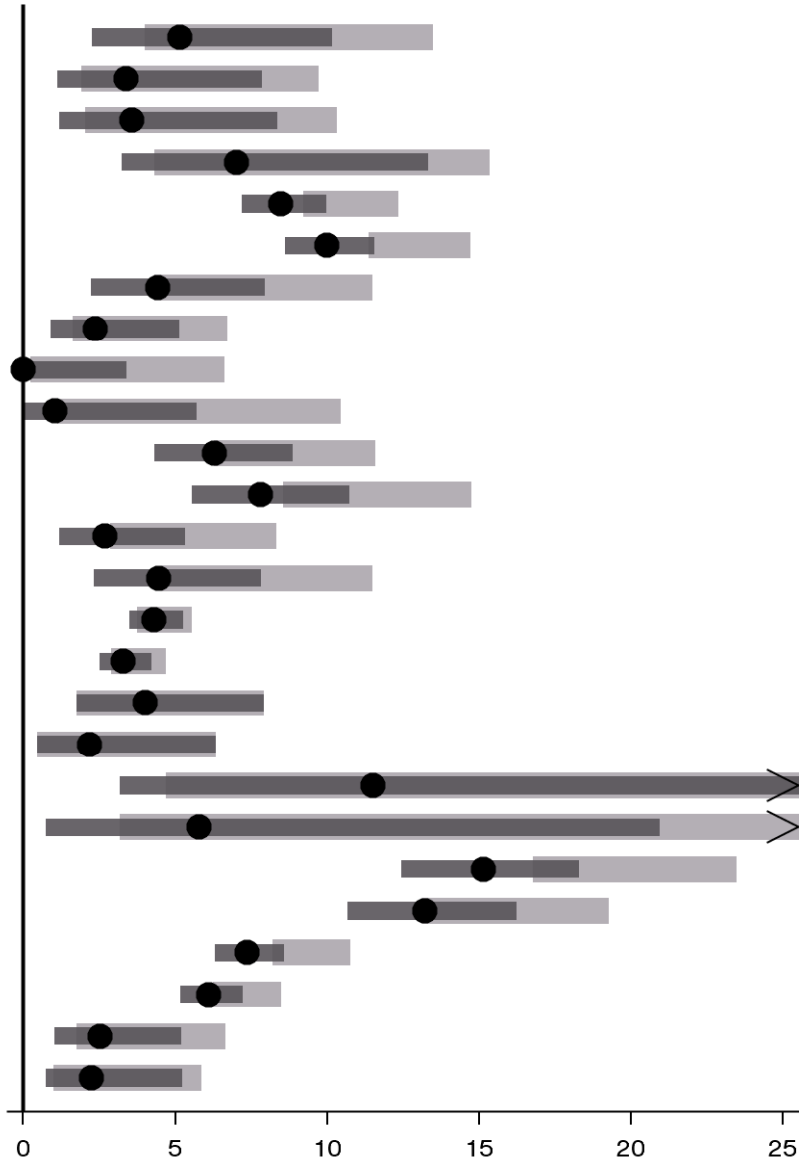
- Laboratory testing methods vary between hospitals. Hospitals that use more sensitive tests may have higher reported rates.
- Length of stay (LOS) varies between hospitals. Hospitals with an average LOS near 3 days will have very low HO rates because the patients do not stay in the hospital long enough to be tested for HO CDI. However, the NHSN method includes all patient days rather than only days patients are at risk for a HO infection. HO rates are biased low to a greater degree in hospitals with very short LOS as compared to long LOS.
- Because data are not available on potential risk factors for CDI among the hospital's entire patient population from which CDI are being reported, it is not possible to use risk adjustment to compare rates between hospitals using only NHSN data. For example, we could not account for differences in average patient age between hospitals. Hospitals that see older patients might have higher rates merely because the patient population is more susceptible to the infection.
- The categorization of CDI cases with regard to where the patients acquired the infection is a best estimate, but we cannot know with certainty where people acquire CDI. It sometimes takes weeks to develop symptoms of infection after a patient acquires the bacteria. Elderly patients may move in and out of their homes and facilities such as hospitals, nursing homes, and assisted living and could be exposed to *C. difficile* in any location.

The hospital-specific CDI rate summary (Figure 16) is different from all other rate summaries in this report because the 2012 HO rate for each hospital is compared to that hospital's 2011 HO rate rather than to the current state average. Similarly, for the 2011 comparison, 2011 HO rate is compared to that hospital's 2010 HO rate. Refer to Appendix 3, Figure 20 for more information about reading Figure 16.

Because of the impact that changes in test methods might have on rates, a statistical comparison was not made for 57 hospitals that changed to a more sensitive test more than 2 months into or before the end of either year of the comparison (that is, March 1, 2011 to October 31, 2012 for the 2012 data comparison, and March 2010 to October 2011 for the 2011 data comparison). Of the hospitals that did not change test method, seven hospitals had significantly increasing HO rates, 17 had decreasing rates, and 94 had no change.

Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 1 of 14)

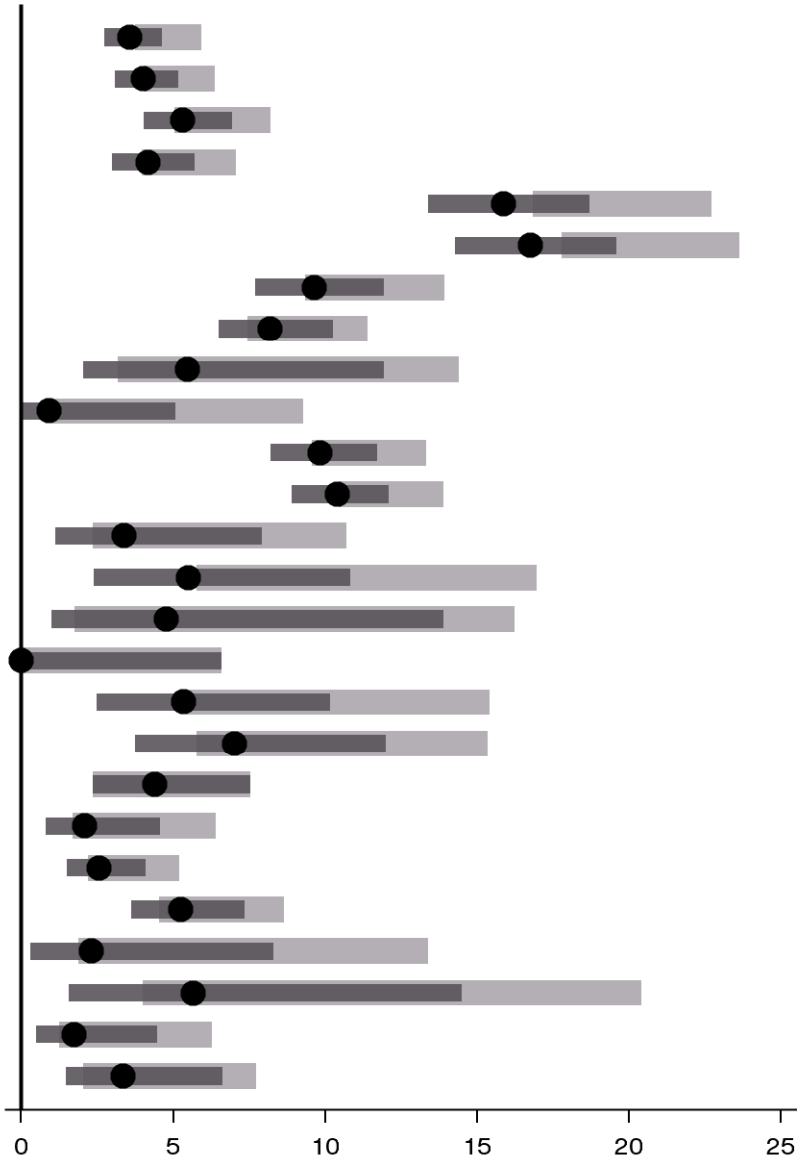
Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
AO Fox Memorial	2011	N	12	4	8	15,564	0.34	5.1	7.7	same
	2012	N	5	2	5	14,885	0.16	3.4	4.7	same
Adirondack Medical	2011	S	6	2	5	13,988	0.21	3.6	5.0	same
	2012	S	5	2	9	12,841	0.18	7.0	8.6	same
Albany Medical	2011	S	81	38	147	173,406	0.26	8.5	10.7	NA
	2012	S	113	54	183	183,307	0.35	10.0	12.9	same
Albany Memorial	2011	N	11	7	11	24,844	0.23	4.4	7.2	same
	2012	S	5	3	6	25,549	0.12	2.3	3.5	NA
Alice Hyde	2011	N	2	2	0	10,971	0.07	0.0	1.8	same
	2012	N	4	3	1	9,830	0.15	1.0	4.1	same
Arnot Ogden	2011	N	28	12	32	51,052	0.25	6.3	8.6	NA
	2012	S	30	17	38	48,675	0.28	7.8	11.3	NA
Auburn Memorial	2011	N	12	7	8	29,785	0.22	2.7	5.0	same
	2012	S	23	8	12	26,924	0.43	4.5	7.4	NA
Bellevue Hospital	2011	N	20	6	96	224,537	0.15	4.3	4.5	same
	2012	N	18	8	61	186,976	0.19	3.3	3.7	same
Benedictine Hospital	2011	N	3	0	8	19,966	0.09	4.0	4.0	same
	2012	N	2	0	3	13,896	0.07	2.2	2.2	same
Bertrand Chaffee	2011	N	6	1	4	3,475	0.76	11.5	14.4	same
	2012	N	8	2	2	3,455	0.95	5.8	11.6	same
Beth Israel- Kings	2011	N	56	34	108	71,392	0.47	15.1	19.9	same
	2012	N	43	19	91	68,914	0.36	13.2	16.0	same
Beth Israel- Petrie	2011	N	80	47	170	231,123	0.18	7.4	9.4	same
	2012	N	57	27	140	229,709	0.13	6.1	7.3	same
Bon Secours	2011	S	8	3	7	27,806	0.16	2.5	3.6	NA
	2012	S	2	1	5	22,411	0.05	2.2	2.7	NA



NYS data as of July 25, 2013. hospital-onset (HO) rate and 95% confidence interval = # HO cases per 10,000 patient days (state average = 8.3)
95% confidence interval of hospital-associated (HA) rate = # HO plus community-onset-possibly-my-hospital cases (CO-PMH) per 10,000 patient days (state average = 9.7)
> Upper confidence limit exceeds graph area. Flag refers to comparison of HO rate between consecutive years, incr = increase, decr = decrease, NA: rates not compared because hospital changed testing method. Test method: N= less sensitive test, S = more sensitive test (nucleic acid amplification test (NAAT) or sensitive screening test(s) plus confirmation with NAAT or culture)

Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 2 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Bronx-Lebanon	2011	N	27	19	58	163,115	0.11	3.6	4.7	decr
	2012	N	40	16	61	151,973	0.15	4.0	5.1	same
Brookdale Hospital	2011	N	5	12	56	105,434	0.03	5.3	6.4	same
	2012	N	15	11	39	93,857	0.10	4.2	5.3	same
Brookhaven Memorial	2011	N	85	34	144	90,835	0.55	15.9	19.6	NA
	2012	S	98	36	159	95,003	0.58	16.7	20.5	NA
BrooklynHos-Downtown	2011	N	17	16	85	88,325	0.12	9.6	11.4	incr
	2012	N	21	10	78	95,259	0.13	8.2	9.2	same
Brooks Memorial	2011	N	6	2	6	10,976	0.22	5.5	7.3	same
	2012	N	7	3	1	11,051	0.27	0.9	3.6	same
Buffalo General	2011	N	42	19	126	128,362	0.23	9.8	11.3	same
	2012	S	56	27	168	161,899	0.24	10.4	12.0	NA
Canton-Potsdam	2011	S	19	3	5	14,768	0.45	3.4	5.4	NA
	2012	S	24	7	8	14,599	0.56	5.5	10.3	same
Carthage Area	2011	N	5	1	3	6,319	0.31	4.7	6.3	same
	2012	N	1	0	0	5,618	0.06	0.0	0.0	same
Catskill Regional	2011	N	12	7	9	16,876	0.30	5.3	9.5	same
	2012	N	8	5	13	18,564	0.19	7.0	9.7	same
Cayuga Medical Cntr	2011	N	13	0	13	29,650	0.21	4.4	4.4	same
	2012	S	17	4	6	28,850	0.27	2.1	3.5	NA
Champlain Valley	2011	N	16	6	17	66,820	0.16	2.5	3.4	same
	2012	S	21	7	33	63,202	0.21	5.2	6.3	NA
Chenango Memorial	2011	N	7	3	2	8,737	0.35	2.3	5.7	same
	2012	S	7	3	4	7,074	0.39	5.7	9.9	NA
Claxton-Hepburn	2011	N	7	3	4	23,027	0.18	1.7	3.0	same
	2012	N	9	2	8	23,892	0.24	3.3	4.2	NA



NYS data as of July 25, 2013. hospital-onset (HO) rate and 95% confidence interval = # HO cases per 10,000 patient days (state average = 8.3)
95% confidence interval of hospital-associated (HA) rate = # HO plus community-onset-possibly-my-hospital cases (CO-PMH) per 10,000 patient days (state average = 9.7)
> Upper confidence limit exceeds graph area. Flag refers to comparison of HO rate between consecutive years, incr = increase, decr = decrease, NA: rates not compared because hospital changed testing method. Test method: N= less sensitive test, S = more sensitive test (nucleic acid amplification test (NAAT) or sensitive screening test(s) plus confirmation with NAAT or culture)

Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 3 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Clifton Springs	2011	N	20	6	8	11,941	0.92	6.7	11.7	same
	2012	N	8	3	9	9,735	0.45	9.2	12.3	same
Columbia Memorial	2011	N	17	7	9	31,688	0.28	2.8	5.0	same
	2012	N	22	19	24	31,630	0.36	7.6	13.6	incr
Community Memorial	2011	N	6	1	1	6,078	0.34	1.6	3.3	same
	2012	N	1	1	2	5,318	0.06	3.8	5.6	same
Coney Island	2011	S	68	26	97	113,554	0.40	8.5	10.8	NA
	2012	S	48	19	63	94,841	0.37	6.6	8.6	same
Corning Hospital	2011	N	17	6	7	15,099	0.39	4.6	8.6	NA
	2012	S	36	8	16	15,386	0.82	10.4	15.6	NA
Cortland Reg Med	2011	N	25	12	15	21,917	0.53	6.8	12.3	same
	2012	N	31	18	9	20,944	0.69	4.3	12.9	same
Crouse Hospital	2011	S	106	27	58	87,241	0.54	6.6	9.7	same
	2012	S	99	21	59	83,769	0.50	7.0	9.6	same
DeGraff Memorial	2011	N	12	7	25	17,336	0.36	14.4	18.5	same
	2012	N	21	9	24	16,158	0.69	14.9	20.4	NA
EJ Noble Hospital	2011	N	5	3	4	6,399	0.40	6.3	10.9	same
	2012	N	0	0	3	4,684	0.00	6.4	6.4	same
Eastern Long Island	2011	N	2	0	0	19,605	0.07	0.0	0.0	same
	2012	S	2	0	4	19,005	0.06	2.1	2.1	NA
Ellis Hospital	2011	N	31	16	43	96,003	0.16	4.5	6.1	same
	2012	S	48	21	49	97,289	0.26	5.0	7.2	NA
Elmhurst	2011	N	19	4	50	141,003	0.07	3.5	3.8	same
	2012	N	36	8	65	110,154	0.15	5.9	6.6	incr
Erie Medical Center	2011	S	18	2	108	70,369	0.15	15.3	15.6	NA
	2012	S	50	21	90	77,584	0.43	11.6	14.3	same

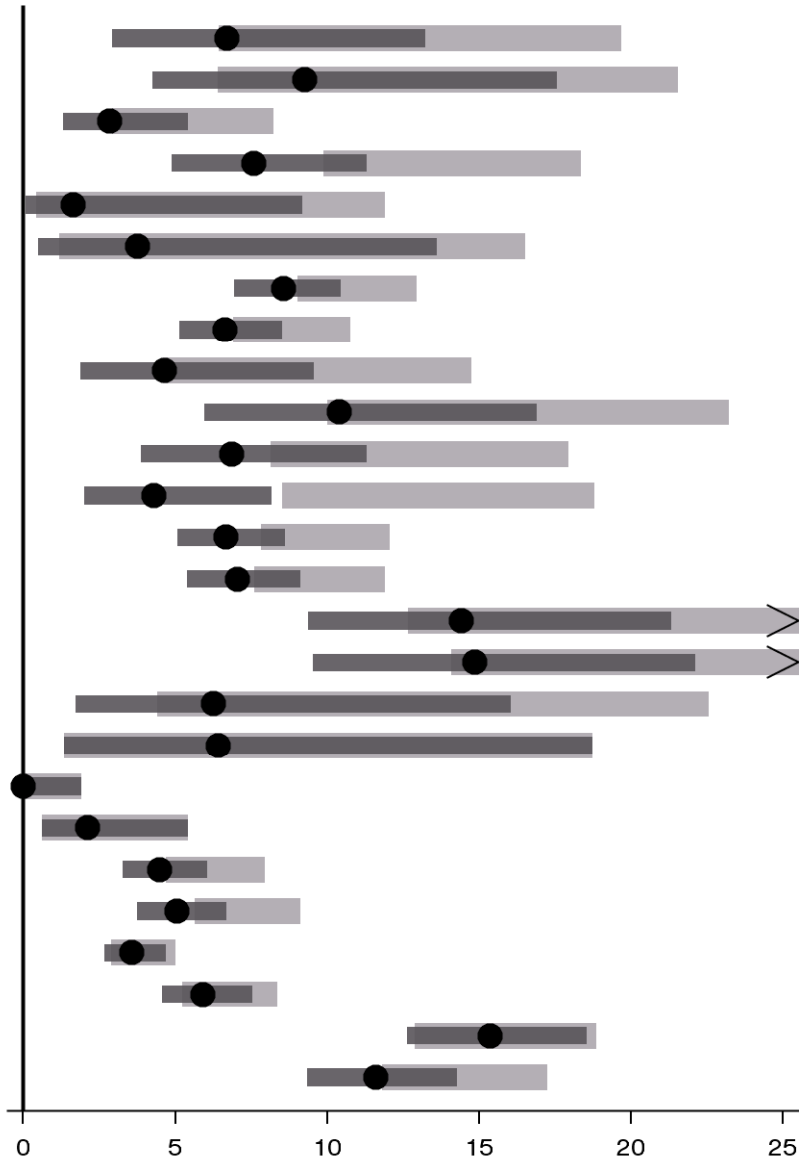


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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 4 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
FF Thompson	2011	S	31	9	12	34,387	0.68	3.5	6.1	NA
	2012	S	38	10	14	25,728	0.95	5.4	9.3	same
Faxton St. Lukes	2011	N	67	22	105	74,570	0.43	14.1	17.0	same
	2012	S	87	41	145	74,304	0.50	19.5	25.0	NA
Flushing Hospital	2011	N	29	16	93	74,073	0.23	12.6	14.7	same
	2012	S	23	15	62	70,425	0.18	8.8	10.9	NA
Forest Hills Hosp	2011	S	71	28	102	80,024	0.42	12.7	16.2	NA
	2012	S	81	36	89	73,730	0.48	12.1	17.0	same
Franklin	2011	S	58	16	58	63,893	0.52	9.1	11.6	NA
	2012	S	57	14	51	61,615	0.54	8.3	10.5	same
Geneva General	2011	N	34	13	15	16,868	0.85	8.9	16.6	same
	2012	N	28	8	16	17,691	0.67	9.0	13.6	same
Glen Cove Hospital	2011	S	36	20	32	63,000	0.38	5.1	8.3	NA
	2012	S	39	13	29	59,663	0.43	4.9	7.0	same
Glens Falls	2011	N	9	14	16	73,490	0.06	2.2	4.1	same
	2012	S	39	19	37	81,488	0.25	4.5	6.9	NA
Good Samar. Suffern	2011	N	42	21	38	59,930	0.30	6.3	9.8	decr
	2012	N	35	20	36	59,753	0.25	6.0	9.4	same
Good Samar. W Islip	2011	N	68	29	99	130,118	0.25	7.6	9.8	same
	2012	S	107	51	194	122,721	0.43	15.8	20.0	NA
Harlem Hospital	2011	N	5	4	17	65,498	0.04	2.6	3.2	same
	2012	N	4	2	23	68,437	0.03	3.4	3.7	same
Highland Hospital	2011	S	80	24	85	74,993	0.51	11.3	14.5	same
	2012	S	77	30	75	76,234	0.48	9.8	13.8	same
Hosp for Spec Surg	2011	N	8	1	20	52,664	0.06	3.8	4.0	NA
	2012	S	8	2	31	55,144	0.06	5.6	6.0	NA

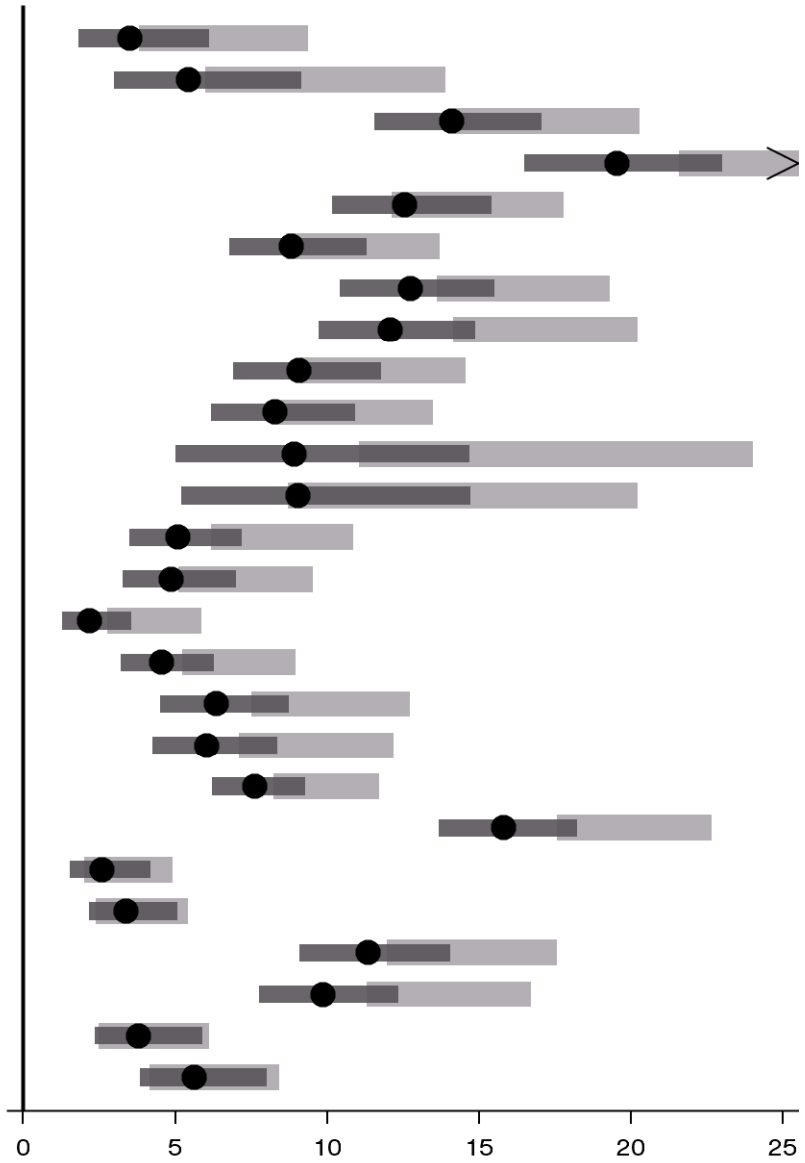

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 5 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Hudson Valley	2011	N	19	11	5	34,220	0.27	1.5	4.7	decr
	2012	N	21	11	27	34,730	0.30	7.8	10.9	incr
Huntington	2011	S	70	31	70	80,596	0.42	8.7	12.5	NA
	2012	S	48	29	43	76,362	0.30	5.6	9.4	decr
Intercomm. Newfane	2011	N	8	2	8	9,868	0.45	8.1	10.1	same
	2012	N	7	4	3	8,644	0.40	3.5	8.1	same
Interfaith Medical	2011	N	11	7	15	92,127	0.17	1.6	2.4	same
	2012	N	6	3	25	87,975	0.06	2.8	3.2	same
Ira Davenport	2011	N	0	1	0	2,405	0.00	0.0	4.2	NA
	2012	S	5	4	2	2,390	0.67	8.4	25.1	NA
JT Mather	2011	N	40	18	56	61,757	0.35	9.1	12.0	same
	2012	N	38	20	34	60,589	0.34	5.6	8.9	decr
Jacobi Medical	2011	N	41	17	63	135,000	0.19	4.7	5.9	same
	2012	S	62	22	100	135,207	0.29	7.4	9.0	NA
Jamaica Hospital	2011	N	30	9	59	88,386	0.15	6.7	7.7	same
	2012	N	21	15	42	83,795	0.10	5.0	6.8	NA
Jones Memorial	2011	N	10	3	3	7,947	0.41	3.8	7.6	same
	2012	N	6	1	3	6,723	0.30	4.5	5.9	same
Kenmore Mercy	2011	N	20	10	36	36,531	0.26	9.9	12.6	same
	2012	N	20	17	37	38,356	0.25	9.6	14.1	NA
Kings County	2011	N	17	9	23	101,877	0.09	2.3	3.1	same
	2012	N	17	7	29	107,924	0.08	2.7	3.3	same
Kingsbrook Jewish	2011	N	15	14	19	53,545	0.17	3.5	6.2	decr
	2012	N	20	7	26	52,637	0.23	4.9	6.3	same
Kingston Hospital	2011	N	33	17	48	45,667	0.33	10.5	14.2	incr
	2012	N	13	6	20	40,485	0.15	4.9	6.4	decr

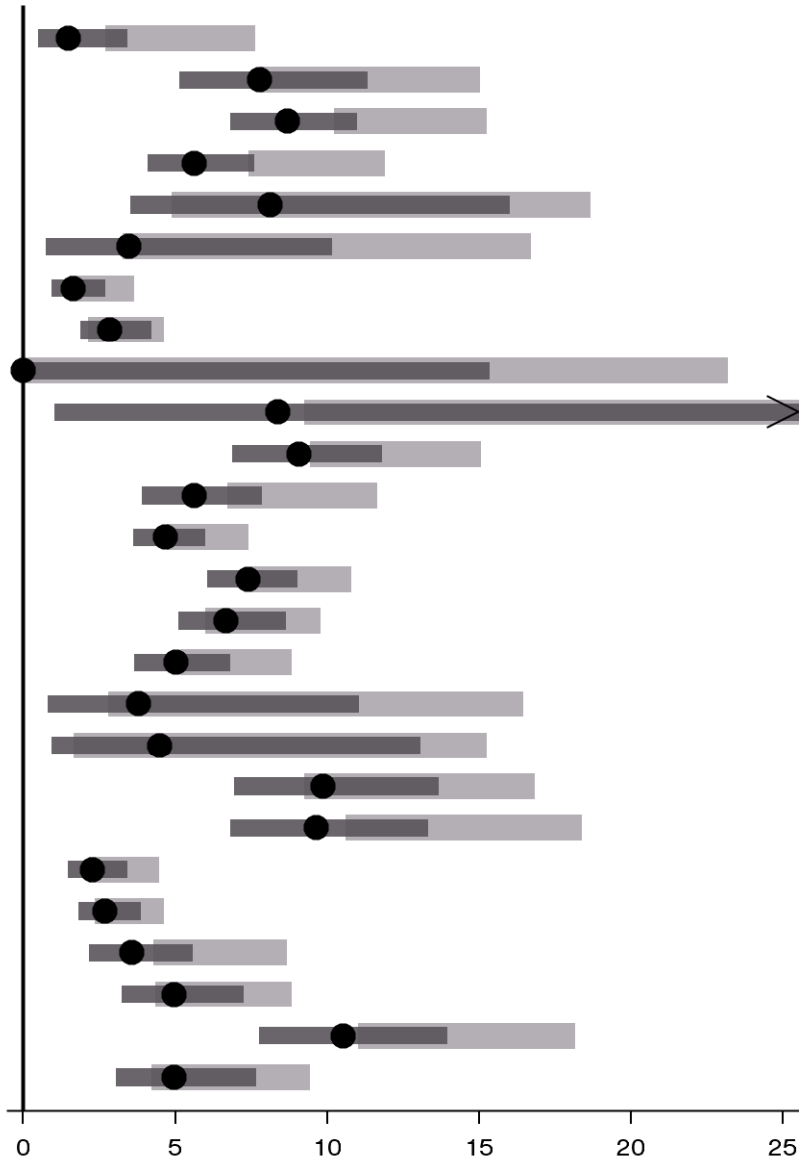

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 6 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Lawrence	2011	S	75	16	59	41,604	0.67	14.2	18.0	NA
	2012	S	51	21	56	36,305	0.46	15.4	21.2	same
Lenox Hill	2011	N	35	21	82	133,478	0.12	6.1	7.7	same
	2012	N	37	24	81	135,557	0.13	6.0	7.7	same
Lewis County	2011	N	4	2	1	6,033	0.20	1.7	5.0	same
	2012	N	2	0	1	5,681	0.10	1.8	1.8	same
Lincoln Medical	2011	N	4	4	7	92,884	0.02	0.8	1.2	decr
	2012	N	5	2	18	92,317	0.02	1.9	2.2	incr
Lockport Memorial	2011	N	7	7	12	18,479	0.19	6.5	10.3	same
	2012	N	9	5	17	17,749	0.23	9.6	12.4	same
Long Beach	2011	N	32	9	46	19,793	1.08	23.2	27.8	same
	2012	N	21	9	26	12,402	1.09	21.0	28.2	same
Long Island Jewish	2011	N	178	74	245	197,578	0.40	12.4	16.1	NA
	2012	S	206	62	213	204,730	0.45	10.4	13.4	NA
Lutheran Medical	2011	N	46	26	103	100,266	0.23	10.3	12.9	same
	2012	N	68	28	130	112,217	0.33	11.6	14.1	NA
Maimonides	2011	N	80	56	229	203,207	0.21	11.3	14.0	same
	2012	N	84	32	159	202,035	0.21	7.9	9.5	decr
Mary Imogene Bassett	2011	N	18	12	24	49,616	0.20	4.8	7.3	same
	2012	S	19	15	35	48,987	0.21	7.1	10.2	NA
Massena Memorial	2011	N	21	4	10	10,302	0.78	9.7	13.6	same
	2012	N	36	6	11	10,210	1.16	10.8	16.7	same
Medina Memorial	2011	S	10	5	11	24,498	0.36	4.5	6.5	NA
	2012	S	14	3	6	18,353	0.66	3.3	4.9	same
Mem. Sloan Kettering	2011	S	115	81	241	136,227	0.47	17.7	23.6	NA
	2012	S	138	66	265	144,473	0.56	18.3	22.9	same

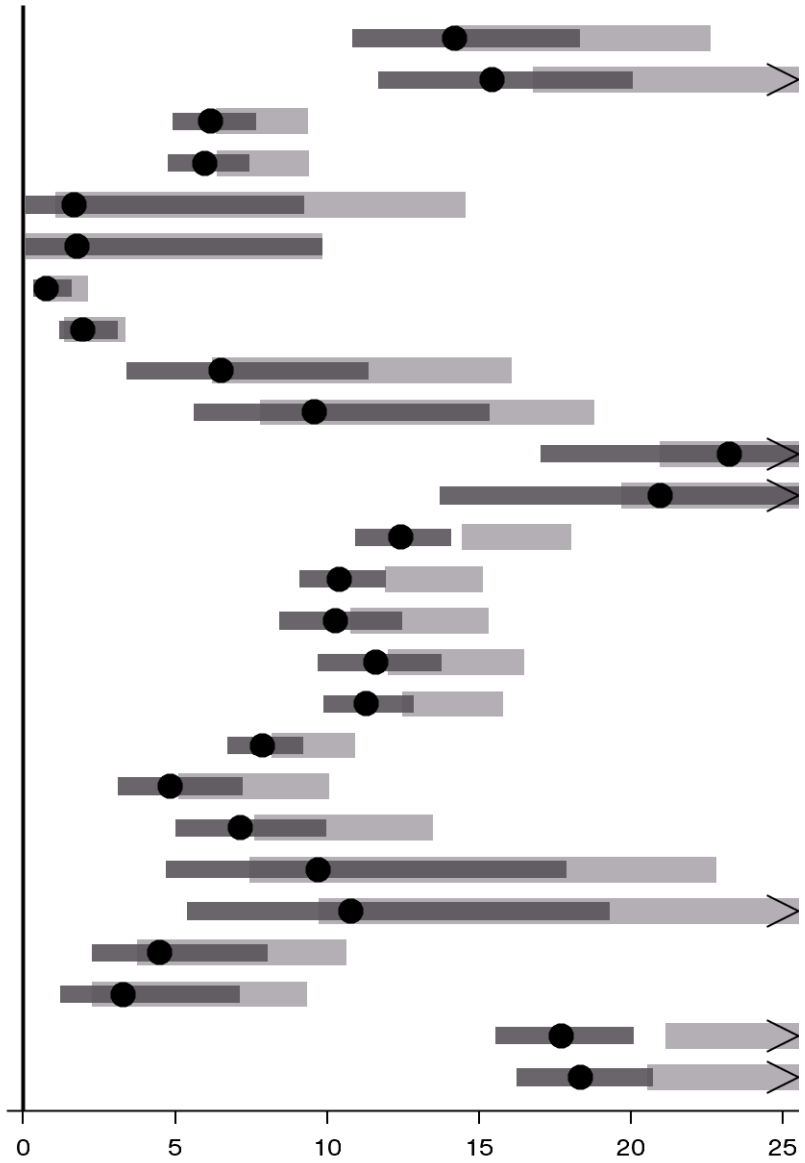

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 7 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Mercy Buffalo	2011	N	51	32	77	91,552	0.28	8.4	11.9	same
	2012	N	72	25	86	94,311	0.37	9.1	11.8	NA
Mercy Medical	2011	S	28	10	39	43,547	0.31	9.0	11.3	NA
	2012	S	46	28	67	40,382	0.45	16.6	23.5	NA
Metropolitan	2011	N	6	2	18	77,815	0.05	2.3	2.6	same
	2012	N	7	4	6	81,964	0.05	0.7	1.2	decr
Millard Fill. Suburb	2011	N	67	29	84	76,752	0.41	10.9	14.7	same
	2012	S	70	21	87	73,167	0.45	11.9	14.8	NA
Montefiore-Einstein	2011	S	75	41	125	120,746	0.32	10.4	13.7	incr
	2012	S	85	24	134	122,153	0.37	11.0	12.9	same
Montefiore-Moses	2011	S	175	86	335	260,082	0.40	12.9	16.2	same
	2012	S	162	86	323	254,200	0.38	12.7	16.1	same
Montifiore North	2011	S	75	25	70	59,746	0.61	11.7	15.9	same
	2012	S	61	21	58	60,434	0.49	9.6	13.1	same
Mount Sinai	2011	N	101	29	248	256,328	0.19	9.7	10.8	NA
	2012	S	133	31	273	262,304	0.28	10.4	11.6	NA
Mount Sinai Queens	2011	N	39	18	81	54,674	0.38	14.8	18.1	NA
	2012	S	42	11	68	54,458	0.42	12.5	14.5	NA
Mount St. Marys	2011	N	13	8	13	25,846	0.24	5.0	8.1	same
	2012	N	15	2	6	24,309	0.25	2.5	3.3	same
Mount Vernon	2011	S	18	8	17	22,893	0.52	7.4	10.9	NA
	2012	S	12	3	20	23,735	0.36	8.4	9.7	same
NY Community Bklyn	2011	N	40	5	43	44,736	0.56	9.6	10.7	same
	2012	N	45	12	34	45,906	0.59	7.4	10.0	same
NY Downtown	2011	N	12	4	39	41,526	0.13	9.4	10.4	same
	2012	N	13	9	21	40,054	0.14	5.2	7.5	decr

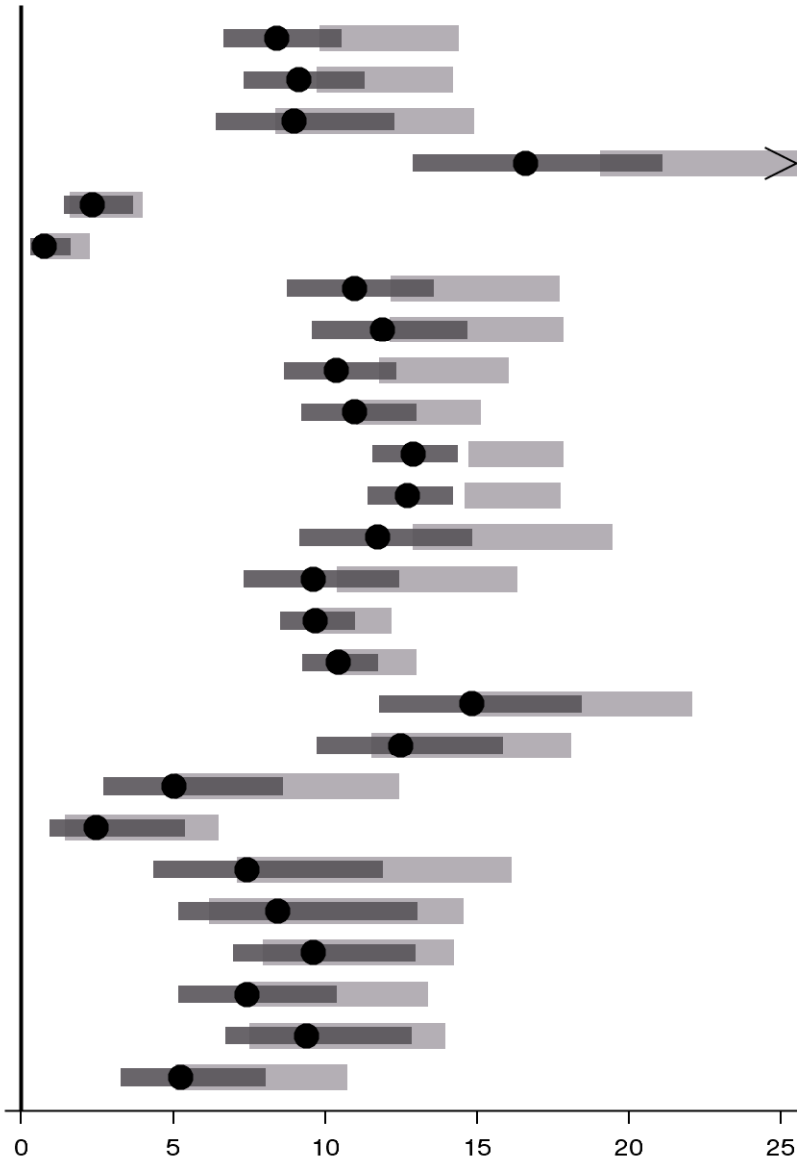

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 8 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
NY Med Ctr Queens	2011	S	243	71	295	158,255	0.69	18.6	23.1	NA
	2012	S	202	74	322	174,421	0.63	18.5	22.7	same
NY Methodist	2011	S	116	53	196	171,083	0.35	11.5	14.6	NA
	2012	S	131	43	150	174,797	0.39	8.6	11.0	decr
NYP- Allen	2011	S	57	14	37	52,016	0.49	7.1	9.8	same
	2012	S	48	12	25	49,984	0.44	5.0	7.4	same
NYP- Columbia	2011	S	127	44	280	202,697	0.42	13.8	16.0	same
	2012	S	141	44	249	201,471	0.47	12.4	14.5	same
NYP- Morgan Stanley	2011	S	18	5	29	56,325	0.15	5.1	6.0	same
	2012	S	12	6	22	55,857	0.10	3.9	5.0	same
NYP- Weill Cornell	2011	S	68	32	232	268,341	0.16	8.6	9.8	same
	2012	S	65	33	274	246,630	0.16	11.1	12.4	NA
NYU Joint Disease	2011	S	2	0	21	31,478	0.03	6.7	6.7	NA
	2012	S	3	0	5	30,019	0.05	1.7	1.7	decr
NYU Medical Center	2011	S	156	26	214	194,367	0.43	11.0	12.3	NA
	2012	S	118	35	137	130,711	0.40	10.5	13.2	NA
Nassau University	2011	N	9	3	10	71,006	0.05	1.4	1.8	same
	2012	N	7	1	8	68,795	0.04	1.2	1.3	same
Nathan Littauer	2011	N	18	8	10	15,207	0.52	6.6	11.8	same
	2012	N	23	12	11	13,313	0.73	8.3	17.3	same
Newark Wayne	2011	S	36	24	20	19,001	0.99	10.5	23.2	NA
	2012	S	22	9	18	18,597	0.57	9.7	14.5	same
Niagara Falls	2011	N	8	4	6	31,860	0.14	1.9	3.1	decr
	2012	N	7	4	11	31,704	0.11	3.5	4.7	same
North Central Bronx	2011	N	13	5	9	50,837	0.17	1.8	2.8	same
	2012	S	11	3	13	49,980	0.14	2.6	3.2	NA

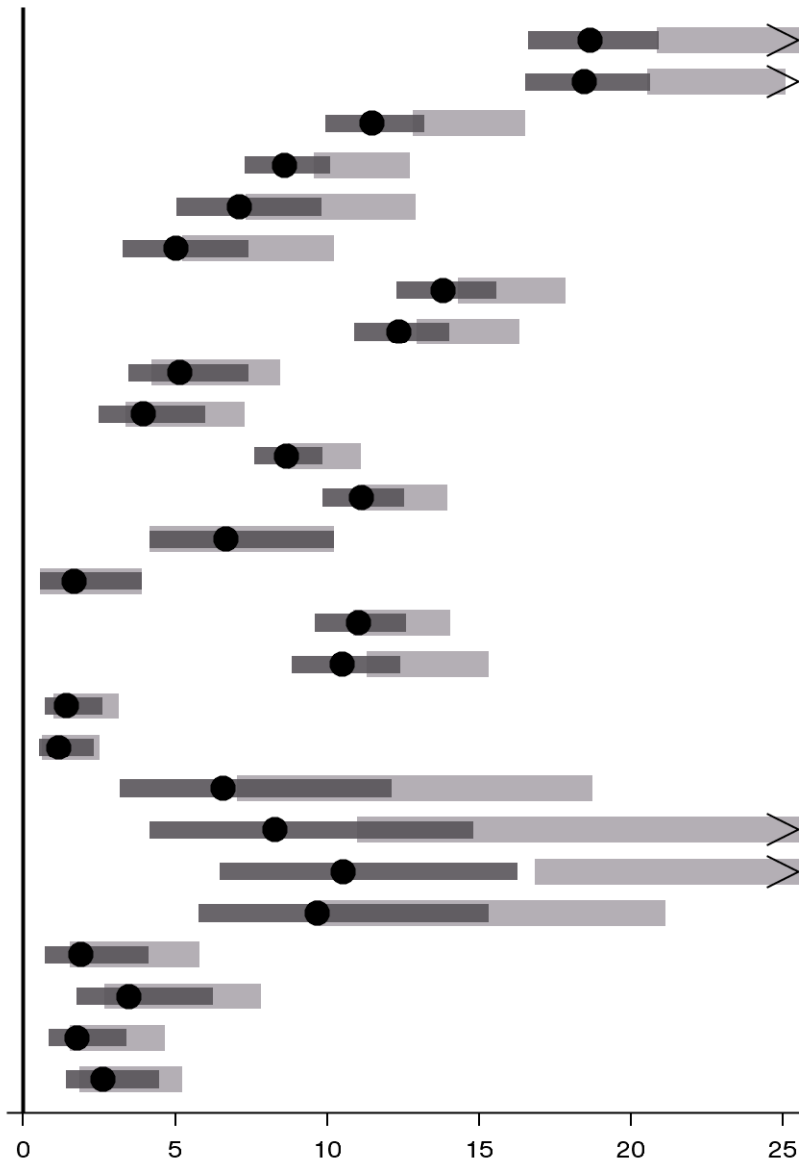

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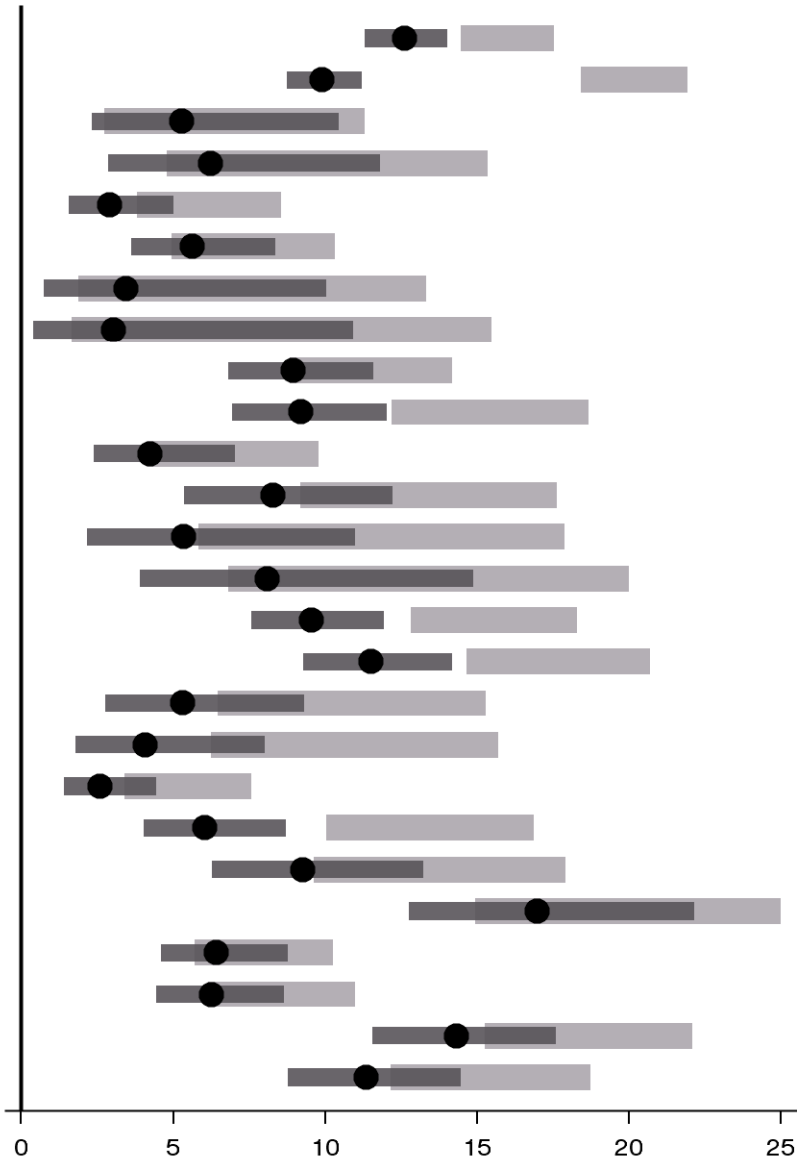
Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 9 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
North Shore	2011	S	153	89	337	267,675	0.31	12.6	15.9	NA
	2012	S	11	260	252	254,962	0.02	9.9	20.1	NA
Northern Dutchess	2011	N	10	1	8	15,144	0.30	5.3	5.9	same
	2012	N	12	4	9	14,499	0.36	6.2	9.0	NA
Northern Westchester	2011	N	21	13	13	44,723	0.21	2.9	5.8	same
	2012	S	34	7	24	42,762	0.37	5.6	7.2	same
Noyes Memorial	2011	N	5	2	3	8,768	0.20	3.4	5.7	same
	2012	N	5	2	2	6,631	0.26	3.0	6.0	same
Nyack Hospital	2011	N	34	15	58	64,885	0.23	8.9	11.3	same
	2012	N	41	35	54	58,752	0.30	9.2	15.1	NA
Olean General	2011	N	10	8	15	35,382	0.15	4.2	6.5	same
	2012	S	30	14	25	30,271	0.49	8.3	12.9	NA
Oneida Healthcare	2011	S	24	7	7	13,167	0.78	5.3	10.6	NA
	2012	S	13	5	10	12,383	0.43	8.1	12.1	same
OrangeReg Goshen&Mid	2011	N	60	48	79	82,761	0.33	9.5	15.3	decr
	2012	N	87	46	89	77,330	0.50	11.5	17.5	same
Oswego Hospital	2011	N	21	11	12	22,603	0.45	5.3	10.2	same
	2012	S	26	12	8	19,698	0.59	4.1	10.2	NA
Our Lady of Lourdes	2011	N	30	13	13	50,452	0.24	2.6	5.2	same
	2012	N	51	33	28	46,564	0.50	6.0	13.1	NA
Peconic Bay Medical	2011	S	17	13	30	32,396	0.23	9.3	13.3	same
	2012	S	32	8	54	31,850	0.44	17.0	19.5	incr
Phelps Memorial	2011	S	27	8	40	62,289	0.29	6.4	7.7	NA
	2012	S	48	12	37	59,177	0.55	6.3	8.3	same
Plainview Hospital	2011	S	87	26	91	63,591	0.72	14.3	18.4	NA
	2012	S	106	22	65	57,381	0.93	11.3	15.2	same



NYS data as of July 25, 2013. hospital-onset (HO) rate and 95% confidence interval = # HO cases per 10,000 patient days (state average = 8.3)
95% confidence interval of hospital-associated (HA) rate = # HO plus community-onset-possibly-my-hospital cases (CO-PMH) per 10,000 patient days (state average = 9.7)
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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 10 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Putnam Hospital	2011	N	23	15	23	37,352	0.27	6.2	10.2	same
	2012	N	29	11	29	34,218	0.35	8.5	11.7	NA
Queens Hospital	2011	N	9	8	27	51,891	0.08	5.2	6.7	same
	2012	N	9	5	15	54,921	0.08	2.7	3.6	same
Richmond Univ	2011	S	80	23	71	76,604	0.48	9.3	12.3	NA
	2012	S	61	12	63	104,041	0.31	6.1	7.2	decr
Rochester General	2011	S	114	52	194	181,480	0.21	10.7	13.6	NA
	2012	S	99	60	143	168,483	0.21	8.5	12.0	decr
Rome Memorial	2011	N	19	3	17	17,878	0.45	9.5	11.2	same
	2012	S	27	7	24	18,059	0.61	13.3	17.2	NA
Roswell Park	2011	N	14	7	19	35,486	0.26	5.4	7.3	same
	2012	N	11	7	12	39,037	0.20	3.1	4.9	same
Samaritan- Troy	2011	N	20	10	14	46,342	0.26	3.0	5.2	same
	2012	N	20	4	12	46,015	0.31	2.6	3.5	same
Samaritan- Watertown	2011	N	16	8	11	27,697	0.25	4.0	6.9	same
	2012	N	22	10	12	28,720	0.32	4.2	7.7	NA
Saratoga Hospital	2011	N	14	6	6	48,339	0.14	1.2	2.5	decr
	2012	N	13	4	14	48,194	0.15	2.9	3.7	same
Seton Health	2011	N	16	20	24	35,315	0.25	6.8	12.5	same
	2012	N	13	10	12	31,242	0.25	3.8	7.0	same
Sisters of Charity	2011	N	13	9	16	49,153	0.10	3.3	5.1	same
	2012	N	22	8	33	49,251	0.17	6.7	8.3	NA
Sound Shore Medical	2011	S	48	20	57	44,724	0.55	12.7	17.2	NA
	2012	S	41	20	45	38,849	0.49	11.6	16.7	same
South Nassau Comm.	2011	N	70	25	117	98,224	0.43	11.9	14.5	incr
	2012	S	102	29	157	95,925	0.62	16.4	19.4	NA

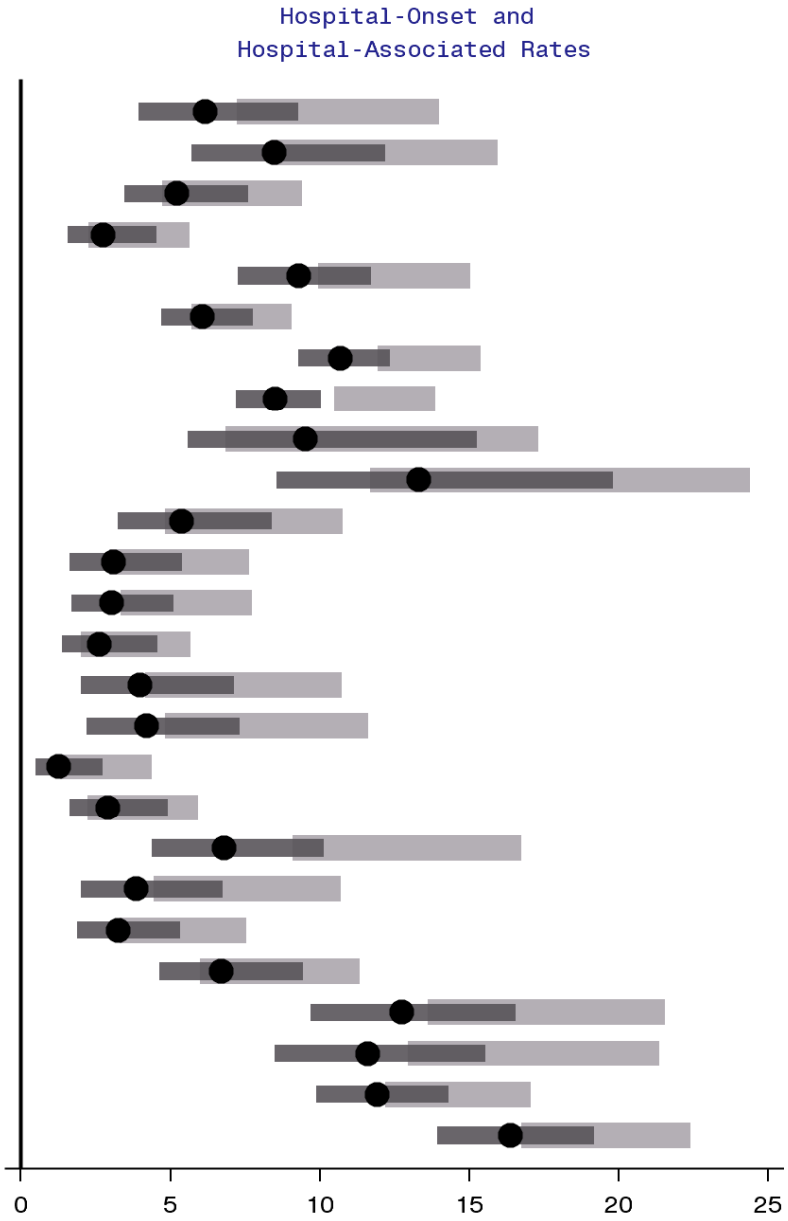

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 11 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Southampton	2011	S	30	14	23	19,403	0.54	11.9	19.1	same
	2012	S	44	15	25	20,602	0.79	12.1	19.4	same
Southside	2011	S	54	14	50	81,453	0.37	6.1	7.9	NA
	2012	S	66	23	73	85,927	0.42	8.5	11.2	same
St Anthony	2011	N	11	4	7	11,824	0.42	5.9	9.3	decr
	2012	S	5	3	4	10,870	0.21	3.7	6.4	NA
St Barnabas	2011	N	29	10	89	93,722	0.14	9.5	10.6	same
	2012	N	10	6	38	95,871	0.05	4.0	4.6	decr
St Catherine Siena	2011	N	50	33	84	84,673	0.35	9.9	13.8	same
	2012	S	75	34	81	77,698	0.56	10.4	14.8	NA
St Charles Hospital	2011	N	11	5	6	31,975	0.15	1.9	3.4	decr
	2012	S	29	12	27	35,703	0.41	7.6	10.9	NA
St Elizabeth Medical	2011	N	30	33	70	58,045	0.25	12.1	17.7	same
	2012	N	51	27	106	60,085	0.44	17.6	22.1	incr
St Francis- Pough.	2011	N	6	0	12	56,485	0.07	2.1	2.1	same
	2012	N	8	1	7	55,385	0.10	1.3	1.4	same
St Francis- Roslyn	2011	S	62	21	119	108,571	0.35	11.0	12.9	same
	2012	S	67	18	107	96,349	0.43	11.1	13.0	same
St James Mercy	2011	N	2	2	0	5,835	0.12	0.0	3.4	same
	2012	N	0	0	2	9,905	0.00	2.0	2.0	same
St Johns Episcopal	2011	S	15	6	29	53,152	0.19	5.5	6.6	NA
	2012	S	14	8	34	61,764	0.14	5.5	6.8	NA
St Johns Riverside	2011	N	32	15	30	109,651	0.18	2.7	4.1	same
	2012	N	56	20	66	105,670	0.31	6.2	8.1	incr
St Joseph -Bethpage	2011	S	47	26	56	36,852	0.66	15.2	22.3	NA
	2012	S	60	10	63	34,763	0.89	18.1	21.0	same

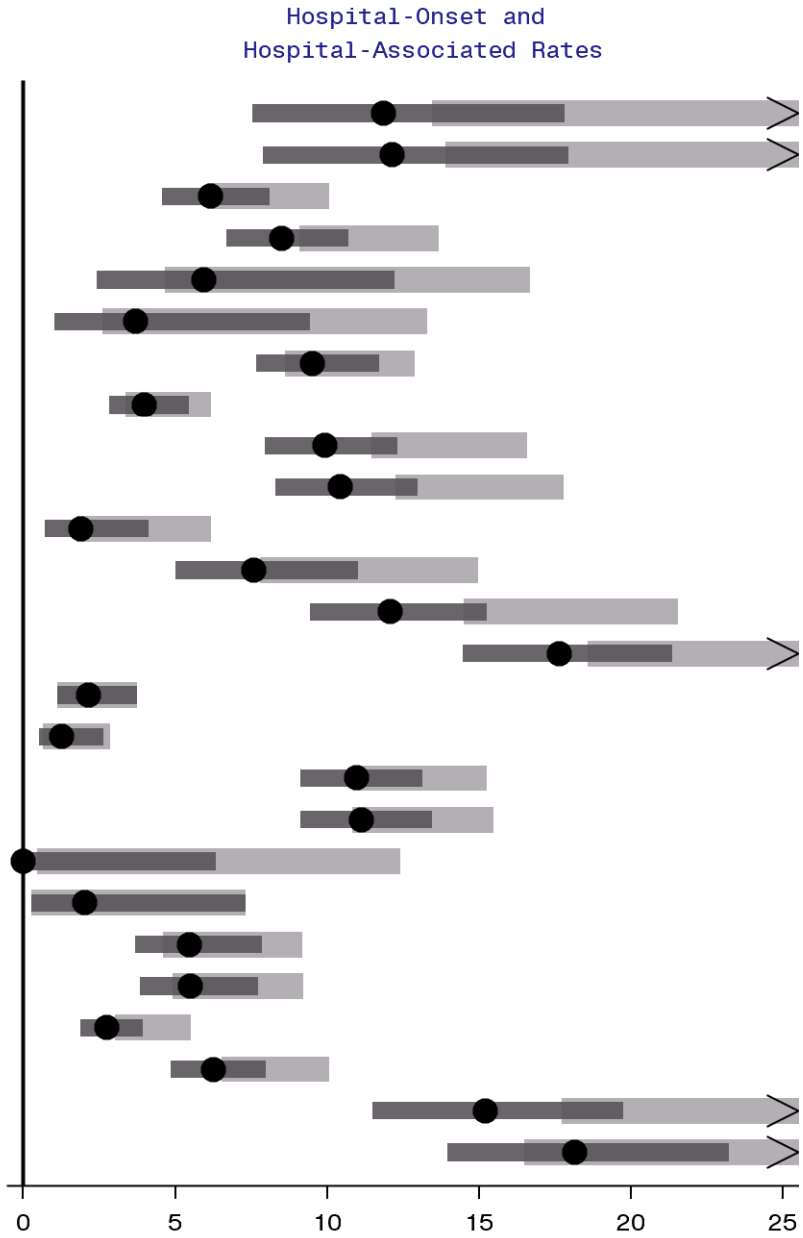

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 12 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
St Joseph Cheektow.	2011	N	31	14	31	30,104	0.57	10.3	14.9	same
	2012	N	35	20	22	29,776	0.65	7.4	14.1	NA
St Josephs- Elmira	2011	N	17	10	20	17,460	0.51	11.5	17.2	NA
	2012	S	19	7	24	19,780	0.61	12.1	15.7	NA
St Josephs- Syracuse	2011	S	147	58	151	125,896	0.62	12.0	16.6	same
	2012	S	140	62	114	130,638	0.53	8.7	13.5	decr
St Josephs- Yonkers	2011	N	12	4	24	48,913	0.19	4.9	5.7	same
	2012	N	8	5	10	44,266	0.13	2.3	3.4	decr
St Lukes- Roosevelt	2011	N	33	12	52	113,293	0.14	4.6	5.6	decr
	2012	N	23	9	42	110,899	0.10	3.8	4.6	same
St Lukes- St Lukes	2011	N	44	18	83	121,989	0.21	6.8	8.3	same
	2012	N	34	27	57	115,823	0.17	4.9	7.3	same
St LukesNewburgh&Cor	2011	N	31	18	46	49,895	0.28	9.2	12.8	same
	2012	N	26	14	28	47,147	0.24	5.9	8.9	same
St Marys Amsterdam	2011	N	28	6	14	29,424	0.46	4.8	6.8	same
	2012	N	31	5	20	29,488	0.52	6.8	8.5	same
St Peters Hospital	2011	N	28	16	44	112,803	0.11	3.9	5.3	same
	2012	S	56	31	67	114,488	0.22	5.9	8.6	NA
Staten Island U N&S	2011	S	102	49	149	156,011	0.28	9.6	12.7	same
	2012	S	89	31	135	158,536	0.24	8.5	10.5	same
Stony Brook Univ.Hos	2011	S	166	74	270	176,439	0.54	15.3	19.5	NA
	2012	S	180	55	221	178,117	0.57	12.4	15.5	decr
Strong Memorial	2011	S	112	56	212	209,268	0.37	10.1	12.8	decr
	2012	S	108	51	240	232,827	0.33	10.3	12.5	same
Syosset Hospital	2011	S	29	11	20	21,200	0.65	9.4	14.6	NA
	2012	S	19	6	13	19,327	0.46	6.7	9.8	same

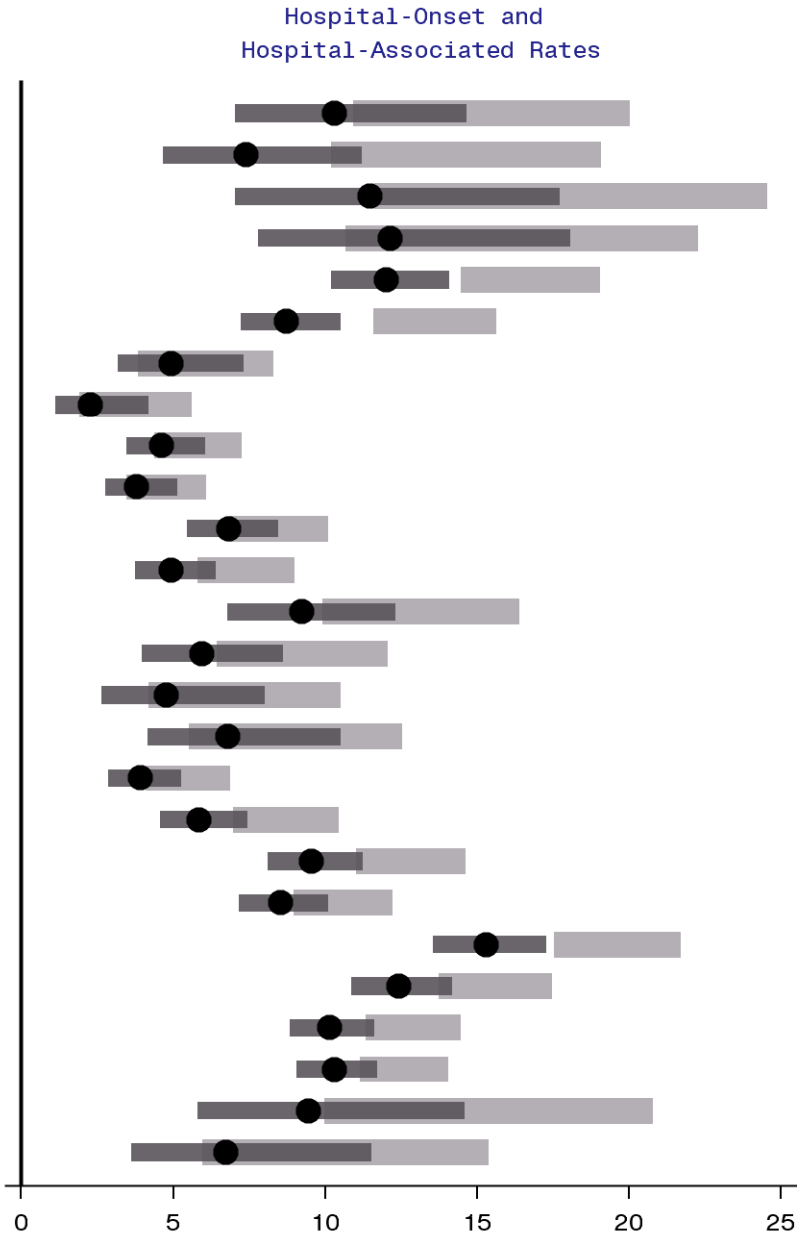

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Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 13 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
TLC Lake Shore	2011	N	9	1	2	6,720	0.58	3.0	4.5	same
	2012	N	5	1	4	5,962	0.41	6.7	8.4	same
U Health Bing/Wilson	2011	N	11	15	40	75,704	0.09	5.3	7.3	same
	2012	S	48	20	52	76,570	0.40	6.8	9.4	NA
U Hosp Brooklyn LICH	2011	N	31	11	53	57,164	0.21	9.3	11.2	decr
	2012	N	32	9	40	64,540	0.24	6.2	7.6	same
U Hosp SUNYDownstate	2011	N	16	13	29	99,534	0.10	2.9	4.2	same
	2012	N	8	10	39	99,509	0.05	3.9	4.9	same
United Memorial	2011	S	25	16	31	22,524	0.58	13.8	20.9	NA
	2012	S	15	12	11	16,713	0.37	6.6	13.8	NA
Unity Hosp Rochester	2011	S	76	26	90	73,326	0.54	12.3	15.8	NA
	2012	S	85	22	83	67,532	0.61	12.3	15.5	same
Upst. Community Gen	2011	S	42	5	34	40,799	0.57	8.3	9.6	same
	2012	S	34	5	14	35,585	0.51	3.9	5.3	decr
Upst. Univ.Hosp.SUNY	2011	S	95	30	138	116,690	0.48	11.8	14.4	NA
	2012	S	86	28	127	124,068	0.41	10.2	12.5	same
Vassar Brothers	2011	N	45	32	58	94,033	0.22	6.2	9.6	same
	2012	N	107	49	89	92,485	0.53	9.6	14.9	NA
Westchester Medical	2011	S	74	24	147	175,828	0.34	8.4	9.7	NA
	2012	S	69	19	124	165,451	0.34	7.5	8.6	same
White Plains	2011	S	77	25	77	78,000	0.50	9.9	13.1	NA
	2012	S	85	19	62	72,545	0.55	8.5	11.2	same
Winthrop University	2011	S	90	28	151	157,671	0.28	9.6	11.4	same
	2012	S	98	24	140	155,987	0.32	9.0	10.5	same
Woman and Childrens	2011	N	8	3	8	35,317	0.20	2.3	3.1	same
	2012	S	9	5	10	34,966	0.22	2.9	4.3	NA

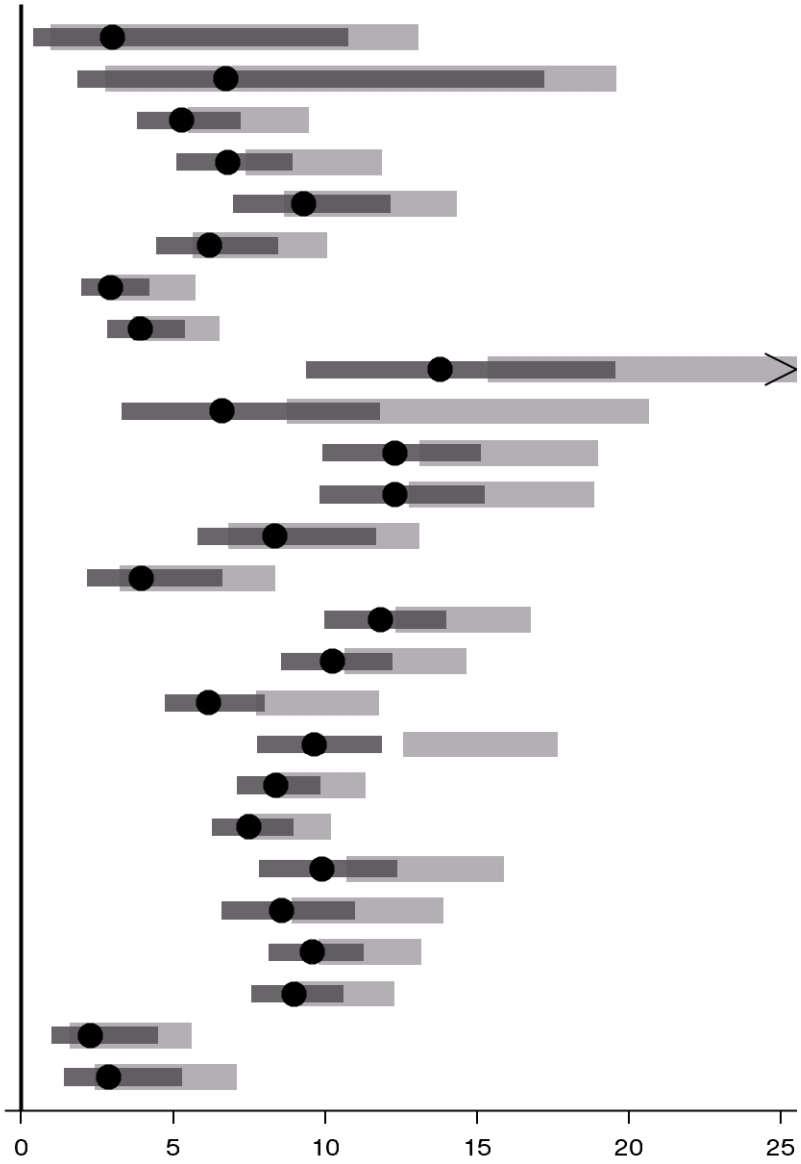

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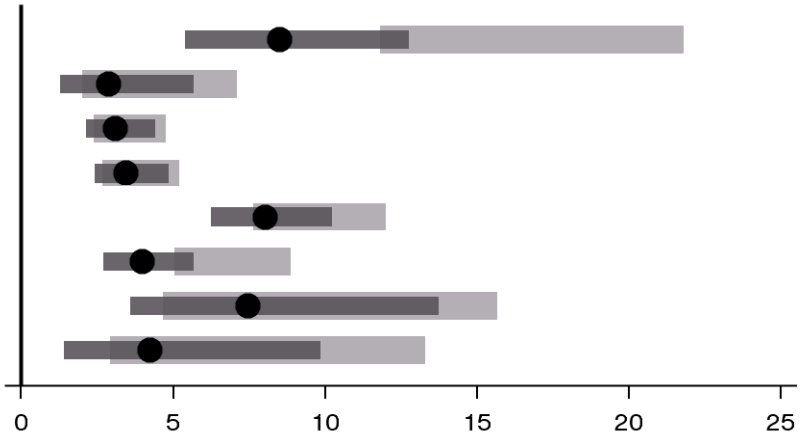
Figure 16: *C. difficile* Rates, New York State, 2011-2012 (Page 14 of 14)

Hospital Name	Year	Test	# CO-NMH	# CO-PMH	# HO	# Patdays	CO-NMH Rate	HO Rate	HA Rate	flag
Womans Christian	2011	N	32	21	23	27,114	0.55	8.5	16.2	same
	2012	N	12	3	8	27,852	0.21	2.9	3.9	decr
Woodhull Medical	2011	N	15	3	31	100,129	0.10	3.1	3.4	incr
	2012	N	7	3	34	98,776	0.05	3.4	3.7	same
Wyckoff Heights	2011	N	35	13	66	82,222	0.19	8.0	9.6	same
	2012	S	18	21	30	75,803	0.10	4.0	6.7	NA
Wyoming County Comm.	2011	N	6	2	10	13,414	0.24	7.5	8.9	same
	2012	N	7	3	5	11,872	0.31	4.2	6.7	same



NYS data as of July 25, 2013. hospital-onset (HO) rate and 95% confidence interval = # HO cases per 10,000 patient days (state average = 8.3)
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C. difficile Prevention Survey

In March 2013, NYSDOH surveyed hospitals on their *C. difficile* prevention and control practices. 173 out of 174 hospitals completed the survey. (One hospital was closed for many months due to Hurricane Sandy.) The following are the results, with comments and recommendations in italics.

- 97% of hospitals manually enter CDI cases into NHSN. *Additional investment in electronic medical records and information technology support for IP departments will improve the efficiency and accuracy of reporting.*
- 92% of hospitals place patients with unexplained diarrhea on contact precautions prior to laboratory confirmation of CDI. *Contact precautions, such as wearing gown and gloves, decrease the risk that germs are spread.*
- 57% of hospitals always place CDI patients in private rooms because all patient rooms in the facility are private (6%) or they are always able to make or find private rooms (51%). An additional 41% place the patients in private rooms if they are available. *If private rooms are not available, hospitals group CDI patients together.*
- 74% of hospitals use unique CDI contact precautions signs. *Signs can help alert visitors, healthcare workers, and cleaning staff to hospital policy.*
- Hospitals keep patients with CDI on contact precautions:
    - For the duration of diarrhea – 13%
    - For at least one day after diarrhea resolves – 9%
    - For at least two days after diarrhea resolves – 28%
    - For at least three days after diarrhea resolves – 4%
    - For the duration of treatment – 3%
    - Until discharge – 30%
    - Until negative test – 2% *(not recommended)*
    - Other – 11%

  Skin and environmental contamination may persist after diarrhea resolves. Hospitals may choose to continue contact precautions for a period after symptoms resolve if CDI is a problem in the facility.
- Hospitals measure staff adherence to use of personal protective equipment for patients on CDI contact precautions
    - Formally (from weekly to annually) – 52%
    - Informally – 24%
    - Never - 23%

  Hospitals may use checklists to monitor the percent of healthcare workers that correctly use gowns and gloves when caring for CDI patients.
- 90% of hospitals use dedicated non-critical medical items (such as blood pressure cuffs or stethoscopes) for patients with CDI. *CDI spores can persist on medical equipment for many weeks and be transferred to other patients who use the same equipment.*

- 94% of hospitals prefer to use soap and water for hand hygiene with patients with CDI, 2% prefer alcohol gel, and 4% have no preference between soap and alcohol gel. *Soap and water can physically wash away the C. difficile spores, however scientific studies have not proven soap and water to be more effective than gel products in reducing CDI*[5].
- 91% of hospitals provided infection control training to environmental services staff within the last year. *It is vital that cleaning staff know and use an appropriate method to clean rooms contaminated with C. difficile.*
- 28% of hospitals use bleach-based surface disinfectant and 63% of hospitals use quaternary ammonium-based surface disinfectant for daily room cleaning in non-isolation areas. *Bleach kills C. difficile spores, quarternary ammonium does not.*
- 93% of hospitals use bleach-based or hydrogen peroxide-based surface disinfectant to clean isolation rooms, either daily or on discharge. *The remainder use quaternary ammonium or phenolic-based surface disinfection, which are not effective in killing C. difficile spores.*
- 10% of hospitals use ultraviolet light, aerosolized hydrogen peroxide, or hydrogen peroxide vapor room treatment during outbreaks. *These new cleaning methods may be able to kill C. difficile spores in difficult to clean places.*
- 75% of respondents strongly agreed that prevention and control of CDI is a priority at their hospital. *These respondents tended to work at the hospitals with the highest CDI rates.*

Antimicrobial Stewardship Programs

Hospital antimicrobial stewardship programs (ASPs) help ensure that each patient receives the right antibiotic, at the right dose, for the right duration.[6] ASPs have been shown to improve patient health. For example, antibiotics are the biggest risk factor for CDI. Improved prescribing of antibiotics reduces CDI.[7, 8, 9] ASPs also decrease the risk of developing antimicrobial-resistant infections.[10, 11] Antimicrobial resistance is the ability of microbes to grow in the presence of drugs that would normally kill them. People infected with antimicrobial-resistant organisms require more complicated treatment and may have longer hospital stays. By decreasing antimicrobial use and improving patient outcomes, comprehensive ASPs have reduced healthcare costs in both large academic hospitals and small community hospitals.[12,13]

The Infectious Diseases Society of America (IDSA) and the Society of Healthcare Epidemiology of America (SHEA) jointly published guidelines for effective ASP programs in hospitals.[12] The following table summarizes the degree to which NYS hospitals currently meet the IDSA/SHEA recommendations, as reported in a March 2013 NYS hospital survey. 173 out of 174 hospitals completed the survey. (One hospital was closed for many months due to Hurricane Sandy).

Antimicrobial Stewardship Programs in NYS Hospitals, 2013 Survey Results

- 9% of hospitals have a comprehensive antimicrobial stewardship team, consisting of an infectious diseases (ID) physician, clinical pharmacist with ID training, clinical microbiologist, information system specialist, infection preventionist, and epidemiologist.
- 51% of hospitals have only a core antimicrobial stewardship team, consisting of an ID physician and clinical pharmacist with ID training.
- 33% of hospitals have an antimicrobial stewardship strategic plan that was approved by the medical executive staff.
- 44% of hospitals prospectively audit antimicrobial use and provide intervention and feedback to the prescribers.
- 69% of hospitals restrict antibiotic use by closing the formulary to a defined set of available agents.
- 62% of hospitals require approval for the use of selected antimicrobials.
- 36% of hospitals offered educational programs within the last year to influence prescriber behavior.
- 40% of hospitals developed clinical practice guidelines incorporating local microbiology and resistance patterns.
- 26% of hospitals require physician justification/indication on antimicrobial orders.
- 49% of hospital physicians or pharmacists review selected therapies to ensure use of the most narrow spectrum drug to treat specific infection based on culture results.

- 37% of hospitals require the use of patient-specific criteria in conjunction with pathogen-specific criteria to optimally dose antibiotics.
- 56% of hospitals have policies for parenteral to oral conversion of antimicrobials.
- The following computer surveillance and decision support tools are used:
    - 35% of hospitals have computerized physician order entry with ordering prompts and assistance.
    - 14% of hospital computer systems provide patient-specific automated recommendations for therapy.
    - 50% of hospitals use automatic stop orders for selected antimicrobials.
    - 65% of hospital systems monitor for adverse drug events.
    - 64% of hospital systems monitor antimicrobial use and resistance trends.

NYSDOH recommends that hospitals review their concordance with the above recommendations and implement additional program elements based on resources and local infection and resistance patterns. Smaller hospitals may consider establishing an ASP through a cooperative relationship with neighboring hospitals. Resources for hospitals are available at:

- http://www.cdc.gov/getsmart/healthcare/
- http:// www.ahrq.gov/qual/cdifftoolkit/
- http://www.jointcommission.org/topics/hai_antimicrobial_stewardship.aspx.

For patients, the following recommendations can help ensure appropriate antibiotic use:

- Take antibiotics exactly as your doctor prescribes.
- Only take antibiotics prescribed for you – do not share or use leftover antibiotics.
- Do not ask your doctor for antibiotics when your doctor thinks you do not need them.
- Ask your doctor what the side effects of the antibiotic are.
- Ask your doctor if the choice of antibiotic and dose was optimized to your infection and local resistance patterns.
- Ask your doctor to reassess the prescription when culture results become available.

Comparison of NYS HAI Rates with National HAI Rates

To compare the performance of NYS with the United States as a whole, the most recently published national data were compared to NYS data from the same time period.

For CLABSIs, 2011 NYS rates were compared to 2011 national rates[14] (Table 22). Overall, NYS CLABSI rates were 28% higher than national rates, after adjusting for ICU type and birthweight within neonatal ICUs. NYS CLABSI rates may appear higher than national rates because NYS has had a strong data validation program since 2007, while states that have more recently implemented reporting mandates have not yet begun data validation. For more details on the NYS data validation process compared to the national process see Appendix 3. The data validation process is likely to increase HAI rates because missed infections are identified and entered into the NHSN, and training efforts increase the skills of the hospital IPs, leading to better identification of HAIs. Additionally, the presence of a validation process in a state might encourage increased care and thoroughness in reporting, which might result in higher pre-audit HAI rates. In summary, states with data validation programs might appear to have higher rates because of their validation efforts, because they truly have a higher rate, or both.

For SSI data, the most recently available national averages are from 2006-8. Because these figures are outdated, no comparison was made. No comparison was made to national CDI rates due to the lack of adequate risk adjustment data.

Table 22. Comparison of NYS and National CLABSI Rates, 2011

	National			NYS			Comparison		
Location	CLABSI	Central Line days	Rate	CLABSI	Central Line days	Rate	NYS Expected	SIR (95% CI)	Result
Cardiac	673	605,187	1.1	72	50,236	1.4	55.9	1.29 (1.01, 1.62)	higher
Cardiothoracic	762	934,275	0.8	68	73,359	0.9	59.8	1.14 (0.88, 1.44)	same
Medical	1,472	1,239,197	1.2	170	110,910	1.5	134.0	1.27 (1.08, 1.47)	higher
Medical/surgical	4,142	4,284,126	1.0	238	175,941	1.4	177.7	1.34 (1.17, 1.52)	higher
Neurosurgical	309	300,009	1.0	26	19,847	1.3	20.4	1.27 (0.83, 1.86)	same
Pediatric	754	431,978	1.7	70	31,630	2.2	54.6	1.28 (1.00, 1.62)	same
Surgical	943	854,679	1.1	116	81,917	1.4	93.0	1.25 (1.03, 1.50)	higher
Neonatal (Level II/III)	799	565,896	1.4	31	7,091	4.4	10.9	2.83 (1.92, 4.02)	higher
Neonatal (Level III)	1,387	896,126	1.5	154	79,938	1.9	129.9	1.19 (1.01, 1.39)	higher
TOTAL all locations	11,241	10,111,473		945	630,869		736.4	1.28 (1.20, 1.37)	higher

NYS data downloaded July 25, 2013. National data reported in Dudeck M, Horan T, Peterson K, et al. National Healthcare Safety Network report, data summary for 2011, device-associated module. Am J Infection Control 2013. 41: 286–300. Rates are per 1,000 central line days. higher: NYS significantly higher than National, same: NYS not significantly different.

Cost of Hospital-Acquired Infections and Savings from Reductions

Since NYS public reporting of HAIs began in 2007, the reductions in colon, CABG, and hip replacement SSI rates, as well as ICU-related CLABSIs, have resulted in cost savings. A recent CDC report provided a range of estimates for the direct hospital cost of treating HAIs[15]. Ranges were provided because HAIs vary in severity. For example, a deep chest infection following CABG surgery is more complicated and expensive than a superficial site infection following CABG surgery. Additionally, studies upon which the CDC report is based differ somewhat in their cost estimates. Until more precise estimates are available, these ranges have been used to estimate comparative costs of HAIs and cost savings since the inception of the HAI program (Table 23).

Table 23. Estimated Costs and Cost Savings of HAIs, New York State

a) CLABSI costs and cost savings

Year	# infections observed in year	Minimum Direct Cost (millions of dollars)	Maximum Direct Cost (millions of dollars)	# infections expected using 2007 NYS baseline	# infections avoided	Minimum Estimated Cost Savings, millions (in 2007 dollars)	Maximum Estimated Cost Savings, millions (in 2007 dollars)
2008	1,557	11.3	45.4	1,628	71	0.5	2.1
2009	1,327	9.7	38.7	1,655	328	2.4	9.6
2010	1,041	7.6	30.4	1,622	581	4.2	16.9
2011	945	6.9	27.6	1,616	671	4.9	19.6
2012	735	5.4	21.4	1,549	814	5.9	23.7
TOTAL	5,605	40.8	163.4	8,069	2,464	18.0	71.8

Based on surveillance of CLABSIs in Medical, Surgical, Medical/Surgical, Cardiac, Cardiothoracic, Neurosurgical, Pediatric, and Neonatal Intensive Care Units beginning in 2007. Direct costs per CLABSI minimum = $7,288 ; maximum = $29,156

b) SSI costs and cost savings

Year	# infections observed in year	Minimum Direct Cost (millions of dollars)	Maximum Direct Cost (millions of dollars)	# infections expected using NYS baseline	# infections avoided	Minimum Estimated Cost Savings, millions (in 2007 dollars)	Maximum Estimated Cost Savings, millions (in 2007 dollars)
2008	1,640	19.5	56.9	1,891	251	3.0	8.7
2009	1,698	20.2	58.9	1,828	130	1.5	4.5
2010	1,582	18.8	54.8	1,762	180	2.1	6.3
2011	1,513	18.0	52.5	1,710	197	2.3	6.8
2012	1,428	17.0	49.5	1,691	263	3.1	9.1
TOTAL	7,861	93.3	272.5	8,882	1,021	12.1	35.4

Based on surveillance of Colon and Coronary Artery Bypass Graft procedures beginning in 2007, and Hip procedures beginning in 2008. Direct costs per SSI minimum = $11,874; maximum = $34,670

c) *C. difficile* costs

Year	# infections observed in year	Minimum Direct Cost (millions)	Maximum Direct Cost (millions)
2010	10,186	65.3	92.9
2011	10,388	66.6	94.8
2012	9,945	63.7	90.7

Based on surveillance of hospital-onset C. difficile infections beginning in 2010.
Direct costs per infection minimum = $6,408; maximum = $9,124

Overall, CLABSI rates decreased by 53% between 2007 and 2012, resulting in a cost savings estimated to be between $18 million and $72 million since 2007. Overall, SSI rates decreased by 16% between 2007 and 2012, resulting in a cost savings estimated to be between $12.1 million and $35.4 million since 2007. The cost of the hospital onset CDI in 2012 is estimated to range between $64 and $91 million. Overall CDI cost savings were not calculated because the number of infections avoided is difficult to determine for the group of hospitals that changed laboratory testing methods.

Infection Prevention Resources

To measure the impact of mandatory HAI reporting on infection prevention personnel and programs, an infection prevention resource survey is conducted annually. Information is obtained on the number of infection preventionists (IPs) and hospital epidemiologists (HEs); IP/HE educational background and certification; infection control program support services; activities and responsibilities of infection prevention and control program staff; and an estimate of time dedicated to various activities, including surveillance. This section summarizes the highlights of the survey.

To compare staffing levels between hospitals and track trends over time, it is important to adjust for the number of IP hours worked and the number of patients the IP staff oversee. This report includes two measures which adjust for these factors:

1) acute care (AC) beds per one full-time-equivalent (FTE) infection preventionist; and
2) aggregate beds per one FTE IP – this measure combines acute care beds, ICU beds, long term care beds, dialysis centers, ambulatory surgery centers, ambulatory clinics and private physician offices using the following formula: 1 ICU bed = 2 acute care beds; 1 long term care bed = ½ an acute care bed; 1 dialysis facility = 50 acute care beds; 1 ambulatory surgery center = 50 acute care beds; 1 ambulatory clinic = 10 acute care beds; and a private physician's office = 5 acute care beds.

In 2012, the average FTE infection preventionist in NYS was responsible for 127 acute care beds or an aggregate measure equivalent to 244 AC beds. Staffing levels have trended up slightly over the past six years; in 2012 the average IP was responsible for 37 fewer acute care beds than he/she was responsible for in 2007 (Figure 17). Over the years, the demands on the IP have also increased, with state and federal requirements for reporting data on more HAI indicators.

Figure 17. Hospital Beds per One Full Time Equivalent Infection Preventionist in New York State, 2007-2012

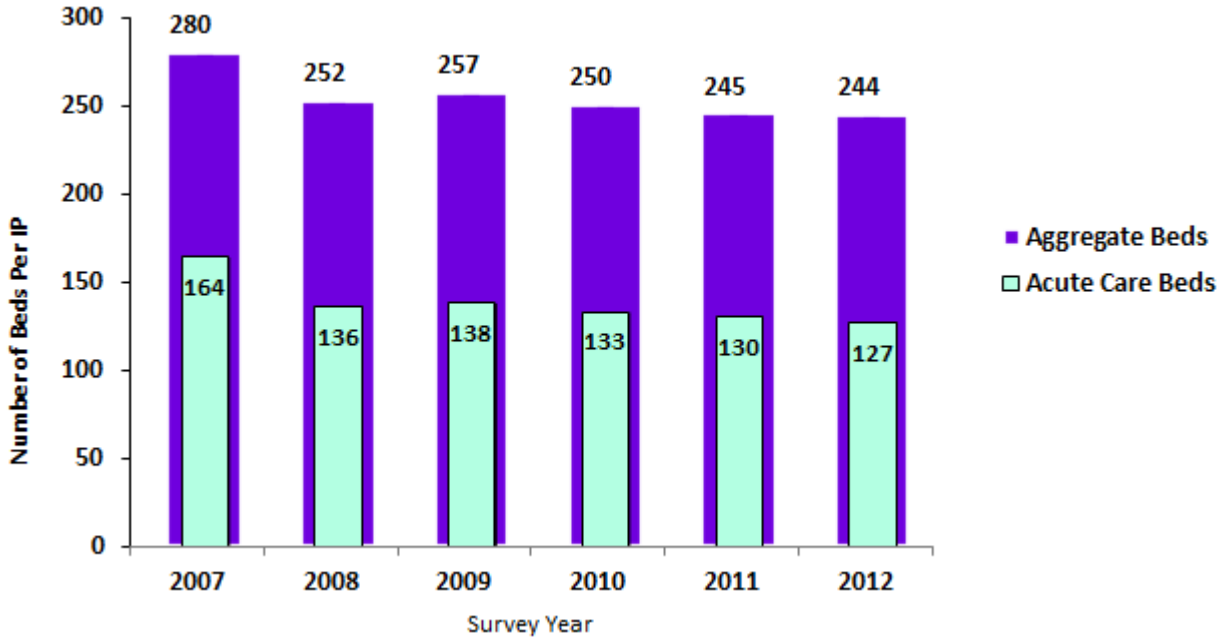


Figure 18 summarizes the staffing levels by hospital. Hospitals in the lowest 15th percentile using either infection prevention staffing measure were designated with a "Low" for low IP resources.

Figure 18. Infection Preventionist Personnel Resources in NYS Hospitals, 2012 (page 1 of 5)

Hospital	FTE for IPs	Acute Care Beds	Acute Beds Per IP	Add. Bed EQ	Add. Bed EQ Per IP	LOW Resources Flag
AO Fox Memorial	0.8	60	80	238	317	LOW
Adirondack Medical	0.9	52	61	198	233	
Albany Medical	5.0	632	126	655	131	
Albany Memorial	1.0	40	40	62	62	
Alice Hyde	1.0	53	53	281	281	
Arnot Ogden	2.2	219	100	472	215	
Auburn Memorial	0.4	99	248	30	75	LOW
Bellevue Hospital	3.0	828	276	798	266	LOW
Benedictine Hospital	0.8	150	188	5	6	
Bertrand Chaffee	0.3	24	80	0	0	
Beth Israel- Kings	1.0	212	212	82	82	LOW
Beth Israel- Petrie	5.0	856	171	1146	229	LOW
Bon Secours	0.6	80	133	58	97	
Bronx-Lebanon	3.0	504	168	526	175	
Brookdale Hospital	4.0	366	92	146	37	
Brookhaven Memorial	1.6	306	191	174	109	
Brooklyn Downtown	3.0	350	117	266	89	
Brooks Memorial	0.5	65	130	58	116	
Buffalo General	4.6	416	90	170	37	
Calvary Hospital	0.8	225	300	10	13	LOW
Canton-Potsdam	1.0	94	94	304	304	LOW
Carthage Area	1.0	48	48	219	219	
Catskill Regional	1.0	104	104	152	152	
Cayuga Medical Center	0.9	204	227	96	107	LOW
Champlain Valley	3.0	186	62	329	110	
Chenango Memorial	0.8	58	73	131	164	
Claxton-Hepburn	1.0	75	75	200	200	
Clifton Springs	0.8	61	76	130	163	
Clifton-Fine Hospital	0.3	3	10	16	53	
Cobleskill Regional	0.5	40	80	110	220	
Columbia Memorial	1.0	192	192	299	299	LOW
Community General	1.6	160	100	36	23	
Community Memorial	0.5	25	50	75	150	
Coney Island Hospital	4.5	363	81	967	215	
Corning Hospital	0.5	66	132	58	116	
Cortland Reg Med	0.8	177	221	52	65	LOW
Crouse Hospital	2.0	380	190	277	139	
Cuba Memorial	0.3	20	80	30	118	
DeGraff Memorial	0.5	61	122	64	128	

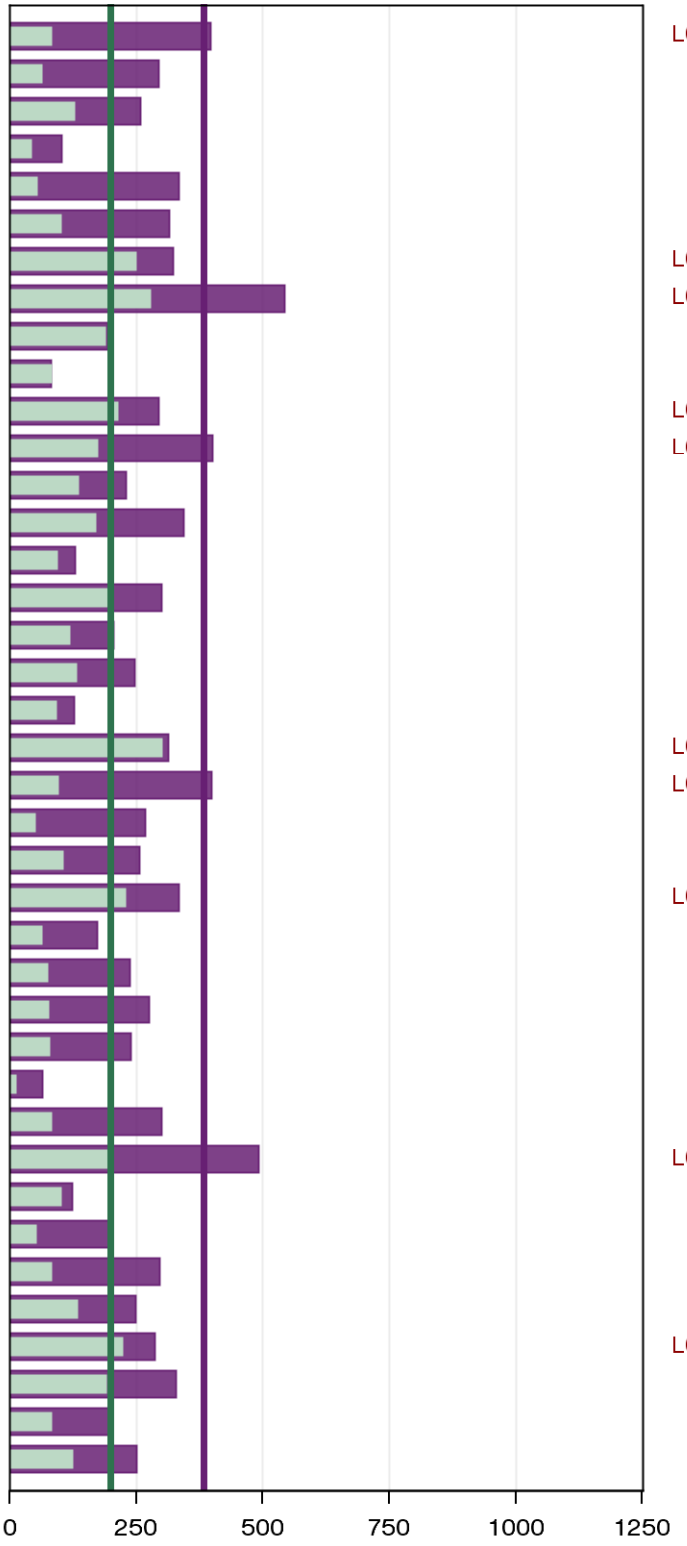


Figure 18. Infection Preventionist Personnel Resources in NYS Hospitals, 2012 (page 2 of 5)

Hospital	FTE for IPs	Acute Care Beds	Acute Beds Per IP	Add. Bed EQ	Add. Bed EQ Per IP	LOW Resources Flag
Delaware Valley	0.4	25	63	60	150	
EJ Noble Hospital	0.9	9	10	113	125	
Eastern Long Island	0.3	80	267	5	17	LOW
Elizabethtown	0.6	12	20	0	0	
Ellenville Regional	2.0	25	13	20	10	
Ellis Hospital	3.0	345	115	160	53	
Elmhurst	3.5	545	156	943	269	LOW
Erie Medical Center	3.4	425	125	190	56	
FF Thompson Hospital	1.2	113	98	142	123	
Faxton - St. Lukes	4.5	250	56	517	115	
Flushing Hospital	2.5	293	117	165	66	
Forest Hills Hospital	1.5	249	166	88	59	
Franklin Hospital	1.5	200	133	116	77	
Geneva General	0.8	132	165	360	450	LOW
Glen Cove Hospital	1.0	146	146	128	128	
Glens Falls Hospital	2.0	300	150	427	214	
Good Samaritan Suffern	1.0	250	250	186	186	LOW
Good Samaritan W Islip	4.0	437	109	200	50	
Harlem Hospital Center	3.7	286	77	441	119	
Highland Hospital	2.9	261	90	209	72	
Hosp for Special Surg	3.9	205	53	70	18	
Hudson Valley	1.0	120	120	70	70	
Huntington Hospital	2.6	275	106	186	72	
Intercomm. Newfane	0.3	30	100	54	180	
Interfaith Medical	1.9	287	151	103	54	
Ira Davenport	0.4	12	34	69	196	
JT Mather	2.0	248	124	20	10	
Jacobi Medical	3.8	457	120	385	101	
Jamaica Hospital	2.5	423	169	417	167	
Jones Memorial	1.0	60	60	86	86	
Kenmore Mercy	1.0	152	152	126	126	
Kings County Hospital	2.0	627	314	859	430	LOW
Kingsbrook Jewish	2.0	326	167	448	230	LOW
Kingston Hospital	1.2	150	125	170	142	
Lakeside Memorial	0.9	61	68	107	118	
Lawrence Hospital	1.8	200	111	38	21	
Lenox Hill	6.0	467	78	220	37	
Lewis County General	1.0	54	54	155	155	
Lincoln Medical	4.0	347	87	728	182	

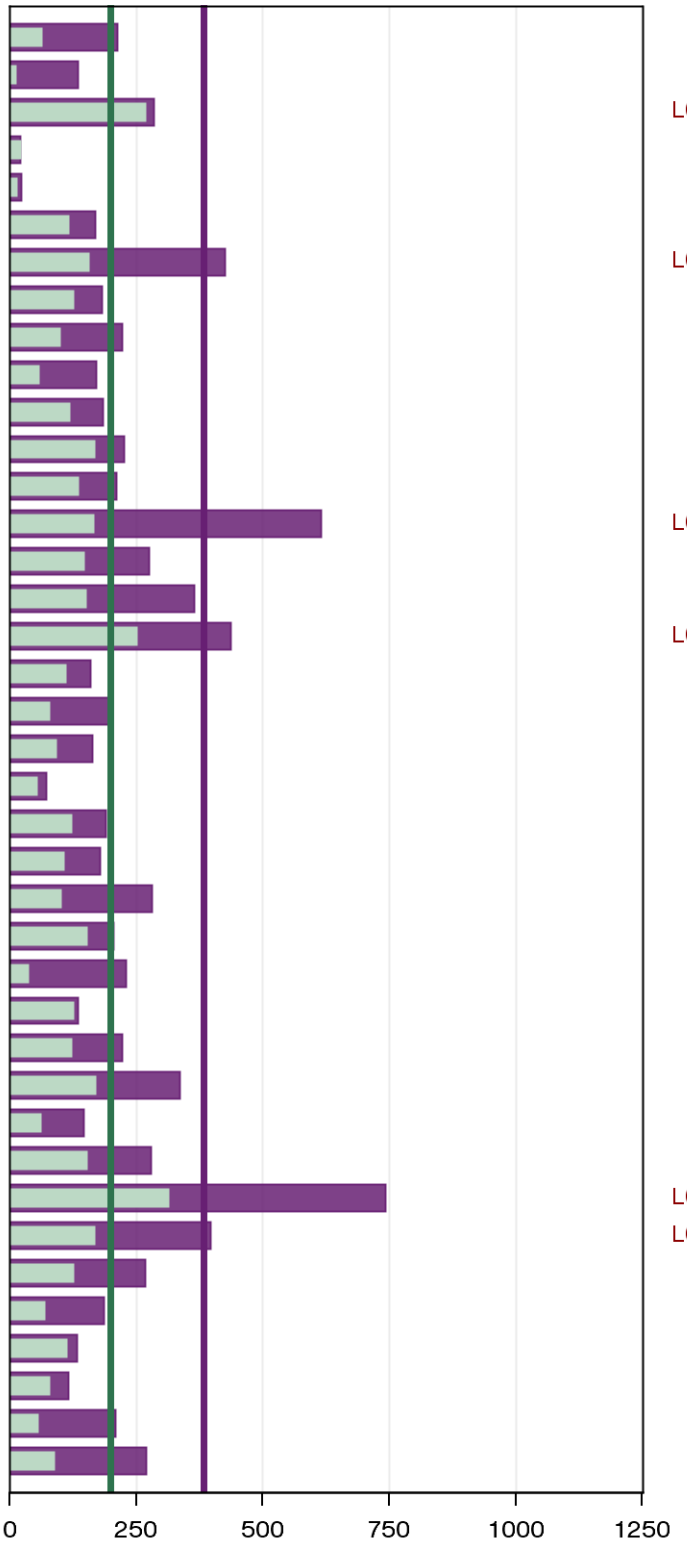


Figure 18. Infection Preventionist Personnel Resources in NYS Hospitals, 2012 (page 3 of 5)

Hospital	FTE for IPs	Acute Care Beds	Acute Beds Per IP	Add. Bed EQ	Add. Bed EQ Per IP	LOW Resources Flag
Little Falls Hospital	0.3	25	100	20	80	
Lockport Memorial	0.6	65	108	16	27	
Long Beach Medical	1.0	95	95	208	208	
Long Island College	2.0	239	120	825	413	LOW
Long Island Jewish	6.5	1071	165	264	41	
Lutheran Medical	3.0	451	150	32	11	
Maimonides	4.0	574	144	394	99	
Margaretville Hospital	0.6	8	13	50	83	
Mary Imogene Bassett	1.3	140	112	544	435	LOW
Massena Memorial	0.6	50	91	129	235	
Medina Memorial	0.4	70	200	172	491	LOW
Mercy Hospital-Buffalo	3.5	346	99	186	53	
Mercy Medical Center	1.6	220	138	123	77	
Metropolitan	1.4	373	276	336	249	LOW
Millard Fill. Suburban	1.5	271	181	20	13	
Monroe Community	1.0	1	1	278	278	
Montefiore-Einstein	2.4	390	166	303	129	
Montefiore-Moses	5.4	767	143	503	94	
Montifiore-North	2.3	321	140	268	117	
Moses-Ludington	0.3	7	23	101	335	
Mount Sinai Hospital	7.5	1125	150	523	70	
Mount Sinai Queens	2.0	192	96	78	39	
Mount St. Marys	0.9	120	133	267	297	LOW
Mount Vernon	0.6	125	208	115	192	LOW
NY Community Brooklyn	0.8	122	153	57	71	
NY Downtown	1.0	125	125	86	86	
NY Eye And Ear	0.9	30	33	50	56	
NY Med Ctr Queens	2.5	539	216	351	140	LOW
NY Methodist	3.0	591	197	236	79	
NYP- Allen	1.2	201	175	12	10	
NYP- Columbia	7.0	981	141	484	70	
NYP- Weill Cornell	6.0	871	145	311	52	
NYU Joint Diseases	0.9	190	224	570	671	LOW
NYU Medical Center	5.0	684	137	396	79	
Nassau University	4.3	430	100	168	39	
Nathan Littauer	1.8	74	41	249	138	
Newark Wayne	1.0	120	120	8	8	
Niagara Falls	0.8	171	214	42	53	LOW
North Central Bronx	2.2	223	101	262	119	

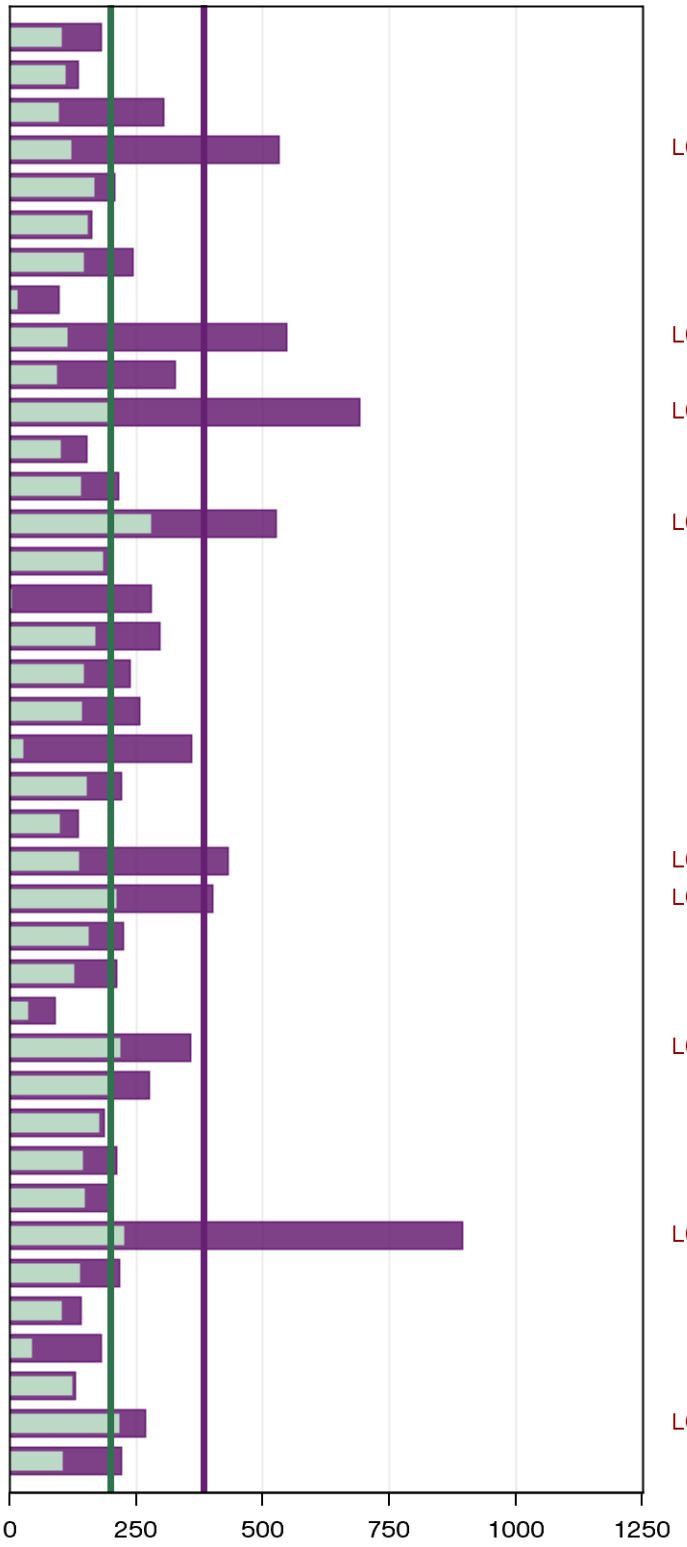


Figure 18. Infection Preventionist Personnel Resources in NYS Hospitals, 2012 (page 4 of 5)

Hospital	FTE for IPs	Acute Care Beds	Acute Beds Per IP	Add. Bed EQ	Add. Bed EQ Per IP	LOW Resources Flag
North Shore	6.0	804	134	515	86	
Northern Dutchess	0.6	68	113	67	112	
Northern Westchester	1.0	232	232	368	368	LOW
Noyes Memorial	0.5	40	80	143	286	
Nyack Hospital	2.0	220	110	87	44	
O'Connor Hospital	0.3	16	53	60	200	
Olean General	0.9	100	111	189	210	
Oneida Healthcare	1.1	40	38	156	149	
Orange Reg- Goshen	2.0	383	192	150	75	
Oswego Hospital	1.0	140	140	83	83	
Our Lady of Lourdes	2.0	140	70	240	120	
Peconic Bay Medical	1.0	150	150	40	40	
Phelps Memorial	1.0	235	235	127	127	LOW
Plainview Hospital	1.0	235	235	121	121	LOW
Putnam Hospital	1.0	165	165	10	10	
Queens Hospital	3.0	308	103	1150	383	LOW
Richmond Univ	2.0	510	255	123	62	LOW
River Hospital	0.2	7	47	60	400	LOW
Rochester General	3.0	525	175	640	213	LOW
Rockefeller University	0.6	20	33	10	17	
Rome Memorial	1.4	126	90	123	88	
Roswell Park	2.0	121	61	320	160	
Samaritan- Troy	0.5	155	344	82	182	LOW
Samaritan- Watertown	2.0	147	74	620	310	
Saratoga Hospital	1.9	171	90	207	109	
Schyuler Hospital	1.0	22	22	153	153	
Seton Hlth- St Mary's	1.1	196	178	142	129	
Sisters of Charity	1.0	290	290	191	191	LOW
Sloan Kettering	6.0	470	78	220	37	
Soldiers And Sailors	0.2	35	175	212	1060	LOW
Sound Shore Medical	1.0	150	150	70	70	
South Nassau Comm.	2.0	320	160	237	119	
Southampton Hospital	1.0	89	89	137	137	
Southside Hospital	2.0	371	186	106	53	
St Anthony Community	0.4	45	113	93	233	
St Barnabas Hospital	3.0	450	150	256	85	
St Catherine of Siena	2.3	311	138	143	64	
St Charles Hospital	1.5	231	154	22	15	
St Elizabeth Medical	3.0	201	67	95	32	

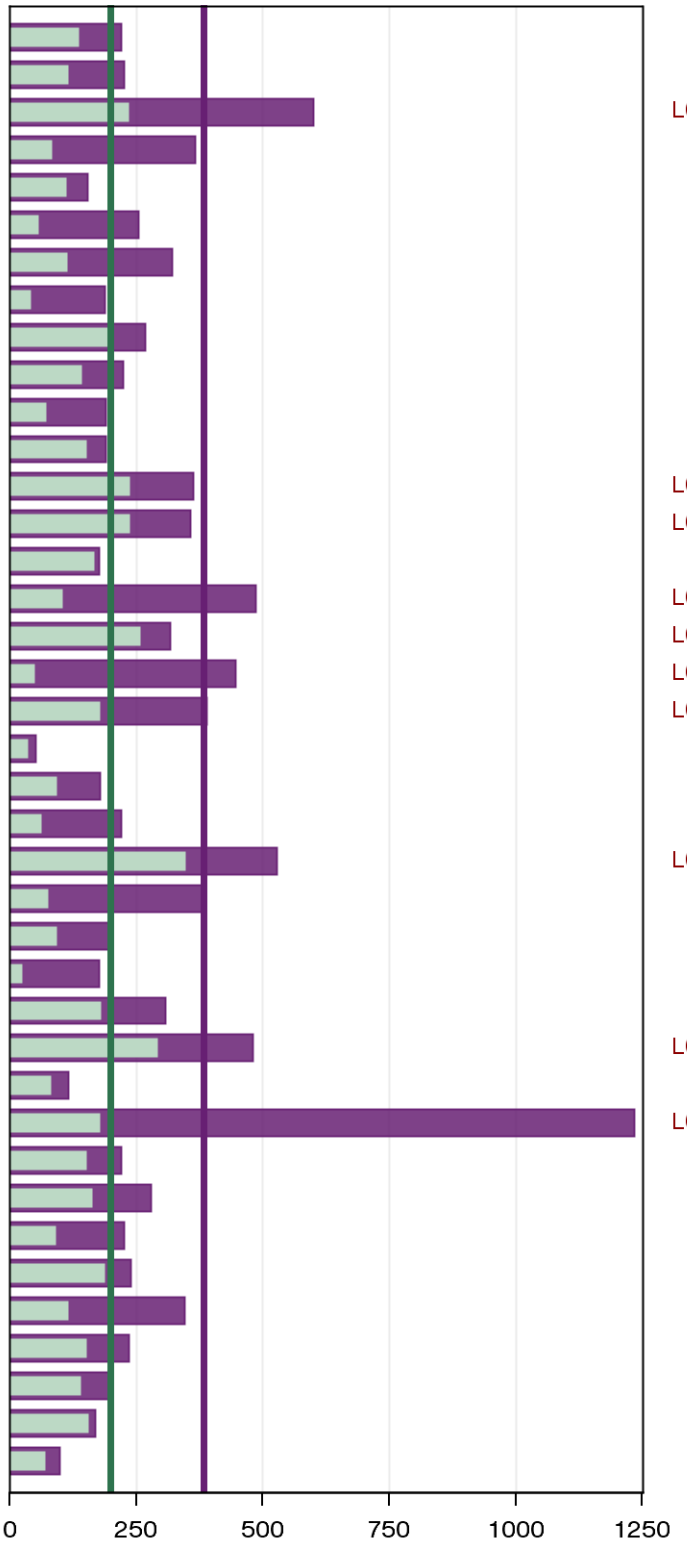
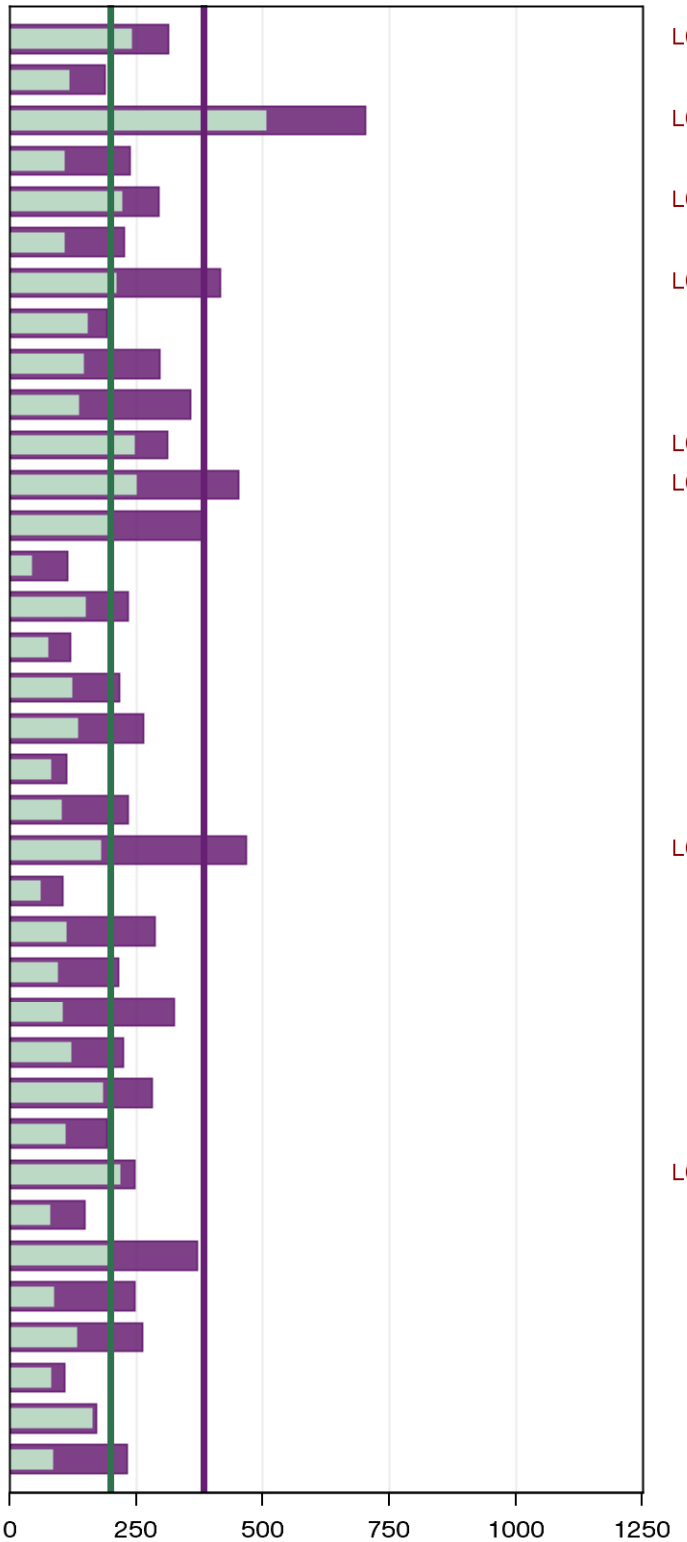


Figure 18. Infection Preventionist Personnel Resources in NYS Hospitals, 2012 (page 5 of 5)

Hospital	FTE for IPs	Acute Care Beds	Acute Beds Per IP	Add. Bed EQ	Add. Bed EQ Per IP	LOW Resources Flag
St Francis-Poughkeeps.	1.0	238	238	75	75	LOW
St Francis-Roslyn	2.6	300	115	185	71	
St James Mercy	0.4	177	506	69	197	LOW
St Johns Episcopal	2.0	212	106	263	131	
St Johns Riverside	1.9	407	220	136	74	LOW
St Joseph- Bethpage	1.0	105	105	120	120	
St Joseph- Cheektowaga	0.6	125	208	124	207	LOW
St Josephs- Elmira	0.6	91	152	24	40	
St Josephs- Syracuse	3.0	431	144	455	152	
St Josephs- Yonkers	1.0	134	134	223	223	
St Lukes - Newburgh	1.5	367	245	98	65	LOW
St Lukes- Roosevelt	1.5	371	247	306	204	LOW
St Lukes- St Lukes	1.5	297	198	275	183	
St Marys Amsterdam	2.0	80	40	147	74	
St Peters Hospital	3.0	442	147	255	85	
Staten Island U-North	5.2	380	73	237	46	
Staten Island U-South	1.0	120	120	96	96	
Strong Memorial	5.6	735	131	737	132	
Syosset Hospital	1.0	79	79	33	33	
TLC Lake Shore	0.4	40	100	53	133	
U Health- Wilson	2.0	356	178	578	289	LOW
United Memorial- North	1.9	111	58	85	45	
Unity Hosp Rochester	3.0	327	109	530	177	
Univ Hosp Brooklyn	4.0	365	92	480	122	
Univ Hosp SUNY Upst.	4.0	409	102	891	223	
Univ Hosp StonyBrook	5.0	599	120	514	103	
Vassar Brothers	2.0	365	183	197	99	
Westchester Medical	5.1	549	108	424	83	
Westchester Square	0.7	140	215	20	31	LOW
White Plains Hospital	3.0	230	77	211	70	
Winthrop University	3.0	574	191	535	178	
Woman and Childrens	2.0	168	84	324	162	
Womans Christian Assoc	1.0	131	131	130	130	
Woodhull Medical	4.3	337	78	126	29	
Wyckoff Heights	2.0	323	162	16	8	
Wyoming County Comm.	0.6	45	82	82	149	



bar: Acute care beds per One FTE Infection Preventionist, state average is 127. Green line: 15% of hospitals are above this line.
bar: Aggregate (acute and other) beds per One FTE Infection Preventionist, state average is 244. Purple line: 15% are above this line.
FTE = full time equivalent; Add. Bed EQ = additional bed equivalent; IP = infection preventionist; AC = acute care
The following equivalents were used: ICU bed = 2 AC beds; long term care bed = ½ an AC bed; dialysis facility = 50 AC beds; ambulatory surgery center = 50 AC beds; ambulatory clinic = 10 AC beds; and a private physician's office = 5 AC beds.
Small bars are better. If bar is greater than reference line, hospital has low resources because IP is responsible for many patients.

HAI Prevention Projects

NYSDOH Funded Prevention Projects

From 2008-2013, the NYSDOH funded HAI Prevention Projects with non-profit health care organizations to develop, implement, and evaluate strategies to reduce or eliminate targeted hospital-acquired infections. The HAI Reporting Program is responsible for the evaluation, selection, and oversight of the projects. A new Request for Applications (RFA) for 2013-2018 was issued on October 17th, 2012. The procurement was delayed in part due to Hurricane Sandy, and to date, final awards are pending.

Continuum Health Partners, New York City, April 2012 - March 2013, $130,625
Year five of this project focused on the continued reduction of CLABSIs in patients with a specific type of central line referred to as a peripherally inserted central catheter (PICC). Patients often leave the hospital with these catheters in place. This infection prevention collaborative was conducted in four acute care hospitals in New York City and achieved the following results:

- PICC infection rates decreased overall by 54%, from 2.8 infections per 1000 PICC line days (2009 baseline) to 1.2 per 1000 PICC line days in 2012, resulting in a cost savings of approximately $564,000.
- From 2010-2012, the median length of stay for patients with PICC lines decreased from 16 days to 12 days. The median length of stay among those with a PICC infection was 46 days, compared to 12 days for patients without infection.
- Patient readmissions because of PICC line infections decreased from 8.5% in 2010 to 5.8% in 2012.
- Indications for PICC lines have been standardized between participating hospitals. Compliance with using the PICC insertion and maintenance bundle check lists remained at 95% or greater.
- Utilization of a PICC instructional DVD developed for patients and staff in 2012 increased from 55% to 75% and remains and important educational tool in reducing PICC CLABSIs.

University of Rochester School of Medicine & Dentistry, April 2012 - March 2013, $130,625
This project was designed to reduce CLABSIs outside the ICU using evidence-based protocols for central line (CL) insertion and care at six hospitals in the Rochester area. The focus in year five was to continue to monitor/sustain CLABSI reductions in non-ICU patient care locations and expand infection prevention efforts/lessons learned to hospitals outside the Rochester area. Findings and accomplishments include:

- CLABSI rates outside the ICU decreased from 2.6/1,000 line days pre-intervention to 1.3/ 1,000 line days post-intervention.
- A retrospective medical record review was performed to estimate the excess cost of a CLABSI as $45,560. Using this estimate, the collaborative achieved an overall cost savings of $13,713,560 during the three year post-intervention period.
- The collaborative published results and provided educational presentations. The web-based interactive CLABSI training module developed in 2009 continues to be used as an education tool for CLABSI prevention.

North Shore University Hospital, April 2012 - March 2013, $130,625
The fifth year of this project focused on continued evaluation of the impact chlorhexidine gluconate (CHG) bathing on MRSA transmission rates in the ICU at three community hospitals. Findings reported include:

- CHG baths, using 2% CHG impregnated washcloths, appeared to be effective in reducing MRSA transmission. A limitation to the project was that the intervention coincided with other patient safety interventions that may have also been related to the decrease in transmission.

Westchester County Healthcare Corporation, April 2012 - March 2013, $130,625
In the final year of this project, five downstate hospitals completed several projects to reduce the incidence of CLABSIs.

- CHG bathing was associated with significant and sustained reductions in ICU CLABSIs. Three years after the CHG intervention began, the combined CLABSI rate at the five hospitals was 1.05 per 1,000 catheter days, compared to 8.7 per 1,000 pre-intervention.
- Westchester Medical Center completed collecting data for a randomized double-blind study of CHG baths in an adult oncology unit. The data analysis will be completed soon, and is expected to provide information on the impact of CHG on CLABSI rates and its tolerability.

CDC Funded HAI Prevention Projects

New York State Long Term Care *C. difficile* Collaborative
In 2012, the NYSDOH Bureau of Healthcare Associated Infections continued collecting data in a prevention project to reduce CDI rates at long term care (LTC) facilities, and potentially in the acute care facilities to which their patients are admitted, through improved implementation of well-established and routinely recommended infection control practices in the LTC facilities. NYSDOH monitored trends in CDI rates over time within the group of facilities that participated in NYSDOH educational conference calls compared to the group of facilities that reported CDI data with no additional NYSDOH support. Data collection ended in May 2013; final analysis is pending. In June 2013, the project was expanded to any interested LTC facilities in the state. NYSDOH staff continue to educate participants in the latest evidence-based practices, support

facilities in transitioning to NHSN for reporting, assist facilities measuring compliance with environmental cleaning, and monitor trends in CDI rates.

The New York State Perinatal Quality Collaborative

The NYS Perinatal Quality Collaborative (NYSPQC) aims to improve maternal and newborn outcomes and improve capability within NYS for ongoing quality improvement and transformation of healthcare by applying evidence-based healthcare system change interventions in Obstetrical and Neonatal Intensive Care Units (NICUs). In October 2011, the NYSDOH was one of three national recipients of a three-year grant from the CDC supporting such collaborative quality improvement initiatives. One of the NYSPQC's goals is to expand on the prior collaborative work of the NYSDOH HAI Program and NYS's Regional Perinatal Centers (RPCs), which demonstrated the effectiveness of Central Line (CL) care bundle and checklist use in preventing CL infections in NICUs. The NYSPQC CLABSI-reduction intervention, which is currently in the recruitment phase, will focus similar efforts on the Level III and II/III NICU hospitals whose CLABSI rates are currently higher than those of the RPCs. The process will use the Institute for Health Improvement's learning model to promote team work, increase communication, enhance knowledge of the value of CL care bundle insertion and maintenance checklists, and track progress toward reducing CLABSI using data submitted to the NHSN. Currently, 15 of 18 RPCs and 20 of 34 Level III and Level II/III facilities have signed on to participate in the project, which is expected to begin in September 2013.

Hospital Success Stories

NYSDOH would like to recognize the achievements of three hospitals for their outstanding work in preventing HAIs in 2012.

SSI Prevention Success

Hospital for Special Surgery (HSS) in NYC has reported hip SSI rates significantly lower than the state average for 5 years in a row. The success is due to the work of the HSS team as a whole, which involves communication of infection data to stakeholders including physicians, nurses, and leadership. The Board of Directors is also very engaged in the quality process at HSS and closely monitors infection rates.

Infections at HSS are more than just numbers or data points on a dashboard. Each patient infection is individually reported as a case review at the monthly Infection Prevention and Control Committee meeting. The entire patient history, medical and social, is presented. Committee members engage in discussion regarding risk and possible improvement opportunities. The multidisciplinary team consists of surgeons, physicians from medicine, rheumatology, infectious diseases, and pediatrics, nurses from inpatient, ambulatory and perioperative services, leadership, pharmacy, central sterile processing, laboratory, occupational health services, and management. Everyone participates in the discussion of care rendered and the patient outcome. Preparation of the case reports is an arduous process which permits the stakeholders to see the patient's infection as an individual event, not just a statistic. If a problem is identified, small teams are convened to review the issue and identify improvement initiatives. Strong physician engagement is a critical part of the infection prevention analysis and process.

HSS also has the rare advantage of having an IP dedicated to the perioperative areas to conduct real time observations and education. At HSS surveillance for infections is performed using a data mining system to collect real time data, including lab reports that alert the Infection Preventionist (IP) when there is a problem such as a multidrug resistant organism. This enables the staff to take immediate action or intervention. HSS is recognized by the American Nurses Credentialing Center as a Magnet hospital, and nurses are fully empowered within their scope of practice. All patients are interviewed for infection risk prior to surgery. Patients with risk factors or previous infections are further screened with laboratory testing, and patients with active or acute infections are separated from other patients until the nature of the infection is clear.

The role of Infection Prevention is respected and valued at HSS. It makes a difference.

CLABSI Prevention Success

United Health Services (UHS) in Central NY report on the combined ICU CLABSI rates for Binghamton General Hospital and Wilson Medical Center. Currently, the two facilities manage a 14 bed Cardiothoracic ICU, a 14 bed Medical Surgical unit, an 8 bed Medical Surgical unit and a 16 bed Neonatal ICU. In 2012, they reported zero CLABSIs across these ICUs, and in 2011 they also reported low infection rates.

UHS follows the standard central line insertion bundles. The standardized central line policy is easily accessible on-line. This policy includes a table for the staff to reference which indicates how each line should be handled. Pre-packaged supplies for insertion and maintenance are available, which includes the CLIP (Central Line Insertion Practices) monitoring form. A standardized day for dressing changes has been established. Line dressings are changed every Wednesday and as necessary. When accessing any line the hubs are scrubbed with alcohol and covered with a new sterile cap every time.

The highlight of the prevention program is the use of an insertion team, Professional Home Care. Employed by UHS, this team consists of registered nurses responsible to insert all PICC (Peripherally Inserted Central Catheter) lines. Two RNs from the PICC team are always present for line insertion; while one is inserting the PICC line, the other provides assistance and documents on the CLIP monitoring form.

Education is ongoing and provided annually. Additionally, the ICUs are provided a monthly report card which reviews device utilization days, infections, and hand hygiene compliance. Results are discussed with the staff by the nurse managers. Involvement in the IPRO (Quality Improvement Organization for NYS) and Partnership for Patients initiatives has also been important to their success. Different staff members are invited to participate in site visits where data and practices are reviewed.

The NICU central line prevention practices include the implementation of the standard central line policy, however, only providers are allowed to insert lines and perform dressing changes. Umbilical lines have no dressing and PICC line use is minimal. Betadine is used to prepare the insertion sites in NICU. All IV fluids are replaced every 24 hours. Additional infection prevention measures include increased hand hygiene compliance, no equipment sharing between infants, controlling number of visitors, and educating the families on hand hygiene.

The Infection Prevention program at UHS is a good example of how consistently reinforcing prevention strategies through education and feedback does provide for successful and sustainable reduction in HAIs.

CDI Prevention Success

NYU Hospital for Joint Diseases is a specialized orthopedic surgical hospital. The hospital realized a significant decrease in hospital associated CDI rates after implementing an intensive effort to improve hand hygiene, disinfect frequently touched surfaces twice daily with bleach in all acute inpatient rooms, and routinely disinfect mobile medical equipment. The Infection Prevention and Control Department worked collaboratively with departments such as Nursing, Physical Therapy, Pharmacy, and Radiology, assigning areas of responsibility for cleaning mobile medical equipment and the frequency of cleaning such items. Evaluation of disinfection played a critical role as well. IPs used fluorescent markers to verify cleaning of mobile medical equipment surfaces and provided feedback to the staff responsible for cleaning those items. After terminal cleaning, Environmental Services and IP staff used an Adenosine-5'-triphosphate (ATP) bioluminescence monitor to evaluate the cleaning of frequently touched surfaces.

Over the next year, NYU Hospital for Joint Diseases plans to continue educating all levels of staff on low level disinfection (e.g. who performs, what equipment, what disinfectant, and how frequently), continue measuring compliance and providing feedback to units, engage patient care unit leadership to ensure Environmental Service staff are incorporated into the unit team, implement more frequent CDI prevalence reporting to focus interventions (e.g. disinfection of frequently touched surfaces), emphasize presumptive isolation of symptomatic patients, improve hand hygiene, contact isolation compliance, mobile medical equipment disinfection, and patient room surface disinfection overall, and continue antibiotic stewardship with a focus on CDI reduction.

Lessons Learned

CLABSI rates, CABG SSI rates, and CDI rates (among facilities that did not change testing methods) have consistently declined since public reporting began. Many factors have likely contributed to the decline, including the attention drawn to HAIs through public reporting, ongoing efforts by IPs and other healthcare workers in improving infection prevention practices, and the support of external partners including professional societies, government agencies, and other associations. Colon and hip SSI rates have remained steady over the past several years. NYSDOH will continue to consult with advisors to identify additional strategies to reduce these infection rates.

NY hospital staff are reporting HAI data to NHSN with 94% accuracy. Some inaccuracies continue to arise because of misunderstanding of NHSN definitions, incomplete surveillance, and data entry errors. CDC updated CLABSI and SSI definitions in January 2013 in an attempt to improve the ease and consistency of following surveillance definitions. However, some of the definitions remain open to multiple interpretations. It is important that CDC disseminate detailed guidance in interpreting the definitions to all users. Incomplete surveillance and data entry errors could be improved by increased use of EMRs for identifying potential HAIs and uploading data to NHSN.

The majority of hospitals have implemented appropriate evidence-based practices to reduce HAIs. Additional improvement may be realized by further developing antibiotic stewardship and environmental cleaning and monitoring programs.

Next Steps

Beginning on July 1, 2013, NYS hospitals began reporting laboratory-identified carbapenem-resistant Enterobacteriaceae (CRE)-*Escherichia coli* and CRE-*Klebsiella* among inpatients, per the recommendations of the CDC[16] and the NYSDOH HAI technical advisory workgroup. The first six months of reporting will be considered a pilot reporting period. NYSDOH will use the pilot data to 1) Assess state and regional CRE rates. 2) Assure the accuracy and completeness of reporting. 3) Explore the relationship between differences in laboratory testing methods and CRE rates. 4) Assist facilities in responding to CRE cases and carrying out infection prevention strategies. The Department will evaluate the preliminary results of the pilot before proceeding to publically report hospital-specific rates for a future time period.

NYSDOH recently developed and disseminated to hospitals a policy describing how NYSDOH will respond when hospitals have high HAI rates for multiple consecutive years (available at http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/). While NYS HAI staff have always communicated with hospitals regarding high rates, the new policy provides consistent and formal guidance to be used by all staff when working with hospitals that are flagged with one, two, three, or four consecutive years of high rates. NYSDOH staff will begin implementing the new policy in August 2013, with the 2012 data published in this report.

Between 2007 and 2012, NYS hospitals decreased CLABSI rates in ICUs by 53%. Other studies have shown that CLABSI rates in non-ICU areas are similar to the rates in ICUs, and many of the CLABSI prevention practices used in ICUs are generalizable to wards.[17] Several other organizations are recommending that surveillance for CLABSIs be expanded outside the ICU. For example, the Joint Commission requires infection surveillance be performed on all central lines throughout the facility per National Patient Safety Goal 07.04.01. CMS recently proposed (Federal Register Vol. 78, No. 91, May 10, 2013) adding medical, surgical, and medical/surgical ward CLABSI reporting to the Inpatient Quality Reporting Program. NYSDOH agreed with its TAW in November 2012 that most NYS hospitals did not yet have the electronic resources to efficiently count central line days outside the ICU, data that is required to conduct surveillance of CLABSI rates. In fact, most hospitals still manually count the number of patients with central lines in ICUs, and as with other HAI indicators, manually type the data into NHSN. NYSDOH recommends that hospitals continue to develop electronic medical records systems capable of collecting HAI data, and voluntarily enter CLABSI data from medical, surgical, and medical/surgical wards into NHSN in order to continue and expand their outstanding progress in improving patient safety through reducing CLABSIs.

One strength of the NYSDOH is its commitment making NYS data available both internally and externally to enhance surveillance and research. For example, the NYS HAI program has linked the NHSN data with NYS hospital discharge data to improve the efficiency of auditing[21], and

with NYS clinical program data to improve risk adjustment[18]. Over the next year, NYS HAI staff plan to link the NHSN with death registry data to evaluate the severity of HAIs in NYS.

NYSDOH entered into a data use agreement with CDC beginning in July 2013. This agreement gives NYSDOH the ability to use non-mandated NHSN data for quality improvement purposes. Examples of these data include catheter-associated urinary tract infections (CAUTI) and methicillin-resistant *Staphylococcus aureus* infections, which are reported to NHSN by almost all NYS hospitals as part of the CMS Hospital Inpatient Quality Reporting Program. As staffing levels allow, NYSDOH will evaluate the burden of other non-mandated HAIs.

NYSDOH will continue to conduct medical record audits to verify appropriate use of surveillance definitions and accurate reporting by hospitals. HAI staff will continue to discuss findings with hospitals, ensure corrective action is taken, and provide technical assistance as needed. NYS staff will continue to use EMRs where available to increase efficiency. Variation in audit coverage and thoroughness across the country currently results in inequitable comparison of hospital and state average rates. NYSDOH will continue to discuss audit methodology with CDC, as the stakeholders hopefully converge on a fair and efficient audit process.

NYSDOH will continue to provide hospitals with education and information about risk factors, strategies and interventions and to encourage adoption of policies and procedures to reduce risk and enhance patient safety. As CDI impacts the greatest number of patients in NYS, reducing CDI rates continues to be a priority. NYSDOH will continue to work with participating nursing homes on the New York State Long Term Care *C. difficile* Collaborative. The NYSDOH HAI Reporting Program will also work with hospitals with the highest infection rates to identify risk factors for infection and opportunities for improvement.

In January 2013, CDC changed CLABSI and SSI definitions. These changes will impact observed trends in HAI rates. During 2013 CLABSI audits, NYS HAI staff will assess potential CLABSIs using both 2012 and 2013 definitions to measure the potential impact of the change on CLABSI rates. NYSDOH will not attempt to measure the impact on SSI rates because of historic inconsistencies in interpreting the definition of primarily closed procedures and because SSI definitions will change again in 2014.

NYSDOH will continue to monitor HAI prevention projects for compliance with program objectives, fiscal responsibility, and potential applicability to other hospitals or healthcare settings.

NYSDOH will continue to work with the TAW and seek guidance on the selection of reporting indicators, evaluation of system modifications, evaluation of potential risk factors, methods of risk adjustment, and presentation of hospital-identified data.

NYSDOH will continue to disseminate data on hospital-specific HAI rates in multiple formats, including annual reports and downloadable spreadsheets. Decisions regarding healthcare quality

should not be based on these data alone. Consumers should consult with doctors, healthcare facilities, health insurance carriers, and reputable healthcare websites before deciding where to receive care.

Appendix 1: List of Abbreviations

AC – Acute Care
APIC – Association for Professionals in Infection Control and Epidemiology
ASA – American Society of Anesthesiologists' Classification of Physical Status
ASP – Antimicrobial Stewardship Program
BSI – Bloodstream Infection
CABG – Coronary Artery Bypass Graft Surgery
CAUTI – Catheter Associated Urinary Tract Infection
CDC – Centers for Disease Control and Prevention
CDI - *Clostridium difficile* infection
C. difficile- Clostridium difficile
CEOs – Chief Executive Officers
Ceph – Cephalosporin
CHF – Congestive Heart Failure
CHG –chlorhexidine gluconate
CI – Confidence Interval
CL – Central Line
CLABSI – Central Line-Associated Bloodstream Infection
CMS – Centers for Medicare and Medicaid Services
CNS – Coagulase Negative Staphylococcus
CO –Community Onset
CO –NMH – Community Onset Not My Hospital
CO –PMH – Community Onset Possibly My Hospital
COPD – Chronic Obstructive Pulmonary Disease
CPI – Consumer Price Index
CRE – Carbapenem-resistant Enterobacteriaceae
CSRS – Cardiac Surgery Reporting System[19]
DIP – Deep Incisional Infection at the Primary Surgical Site (for CABG procedures, this would be the chest site)
DIS – Deep Incisional Infection at the Secondary Surgical Site (for CABG procedures, this would be the donor vessel site)
DOH –Department of Health
DU– Device Utilization
FTE – Full-Time Equivalent
FY – State Fiscal Year, starts in April
HA – Hospital Associated
HAI – Hospital-Acquired Infection
HO – Hospital Onset
ICD-9 – International Classification of Diseases, Ninth Revision
ICU – Intensive Care Unit
IP – Infection Preventionist
IT – Information Technology
LCBI – Laboratory Confirmed Bloodstream Infection
LTCF – Long Term Care Facility
MDRO – Multi-Drug Resistant Organism
MRSA – Methicillin-Resistant *Staphylococcus aureus*
MSSA – Methicillin-Sensitive *Staphylococcus aureus*

NICU – Neonatal Intensive Care Unit
NHSN – National Healthcare Safety Network
NYS – New York State
NYSDOH – New York State Department of Health
OS – Organ/Space Infection
PAD – Peripheral Artery Disease
PDS – Post-Discharge Surveillance
PHL – Public Health Law
RPC – Regional Perinatal Center (Level IV – highest level of NICU care)
SHEA – Society for Healthcare Epidemiology of America
SIP – Superficial Incisional Infection at the Primary Surgical Site (for CABG procedures, this would be the chest site)
SIR – Standardized Infection Ratio
SIS – Superficial Incisional Infection at the Secondary Surgical Site (for CABG procedures, this would be the donor vessel site)
SPARCS - Statewide Planning and Research Cooperative System[20]
spp – species (pleural)
SSI – Surgical Site Infection
TAW – Technical Advisory Workgroup
UC – Umbilical Catheter
UCABSI – Umbilical Catheter-Associated Blood Stream Infection
VRE – Vancomycin-Resistant Enterococci

Appendix 2: Glossary of Terms

Active surveillance: A system used by a trained infection preventionist (IP) to look for infections during a patient's hospital stay. A variety of tools are used to identify infections and determine if they are related to the patient's hospital stay or if an infection was present on hospital admission. These tools may include, but are not limited to, information from laboratory, radiology, operation, pharmacy reports and nursing care units and/or patient treatment areas.

ASA Score: This is a scale used by the anesthesiologist to classify the patient's physical condition prior to surgery. It uses the American Society of Anesthesiologist (ASA) Classification of Physical Status. It is one of the factors that help determine a patient's risk of possibly developing a SSI. Here is the ASA scale:

1 - Normally healthy patient
2 - Patient with mild systemic disease
3 - Patient with severe systemic disease
4 - Patient with an incapacitating systemic disease that is a constant threat to life
5 -A patient who is not expected to survive with or without the operation.

Birth Weight Categories: Birth weight refers to the weight of the infant at the time of birth. Infants remain in their birth weight category even if they gain weight. Birth weight category is important because the lower the birth weight, the higher the risk of developing an infection.

Body Mass Index (BMI): BMI is a measure of the relationship between a person's weight and their height. It is calculated with the following formula: kg/m^2.

Central Line: A central line is a long thin tube that is placed into a large vein, usually in the neck, chest, arm, groin or umbilical cord. The tube is threaded through this vein until it reaches a large vein near the heart. A central line is used to give fluids or medication, withdraw blood, and monitor the patient's condition.

Central Line-Associated Bloodstream Infection (CLABSI): A bloodstream infection can occur when microorganisms travel around and through a central line or umbilical catheter and then enter the blood.

Central Line-Associated Bloodstream Infection (CLABSI) Rate: To get this rate, divide the total number of central line-associated bloodstream infections by the number of central line days. That result is then multiplied by 1,000. Lower rates are better.

Central Line Days (Device Days): This is the total number of days a central line is used. A daily count of patients with a central line in place is performed at the same time each day. Each patient with one or more central lines at the time the daily count is performed is counted as one central line day.

Central line Device Utilization Ratio: This ratio is obtained by dividing the number of central line-days by the number of patient-days. It is also referred to as the device utilization (DU) ratio.

***Clostridium difficile*:** A bacterium that naturally resides in the bowels of some people without symptoms of infection**.** Overgrowth of *C. difficile* in the bowel, sometimes resulting from a patient's taking antibiotics, or touching their mouth after coming in contact with contaminated

environmental surfaces or patient care items, allows this bacterium to produce a toxin in the bowel causing infection symptoms, which range from mild to severe diarrhea and in some instances death.

Colon Surgery: Colon surgery is a procedure performed on the lower part of the digestive tract also known as the large intestine or colon.

Community Onset-Not-My-Hospital (CO-NMH): Documented infection occurring within 3 days of hospital admission and more than 4 weeks after discharge from the same hospital.

Community Onset-Possibly-My-Hospital (CO-PMH): Documented new infection within three days of readmission to the same hospital when a discharge from the same hospital occurred within the last four weeks.

Confidence Interval (CI): The confidence interval is the range around a measurement that conveys how precise the measurement is. A 95% CI means that we can be 95% confident that the true measurement falls within the interval. If hospital A reports 1 infection out of 20 procedures (i.e. 5%, with 95% CI: 0% to 25%), and hospital B reports 10 infections out of 200 procedures (i.e. 5% with 95% CI: 2% to 9%), we can see that both hospitals have the same rate, but we are less confident that the rate is truly 5% at hospital A because it was based on only 1 infection.

Coronary Artery Bypass Graft (CABG) Surgery: A treatment for heart disease in which a vein or artery from another part of the body is used to create an alternate path for blood to flow to the heart, bypassing a blocked artery.

Deep incisional SSI: A surgical site infection that involves the deep soft tissues (e.g., fascial and muscle layers) of the incision and meets the NHSN criteria as described in the NHSN Patient Safety Manual.

Diabetes: A disease in which the body does not produce or properly use insulin. Insulin is needed to control the amount of sugar normally released into the blood.

Donor Incision Site for Coronary Artery By-pass Graft (CABG): CABG surgery with a chest incision and donor site incisions (donor sites include the patient's leg or arm) from which a blood vessel is removed to create a new path for blood to flow to the heart. CABG surgical incision site infections involving the donor incision site are reported separately from CABG surgical chest incision site infections.

Duration: The duration of an operation is the time between skin incision and stitching or stapling the skin closed. In the NHSN protocol, if a person has another operation through the same incision within 24 hours of the end of the original procedure, only one procedure is entered into NHSN and the total duration of the procedure is assigned as the sum of the two durations. Infection risk tends to increase with duration of surgery.

Higher than State Average: The risk adjusted rate for each hospital is compared to the state average to determine if it is significantly higher or lower than the state average. A rate is significantly higher than the state average if the confidence interval around the risk adjusted rate falls entirely above the state average.

Hip Replacement Surgery: Hip replacement surgery involves removing damaged cartilage and bone from the hip joint and replacing them with new, man-made parts.

Hospital-Acquired Infection (HAI): A hospital acquired infection is an infection that occurs in a patient as a result of being in a hospital setting after having medical or surgical treatments.

Hysterectomy: The surgical removal of a woman's uterus.

Infection control / prevention processes: These are routine measures to prevent infections that can be used in all healthcare settings. These steps or principles can be expanded to meet the needs of specialized types of hospitals. Some hospitals make the processes mandatory. Examples include:

- Complete and thorough hand washing.
- Use of personal protective equipment such as gloves, gowns, and/or masks when caring for patients in selected situations to prevent the spread of infections.
- Use of an infection prevention checklist when putting central lines in patients. The list reminds healthcare workers to clean their hands thoroughly; clean the patient's skin before insertion with the right type of skin cleanser; wear the recommended sterile gown, gloves and mask; and place sterile barriers around the insertion site, etc.
- Monitoring to ensure that employees, doctors and visitors are following the proper infection prevention procedures.

Infection Preventionist (IP): Health professional that has special training in infection prevention and monitoring.

Inpatient: A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

Intensive Care Unit (ICU): Intensive care units are hospital units that provide intensive observation and treatment for patients (adult, pediatric or newborn) either suffering from, or at risk of developing life threatening problems. ICUs are described by the types of patients cared for. Many hospitals typically care for patients with both medical and surgical conditions in a combined medical/surgical ICU, while others have separate ICUs for medical, surgical and other specialty ICUs based on the patient care services provided by the hospital.

Lower than State Average: The risk adjusted rate for each hospital is compared to the state average to determine if it is significantly higher or lower than the state average. A rate is significantly lower than the state average if the confidence interval around the risk adjusted rate falls entirely below the state average.

National Healthcare Safety Network (NHSN): This is a secure, internet-based national data reporting system that NYS hospitals must use to report HAIs. The NHSN is managed by the CDC's Division of Healthcare Quality Promotion.

Neonatal Intensive Care Units: Patient care units that provide care to newborns.

- **Level II/III Units**: provide care to newborns at Level II (moderate risk) and Level III (requiring increasingly complex care).

- **Level III Units:** provide highly specialized care to newborns with serious illness, including premature birth and low birth weight and newborns under the supervision of a neonatologist.
- **Regional Perinatal Centers (RPC):** Level IV units, providing all the services and expertise required by the most acutely sick or at-risk pregnant women and newborns. RPCs provide or coordinate maternal-fetal and newborn transfers of high-risk patients from their affiliate hospitals to the RPC, and are responsible for support, education, consultation and improvements in the quality of care in the affiliate hospitals within their region.

NHSN Patient Safety Protocol Manual: This document contains standardized definitions and data collection methods that are essential for consistent, fair reporting of hospital infection rates.

Obesity: Obesity is a condition in which a person has too much body fat that can lower the likelihood of good health. It is commonly defined as a body mass index (BMI) of 30 kg/m^2 or higher.

Organ/Space SSI: A surgical site infection that involves a part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure.

Operative Procedure: An operation that takes place during one single trip to the operating room (OR) where a surgeon makes at least one incision (cut) through the skin or mucous membrane, and stitches or staples the incision before the patient leaves the OR.

Post discharge surveillance: This is the process IPs use to seek out infections after patients have been discharged from the hospital. It includes screening a variety of data sources, including re-admissions, emergency department visits and/or contacting the patient's doctor.

Raw Rate: Raw rates are not adjusted to account for differences in the patient populations.

- **Blood Stream Infections:** Raw rate is the number of infections (the numerator) divided by the number of line days (the denominator) then multiplied by 1000 to give the number of infections per 1000 line days.
- **Surgical Procedures:** Raw rate is the number of infections (the numerator) divided by the number of procedures (the denominator) then multiplied by 100 to give the number of infections per 100 operative procedures.
- **Community Onset infection:** Raw rate is the number of infections (the numerator) divided by the number of admissions (the denominator) then multiplied by 100 to give the number of infections per 100 admissions.
- **Hospital Onset infection:** Raw rate is the number of infections (the numerator) divided by the number of patient days (the denominator) then multiplied by 10,000 to give the number of infections per 10,000 patient days.

Risk Adjustment: Risk adjustment accounts for differences in patient populations and allows hospitals to be compared. A hospital that performs a large number of complex procedures on very sick patients would be expected to have a higher infection rate than a hospital that performs more routine procedures on healthier patients.

Risk-Adjusted Rate:

- For surgical site infections, the risk-adjusted rate is based on a comparison of the actual (observed) rate and the rate that would be expected if, statewide, the patients had the same distribution of risk factors as the hospital.
- For NICU CLABSIs, the adjusted rate is a comparison of the actual rate and the expected rate based on statewide rates within birth weight categories for neonates.

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 hospital discharge, ambulatory surgery procedure and emergency department admission in NYS.

Standardized Infection Ratio (SIR): The SIR compares infection rate in a smaller population with infection rates in a larger standard population, after adjusting for risk factors that might affect the chance of developing an infection. In this report, the SIR is most often used to compare each hospital's rate to the NYS standard. Sometimes the SIR is also used to compare NYS to the National standard. In both cases, the SIR is calculated by dividing the actual number of infections in the smaller group by the number of infections that would be statistically predicted if the standard population had the same risk distribution as the observed population.

- A SIR of 1.0 means the observed number of infections is equal to the number of predicted infections.
- A SIR above 1.0 means that the infection rate is higher than that found in the standard population. The difference above 1.0 is the percentage by which the infection rate exceeds that of the standard population.
- A SIR below 1.0 means that the infection rate is lower than that of the standard population. The difference below 1.0 is the percentage by which the infection rate is lower than that experienced by the standard population.

Superficial incisional SSI: A surgical site infection that involves only skin and soft tissue layers of the incision and meets NHSN criteria as described in the NHSN Patient Safety Protocol.

Surgical Implant: A nonhuman-derived object, material, or tissue that is permanently placed in a patient during an operation. Examples include: heart valves, metal rods, mesh, wires, screws, cements, hip replacements and other devices.

Surgical Site Infection (SSI): An infection that occurs after the operation in the part of the body where the surgery took place (incision).

Surgical Site Infection (SSI) Rate: Surgical site infection rates per 100 operative procedures are found by dividing the number of SSIs by the total number of specific operative procedures within a given reporting period. The results are then multiplied by 100. These calculations are performed separately for each type of surgical procedure.

Umbilical Catheter: A small thin tube that is inserted through the umbilical blood vessel in a newborn.

Umbilical Catheter Days (Device Days): Total number of days umbilical catheters are present in newborns in a NICU. The count is performed at the same time each day. Each newborn with both an umbilical catheter and a central line is counted as one umbilical catheter day.

Validation: A way of making sure the HAI data reported to NYS are complete and accurate. Complete reporting of HAIs, total numbers of surgical procedures performed, central line days, and patient information to assign risk scores must all be validated. The accuracy of reporting is evaluated by visiting hospitals and reviewing patient records. The purpose of the validation visits are to:

- Assess the accuracy and quality of the data submitted to NYS.
- Provide hospitals with information to help them use the data to improve and decrease HAIs.
- Provide education to the IPs and other hospital employees and doctors, to improve reporting accuracy and quality.
- Look for unreported HAIs.
- Make recommendations for improving data accuracy and/or patient care quality issues.

Wound Class: An assessment of how clean or dirty the operation body site is at the time of the operation. Wounds are divided into four classes:

- **Clean:** An uninfected operation body site is encountered and the respiratory, digestive, genital, or uninfected urinary tracts are not entered.
- **Clean-Contaminated:** Operation body sites in which the respiratory, digestive, genital or urinary tracts are entered under controlled conditions and without unusual contamination.
- **Contaminated:** Operation body sites that have recently undergone trauma, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract.
- **Dirty or Infected:** Includes old traumatic wounds with retained dead tissue and those that involve existing infection or perforated intestines.

Appendix 3: Methods

For more details on the HAI surveillance protocols used to collect this data, please see the NHSN website at http://www.cdc.gov/nhsn/. This section of the report focuses on NYS-specific methods and provides additional information helpful for interpreting the results.

Data Validation

Data reported to the NHSN are validated by the NYSDOH using a number of methods.

1) Point of entry checks - The NHSN is a web-based data reporting and analysis program that includes validation routines for many data elements, reducing common data entry errors. Hospitals can view, edit, and analyze their data at any time.

2) Monthly checks for internal consistency - Each month, NYS HAI staff download the data from the NHSN and run it through a computerized data validation code. Data that are missing, unusual, inconsistent, or duplicate are identified and investigated through email or telephone communication with hospital staff. Hospitals are given the opportunity to verify and/or correct the data.

3) Audits – Audits of a sample of medical records are conducted by the NYSDOH to assess compliance with reporting requirements. In addition, the purposes of the audit are to:
    a. Enhance the reliability and consistency of applying the surveillance definitions;
    b. Evaluate the adequacy of surveillance methods to detect infections; and
    c. Evaluate intervention strategies designed to reduce or eliminate specific infections.

    Audits have been an important component of the NYSDOH program since its inception in 2007. Between 2007 and 2012, 97%, 89%, 89%, 74%, 68%, and 30% of hospitals were audited, respectively. 96% of hospitals have been audited at least three times. A hospital is more likely to be audited in a given year if it had significantly high or low rates in the previous year, was not audited the previous year, performed poorly during the previous audit, hired new hospital staff, and was either conveniently located or offered electronic record access.

NYSDOH continues to take advantage of technological developments in healthcare information. NYSDOH developed a process to conduct these audits via off-site access to electronic medical records (EMRs). In 2011 and 2012, off-site audits of EMRs were accomplished in 20 and 34 hospitals respectively. EMR development and access vary across the state, and may be available as part of a Regional Health Information Organization (RHIO) (i.e. HealtheLink in Western NY) or within an individual hospital. Regional health information systems are more valuable than independent hospital systems because they allow for complete follow-up of patients post-discharge through various facilities in the region. When complete EMRs are not available, the missing documents (i.e. coding summaries, intra-operative reports and vital signs) can also be effectively obtained by fax or secure file transfer, allowing the use of partial EMRs.

Off-site audits can be accomplished as effectively as on-site audits, and are an efficient use of time and resources. Communication of audit results, review of compliance issues, and education are successfully provided through phone conference. Infection preventionists that participated in this audit process approved and endorsed this method of auditing. Availability of EMRs continues to grow, and NYSDOH will continue to leverage this resource to increase audit efficiency in the future.

For CLABSI audits, staff reviewed the medical records of patients identified as having a positive blood culture during a specified time period. For *C. difficile* audits, staff reviewed a laboratory list of positive *C. difficile* cases during a specified time period. For SSI audits, staff reviewed a targeted selection of medical records in an attempt to efficiently identify underreporting. Specifically, the SPARCS database was used to preferentially select patients with an infection reported to the SPARCS billing database but not NHSN.

The 2012 audit results will be summarized in the next annual report. In 2011, NYSDOH staff reviewed almost 8,000 records and agreed with the hospital-reported infection status 94% of the time. Disagreements were discussed and corrected in NHSN. Table 24 summarizes the number of inconsistencies in reporting infections out of the total number of records reviewed in 2011. These results are similar to the audit agreement rates for 2010.

Table 24. Brief Summary of 2011 HAI Audit

Type of Infection	# Agreements	# Records Reviewed	% Agreement	% Under reported	% Over reported
Colon SSI	1,051	1,156	90.9%	6.1%	2.9%
CABG SSI	370	390	94.9%	4.6%	0.5%
Hip SSI	1,204	1,223	98.4%	1.2%	0.3%
CLABSI	1,203	1,260	95.5%	3.5%	1.1%
C. difficile	3,644	3,920	93.0%	5.6%	1.4%
TOTAL	**7,472**	**7,949**	**94.0%**	**4.6%**	**1.4%**

The intensity of the auditing performed by NYSDOH exceeds the intensity of auditing performed by other states and CMS in terms of the number of hospitals audited, the number of records audited in each hospital, and the methods used to efficiently target the records most likely to have errors[21]. CDC recommends that large states audit 21 targeted facilities plus 5% of remaining facilities; this works out to only 17% of facilities in NYS[22]. Only 18 state health departments audited CLABSI data in 2010 and 2011.[23]

4) Cross-checks for completeness and accuracy in reporting - NYS HAI staff match the NHSN data to other NYSDOH data sets to aid in evaluating the completeness and accuracy of the data reported to the NHSN.
    a. NHSN CABG data are linked to the Cardiac Surgery Reporting System[19] (CSRS) database. The cardiac services program collects and analyzes risk factor information for patients undergoing cardiac surgery and uses the information to monitor and report hospital and physician-specific mortality rates.
    b. NHSN colon, hip, and hysterectomy data are linked to the Statewide Planning and Research Cooperative System[20] (SPARCS) database. SPARCS is an administrative billing database that contains details on patient diagnoses and treatments, services, and charges for every hospital discharge in NYS.

Thresholds for Reporting Hospital-Specific Infection Rates

This report contains data from 175 hospitals reporting complete data for 2012 (Figure 2). Two hospitals that closed in 2013 are not listed in hospital-specific tables. Only hospitals that perform the selected surgical procedures or provide ICU care are required to report the designated indicator data. Hospitals that perform very few procedures or have ICUs with very few patients with central lines have infection rates that fluctuate greatly over time. This is because even a few cases of infection will yield a numerically high rate in the rate calculation when the denominator is small. To assure a fair and representative set of data, the NYSDOH adopted minimum thresholds.

- For surgical site infections, there must be a minimum of 20 patients undergoing a surgical procedure.

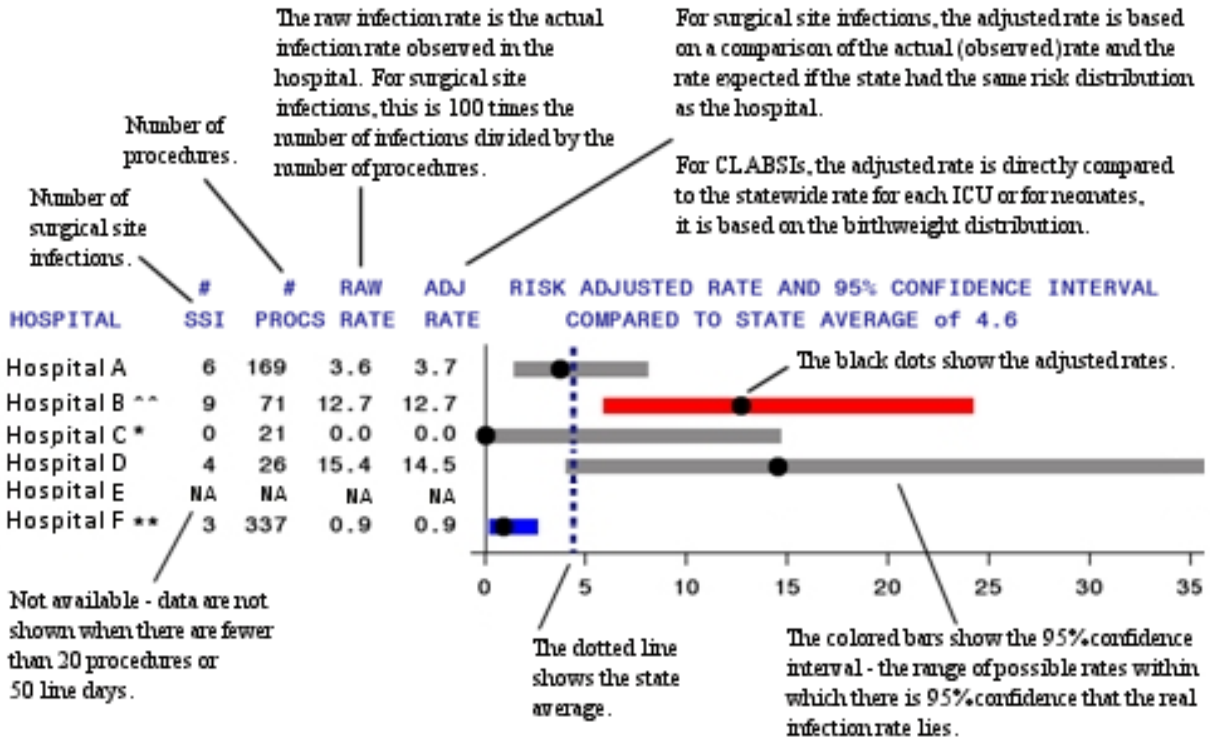
- For CLABSIs there must be a minimum of 50 central line days. Central line days are the total number of days central lines are used for each patient in an ICU over a given period of time.

Risk Adjustment

Risk adjustment is a statistical technique that allows hospitals to be more fairly compared. The adjustment takes into account the differences in patient populations related to severity of illness and other factors that may affect the risk of developing an HAI. A hospital that performs a large number of complex procedures on very sick patients would be expected to have a higher infection rate than a hospital that performs more routine procedures on healthier patients. Therefore, before comparing the infection rates of hospitals, it is important to adjust for the proportion of high and low risk patients.

Risk-adjusted infection rates for SSIs in each hospital were calculated using a two-step method. First, all the data for the state were pooled to develop a logistic regression model predicting the risk of infection based on patient-specific risk factors. Second, that model was used to calculate the expected number of infections for each hospital. The observed infection rate was then divided by the hospital's expected infection rate. If the resulting ratio is larger than one, the provider has a higher infection rate than expected on the basis of its patient mix. If it is smaller than one, the provider has a lower infection rate than expected from its patient mix. For each hospital, the ratio is then multiplied by the overall statewide infection rate to obtain the hospital's risk-adjusted rate. This method of risk adjustment is called "indirect adjustment." Hospitals with risk-adjusted rates significantly higher or lower than the state average were identified using exact two-sided 95% Poisson confidence intervals. The Poisson distribution is used for rates based on rare events. All data analyses were performed using SAS version 9.3 (SAS Institute, Cary NC). Figure 19 provides an example of how to interpret the hospital-specific SSI and CLABSI infection rate tables.

Figure 19. How to Read Hospital-Specific SSI and CLABSI Infection Rate Figures



- Hospital A had an adjusted infection rate very similar to the state average. The grey bar (95% confidence interval) goes over the dotted line representing the state average, indicating no statistical difference in the rates.

- Hospital B has an adjusted infection rate that is significantly higher than the state average, because the red bar is entirely to the right (representing higher rates) of the dotted line.

- Hospital C had zero infections, but this was not considered to be statistically lower than the state average because the grey bar goes over the dotted line. All hospitals that observed zero infections get a *, because they do deserve acknowledgement for achieving zero infections.

- Hospital D had the highest infection rate, but this was not statistically higher than the state average.

- Hospital E - The data are not shown because the hospital performed fewer than 20 procedures, and therefore the rates are not stable enough to be reported.

- Hospital F had an adjusted infection rate that is statistically lower than the state average, because the blue bar is entirely to the left (representing lower rates) of the dotted line

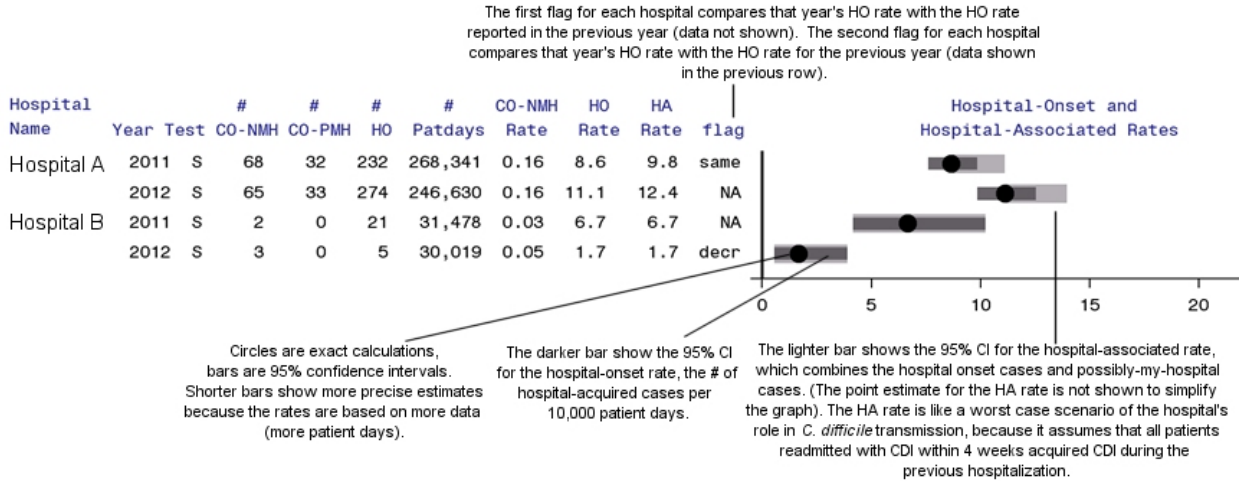
Adult and pediatric ICU CLABSI data were compared within the ICU types listed in Table 1. Note that in previous reports, medical surgical ICU rates were stratified by major teaching

hospital designation in NHSN. This stratification has been removed going back to 2007 for several reasons: 1) NHSN recently provided new guidance on interpreting the definition of major teaching, causing several hospitals to be newly classified as major teaching and this change makes it difficult to assess performance trends; 2) there has never been a statistically significant difference between teaching and nonteaching hospitals in NYS; 3) While the hospital-level variables may be in part a proxy for patient risk, they may also in part reflect the hospital practices we are trying to measure. Major teaching hospitals may have higher infection rates because they handle more complex patients, or because the teaching environment and inexperienced students contribute to the development of infections. The impact of teaching status should not be adjusted away.

Similar risk adjustment techniques were used to compare NYS average infection rates to national infection rates. In this case, NYS data was stratified into risk groups identical to those published in national reports. Within each risk group, the observed number of infections in NYS was compared to the expected number based on the national rates. The observed and expected numbers of infections were added across all the risk groups, and then the total number of observed infections was divided by the total number of expected infections to give an overall SIR.

The CDI table shows data for 2011 and 2012. An example of how to read the table is described below (Figure 31).

Figure 20. How to Read Hospital-Specific CDI Infection Rate Figures



Hospital CDI rates cannot be compared because the rates in a hospital depend on the type of patients in the hospital and the hospitals' testing methods. Each hospital will use these rates to monitor CDI over time.

Comparison of NYS and CMS HAI Reporting

In addition to the indicators required by NYS law, hospitals are encouraged by the Centers for Medicaid and Medicare Services (CMS) to report HAI data. The CMS Hospital Inpatient Quality Reporting Program offers financial incentives to hospitals that report HAI data and publishes the nationwide data on the Hospital Compare Website (http://www.hospitalcompare.hhs.gov). Currently, the CMS website compares hospital-specific CLABSI, colon SSI, and hysterectomy SSI rates to the National 2006-8 benchmark, and catheter-associated urinary tract infection (CAUTI) to the National 2009 benchmark. In the future, additional indicators such as CDI will be added.

The HAI rates reported by NYS and CMS may differ. The following table (Table 25) summarizes the reasons for these differences. The NYS data are also available electronically on Health Data NY (https://health.data.ny.gov/).

Table 25. Comparison of New York State and Hospital Compare Data

	NYSDOH HAI Report	**CMS Hospital Compare**
Question answered	How did each hospital perform in 2012 compared to the NYS 2012 average?	How did each hospital perform in the most recent time period compared to the older National baseline?
Surveillance system	NHSN	NHSN
2012 measures	CLABSI (ICU), SSI (colon, hip, CABG, hysterectomy), CDI	CLABSI (ICU), SSI (colon, hysterectomy), CAUTI (ICU)
Time period	Calendar year	Rolling year (updated quarterly)
Hospital	Reported by unique NHSN number	Reported by unique CMS number (may contain more than one NHSN number)
Intensive care units (ICUs)	8 types of ICUs (cardiothoracic, coronary, medical, medical-surgical, surgical, neurosurgical, pediatric, neonatal)	The 8 ICUs tracked by NYS plus other adult and pediatric ICUs (e.g. burn, trauma)
Displayed outcomes	Raw rates, risk-adjusted rates, and standardized infection ratios	Standardized infection ratios
CLABSI Exclusions	Untreated events with single-pathogen contaminated specimens are excluded from hospital comparisons but not statewide averages.	None
SSI Exclusions	SSIs detected using post discharge surveillance and not readmitted to any hospital	Children, patients with outlying risk adjustment variables, superficial infections

Appendix 4: List of Hospitals by County

This table lists the hospitals individually identified in this report. Additional information on the hospitals can be obtained from the NYSDOH Hospital Profile at http://hospitals.nyhealth.gov/.

County	PFI	CMS	Hospital Name
Albany	0001	330013	Albany Medical
	0004	330003	Albany Memorial
	0005	330057	St Peters Hospital
Allegany	0039	330096	Jones Memorial
Bronx	1178	330009	Bronx-Lebanon
	1165	330127	Jacobi Medical
	1172	330080	Lincoln Medical
	3058	330059	Montefiore-Einstein
	1169	330059	Montefiore-Moses
	1168	330059	Montifiore North
	1186	330385	North Central Bronx
	1176	330399	St Barnabas
Broome	0043	330011	Our Lady of Lourdes
	0042 / 0058	330394	U Health Bing/Wilson
Cattaraugus	0066	330103	Olean General
Cayuga	0085	330235	Auburn Memorial
Chautauqua	0098	330229	Brooks Memorial
	0114	330132	TLC Lake Shore
	0103	330239	Womans Christian
Chemung	0116	330090	Arnot Ogden
	0118	330108	St Josephs- Elmira
Chenango	0128	330033	Chenango Memorial
Clinton	0135	330250	Champlain Valley
Columbia	0146	330094	Columbia Memorial
Cortland	0158	330175	Cortland Reg Med
Dutchess	0192	330049	Northern Dutchess
	0180	330067	St Francis- Pough.
	0181	330023	Vassar Brothers
Erie	0280	330111	Bertrand Chaffee
	0207	330005	Buffalo General
	0210	330219	Erie Medical Center
	0267	330102	Kenmore Mercy
	0213	330279	Mercy Buffalo
	3067	330005	Fill. Suburb
	0216	330354	Roswell Park
	0218	330078	Sisters of Charity
	0292	330078	St Joseph Cheektow.
	0208	330005	Woman and Childrens
Franklin	0324	330079	Adirondack Medical
	0325	330084	Alice Hyde
Fulton	0330	330276	Nathan Littauer
Genesee	0339	330073	United Memorial

County	PFI	CMS	Hospital Name
Jefferson	0379	330263	Carthage Area
	0367	330157	Samaritan- Watertown
Kings	1324	330169	Beth Israel- Kings
	1286	330233	Brookdale Hospital
	1288	330056	Brooklyn Hosp. Downtown
	1294	330196	Coney Island
	1309	330397	Interfaith Medical
	1301	330202	Kings County
	1315	330201	Kingsbrook Jewish
	1304	330306	Lutheran Medical
	1305	330194	Maimonides
	1293	330019	NY Community Bklyn
	1306	330236	NY Methodist
	1302	330152	U Hosp Brooklyn LICH
	1320	330350	U Hosp SUNYDownstate
	1692	330396	Woodhull Medical
	1318	330221	Wyckoff Heights
Lewis	0383	330213	Lewis County
Livingston	0393	330238	Noyes Memorial
Madison	0401	330249	Community Memorial
	0397	330115	Oneida Healthcare
Monroe	0409	330164	Highland Hospital
	0411	330125	Rochester General
	0413	330285	Strong Memorial
	0471	330226	Unity Hosp Rochester
Montgomery	0484	330047	St Marys Amsterdam
Nassau	0518	330372	Franklin
	0490	330181	Glen Cove Hospital
	0495	330225	Long Beach
	0513	330259	Mercy Medical
	0528	330027	Nassau University
	0541	330106	North Shore
	0552	330331	Plainview Hospital
	0527	330198	South Nassau Comm.
	0563	330182	St Francis- Roslyn
	0551	330332	St Joseph -Bethpage
	0550	330106	Syosset Hospital
	0511	330167	Winthrop University

County	PFI	CMS	Hospital Name
New York	1438	330204	Bellevue Hospital
	1439	330169	Beth Israel- Petrie
	1445	330240	Harlem Hospital
	1447	330270	Hosp for Spec Surg
	1450	330119	Lenox Hill
	1453	330154	Mem. Sloan Kettering
	1454	330199	Metropolitan
	1456	330024	Mount Sinai
	1437	330064	NY Downtown
	3975	330101	NYP- Allen
	1464	330101	NYP- Columbia
	1464	330101	NYP- Morgan Stanley
	1458	330101	NYP- Weill Cornell
	1446	330389	NYU Joint Disease
	1463	330214	NYU Medical Center
	1466	330046	St Lukes- Roosevelt
	1469	330046	St Lukes- St Lukes
Niagara	0581	330005	DeGraff Memorial
	0585	330163	Intercomm. Newfane
	0565	330163	Lockport Memorial
	0583	330188	Mount St. Marys
	0574	330065	Niagara Falls
Oneida	0599	330044	Faxton St. Lukes
	0589	330215	Rome Memorial
	0598	330245	St Elizabeth Medical
Onondaga	0636	330203	Crouse Hospital
	0630	330140	St Josephs- Syracuse
	0628	330241	Upst. Community Gen
	0635	330241	Upst. Univ.Hosp.SUNY
Ontario	0676	330265	Clifton Springs
	0678	330074	FF Thompson
	0671	330058	Geneva General
Orange	0708	330135	Bon Secours
	0699 / 0686	330126	OrangeReg Goshen&Mid
	0704	330205	St Anthony
	0694 / 0698	330264	St LukesNewburgh&Cor
Orleans	0718	330053	Medina Memorial
Oswego	0727	330218	Oswego Hospital
Otsego	0739	330085	AO Fox Memorial
	0746	330136	Mary Imogene Bassett
Putnam	0752	330273	Putnam Hospital
Queens	1626	330128	Elmhurst
	1628	330193	Flushing Hospital
	1638	330353	Forest Hills Hosp
	1629	330014	Jamaica Hospital
	1630	330195	Long Island Jewish
	1639	330024	Mount Sinai Queens
	1637	330055	NY Med Ctr Queens
	1633	330231	Queens Hospital
	1635	330395	St Johns Episcopal

County	PFI	CMS	Hospital Name
Rensselaer	0756	330180	Samaritan- Troy
	0755	330232	Seton Health
Richmond	1738	330028	Richmond Univ
	1740 / 1737	330160	Staten Island U N&S
Rockland	0779	330158	Good Samar. Suffern
	0776	330104	Nyack Hospital
Saratoga	0818	330222	Saratoga Hospital
Schenectady	0829	330153	Ellis Hospital
St.Lawrence	0815	330197	Canton-Potsdam
	0798	330211	Claxton-Hepburn
	0804	330223	Massena Memorial
Steuben	0866	330277	Corning Hospital
	0873	330144	Ira Davenport
	0870	330151	St James Mercy
Suffolk	0885	330141	Brookhaven Memorial
	0891	330088	Eastern Long Island
	0925	330286	Good Samar. W Islip
	0913	330045	Huntington
	0895	330185	JT Mather
	0938	330107	Peconic Bay Medical
	0889	330340	Southampton
	0924	330043	Southside
	0943	330401	St Catherine Siena
	0896	330246	St Charles Hospital
	0245	330393	Stony Brook Univ.Hos
Sullivan	0971	330386	Catskill Regional
Tompkins	0977	330307	Cayuga Medical Cntr
Ulster	0989	330224	Benedictine Hospital
	0990	330004	Kingston Hospital
Warren	1005	330191	Glens Falls
Wayne	1028	330030	Newark Wayne
Westchester	1039	330267	Hudson Valley
	1122	330061	Lawrence
	1061	330086	Mount Vernon
	1117	330162	Northern Westchester
	1129	330261	Phelps Memorial
	1072	330184	Sound Shore Medical
	1097	330208	St Johns Riverside
	1098	330006	St Josephs- Yonkers
	1139	330234	Westchester Medical
	1045	330304	White Plains
Wyoming	1153	330008	Wyoming County Comm.

PFI: New York State Permanent Facility Identification Number

CMS: Centers for Medicaid and Medicare Services Identification Number

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Guthrie Birkhead, MD, MPH, Director, Office of Public Health
Bradley Hutton, MPH, Director, Center for Community Health
Debra Blog, MD, MPH, Director, Division of Epidemiology

NYS HAI Program Personnel
Bureau Director – Emily Lutterloh, MD, MPH
HAI Reporting Program Director/Data Manager – Valerie Haley, PhD
Western/Central Regions Program Representative – Peggy Hazamy, RN, BSN, CIC
Metropolitan Area Program Representative – Marie Tsivitis, MPH, CIC
Metropolitan Area Program Representative – Rosalie Giardina, MT, CIC (new 2013)
Capital Region Program Representative – Karen Zanni, PhDc, MSN, ARNP-C, RN
State HAI Plan Coordinator – Cindi Dubner, BS
Data Analyst – Boldtsetseg Tserenpuntsag, DrPh
Administrative Assistant – Patricia Lewis, AAS
Secretary – Allison Braden, BA

Technical Advisory Workgroup
Physicians
Sarah Elmendorf, MD, Albany Medical Center
Paul Graman, MD, Strong Memorial Hospital
Brian Koll, MD, Beth Israel Medical Center
Marisa Montecalvo, MD, Westchester Medical Center
Lisa Saiman, MD, MPH, Columbia University Medical Center
Kent Sepkowitz, MD, Memorial Sloan-Kettering Cancer Center
Michael Tapper, MD, Lenox Hill Hospital
Brian Valerian, MD, FACS, FASCRS, Albany Medical Center
John Crane, MD, Erie County Medical Center
Infection Preventionists
Audrey Adams, RN, MPH, CIC, Montefiore Medical Center
Donna Armellino, RN, DNP, CIC, North Shore University Hospital
Melissa Bown, NP-C, Saratoga Hospital
Linda Greene, RN, MPS, CIC, Highland Hospital
Janet Haas, RN, DNSc, CIC, Westchester Medical Center
LeAnna Grace, RN, BSN, CIC, Rome Memorial Hospital
Jill Patak, RN, CIC, Our Lady of Lourdes Hospital
Charlene Ludlow, RN, CIC, Erie County Medical Center
Consumer
Arthur Levin, MPH, Center for Medical Consumers
Researcher
Eileen Graffunder, BA, Albany Medical Center
Healthcare Organization Representatives
Hillary Jalon, MS, United Hospital Fund
Lauren Johnston, RN, MPA, CNAA-BC, FACHE, NYC Health & Hospitals Corporation
Zeynep Sumer, MS, Greater New York Hospital Association
Donna Farnsworth, RN, MHA, CIC, New York State APIC Coordinating Council
Mary Therriault, RN, MS, Healthcare Association of New York State

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