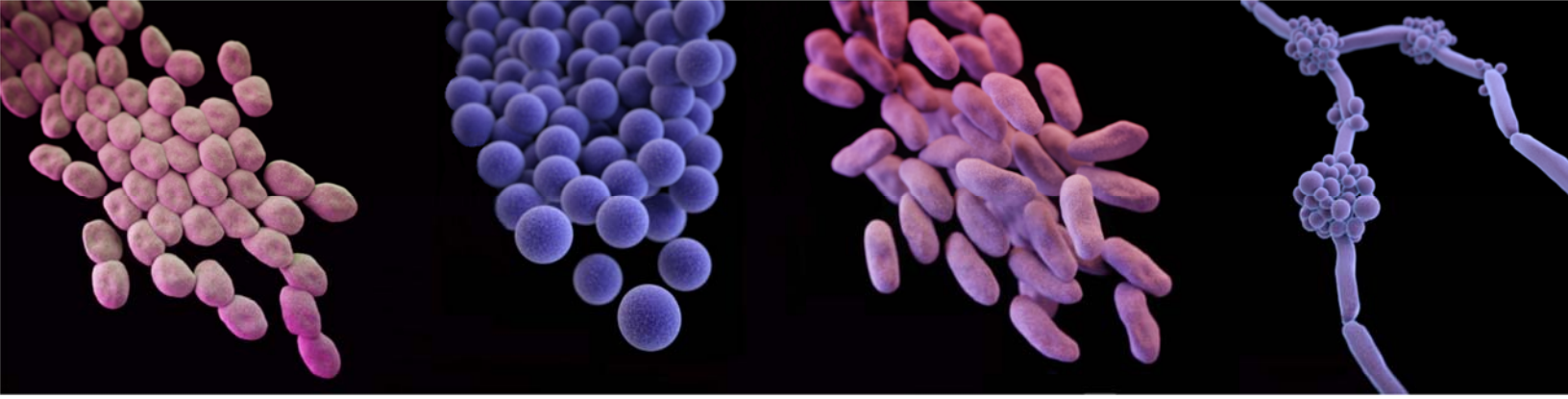

Hospital-Acquired Infections in New York State, 2016

Part 2: Technical Report

NEW YORK STATE | Department of Health

June 13, 2018

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Introduction

In accordance with Public Health Law 2819, New York State (NYS) has been tracking hospital-acquired infections (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.

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 bloodstream infections (CLABSIs) in intensive care units (ICUs) and surgical site infections (SSIs) following colon and coronary artery bypass graft (CABG) surgeries. In 2008, hip replacement SSIs were added; in 2010, *Clostridium difficile* (CDI) infections were added; in 2012, abdominal hysterectomy SSIs were added; and in 2014, carbapenem-resistant Enterobacteriaceae (CRE) infections were added.

In addition to reporting the HAI data mandated by NYS, hospitals enter data into NHSN for federal programs, regional collaboratives, and local surveillance. The Centers for Medicare and Medicaid Services (CMS) Hospital Inpatient Quality Reporting (IQR) Program provides higher reimbursement to hospitals that report certain types of HAI data, including catheter-associated urinary tract infections (CAUTIs) and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia. In addition, the CMS Hospital Value-Based Purchasing Program provides incentive payments to hospitals based on how well they perform on certain HAI measures. NYSDOH can see this other data (i.e. data not mandated by NYS) through a data use agreement (DUA) with CDC. The DUA specifies that DOH may only use this other data for surveillance or prevention purposes, not for public reporting of facility-specific data or for regulatory action. NYSDOH does not audit this data. The data are only reported in aggregate. More information about the DUA is available on the CDC website http://www.cdc.gov/hai/pdfs/stateplans/New-York_DUA.pdf.

Table 1 summarizes the progression of NYS reporting requirements through 2016 and includes additional data visible through the DUA.

Table 1. Hospital-acquired infections reported by New York State hospitals, by year

Type of Infection	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Central line-associated bloodstream infections in ICUs	P1	✓	✓	✓	✓	✓	✓	✓	✓	✓
Colon surgical site infections	P1	✓	✓	✓	✓	✓	✓	✓	✓	✓
Coronary artery bypass graft surgical site infections	P1	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hip replacement surgical site infections		✓	✓	✓	✓	✓	✓	✓	✓	✓
Clostridium difficile infections			P2	✓	✓	✓	✓	✓	✓	✓
Abdominal hysterectomy surgical site infections						✓	✓	✓	✓	✓
Carbapenem-resistant Enterobacteriaceae infections							P2	✓	✓	✓
Central line-associated bloodstream infections in wards							DUA	DUA	✓	✓
Catheter-associated urinary tract infections							DUA	DUA	DUA	DUA
Methicillin-resistant *Staphylococcus aureus* bacteremia							DUA	DUA	DUA	DUA

✓ = full reporting (publish hospital-specific rates)
P1 = pilot reporting full year (do not publish hospital-specific rates)
P2 = pilot reporting half year from July (do not publish hospital-specific rates)
DUA = Not required by New York, but reported for Centers for Medicare and Medicaid Services Inpatient Prospective Payment System and visible through data use agreement between CDC and NYS beginning May 2013.

This report focuses on HAI rates in NYS hospitals in 2016. The detailed information is primarily intended for use by hospital Infection Preventionists (IPs), but it may also be used by others who want more detailed information than is available in "Part 1: Summary for Consumers".

Because of substantive changes to HAI surveillance definitions that occurred between 2007 and 2015, state and federal agencies designated 2015 as the "baseline" for assessment of trends. This baseline will be used until surveillance definitions change such that the comparisons are no longer valid, or until policy changes require a new baseline. This report will assess trends between 2015 and 2016. For information on HAI rates prior to 2015, please see the 2015 NYS HAI Report.

Surgical Site Infections (SSIs)

For each type of SSI, the following pages present detailed information on the severity (depth) of infections, the circumstance of detection (initial hospitalization, readmission, etc.), the microorganisms involved, and time trends. In addition, detailed plots show each individual hospital's risk-adjusted infection rates compared to the state average.

SSIs are categorized into three groups depending on the severity of the infection:

- Superficial Incisional SSI - This infection occurs in the area of the skin where the surgical incision was made. The patient may have pus draining from the incision or laboratory-identified pathogens from cultures of the incision.
- Deep Incisional SSI - This infection occurs beneath the incision in muscle tissue. Pus may drain from the incision, and patients may experience fever and pain. The incision may reopen on its own, or a surgeon may reopen the wound.
- Organ or Space SSI - This type of infection occurs in body organs or the space between organs. Pus may collect in an abscess below the muscles, resulting in inflammation and pain.

Hospital IPs use a wide variety of surveillance methods to identify SSIs. Some routinely review all procedures for SSIs, while others review a subset of procedures that are flagged based on data mining systems, wound culture reports, readmission, return to surgery, and discharge coding. IPs review the selected procedures using many data sources, including lab reports, operative reports, physician dictated operative notes, progress notes, discharge notes, history and physical examination documentation, return to surgery, radiology reports, infectious disease consultations, intraoperative reports, outpatient/emergency room visits, documentation of vital signs, antibiotic prescriptions, and coding summary sheets.

SSIs may be detected on the original hospital admission, readmission to the same hospital, readmission to a different hospital, or only in outpatient settings (post-discharge surveillance and not readmitted, [PDS]). The ability to identify SSIs among patients seen by physicians in outpatient settings varies among hospitals. PDS infections are excluded from hospital-specific comparisons in this report so as not to penalize facilities with the best surveillance systems.

If there is evidence of clinical infection or abscess at the time a surgical procedure is performed, any resulting SSI will be designated as "present at time of surgery" (PATOS). The number of PATOS SSIs are summarized for each type of procedure. Because PATOS SSIs are more difficult to prevent, these SSIs and procedures are excluded from the final hospital risk-adjusted rates.

Colon Surgical Site Infections

In 2016, 161 hospitals reported a total of 1,349 colon SSIs out of 20,021 procedures, a rate of 6.7 infections per 100 procedures. NYSDOH excludes some of these SSIs and procedures from SSI rates before evaluating time trends and comparing hospital performance, as described below.

Of the 1,349 infections, 237 (17.6%) were classified as PATOS. The PATOS SSIs were predominantly (81%) Organ/Space. At completion of the surgery 77% were primarily closed. PATOS SSIs/procedures were excluded from the final SSI rate because these infections are more difficult to prevent. However, to encourage hospitals to continue to implement prevention efforts for these types of procedures, the number of excluded PATOS are listed in the hospital-specific colon SSI rate plots at the end of the section.

Of the remaining 1,112 infections, 44% were superficial, 10% were deep, and 46% were organ/space (Table 2). Most of the SSIs (55%) were detected during the initial hospitalization; 30% were identified upon readmission to the same hospital; 3% involved readmission to another hospital; and 13% were detected using post-discharge surveillance and not readmitted. The majority of the PDS infections were superficial. Detection of SSIs in outpatient locations is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 131 PDS infections in the final SSI rate so as not to penalize facilities with the best surveillance systems.

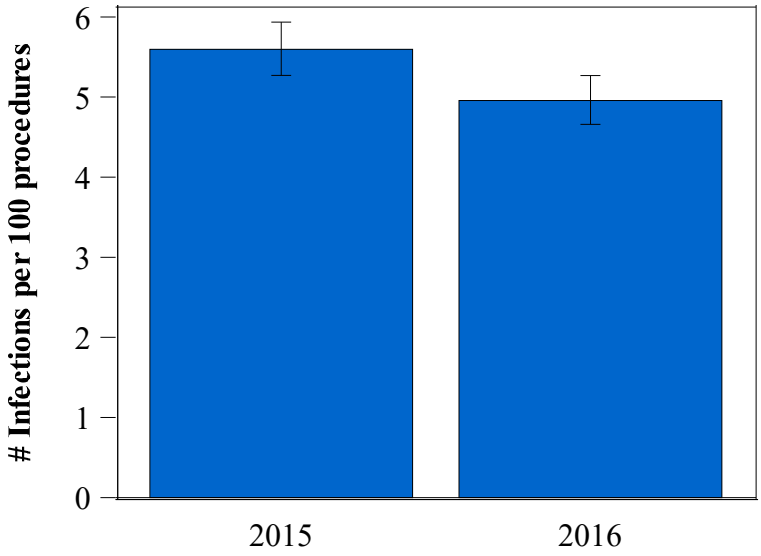
Table 2. Method of detection of colon surgical site infection by depth of infection, New York State 2016

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Post-Discharge Surveillance Not Readmitted**	**Total**
Superficial Incisional	245 (50.4%) (40.2%)	107 (22.0%) (31.9%)	14 (2.9%) (37.8%)	120 (24.7%) (91.6%)	486 (43.7%)
Deep Incisional	64 (57.7%) (10.5%)	37 (33.3%) (11.0%)	2 (1.8%) (5.4%)	8 (7.2%) (6.1%)	111 (10.0%)
Organ/Space	300 (58.3%) (49.3%)	191 (37.1%) (57.0%)	21 (4.1%) (56.8%)	3 (0.6%) (2.3%)	515 (46.3%)
Total	609 (54.8%)	335 (30.1%)	37 (3.3%)	131 (11.8%)	1,112

New York State data reported as of July 31, 2017. Excludes infections present at time of surgery.

Trends in colon SSI rates after deleting PATOS and PDS infections are show in Figure 1. Between 2015 and 2016, the colon surgical site infection rate declined 11%, from 5.60 infections per 100 procedures in 2015, to 4.96 infections per 100 procedures in 2016.

Figure 1: Trend in colon surgical site infection rates, New York State 2015-2016
Excluding infections present at time of surgery and detected in outpatient settings without readmission



Year	# Hospitals	# Infections	# Procedures	Infection Rate (95% Confidence Interval)
2015	160	1,042	18,612	5.60 (5.27, 5.94)
2016	161	981	19,784	4.96 (4.66, 5.27)

New York State Data reported as of July 31, 2017. Infection rate is the number of infections divided by the number of procedures, multiplied by 100.

The most common microorganisms associated with colon SSIs were Enterococci and *Escherichia coli* (Table 3).

Table 3. Microorganisms identified in colon surgical site infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Enterococci	420	31.1
(VRE)	(80)	(5.9)
Escherichia coli	360	26.7
(CRE-*E. coli*)	(2)	(0.1)
Staphylococcus aureus	114	8.5
(MRSA)	(65)	(4.8)
Pseudomonas spp.	107	7.9
Bacteroides spp.	103	7.6
Klebsiella spp.	90	6.7
(CRE-*Klebsiella*)	(4)	(0.3)
Yeast	86	6.4
Streptococci	75	5.6
Coagulase negative staphylococci	71	5.3
Enterobacter spp.	69	5.1
(CRE-*Enterobacter*)	(3)	(0.2)
Proteus spp.	38	2.8
Citrobacter spp.	24	1.8
Clostridium spp.	24	1.8
Prevotella spp.	12	0.9
Morganella morganii	10	0.7
Actinomyces spp.	8	0.6
Corynebacteria	7	0.5
Peptostreptococci	7	0.5
Lactobacilli	5	0.4
Parabacteroides spp.	5	0.4
Acinetobacter spp.	2	0.1
Other	31	2.3

New York State data reported as of July 31, 2017. Out of 1,349 infections, no microorganisms identified for 333 (25%) infections. VRE: vancomycin-resistant enterococci; CRE: carbapenem-resistant Enterobacteriaceae; MRSA: methicillin-resistant *Staphylococcus aureus;* spp: multiple species

Risk-Adjustment for Colon SSIs

The following risk factors were associated with these SSIs and included in the risk-adjustment model:

- Patients with severe systemic disease (American Society of Anesthesiologists [ASA] score of 3, 4, or 5) were 1.3 times more likely to develop an SSI than healthier patients (ASA score of 1 or 2).
- Procedures with duration greater than three hours were 2.0 times more likely to result in SSI than procedures less than two hours. Procedures with duration between two and three hours were 1.5 times more likely to result in SSI than procedures less than two hours.
- Procedures that used traditional surgical incisions were 2.1 times more likely to result in SSI than procedures performed entirely with a laparoscopic instrument.
- Obese patients (with body mass index [BMI] greater than 30) were 1.3 times more likely to develop an SSI than patients with BMI less than or equal to 30.

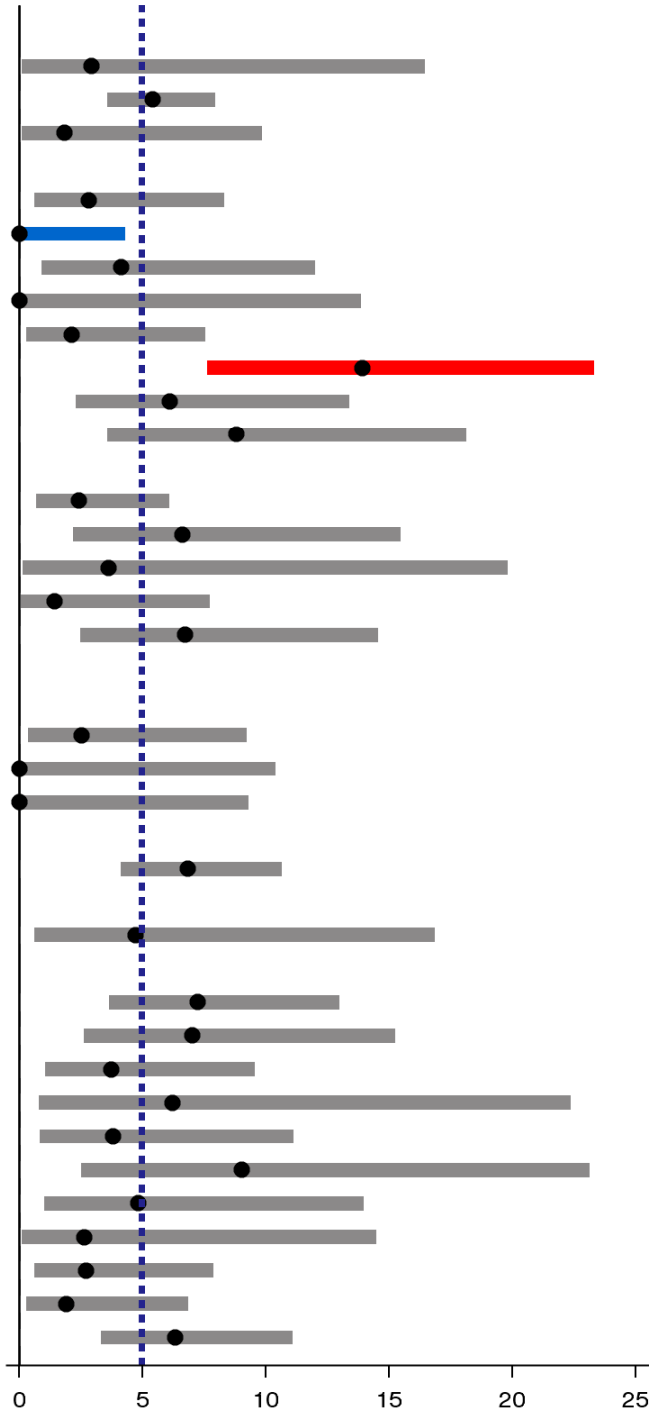
Hospital-Specific Colon SSI Rates

Hospital-specific colon SSI rates are provided in Figure 2. Seven hospitals (4%) had colon SSI rates that were statistically higher than the state average; none were high for more than two consecutive years. All seven hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates.

Five hospitals (3%) had rates that were statistically lower than the state average; one hospital was low for three consecutive years (2014-2016, NYP Columbia); no hospitals were high for three or more consecutive years.

Figure 2: Colon Surgical Site Infection Rates, New York 2016 (page 1 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
AO Fox Memorial	NA	NA	NA	NA	NA	NA
Adirondack Medical	1	1	1	57	1.8	2.9
Albany Med Ctr	26	13	2	515	5.0	5.4
Albany Memorial	1	1	1	54	1.9	1.8
Alice Hyde Med Ctr	NA	NA	NA	NA	NA	NA
Arnot Ogden Med Ctr	3	1	2	83	3.6	2.8
Auburn Memorial**	0	2	0	59	0.0	0.0
Bellevue Hospital	3	1	0	77	3.9	4.1
Bon Secours	0	0	0	24	0.0	0.0
Bronx-Lebanon	2	3	0	101	2.0	2.1
Brookdale Hospital^^	14	1	1	74	18.9	13.9
Brookhaven Memorial	6	2	1	96	6.3	6.1
Brooklyn Hosp Ctr	7	0	0	75	9.3	8.8
Brooks Memorial	NA	NA	NA	NA	NA	NA
Buffalo General	4	0	0	149	2.7	2.4
Canton-Potsdam	5	1	1	63	7.9	6.6
Catskill Regional	1	0	0	32	3.1	3.6
Cayuga Medical Ctr	1	2	0	68	1.5	1.4
Champlain Valley	6	2	2	89	6.7	6.7
Claxton-Hepburn	NA	NA	NA	NA	NA	NA
Clifton Springs	NA	NA	NA	NA	NA	NA
Columbia Memorial	2	0	0	78	2.6	2.5
Coney Island Hosp	0	0	0	24	0.0	0.0
Corning Hospital	0	0	0	31	0.0	0.0
Cortland Reg Med	NA	NA	NA	NA	NA	NA
Crouse Hospital	19	1	2	261	7.3	6.8
DeGraff Memorial	NA	NA	NA	NA	NA	NA
East. Niag. Lockport	2	0	0	47	4.3	4.7
Eastern Long Island	NA	NA	NA	NA	NA	NA
Ellis Hospital	11	1	1	167	6.6	7.2
Elmhurst Hospital	6	0	1	68	8.8	7.0
Erie County Med Ctr	4	4	0	91	4.4	3.7
FF Thompson	2	1	0	57	3.5	6.2
Faxton St. Lukes	3	0	1	76	3.9	3.8
Flushing Hospital	4	1	3	49	8.2	9.0
Geneva General	3	1	0	67	4.5	4.8
Glen Cove Hospital	1	2	0	28	3.6	2.6
Glens Falls Hospital	3	0	0	184	1.6	2.7
Good Samar. Suffern	2	0	0	129	1.6	1.9
Good Samar. W Islip	12	0	1	227	5.3	6.3



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, obesity, duration, and endoscope. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Figure 2: Colon Surgical Site Infection Rates, New York 2016 (page 2 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Harlem Hospital	2	0	0	30	6.7	5.9
HealthAlli Broadway	0	0	0	52	0.0	0.0
HealthAlli MarysAve	NA	NA	NA	NA	NA	NA
Highland Hospital	6	3	0	156	3.8	4.3
Huntington Hospital	10	3	1	220	4.5	5.5
Interfaith Med Ctr	NA	NA	NA	NA	NA	NA
JT Mather Hospital	6	3	0	115	5.2	5.3
Jacobi Med Ctr	7	0	1	93	7.5	5.7
Jamaica Hospital	4	2	0	69	5.8	5.1
Jones Memorial	NA	NA	NA	NA	NA	NA
Kenmore Mercy	7	3	0	137	5.1	5.9
Kings County Hosp	5	5	0	114	4.4	3.8
Kingsbrook Jewish MC	1	0	0	39	2.6	2.1
LIJ at Forest Hills	3	0	0	107	2.8	2.7
LIJ at Valley Stream	1	0	0	56	1.8	1.9
Lenox Hill Hospital	14	4	1	245	5.7	5.3
Lincoln Med Ctr	3	0	0	71	4.2	3.3
Long Isl Jewish(LIJ)**	11	5	0	392	2.8	2.6
Maimonides Med Ctr	9	1	1	259	3.5	3.6
Mary Imogene Bassett	8	2	7	166	4.8	5.0
Massena Memorial	NA	NA	NA	NA	NA	NA
Memor SloanKettering	76	8	23	1142	6.7	5.6
Mercy Hosp Buffalo^^	21	9	0	313	6.7	8.1
Mercy Med Ctr	1	0	0	61	1.6	1.3
Metropolitan Hosp	0	0	3	37	0.0	0.0
MidHudson Reg of WMC	1	0	0	47	2.1	2.0
Millard Fill. Suburb	9	0	0	282	3.2	3.5
Montefiore-Einstein	9	2	1	165	5.5	5.2
Montefiore-Moses	16	0	4	281	5.7	5.4
Montefiore-Mt Vernon	NA	NA	NA	NA	NA	NA
Montefiore-NewRochl	3	0	0	55	5.5	5.4
Montefiore-Wakefield	4	3	0	29	13.8	12.4
Mount St. Marys	1	1	0	36	2.8	2.6
Mt Sinai	45	13	14	946	4.8	5.7
Mt Sinai Beth Israel	11	0	0	213	5.2	6.4
Mt Sinai Brooklyn	1	0	0	61	1.6	1.4
Mt Sinai Queens	1	0	0	60	1.7	1.8
Mt Sinai St Lukes	1	2	0	76	1.3	1.1
Mt Sinai West	5	1	0	156	3.2	2.8
NY Community Hosp	1	0	0	32	3.1	3.2

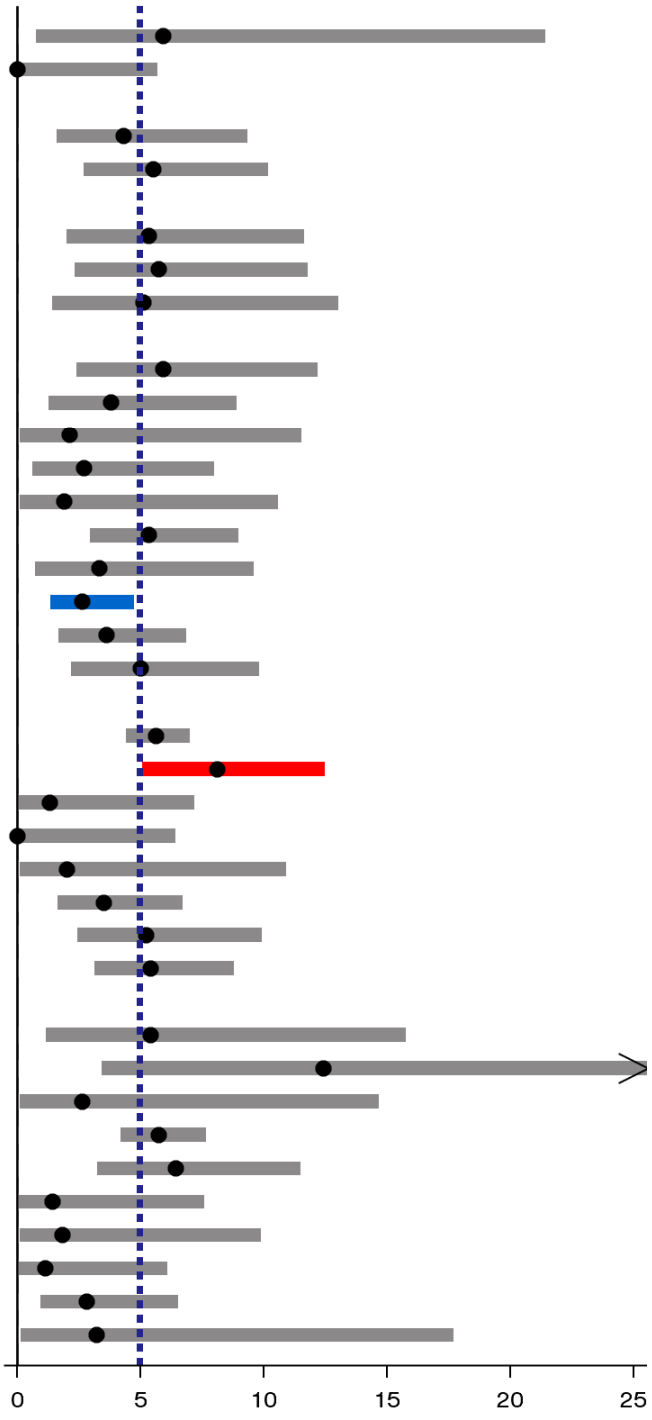


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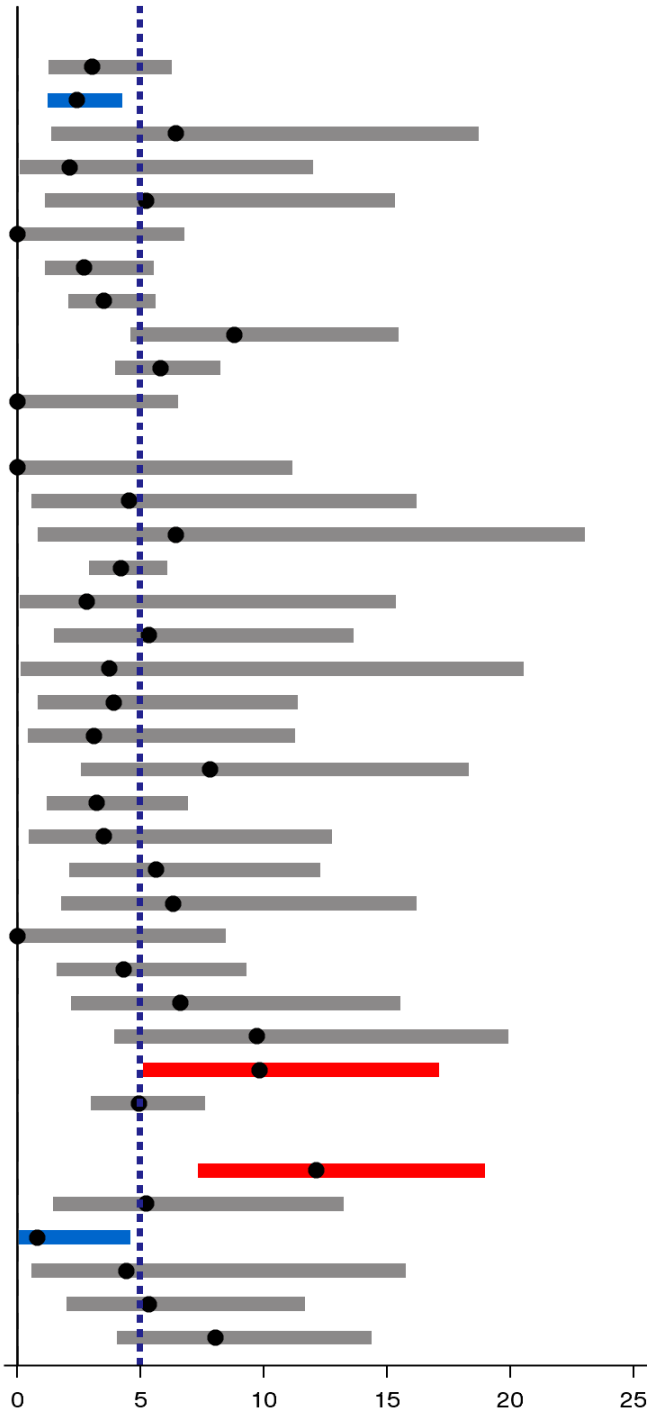
Figure 2: Colon Surgical Site Infection Rates, New York 2016 (page 3 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
NYP-Allen	NA	NA	NA	NA	NA	NA
NYP-Brklyn Methodist	7	1	0	200	3.5	3.0
NYP-Columbia**	11	2	0	411	2.7	2.4
NYP-Hudson Valley	3	1	0	52	5.8	6.4
NYP-Lawrence	1	2	0	48	2.1	2.1
NYP-Lower Manhattan	3	0	0	57	5.3	5.2
NYP-Morgan Stanley	0	0	0	35	0.0	0.0
NYP-Queens	7	7	0	266	2.6	2.7
NYP-Weill Cornell	17	2	0	468	3.6	3.5
NYU Lutheran	12	0	0	114	10.5	8.8
NYU Tisch	31	1	2	497	6.2	5.8
Nassau University	0	1	0	31	0.0	0.0
Nathan Littauer	NA	NA	NA	NA	NA	NA
Newark Wayne	0	1	0	36	0.0	0.0
Niagara Falls	2	1	0	53	3.8	4.5
North Central Bronx	2	0	2	21	9.5	6.4
North Shore	30	3	0	619	4.8	4.2
Northern Dutchess	1	1	0	33	3.0	2.8
Northern Westchester	4	1	0	117	3.4	5.3
Noyes Memorial	1	0	0	23	4.3	3.7
Nyack Hospital	3	2	0	81	3.7	3.9
Olean General	2	0	2	70	2.9	3.1
Oneida Healthcare	5	1	1	94	5.3	7.8
OrangeReg Goshen-Mid	6	1	1	213	2.8	3.2
Oswego Hospital	2	2	2	43	4.7	3.5
Our Lady of Lourdes	6	0	0	141	4.3	5.6
Peconic Bay Medical	4	4	0	59	6.8	6.3
Phelps Memorial	0	0	0	41	0.0	0.0
Plainview Hospital	6	3	1	119	5.0	4.3
Putnam Hospital	5	0	4	95	5.3	6.6
Queens Hospital	7	1	0	56	12.5	9.7
Richmond Univ MC^^	12	1	1	121	9.9	9.8
Rochester General	19	2	0	424	4.5	4.9
Rome Memorial	NA	NA	NA	NA	NA	NA
Roswell Park^^	19	1	5	161	11.8	12.1
SUNY Downstate MedCr	4	0	0	68	5.9	5.2
Samaritan- Troy**	1	1	2	122	0.8	0.8
Samaritan- Watertown	2	1	0	49	4.1	4.4
Saratoga Hospital	6	3	2	127	4.7	5.3
Sisters of Charity	11	3	1	136	8.1	8.0



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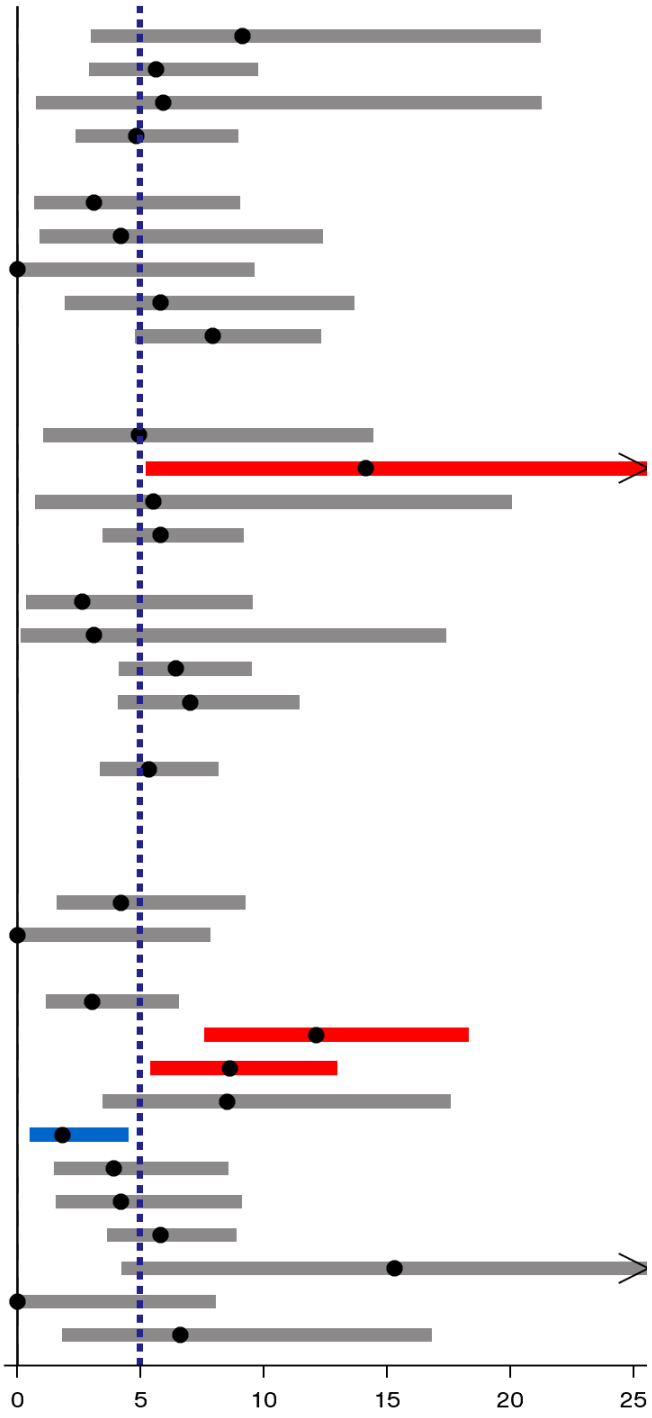
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, obesity, duration, and endoscope. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Figure 2: Colon Surgical Site Infection Rates, New York 2016 (page 4 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Sisters- St Joseph	5	0	1	55	9.1	9.1
South Nassau Comm.	12	2	0	220	5.5	5.6
Southampton	2	0	1	41	4.9	5.9
Southside	10	2	0	192	5.2	4.8
St Anthony	NA	NA	NA	NA	NA	NA
St Barnabas	3	0	1	75	4.0	3.1
St Catherine Siena	3	1	0	75	4.0	4.2
St Charles Hospital	0	0	0	25	0.0	0.0
St Elizabeth Medical	5	4	2	93	5.4	5.8
St Francis- Roslyn	19	2	0	266	7.1	7.9
St James Mercy	NA	NA	NA	NA	NA	NA
St Johns Dobbs Ferry	NA	NA	NA	NA	NA	NA
St Johns Episcopal	3	0	0	49	6.1	4.9
St Johns Riverside^^	6	2	1	50	12.0	14.1
St Joseph -Bethpage	2	4	1	36	5.6	5.5
St Josephs- Syracuse	18	8	3	372	4.8	5.8
St Josephs- Yonkers	NA	NA	NA	NA	NA	NA
St Lukes Cornwall	2	0	0	84	2.4	2.6
St Marys Amsterdam	1	0	0	54	1.9	3.1
St Peters Hospital	24	2	0	442	5.4	6.4
Staten Island U N	16	5	3	199	8.0	7.0
Staten Island U S	NA	NA	NA	NA	NA	NA
Strong Memorial	21	7	0	387	5.4	5.3
Syosset Hospital	NA	NA	NA	NA	NA	NA
TLC Lake Shore	NA	NA	NA	NA	NA	NA
UHS Chenango Memor	NA	NA	NA	NA	NA	NA
UHS Wilson	6	1	0	170	3.5	4.2
UPMC Chautauqua WCA	0	0	0	51	0.0	0.0
United Memorial	NA	NA	NA	NA	NA	NA
Unity Hosp Rochester	6	1	0	222	2.7	3.0
Univ Hosp SUNY Upst^^	22	10	2	162	13.6	12.1
Univ Hosp StonyBrook^^	22	4	5	225	9.8	8.6
Upst. Community Gen	7	0	0	74	9.5	8.5
Vassar Brothers**	4	3	1	267	1.5	1.8
Westchester Medical	6	1	2	127	4.7	3.9
White Plains Hosp	6	3	2	198	3.0	4.2
Winthrop University	21	6	1	364	5.8	5.8
Woman and Childrens	4	0	0	29	13.8	15.3
Woodhull Med Ctr	0	2	0	32	0.0	0.0
Wyckoff Heights	4	0	0	52	7.7	6.6



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, obesity, duration, and endoscope. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

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

In 2016, 37 hospitals reported a total of 185 CABG chest surgical site infections out of 11,029 procedures, a rate of 1.7 infections per 100 procedures. NYSDOH excludes some of these SSIs and procedures from SSI rates before evaluating time trends and comparing hospital performance, as described below.

Of the 185 infections, one was classified as PATOS and excluded from further analysis because PATOS infections are more difficult to prevent. Of the remaining 184 infections, 32% were superficial, 34% were deep, and 34% were organ/space (Table 4). Most of the SSIs (72%) were detected upon readmission to the same hospital; 15% were identified during the initial hospitalization; 7% involved readmission to another hospital; and 7% were detected using PDS and not readmitted. Detection of SSIs in outpatient locations is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 13 PDS infections in the final SSI rate so as not to penalize facilities with the best surveillance systems.

Table 4. Method of detection of coronary artery bypass graft chest-site surgical site infection by depth of infection, New York State 2016

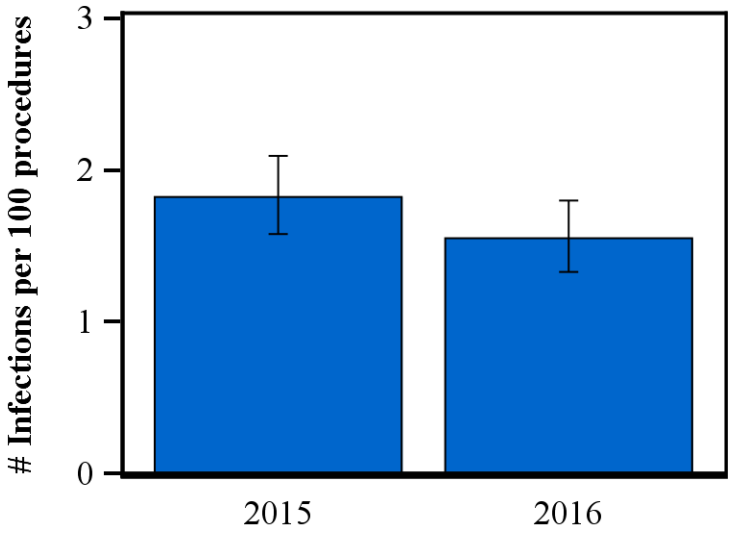
Extent (Row%) (Column%)	When Detected				
	Initial Hospitalization	Readmitted to the Same Hospital	Readmitted to Another Hospital	Post-Discharge Surveillance Not Readmitted	Total
Superficial Incisional	6 (10.2%) (22.2%)	42 (71.2%) (31.8%)	0 (0%) (0%)	11 (18.6%) (84.6%)	59 (32.1%)
Deep Incisional	5 (7.9%) (18.5%)	51 (81.0%) (38.6%)	5 (7.9%) (41.7%)	2 (3.2%) (15.4%)	63 (34.2%)
Organ/Space	16 (25.8%) (59.3%)	39 (62.9%) (29.5%)	7 (11.3%) (58.3%)	0 (0%) (0%)	62 (33.7%)
Total	27 (14.7%)	132 (71.7%)	12 (6.5%)	13 (7.1%)	184

New York State data reported as of July 31, 2017. Excludes infections present at time of surgery.

Trends in CABG chest SSI rates after deleting PATOS and PDS infections are shown in Figure 3. Between 2015 and 2016, the total number of CABG chest SSIs declined 15%, from 1.82 infections per 100 procedures in 2015, to 1.55 infections per 100 procedures in 2016.

Figure 3: Trend in coronary artery bypass graph chest site surgical site infection rates, New York State 2015-2016

Excluding infections present at time of surgery and detected in outpatient settings without readmission



Year	# Hospitals	# Infections	# Procedures	Infection Rate (95% Confidence Interval)
2015	38	196	10,754	1.82 (1.58, 2.09)
2016	37	171	11,028	1.55 (1.33, 1.80)

New York State data reported as of July 31, 2017.
Infection rate is the number of infections divided by the number of procedures, multiplied by 100.

In NYS, the most common microorganisms associated with CABG chest SSIs were *Staphylococcus aureus* and coagulase-negative staphylococci (Table 5).

Table 5. Microorganisms identified in coronary artery bypass graft chest site infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	57	30.8
(MRSA)	(13)	(7.0)
Coagulase negative staphylococci	37	20.0
Serratia spp.	15	8.1
Enterobacter spp.	12	6.5
(CRE-Enterobacter)	(1)	(0.5)
Klebsiella spp.	11	5.9
Proteus spp.	11	5.9
Pseudomonas spp.	11	5.9
Escherichia coli	9	4.9
Enterococci	8	4.3
(VRE)	(5)	(2.7)
Propionibacterium spp.	5	2.7
Acinetobacter spp.	2	1.1
Other	21	11.4

New York State data reported as of July 31, 2017. Out of 185 infections. No microorganisms identified for 29 (16%) infections. VRE: vancomycin-resistant enterococci; MRSA: methicillin-resistant *Staphylococcus aureus*

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 2016, the following risk factors were associated with SSIs and were included in the risk-adjustment:

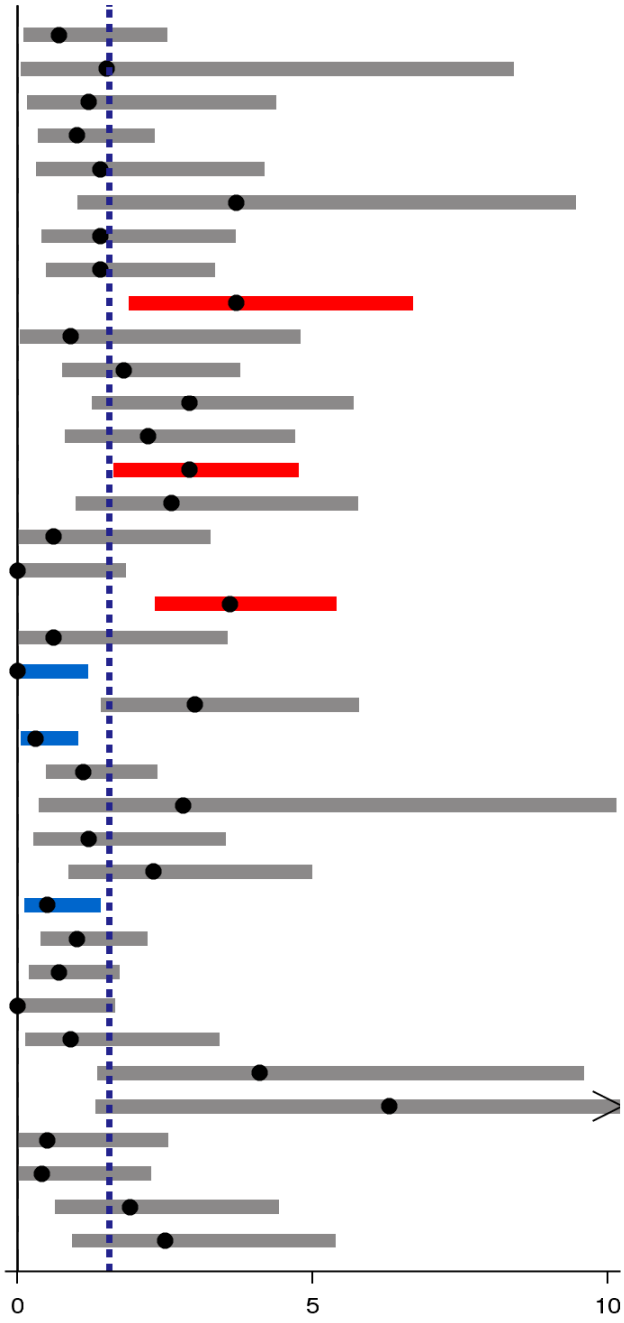
- Patients with diabetes were 1.8 times more likely to develop an SSI than patients without diabetes.
- Obese patients (with body mass index [BMI] greater than or equal to 30) were 1.7 times more likely to develop an SSI than patients with BMI less than 30.
- Females were 1.8 times more likely to develop an SSI than males.
- Patients who underwent procedures with a total duration longer than five hours were 1.4 times more likely to develop an SSI than patients undergoing shorter procedures.

Hospital-Specific CABG Chest SSI Rates

Hospital-specific CABG chest SSI rates are provided in Figure 4. In 2016, of the 37 reporting hospitals, three (8%) had a CABG chest SSI rate that was statistically higher than the state average. All three hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Three hospitals (8%) were statistically lower than the state average. No hospitals were flagged high or low for three consecutive years.

Figure 4. Coronary artery bypass graft chest site infection rates, New York 2016 (page 1 of 1)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Albany Med Ctr	2	0	1	287	0.7	0.7
Arnot Ogden Med Ctr	1	0	0	57	1.8	1.5
Bellevue Hospital	2	0	0	167	1.2	1.2
Buffalo General	5	0	0	494	1.0	1.0
Ellis Hospital	3	0	1	227	1.3	1.4
Good Samar. Suffern	4	0	0	108	3.7	3.7
Good Samar. W Islip	4	0	0	264	1.5	1.4
Lenox Hill Hospital	5	0	0	368	1.4	1.4
Maimonides Med Ctr^^	11	0	1	265	4.2	3.7
Mary Imogene Bassett	1	0	1	101	1.0	0.9
Mercy Hosp Buffalo	7	0	0	392	1.8	1.8
Montefiore-Einstein	8	0	2	247	3.2	2.9
Montefiore-Moses	6	0	1	235	2.6	2.2
Mt Sinai^^	15	0	0	503	3.0	2.9
Mt Sinai Beth Israel	6	0	0	210	2.9	2.6
Mt Sinai St Lukes	1	0	0	169	0.6	0.6
NYP-Brklyn Methodist	0	0	0	164	0.0	0.0
NYP-Columbia^^	24	0	0	636	3.8	3.6
NYP-Queens	1	0	0	170	0.6	0.6
NYP-Weill Cornell**	0	0	0	276	0.0	0.0
NYU Tisch	9	0	3	306	2.9	3.0
North Shore**	2	0	0	737	0.3	0.3
Rochester General	7	0	0	612	1.1	1.1
SUNY Downstate MedCr	2	0	0	64	3.1	2.8
Southside	3	1	0	253	1.2	1.2
St Elizabeth Medical	6	0	1	268	2.2	2.3
St Francis- Roslyn**	3	0	0	679	0.4	0.5
St Josephs- Syracuse	6	0	0	604	1.0	1.0
St Peters Hospital	4	0	0	556	0.7	0.7
Staten Island U N	0	0	0	183	0.0	0.0
Strong Memorial	2	0	1	282	0.7	0.9
UHS Wilson	5	0	0	130	3.8	4.1
Univ Hosp SUNY Upst	3	0	0	40	7.5	6.3
Univ Hosp StonyBrook	1	0	1	207	0.5	0.5
Vassar Brothers	1	0	0	226	0.4	0.4
Westchester Medical	5	0	0	267	1.9	1.9
Winthrop University	6	0	0	274	2.2	2.5



Data reported as of July 31, 3017. State Average. ●Risk-adjusted Infection rate. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using diabetes, body mass index, duration, and gender. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

CABG Donor Site Infections

In 2016, 37 hospitals reported a total of 41 CABG donor site infections out of 9,792 procedures, a rate of 0.42 infections per 100 procedures. None of the infections were classified as PATOS.

Of the 41 infections, 83% were superficial and 17% were deep (Table 6). Most of the SSIs (59%) were detected upon readmission to the same hospital; 17% were identified during the initial hospitalization; 5% involved readmission to another hospital; and 20% were detected using post-discharge surveillance and not readmitted. Most of the PDS infections were superficial. Detection of SSIs in outpatient locations is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 8 PDS infections in the final SSI rate so as not to penalize facilities with the best surveillance systems.

Table 6: Method of detection for coronary artery bypass graft donor site infection by depth of infection, New York State 2016

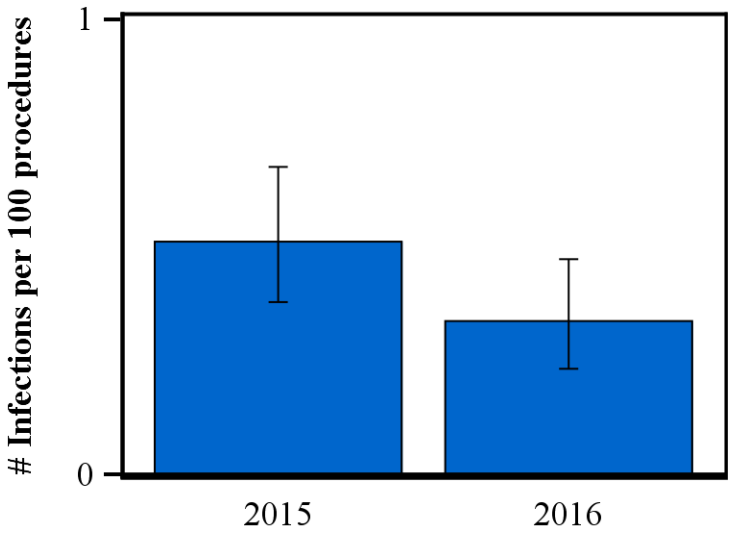
	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Post-Discharge Surveillance Not Readmitted**	**Total**
Superficial Incisional	7 (20.6%) (100.0%)	20 (58.8%) (83.3%)	0 (0.0%) (0.0%)	7 (20.6%) (87.5%)	34 (82.9%)
Deep Incisional	0 (0.0%) (0.0%)	4 (57.1%) (16.7%)	2 (28.6%) (100.0%)	1 (14.3%) (12.5%)	7 (17.1%)
Total	7 (17.1%)	24 (58.5%)	2 (4.9%)	8 (19.5%)	41

New York State data reported as of July 31, 2017. Excludes infections present at time of surgery.

Trends in CABG SSI rates after deleting PATOS and PDS infections are shown in Figure 5. Between 2015 and 2016, the total number of CABG donor site infection rate declined 33%, from 0.51 infections per 100 procedures in 2015, to 0.34 infections per 100 procedures in 2016.

Figure 5: Trend in coronary artery bypass graft donor site surgical site infection rates, New York State 2015-2016

Excluding infections present at time of surgery and detected in outpatient settings without readmission



Year	# Hospitals	# Infections	# Procedures	Infection Rate (95% Confidence Interval)
2015	38	49	9,578	0.51 (0.38, 0.68)
2016	37	33	9,791	0.34 (0.23, 0.47)

New York State data reported as of July 31, 2017.
Infection rate is the number of infections divided by the number of procedures, multiplied by 100.

Serratia spp. were the most common microorganisms associated with CABG donor site SSIs. (Table 7). *Serratia* spp. were responsible for 32% of infections, whereas they were associated with 13% of infections in 2015.

Table 7. Microorganisms identified in coronary artery bypass graft donor site infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Serratia spp.	13	31.7
Staphylococcus aureus	9	22.0
(MRSA)	(3)	(7.3)
Klebsiella spp.	6	14.6
(CRE-Klebsiella)	(1)	(2.4)
Proteus spp.	6	14.6
Coagulase negative staphylococci	5	12.2
Escherichia coli	5	12.2
Enterococci	3	7.3
Enterobacter spp.	2	4.9
Acinetobacter spp.	1	2.4
Other	13	31.7

New York State data reported as of July 31, 2017. Out of 41 infections. No microorganisms identified for 5 (12%) infections. MRSA: methicillin-resistant *Staphylococcus aureus;* CRE: carbapenem-resistant Enterobacteriaceae; spp: multiple species.

Risk Adjustment for CABG Donor Site SSIs

Certain patient and procedure-specific factors increased the risk of developing a donor site SSI following CABG surgery. In 2016, 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:

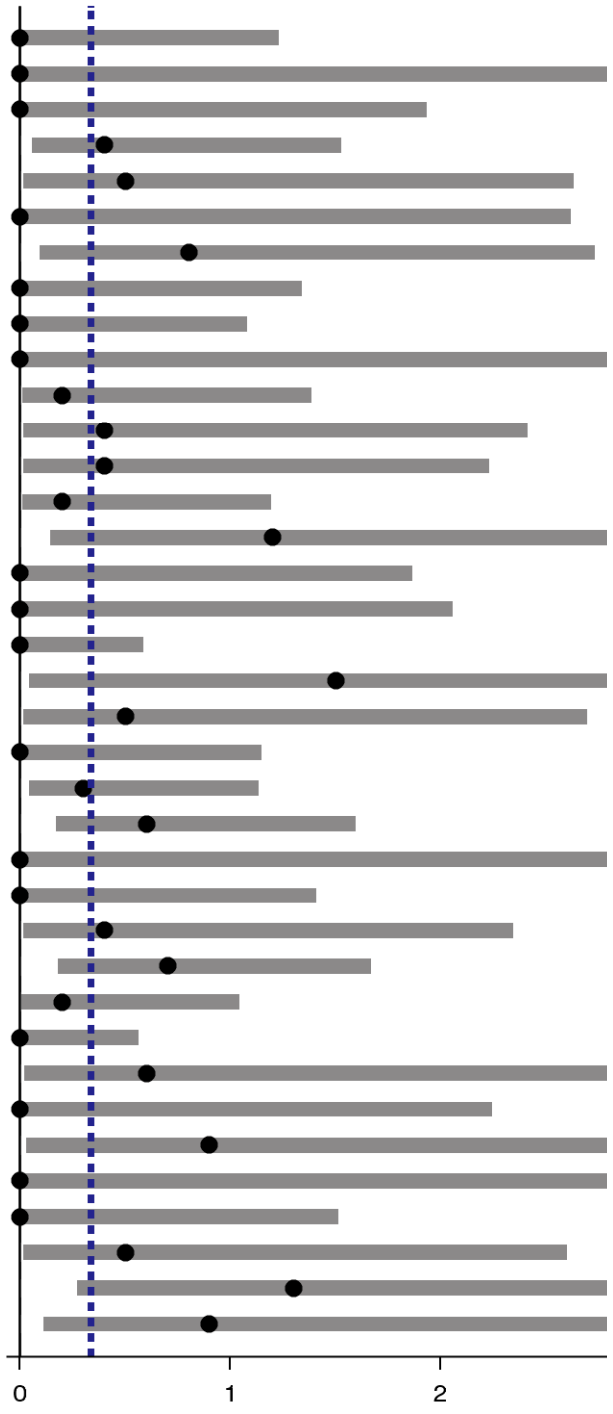
- Obese patients (with BMI at least 30) were 1.5 times more likely to develop an SSI than patients with BMI less than 30.
- Patients with diabetes were 2.9 times more likely to develop an SSI than patients without diabetes.

Hospital-Specific CABG Donor Site SSI rates

Hospital-specific CABG donor site SSI rates are provided in Figure 6. In 2016, no hospitals were flagged for having significantly high or low rates.

Figure 6. Coronary artery bypass graft donor site infection rates, New York 2016 (page 1 of 1)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Albany Med Ctr	0	0	0	264	0.0	0.0
Arnot Ogden Med Ctr	0	0	0	56	0.0	0.0
Bellevue Hospital	0	0	0	161	0.0	0.0
Buffalo General	2	0	0	444	0.5	0.4
Ellis Hospital	1	0	0	215	0.5	0.5
Good Samar. Suffern	0	0	0	103	0.0	0.0
Good Samar. W Islip	2	0	0	246	0.8	0.8
Lenox Hill Hospital	0	0	0	234	0.0	0.0
Maimonides Med Ctr	0	0	0	249	0.0	0.0
Mary Imogene Bassett	0	0	0	89	0.0	0.0
Mercy Hosp Buffalo	1	0	0	374	0.3	0.2
Montefiore-Einstein	1	0	0	209	0.5	0.4
Montefiore-Moses	1	0	0	222	0.5	0.4
Mt Sinai	1	0	0	441	0.2	0.2
Mt Sinai Beth Israel	2	0	0	172	1.2	1.2
Mt Sinai St Lukes	0	0	0	156	0.0	0.0
NYP-Brklyn Methodist	0	0	0	163	0.0	0.0
NYP-Columbia	0	0	0	538	0.0	0.0
NYP-Queens	1	0	0	75	1.3	1.5
NYP-Weill Cornell	1	0	0	233	0.4	0.5
NYU Tisch	0	0	0	255	0.0	0.0
North Shore	2	0	0	638	0.3	0.3
Rochester General	4	0	0	595	0.7	0.6
SUNY Downstate MedCr	0	0	0	47	0.0	0.0
Southside	0	0	0	215	0.0	0.0
St Elizabeth Medical	1	0	0	249	0.4	0.4
St Francis- Roslyn	4	0	0	648	0.6	0.7
St Josephs- Syracuse	1	0	0	536	0.2	0.2
St Peters Hospital	0	0	0	516	0.0	0.0
Staten Island U N	1	0	0	167	0.6	0.6
Strong Memorial	0	0	0	239	0.0	0.0
UHS Wilson	1	0	0	117	0.9	0.9
Univ Hosp SUNY Upst	0	0	0	27	0.0	0.0
Univ Hosp StonyBrook	0	0	0	191	0.0	0.0
Vassar Brothers	1	0	0	218	0.5	0.5
Westchester Medical	3	0	0	242	1.2	1.3
Winthrop University	2	0	0	247	0.8	0.9



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. ^^Significantly higher than state average. **Significantly lower than state average. Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using obesity and diabetes. Excludes SSIs present at time of surgery (PATOS) and post discharge surveillance non–readmitted cases (PDS).

Hip Replacement/Revision Surgical Site Infections

In 2016, 157 hospitals reported a total of 279 hip replacement/revision surgical site infections out of 33,724 procedures, a rate of 0.8 infections per 100 procedures. NYSDOH excludes some of these SSIs and procedures from SSI rates before evaluating time trends and comparing hospital performance, as described below.

Of the 279 infections, one was classified as PATOS and excluded from further analysis, because PATOS infections are more difficult to prevent.

Of the remaining 278 infections, 26% were superficial, 44% were deep, and 30% were organ/space (Table 8). Most of the SSIs (81%) were detected upon readmission to the same hospital; 5% were identified during the initial hospitalization; 8% involved readmission to another hospital; and 6% were detected using PDS and not readmitted. A total of 7 (41%) of the PDS infections were superficial. Detection of SSIs in outpatient locations is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 17 PDS infections in the final SSI rate so as not to penalize facilities with the best surveillance systems.

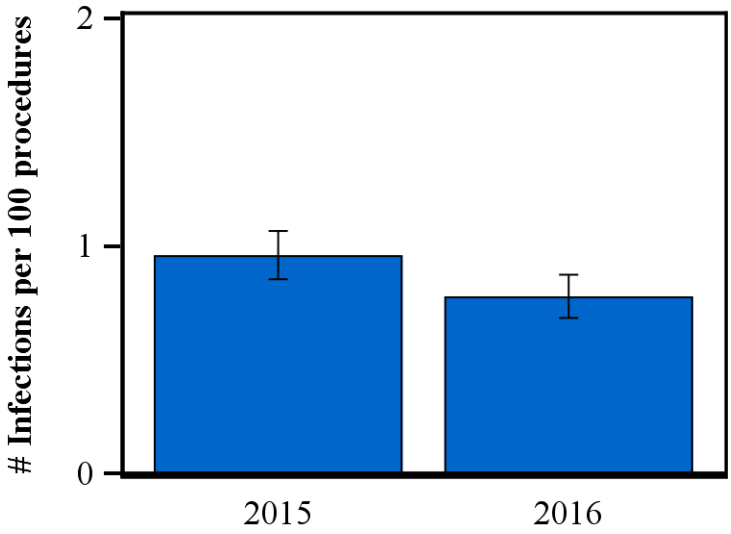
Table 8. Method of detection of hip surgical site infection by depth of infection, New York State 2016

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Post-Discharge Surveillance Not Readmitted**	**Total**
Superficial Incisional	5 (7.0%) (38.5%)	56 (78.9%) (24.8%)	3 (4.2%) (13.6%)	7 (9.9%) (41.2%)	71 (25.5%)
Deep Incisional	4 (3.3%) (30.8%)	99 (80.5%) (43.8%)	12 (9.8%) (54.5%)	8 (6.5%) (47.1%)	123 (44.2%)
Organ/Space	4 (4.8%) (30.8%)	71 (84.5) (31.4%)	7 (8.3%) (31.8%)	2 (2.4%) (11.8 %)	84 (30.2%)
Total	13 (4.7%)	226 (81.3%)	22 (7.9%)	17 (6.1%)	278

New York State data reported as of July 31, 2017. Excludes infections present at time of surgery.

Trends in hip SSI rates after deleting PATOS and PDS infections are shown in Figure 7. Between 2015 and 2016, the total number of hip surgical site infections declined 20%, from 0.96 infections per 100 procedures in 2015, to 0.77 infections per 100 procedures in 2016.

Figure 7: Trend in hip surgical site infection rates, New York State 2015-2016
Excluding infections present at time of surgery and detected in outpatient settings without readmission



Year	# Hospitals	# Infections	# Procedures	Infection Rate (95% Confidence Interval)
2015	158	318	33,293	0.96 (0.85, 1.07)
2016	157	261	33,723	0.77 (0.68, 0.87)

New York State Data reported as of July 31, 2017.
Infection rate is the number of infections divided by the number of procedures, multiplied by 100.

Microorganisms Associated with Hip SSIs

The most common microorganism associated with hip SSIs was *Staphylococcus aureus* (Table 9).

Table 9. Microorganisms identified in hip replacement surgical site infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	132	47.3
(MRSA)	(64)	(22.9)
Coagulase negative staphylococci	32	11.5
Enterococci	32	11.5
(VRE)	(3)	(1.1)
Escherichia coli	26	9.3
Pseudomonas spp.	23	8.2
Enterobacter spp.	18	6.5
Proteus spp.	17	6.1
Streptococci	17	6.1
Klebsiella spp.	9	3.2
Corynebacteria	7	2.5
Acinetobacter spp.	3	1.1
Other	21	7.5

New York State data reported as of July 31, 2017. Out of 279 infections. No microorganisms identified for 18 (6%) infections. VRE: vancomycin-resistant enterococci; MRSA: methicillin-resistant *Staphylococcus aureus;* spp: multiple species.

Risk Adjustment for Hip Surgical Site Infections

Certain patient and procedure-specific factors increased the risk of developing an SSI following hip surgery. In 2016, after excluding SSIs identified using PDS that did not result in hospitalization, and SSIs that were PATOS, the following risk factors were associated with SSIs. These variables were used to risk-adjust hospital-specific rates.

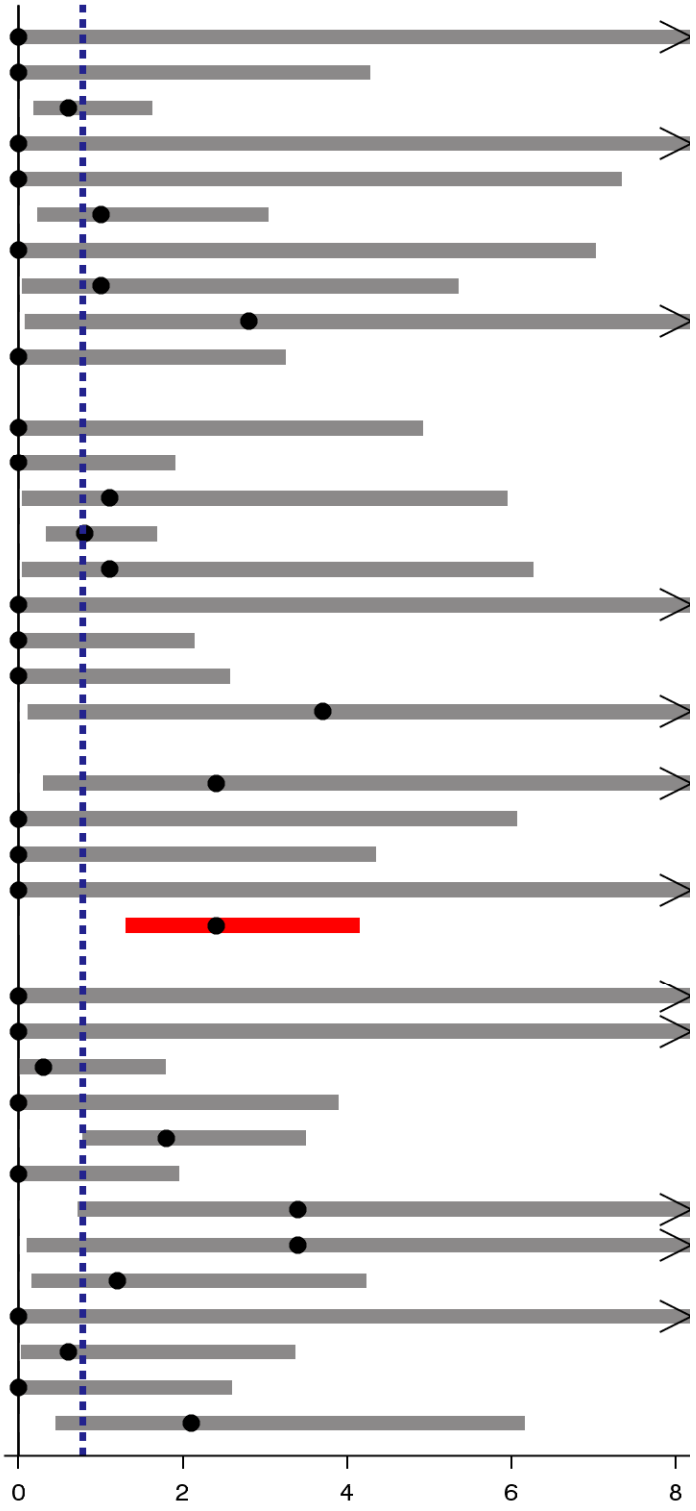
- Patients with severe systemic disease (ASA score of 3, 4, or 5) were 1.7 times more likely to develop an SSI than healthier patients (ASA score of 1 or 2).
- The risk of SSI varied by type of hip procedure. Compared to total and resurfacing primary hip replacement procedures, partial primary procedures were 1.9 times more likely to result in an SSI, revisions with no prior infection at the joint were 3.6 times more likely to result in an SSI, and revisions with prior infection at the joint were 3.8 times more likely to result in an SSI.
- Procedures with duration longer than the 75th percentile (by type of hip procedure) were 1.6 times more likely to result in an SSI than procedures of shorter duration.
- Very obese patients (with BMI greater than or equal to 40) were 4.4 times more likely to develop an SSI, and obese patients (with BMI between 30 and 39) were 1.9 times more likely to develop an SSI than patients with BMI less than 30.
- Patients with diabetes were 1.4 times more likely to develop an SSI than patients without diabetes.

Hospital-Specific Hip SSI Rates

Hospital-specific hip SSI rates are provided in Figure 8. In 2016, five hospitals (3%) had hip SSI rates that were statistically higher than the state average. None were also high in the previous two years. All five hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Two hospitals (1%) had an SSI rate significantly lower than the state average; Hospital for Special Surgery was significantly lower in each of the past nine years (2008-2016).

Figure 8. Hip replacement surgical site infection rates, New York 2016 (page 1 of 4)

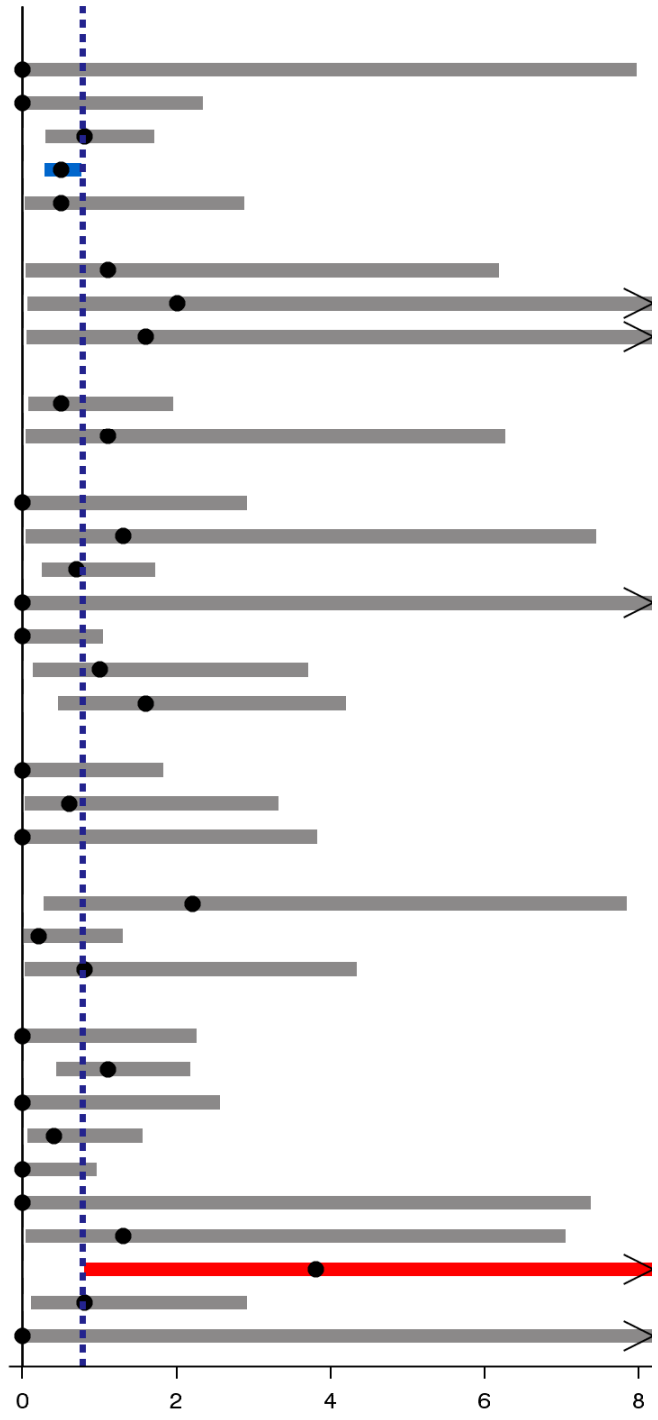
Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
AO Fox Memorial	0	0	0	24	0.0	0.0
Adirondack Medical	0	0	0	65	0.0	0.0
Albany Med Ctr	4	0	0	704	0.6	0.6
Albany Memorial	0	0	0	20	0.0	0.0
Alice Hyde Med Ctr	0	0	0	34	0.0	0.0
Arnot Ogden Med Ctr	3	0	0	249	1.2	1.0
Auburn Memorial	0	0	0	38	0.0	0.0
Bellevue Hospital	1	0	1	86	1.2	1.0
Bon Secours	1	0	0	29	3.4	2.8
Bronx-Lebanon	0	0	0	68	0.0	0.0
Brookdale Hospital	NA	NA	NA	NA	NA	NA
Brookhaven Memorial	0	0	0	58	0.0	0.0
Brooklyn Hosp Ctr	0	0	0	110	0.0	0.0
Brooks Memorial	1	0	0	123	0.8	1.1
Buffalo General	7	0	0	850	0.8	0.8
Canton-Potsdam	1	0	0	70	1.4	1.1
Catskill Regional	0	0	0	23	0.0	0.0
Cayuga Medical Ctr	0	0	0	136	0.0	0.0
Champlain Valley	0	0	0	114	0.0	0.0
Claxton-Hepburn	1	0	0	30	3.3	3.7
Clifton Springs	NA	NA	NA	NA	NA	NA
Columbia Memorial	2	0	0	86	2.3	2.4
Coney Island Hosp	0	0	0	51	0.0	0.0
Corning Hospital	0	0	0	74	0.0	0.0
Cortland Reg Med	0	0	0	23	0.0	0.0
Crouse Hospital^^	13	0	0	658	2.0	2.4
DeGraff Memorial	NA	NA	NA	NA	NA	NA
East. Niag. Lockport	0	0	0	20	0.0	0.0
Eastern Long Island	0	0	0	22	0.0	0.0
Ellis Hospital	1	0	0	248	0.4	0.3
Elmhurst Hospital	0	0	0	58	0.0	0.0
Erie County Med Ctr	8	0	0	458	1.7	1.8
FF Thompson	0	0	0	156	0.0	0.0
Faxton St. Lukes	3	0	0	70	4.3	3.4
Flushing Hospital	1	0	0	42	2.4	3.4
Geneva General	2	0	0	152	1.3	1.2
Glen Cove Hospital	0	0	0	25	0.0	0.0
Glens Falls Hospital	1	0	0	166	0.6	0.6
Good Samar. Suffern	0	0	0	148	0.0	0.0
Good Samar. W Islip	3	0	0	117	2.6	2.1



Data reported as of July 31, 2017. ¦State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, procedure type, duration, obesity, and diabetes. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Figure 8. Hip replacement surgical site infection rates, New York 2016 (page 2 of 4)

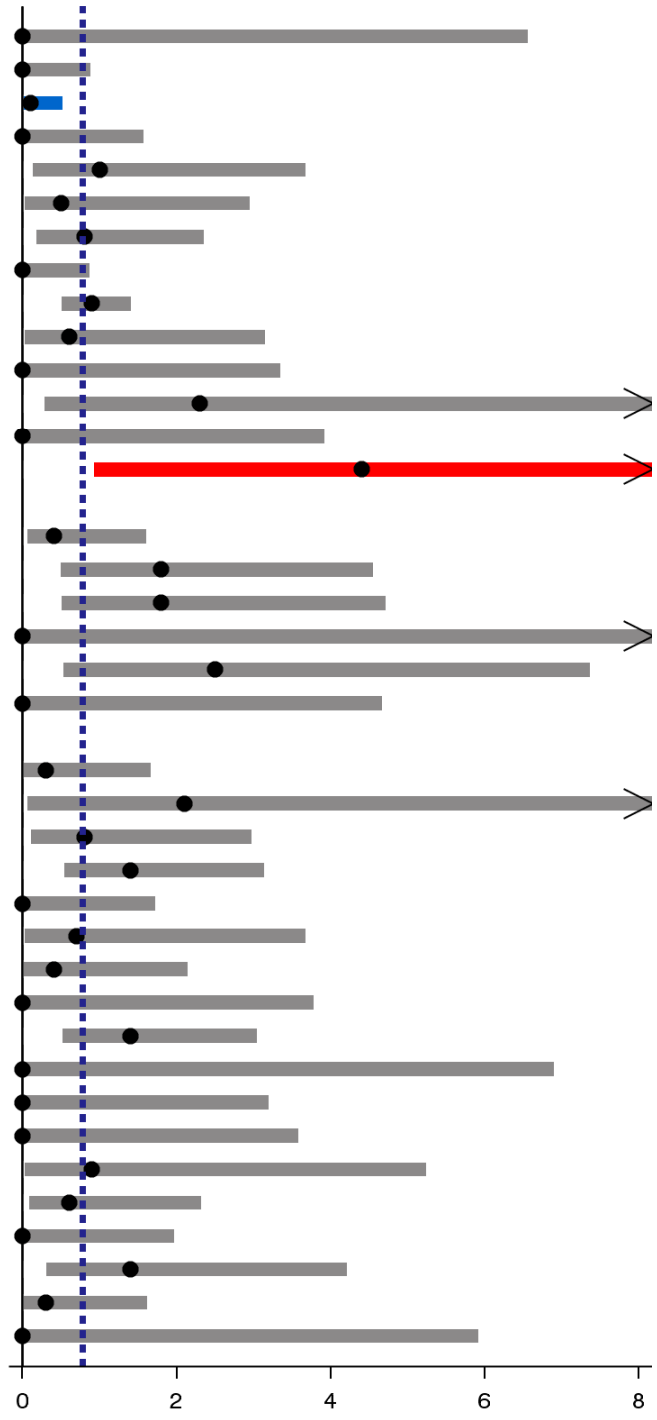
Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Harlem Hospital	NA	NA	NA	NA	NA	NA
HealthAlli Broadway	0	0	0	32	0.0	0.0
HealthAlli MarysAve	0	0	0	116	0.0	0.0
Highland Hospital	6	0	0	906	0.7	0.8
Hosp for Spec Surg**	17	0	1	5129	0.3	0.5
Huntington Hospital	1	0	0	227	0.4	0.5
Interfaith Med Ctr	NA	NA	NA	NA	NA	NA
JT Mather Hospital	1	0	0	100	1.0	1.1
Jacobi Med Ctr	1	0	0	31	3.2	2.0
Jamaica Hospital	1	0	2	47	2.1	1.6
Jones Memorial	NA	NA	NA	NA	NA	NA
Kenmore Mercy	2	0	0	462	0.4	0.5
Kings County Hosp	1	0	0	58	1.7	1.1
Kingsbrook Jewish MC	NA	NA	NA	NA	NA	NA
LIJ at Forest Hills	0	0	0	101	0.0	0.0
LIJ at Valley Stream	1	0	0	78	1.3	1.3
Lenox Hill Hospital	5	0	0	716	0.7	0.7
Lincoln Med Ctr	0	0	0	26	0.0	0.0
Long Isl Jewish(LIJ)	0	0	0	322	0.0	0.0
Maimonides Med Ctr	2	0	0	155	1.3	1.0
Mary Imogene Bassett	4	0	2	229	1.7	1.6
Massena Memorial	NA	NA	NA	NA	NA	NA
Memor SloanKettering	0	0	0	109	0.0	0.0
Mercy Hosp Buffalo	1	0	0	149	0.7	0.6
Mercy Med Ctr	0	0	0	71	0.0	0.0
Metropolitan Hosp	NA	NA	NA	NA	NA	NA
MidHudson Reg of WMC	2	0	0	92	2.2	2.2
Millard Fill. Suburb	1	0	0	517	0.2	0.2
Montefiore-Moses	1	0	0	73	1.4	0.8
Montefiore-Mt Vernon	NA	NA	NA	NA	NA	NA
Montefiore-NewRochl	0	0	0	150	0.0	0.0
Montefiore-Wakefield	7	0	0	517	1.4	1.1
Mount St. Marys	0	0	0	84	0.0	0.0
Mt Sinai	2	0	0	335	0.6	0.4
Mt Sinai Beth Israel	0	0	0	325	0.0	0.0
Mt Sinai Brooklyn	0	0	0	44	0.0	0.0
Mt Sinai Queens	1	0	0	78	1.3	1.3
Mt Sinai St Lukes^^	3	0	0	70	4.3	3.8
Mt Sinai West	2	0	0	257	0.8	0.8
NY Community Hosp	0	0	0	21	0.0	0.0



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, procedure type, duration, obesity, and diabetes. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Figure 8. Hip replacement surgical site infection rates, New York 2016 (page 3 of 4)

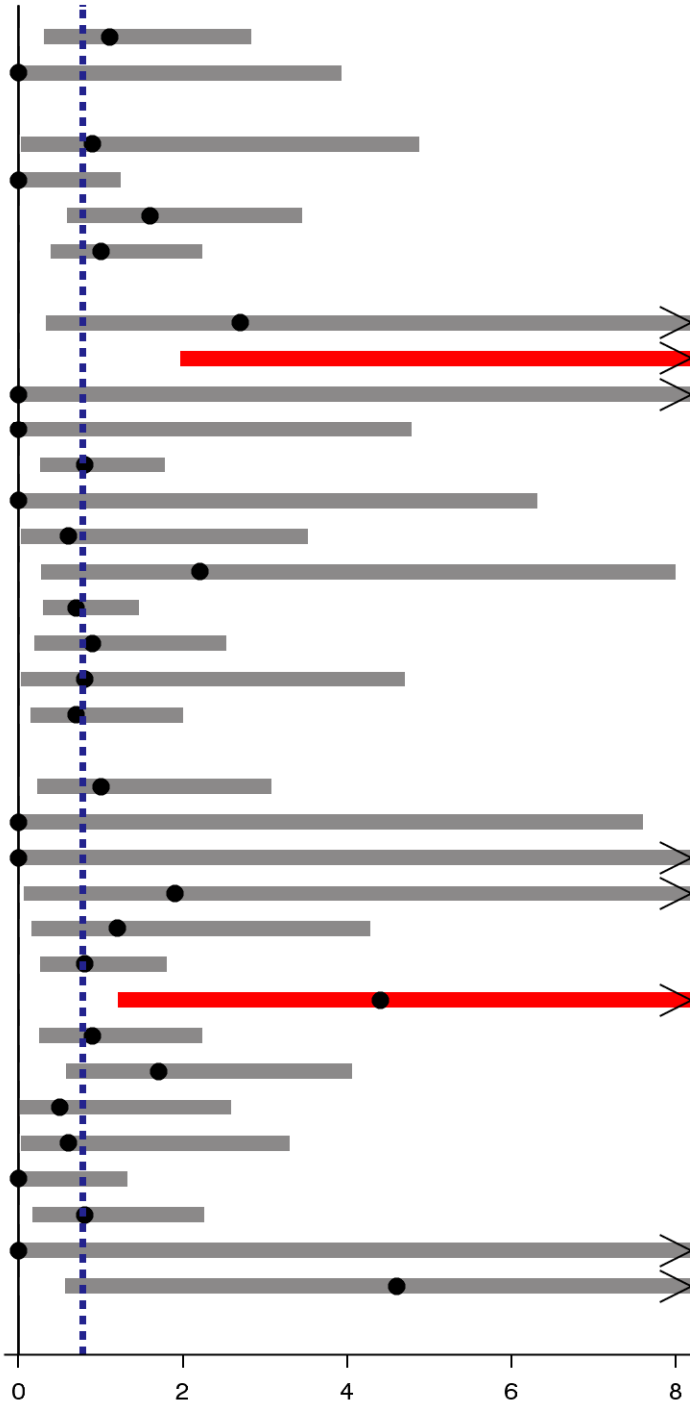
Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
NYP-Allen	0	0	0	20	0.0	0.0
NYP-Brklyn Methodist	0	0	1	262	0.0	0.0
NYP-Columbia**	1	0	3	443	0.2	0.1
NYP-Hudson Valley	0	0	0	166	0.0	0.0
NYP-Lawrence	2	0	0	117	1.7	1.0
NYP-Lower Manhattan	1	0	0	68	1.5	0.5
NYP-Queens	3	0	0	312	1.0	0.8
NYP-Weill Cornell	0	0	0	141	0.0	0.0
NYU Joint Diseases	16	0	0	1781	0.9	0.9
NYU Lutheran	1	0	0	171	0.6	0.6
NYU Tisch	0	0	0	65	0.0	0.0
Nassau University	2	0	0	63	3.2	2.3
Nathan Littauer	0	0	0	56	0.0	0.0
Newark Wayne^^	3	0	0	75	4.0	4.4
Niagara Falls	NA	NA	NA	NA	NA	NA
North Shore	2	0	0	469	0.4	0.4
Northern Dutchess	4	0	0	276	1.4	1.8
Northern Westchester	4	0	0	288	1.4	1.8
Noyes Memorial	0	0	0	36	0.0	0.0
Nyack Hospital	3	0	0	134	2.2	2.5
Olean General	0	0	0	59	0.0	0.0
Oneida Healthcare	NA	NA	NA	NA	NA	NA
OrangeReg Goshen-Mid	1	0	0	280	0.4	0.3
Oswego Hospital	1	0	1	26	3.8	2.1
Our Lady of Lourdes	2	0	1	254	0.8	0.8
Peconic Bay Medical	6	0	0	391	1.5	1.4
Phelps Memorial	0	0	0	249	0.0	0.0
Plainview Hospital	1	0	0	139	0.7	0.7
Putnam Hospital	1	0	0	328	0.3	0.4
Richmond Univ MC	0	0	0	39	0.0	0.0
Rochester General	6	0	0	413	1.5	1.4
Rome Memorial	0	0	0	30	0.0	0.0
SUNY Downstate MedCr	0	0	0	70	0.0	0.0
Samaritan- Troy	0	0	1	96	0.0	0.0
Samaritan- Watertown	1	0	0	123	0.8	0.9
Saratoga Hospital	2	0	1	385	0.5	0.6
Sisters of Charity	0	0	0	148	0.0	0.0
Sisters- St Joseph	3	0	0	203	1.5	1.4
South Nassau Comm.	1	0	0	431	0.2	0.3
Southampton	0	0	0	29	0.0	0.0



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, procedure type, duration, obesity, and diabetes. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Figure 8. Hip replacement surgical site infection rates, New York 2016 (page 4 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
Southside	4	0	0	316	1.3	1.1
St Anthony	0	0	0	95	0.0	0.0
St Barnabas	NA	NA	NA	NA	NA	NA
St Catherine Siena	1	0	0	86	1.2	0.9
St Charles Hospital	0	0	0	228	0.0	0.0
St Elizabeth Medical	6	0	0	370	1.6	1.6
St Francis- Roslyn	6	1	0	538	1.1	1.0
St James Mercy	NA	NA	NA	NA	NA	NA
St Johns Dobbs Ferry	2	0	0	85	2.4	2.7
St Johns Episcopal^^	3	0	0	25	12.0	9.5
St Johns Riverside	0	0	0	30	0.0	0.0
St Joseph -Bethpage	0	0	0	71	0.0	0.0
St Josephs- Syracuse	5	0	0	864	0.6	0.8
St Josephs- Yonkers	0	0	0	31	0.0	0.0
St Lukes Cornwall	1	0	0	148	0.7	0.6
St Marys Amsterdam	2	0	0	102	2.0	2.2
St Peters Hospital	7	0	0	1050	0.7	0.7
Staten Island U N	3	0	0	258	1.2	0.9
Strong Memorial	1	0	0	95	1.1	0.8
Syosset Hospital	3	0	1	488	0.6	0.7
TLC Lake Shore	NA	NA	NA	NA	NA	NA
UHS Binghamton	3	0	0	286	1.0	1.0
UHS Chenango Memor	0	0	0	45	0.0	0.0
UHS Wilson	0	0	0	37	0.0	0.0
UPMC Chautauqua WCA	1	0	0	34	2.9	1.9
United Memorial	2	0	0	129	1.6	1.2
Unity Hosp Rochester	5	0	0	668	0.7	0.8
Univ Hosp SUNY Upst^^	4	0	0	74	5.4	4.4
Univ Hosp StonyBrook	4	0	0	448	0.9	0.9
Upst. Community Gen	5	0	0	305	1.6	1.7
Vassar Brothers	1	0	0	235	0.4	0.5
Westchester Medical	1	0	0	96	1.0	0.6
White Plains Hosp	0	0	0	197	0.0	0.0
Winthrop University	3	0	0	355	0.8	0.8
Woodhull Med Ctr	0	0	0	30	0.0	0.0
Wyckoff Heights	2	0	0	32	6.3	4.6
Wyoming County Comm.	NA	NA	NA	NA	NA	NA



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, procedure type, duration, obesity, and diabetes. Excludes SSIs present at time of surgery and non-readmitted cases identified using post discharge surveillance.

Abdominal Hysterectomy Surgical Site Infections

In 2016, 148 hospitals reported a total of 302 hysterectomy surgical site infections out of 18,450 procedures, a rate of 1.6 infections per 100 procedures. NYSDOH excludes some of these SSIs and procedures from SSI rates before evaluating time trends and comparing hospital performance, as described below.

Of the 302 infections, two were classified as PATOS. PATOS SSIs/procedures were excluded from the final SSI rate because these infections are more difficult to prevent. Of the remaining 300 infections, 50% were superficial, 12% were deep, and 39% were organ/space (Table 10). Most of the SSIs (54%) were detected upon readmission to the same hospital; 10% were identified during the initial hospitalization; 5% involved readmission to another hospital; and 31% were detected using post-discharge surveillance and not readmitted. Most (54%) of the PDS infections were superficial. Detection of SSIs in outpatient locations is labor intensive and is not standardized across hospitals; therefore, the NYSDOH did not include these 93 PDS infections in the final SSI rate so as not to penalize facilities with the best surveillance systems.

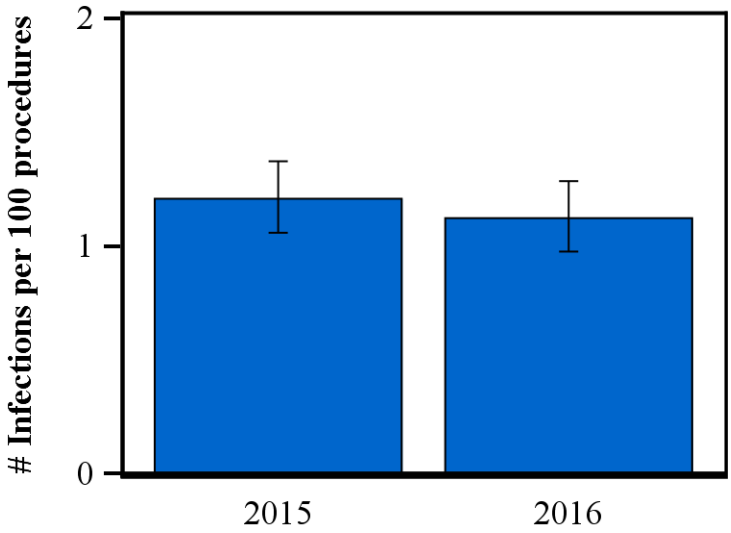
Table 10. Method of detection of hysterectomy surgical site infection by depth of infection, New York State 2016

	When Detected				
Extent (Row%) (Column%)	**Initial Hospitalization**	**Readmitted to the Same Hospital**	**Readmitted to Another Hospital**	**Post-Discharge Surveillance Not Readmitted**	**Total**
Superficial Incisional	15 (10.1%) (50.0%)	48 (32.2%) (29.6%)	5 (3.4%) (33.3%)	81 (54.4%) (87.1%)	149 (49.7%)
Deep Incisional	1 (2.9%) (3.3%)	26 (74.3%) (16.0%)	3 (8.6%) (20.0%)	5 (14.3%) (5.4%)	35 (11.7%)
Organ/Space	14 (12.1%) (46.7%)	88 (75.9) (54.3%)	7 (6.0%) (46.7%)	7 (6.0%) (7.5%)	116 (38.7%)
Total	30 (10.0%)	162 (54.0%)	15 (5.0%)	93 (31.0%)	300

New York State data reported as of July 31, 2017. Excludes infections present at time of surgery.

Trends in hysterectomy SSI rates after deleting PATOS and PDS infections are shown in Figure 9. Between 2015 and 2016, the total number of hysterectomy surgical site infections declined 7%, from 1.21 infections per 100 procedures in 2015, to 1.12 infections per 100 procedures in 2016.

Figure 9: Trend in hysterectomy surgical site infection rates, New York State 2015-2016
Excluding infections present at time of surgery and detected in outpatient settings without readmission



Year	# Hospitals	# Infections	# Procedures	Infection Rate (95% Confidence Interval)
2015	151	232	19,216	1.21 (1.06, 1.37)
2016	148	207	18,448	1.12 (0.98, 1.28)

New York State data reported as of July 31, 2017.
Infection rate is the number of infections divided by the number of procedures, multiplied by 100.

Microorganisms Associated with Hysterectomy SSIs

The most common microorganisms associated with hysterectomy SSIs were *Staphylococcus aureus,* Enterococci, *E. coli*, and coagulase negative Staphylococci (Table 11).

Table 11. Microorganisms identified in hysterectomy surgical site infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	40	13.2
(MRSA)	(18)	(6.0)
Enterococci	38	12.6
Escherichia coli	32	10.6
Coagulase negative staphylococci	29	9.6
Streptococci	27	8.9
Pseudomonas spp.	18	6.0
Bacteroides spp.	17	5.6
Klebsiella spp.	16	5.3
(CRE-Klebsiella)	(2)	(0.7)
Enterobacter spp.	13	4.3
Proteus spp.	12	4.0
Yeast	7	2.3
Corynebacteria	6	2.0
Morganella morganii	6	2.0
Prevotella spp.	6	2.0
Propionibacteria	5	1.7
Acinetobacter spp.	3	1.0
Other	32	10.6

New York State data reported as of July 31, 2017. Out of 302 infections. No microorganisms identified for 97 (32%) infections. MRSA: methicillin-resistant *Staphylococcus aureus;* CRE: carbapenem-resistant Enterobacteriaceae; spp: multiple species

Risk Adjustment for Hysterectomy Surgical Site Infections

Certain patient and procedure-specific factors increased the risk of developing an SSI following abdominal hysterectomy. In 2016, after excluding SSIs identified using PDS that did not result in hospitalization and SSIs that were PATOS, the following risk factors were associated with SSIs. These variables were used to risk-adjust hospital-specific rates.

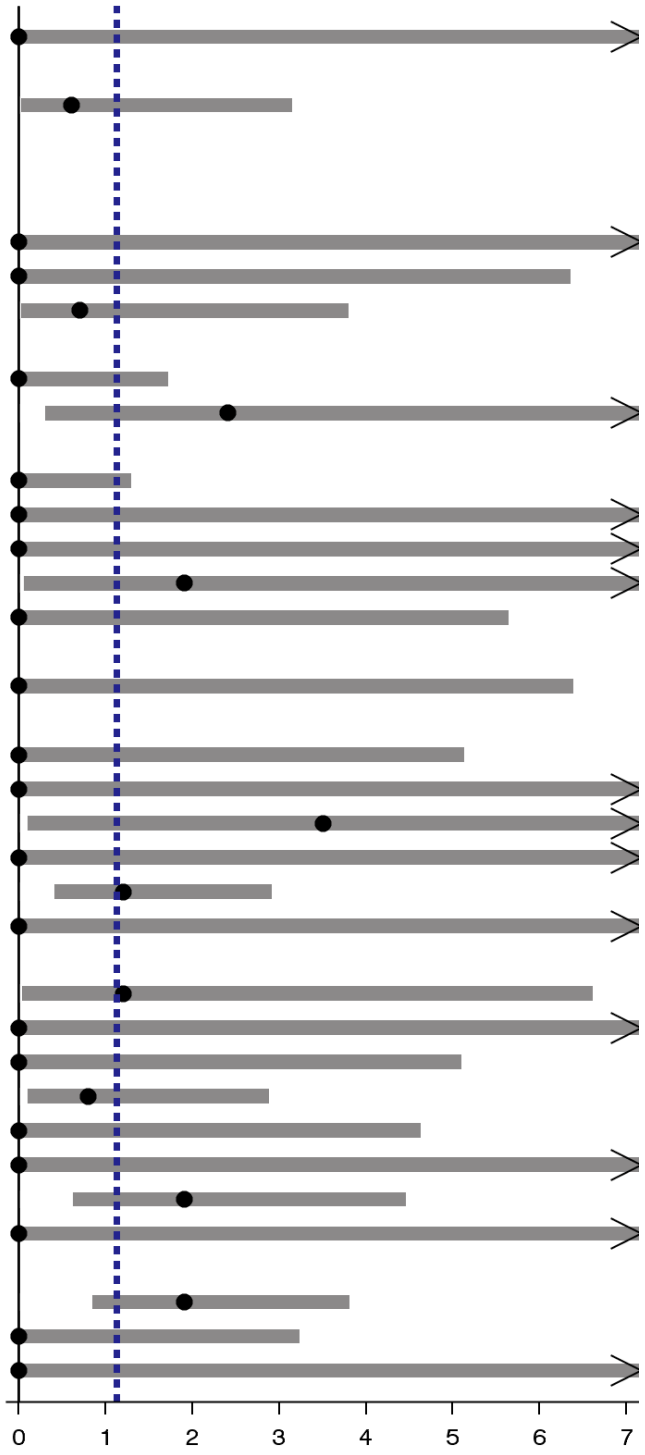
- Patients with severe systemic disease (ASA score of 3, 4, or 5) were 1.5 times more likely to develop an SSI than healthier patients (ASA score of 1 or 2).
- Procedures with duration greater than three hours were 2.7 times more likely to result in SSI than procedures less than two hours. Procedures with duration between two and three hours were 1.5 times more like to result in SSI than procedures less than two hours.
- Procedures that involved traditional surgical incisions were 2.4 times more likely to result in SSI than procedures performed entirely with a laparoscopic instrument.
- Patients with diabetes were 2.0 times more likely to develop an SSI than patients without diabetes.

Hospital-Specific Hysterectomy SSI Rates

Hospital-specific hysterectomy SSI rates are provided in Figure 10. In 2016, one hospital (1%) had a hysterectomy SSI rate that was statistically higher than the state average. The hospital will submit an improvement plan following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Three hospitals (2%) had SSI rates that were significantly lower than the state average. None were also flagged high or low in the previous year.

Figure 10. Abdominal hysterectomy surgical site infection rates, New York 2016 (page 1 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
AO Fox Memorial	0	0	0	28	0.0	0.0
Adirondack Medical	NA	NA	NA	NA	NA	NA
Albany Med Ctr	1	0	1	182	0.5	0.6
Albany Memorial	NA	NA	NA	NA	NA	NA
Alice Hyde Med Ctr	NA	NA	NA	NA	NA	NA
Arnot Ogden Med Ctr	NA	NA	NA	NA	NA	NA
Auburn Memorial	0	0	0	39	0.0	0.0
Bellevue Ellis	0	0	1	54	0.0	0.0
Bellevue Hospital	1	0	0	104	1.0	0.7
Bon Secours	NA	NA	NA	NA	NA	NA
Bronx-Lebanon	0	1	0	135	0.0	0.0
Brookdale Hospital	2	0	1	60	3.3	2.4
Brookhaven Memorial	NA	NA	NA	NA	NA	NA
Brooklyn Hosp Ctr	0	0	0	244	0.0	0.0
Brooks Memorial	0	0	0	49	0.0	0.0
Buffalo General	0	0	0	29	0.0	0.0
Canton-Potsdam	1	0	0	64	1.6	1.9
Catskill Regional	0	0	0	58	0.0	0.0
Cayuga Medical Ctr	NA	NA	NA	NA	NA	NA
Champlain Valley	0	0	0	80	0.0	0.0
Claxton-Hepburn	NA	NA	NA	NA	NA	NA
Columbia Memorial	0	0	0	92	0.0	0.0
Coney Island Hosp	0	0	0	21	0.0	0.0
Corning Hospital	1	0	0	31	3.2	3.5
Cortland Reg Med	0	0	0	39	0.0	0.0
Crouse Hospital	5	0	2	493	1.0	1.2
East. Niag. Lockport	0	0	0	22	0.0	0.0
Ellis Hospital	NA	NA	NA	NA	NA	NA
Elmhurst Hospital	1	0	0	53	1.9	1.2
FF Thompson	0	0	1	23	0.0	0.0
Faxton St. Lukes	0	0	1	58	0.0	0.0
Flushing Hospital	2	0	3	313	0.6	0.8
Glens Falls Hospital	0	0	0	107	0.0	0.0
Good Samar. Suffern	0	0	0	48	0.0	0.0
Good Samar. W Islip	5	0	1	336	1.5	1.9
Harlem Hospital	0	0	0	24	0.0	0.0
HealthAlli Broadway	NA	NA	NA	NA	NA	NA
Highland Hospital	8	0	0	633	1.3	1.9
Huntington Hospital	0	0	0	202	0.0	0.0
Interfaith Med Ctr	0	0	0	23	0.0	0.0



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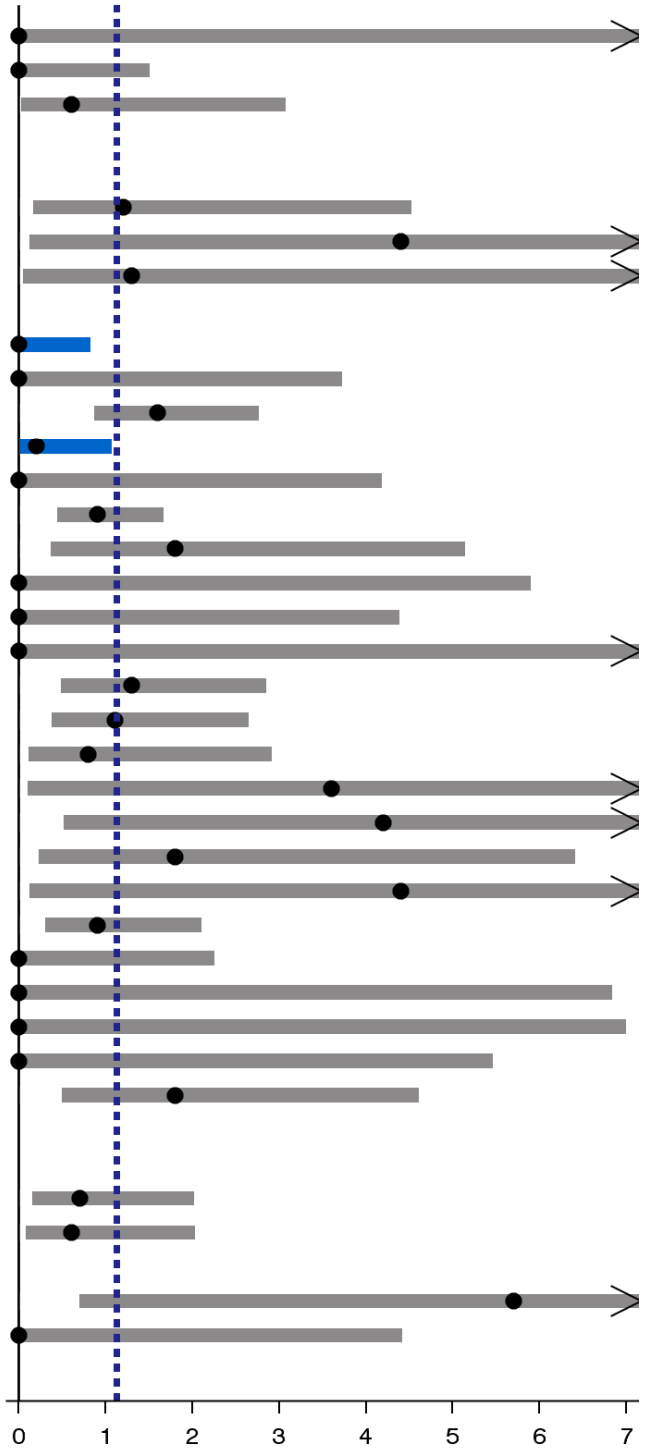
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, duration, diabetes, and endoscope. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 10. Abdominal hysterectomy surgical site infection rates, New York 2016 (page 2 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
JT Mather Hospital	0	0	0	38	0.0	0.0
Jacobi Med Ctr	0	0	1	106	0.0	0.0
Jamaica Hospital	1	0	2	128	0.8	0.6
Jones Memorial	NA	NA	NA	NA	NA	NA
Kenmore Mercy	NA	NA	NA	NA	NA	NA
Kings County Hosp	2	0	0	106	1.9	1.2
Kingsbrook Jewish MC	1	0	0	22	4.5	4.4
LIJ at Forest Hills	1	0	0	80	1.3	1.3
LIJ at Valley Stream	NA	NA	NA	NA	NA	NA
Lenox Hill Hospital**	0	0	0	300	0.0	0.0
Lincoln Med Ctr	0	0	0	50	0.0	0.0
Long Isl Jewish(LIJ)	13	0	0	620	2.1	1.6
Maimonides Med Ctr**	1	0	2	388	0.3	0.2
Mary Imogene Bassett	0	0	1	93	0.0	0.0
Memor SloanKettering	10	0	18	682	1.5	0.9
Mercy Hosp Buffalo	3	0	0	289	1.0	1.8
Mercy Med Ctr	0	0	0	58	0.0	0.0
Metropolitan Hosp	0	0	1	46	0.0	0.0
MidHudson Reg of WMC	0	0	0	77	0.0	0.0
Millard Fill. Suburb	6	0	0	585	1.0	1.3
Montefiore-Einstein	5	1	7	282	1.8	1.1
Montefiore-Moses	2	0	3	209	1.0	0.8
Montefiore-Mt Vernon	1	0	0	39	2.6	3.6
Montefiore-NewRochl	2	0	0	60	3.3	4.2
Montefiore-Wakefield	2	0	0	107	1.9	1.8
Mount St. Marys	1	0	0	34	2.9	4.4
Mt Sinai	5	0	12	503	1.0	0.9
Mt Sinai Beth Israel	0	0	0	120	0.0	0.0
Mt Sinai Brooklyn	0	0	0	54	0.0	0.0
Mt Sinai Queens	0	0	0	53	0.0	0.0
Mt Sinai St Lukes	0	0	1	39	0.0	0.0
Mt Sinai West	4	0	0	147	2.7	1.8
NY Community Hosp	NA	NA	NA	NA	NA	NA
NYP-Allen	NA	NA	NA	NA	NA	NA
NYP-Brklyn Methodist	3	0	0	303	1.0	0.7
NYP-Columbia	2	0	0	255	0.8	0.6
NYP-Hudson Valley	NA	NA	NA	NA	NA	NA
NYP-Lawrence	2	0	0	39	5.1	5.7
NYP-Lower Manhattan	0	0	0	57	0.0	0.0
NYP-Morgan Stanley	NA	NA	NA	NA	NA	NA



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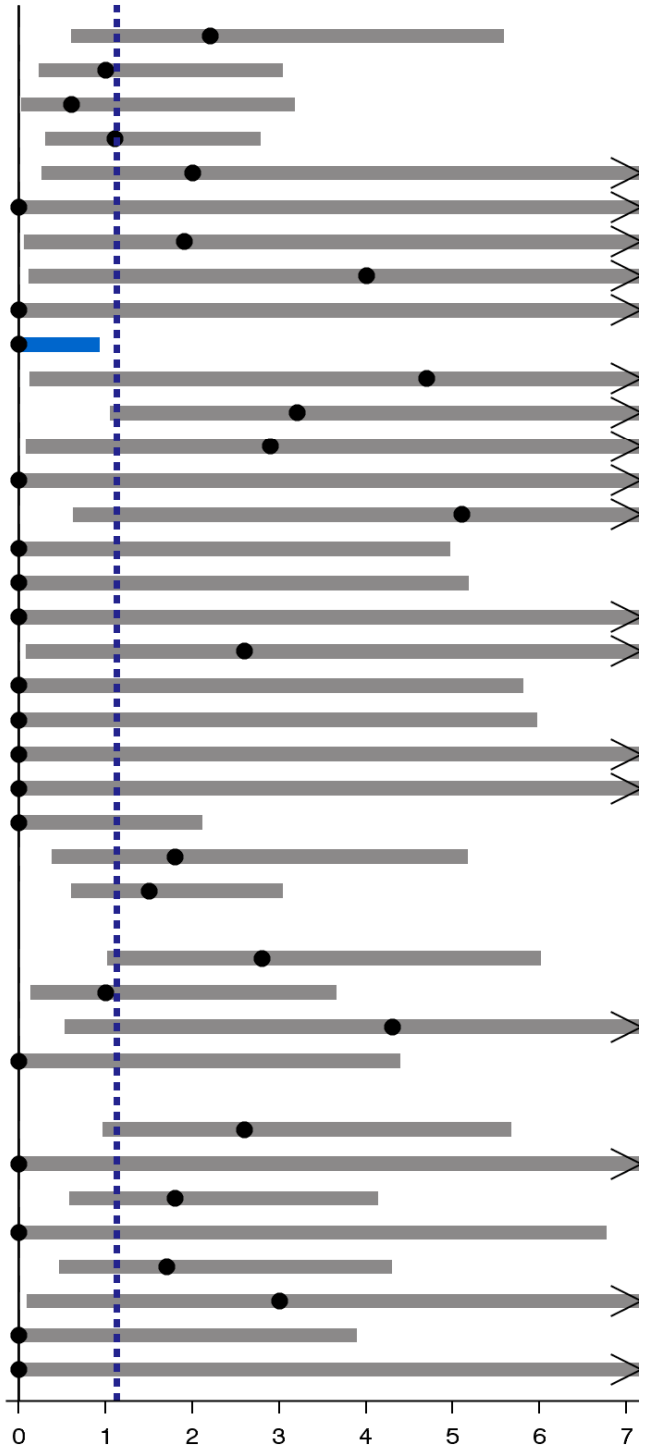
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, duration, diabetes, and endoscope. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 10. Abdominal hysterectomy surgical site infection rates, New York 2016 (page 3 of 4)

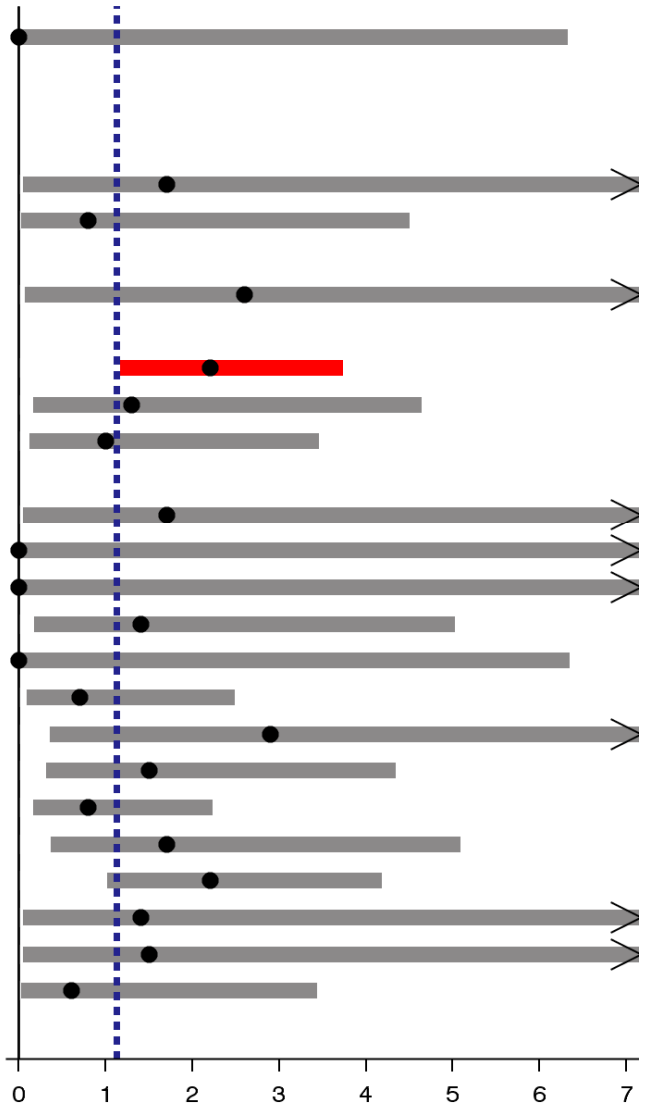
Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
NYP-Queens	4	0	0	147	2.7	2.2
NYP-Weill Cornell	3	0	0	200	1.5	1.0
NYU Lutheran	1	0	0	146	0.7	0.6
NYU Tisch	4	0	1	282	1.4	1.1
Nassau University	2	0	0	79	2.5	2.0
Nathan Littauer	0	0	0	28	0.0	0.0
Newark Wayne	1	0	1	88	1.1	1.9
Niagara Falls	1	0	1	58	1.7	4.0
North Central Bronx	0	0	1	30	0.0	0.0
North Shore**	0	0	1	295	0.0	0.0
Northern Dutchess	1	0	0	22	4.5	4.7
Northern Westchester	5	0	0	272	1.8	3.2
Noyes Memorial	1	0	0	38	2.6	2.9
Nyack Hospital	0	0	0	20	0.0	0.0
Olean General	2	0	1	49	4.1	5.1
Oneida Healthcare	0	0	1	146	0.0	0.0
OrangeReg Goshen-Mid	0	0	0	68	0.0	0.0
Oswego Hospital	0	0	2	43	0.0	0.0
Our Lady of Lourdes	1	0	1	69	1.4	2.6
Peconic Bay Medical	0	0	0	46	0.0	0.0
Phelps Memorial	0	0	0	39	0.0	0.0
Plainview Hospital	0	0	1	50	0.0	0.0
Putnam Hospital	0	0	0	34	0.0	0.0
Queens Hospital	0	0	0	95	0.0	0.0
Richmond Univ MC	3	0	0	249	1.2	1.8
Rochester General	7	0	1	555	1.3	1.5
Rome Memorial	NA	NA	NA	NA	NA	NA
Roswell Park	6	0	6	258	2.3	2.8
SUNY Downstate MedCr	2	0	0	145	1.4	1.0
Samaritan- Troy	2	0	0	72	2.8	4.3
Samaritan- Watertown	0	0	1	104	0.0	0.0
Saratoga Hospital	NA	NA	NA	NA	NA	NA
Sisters of Charity	6	0	0	246	2.4	2.6
Sisters- St Joseph	0	0	0	36	0.0	0.0
South Nassau Comm.	5	0	0	300	1.7	1.8
Southampton	0	0	0	70	0.0	0.0
Southside	4	0	0	323	1.2	1.7
St Anthony	1	0	0	54	1.9	3.0
St Barnabas	0	0	1	49	0.0	0.0
St Catherine Siena	0	0	0	46	0.0	0.0



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, duration, diabetes, and endoscope.
Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 10. Abdominal hysterectomy surgical site infection rates, New York 2016 (page 4 of 4)

Hospital	# SSI	#PATOS excl.	#PDS excl.	# Procs	Raw Rate	Adj Rate
St Charles Hospital	0	0	0	61	0.0	0.0
St Elizabeth Medical	NA	NA	NA	NA	NA	NA
St Francis- Roslyn	NA	NA	NA	NA	NA	NA
St Johns Episcopal	NA	NA	NA	NA	NA	NA
St Johns Riverside	1	0	1	74	1.4	1.7
St Josephs- Syracuse	1	0	5	221	0.5	0.8
St Josephs- Yonkers	NA	NA	NA	NA	NA	NA
St Lukes Cornwall	1	0	0	32	3.1	2.6
St Marys Amsterdam	NA	NA	NA	NA	NA	NA
St Peters Hospital^^	13	0	1	913	1.4	2.2
Staten Island U N	2	0	2	118	1.7	1.3
Strong Memorial	2	0	0	237	0.8	1.0
UHS Chenango Memor	NA	NA	NA	NA	NA	NA
UHS Wilson	1	0	1	68	1.5	1.7
UPMC Chautauqua WCA	0	0	1	28	0.0	0.0
United Memorial	0	0	0	27	0.0	0.0
Unity Hosp Rochester	2	0	0	207	1.0	1.4
Univ Hosp SUNY Upst	0	0	0	36	0.0	0.0
Univ Hosp StonyBrook	2	0	0	207	1.0	0.7
Upst. Community Gen	2	0	0	124	1.6	2.9
Vassar Brothers	3	0	0	357	0.8	1.5
Westchester Medical	3	0	1	198	1.5	0.8
White Plains Hosp	3	0	0	319	0.9	1.7
Winthrop University	9	0	0	303	3.0	2.2
Woman and Childrens	1	0	0	44	2.3	1.4
Woodhull Med Ctr	1	0	0	49	2.0	1.5
Wyckoff Heights	1	0	2	109	0.9	0.6
Wyoming County Comm.	NA	NA	NA	NA	NA	NA



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures.
SSI: surgical site infections, Procs: procedures. Rates are per 100 procedures. Adjusted using ASA score, duration, diabetes, and endoscope. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

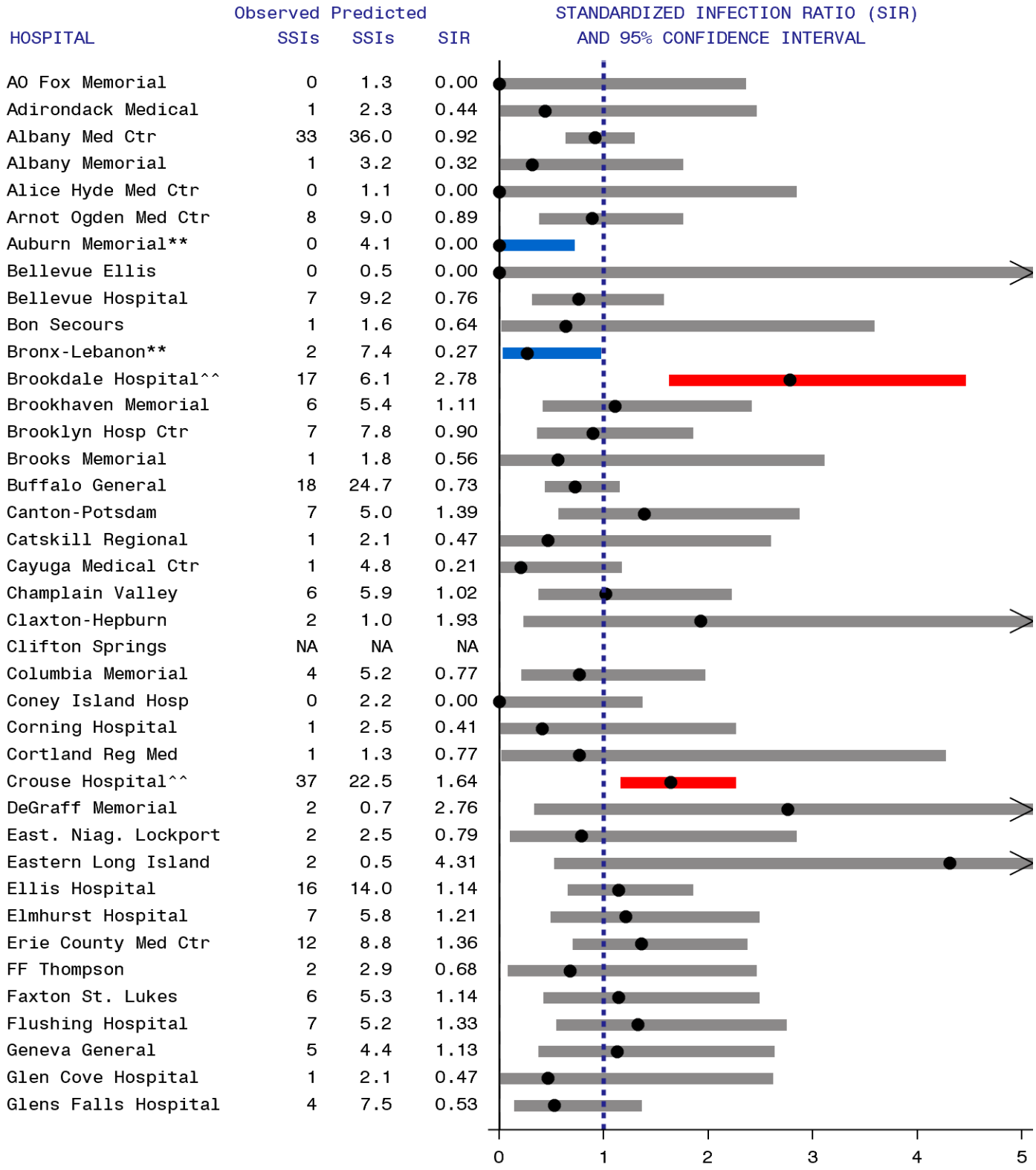
Summary across SSIs

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 patients who had reportable procedures at 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.

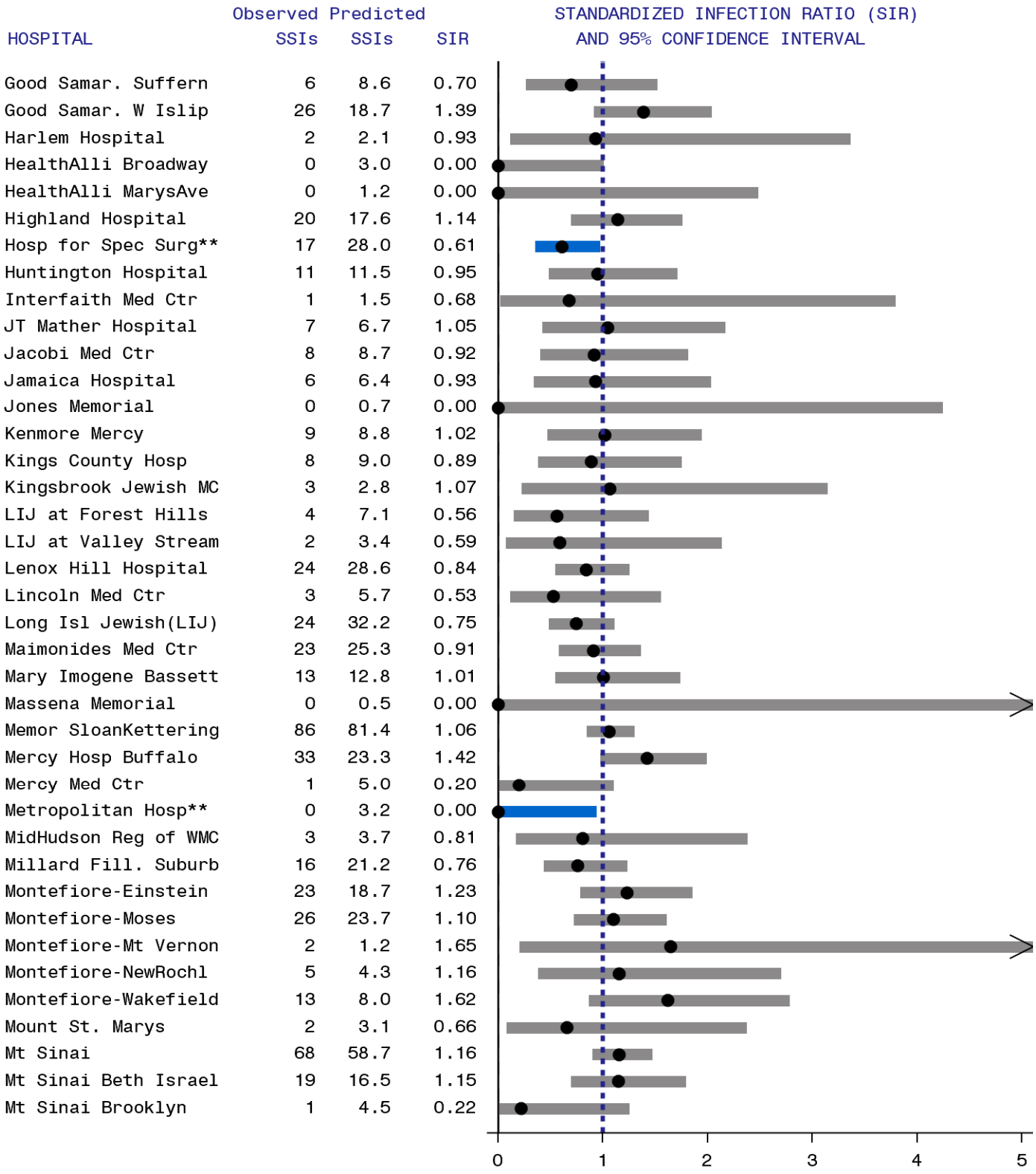
Figure 11 provides hospital-specific SSI SIRs for each hospital. The SSI SIRs combine results across the five different types of SSIs, showing the average performance of each hospital. In 2016, five hospitals (3%) had high SIR flags. No hospitals were flagged high for three consecutive years. The three hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Ten hospitals (6%) had low SIR flags. Hospital for Special Surgery was flagged low for 7 consecutive years. (This hospital only performs hip surgery so the all SSI SIR is the same as the Hip SSI SIR).

Figure 11. Surgical site infection (SSI) summary for colon, coronary artery bypass, hip, and hysterectomy procedures standardized infection ratio (SIR), New York 2016 (page 1 of 5)



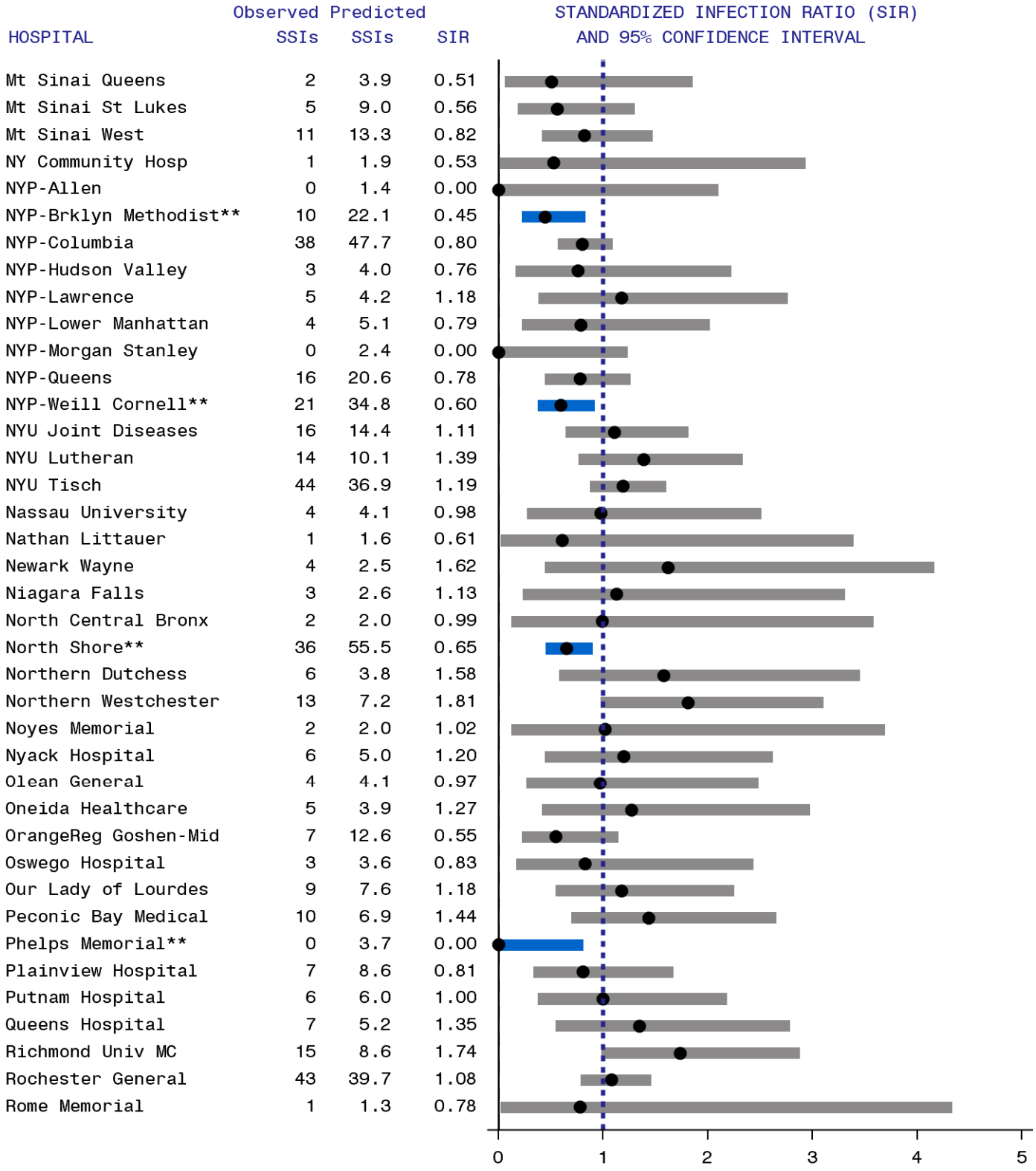
Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections. Predicted based on NYS 2016 average, after adjusting for patient risk factors. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 11. Surgical site infection (SSI) summary for colon, coronary artery bypass, hip, and hysterectomy procedures standardized infection ratio (SIR), New York 2016 (page 2 of 5)



Data reported as of July 31, 2017. ¦State Average. ●Risk-adjusted Infection rate. —^^Significantly higher than state average. —**Significantly lower than state average. —Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections. Predicted based on NYS 2016 average, after adjusting for patient risk factors. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 11. Surgical site infection (SSI) summary for colon, coronary artery bypass, hip, and hysterectomy procedures standardized infection ratio (SIR), New York 2016 (page 3 of 5)



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. ^^Significantly higher than state average. **Significantly lower than state average. Average. > Upper confidence limit exceeds graph area. NA: less than 20 procedures. SSI: surgical site infections. Predicted based on NYS 2016 average, after adjusting for patient risk factors. Excludes SSIs present at time of surgery (PATOS) and non-readmitted cases identified using post discharge surveillance (PDS).

Figure 11. Surgical site infection (SSI) summary for colon, coronary artery bypass, hip, and hysterectomy procedures standardized infection ratio (SIR), New York 2016 (page 4 of 5)

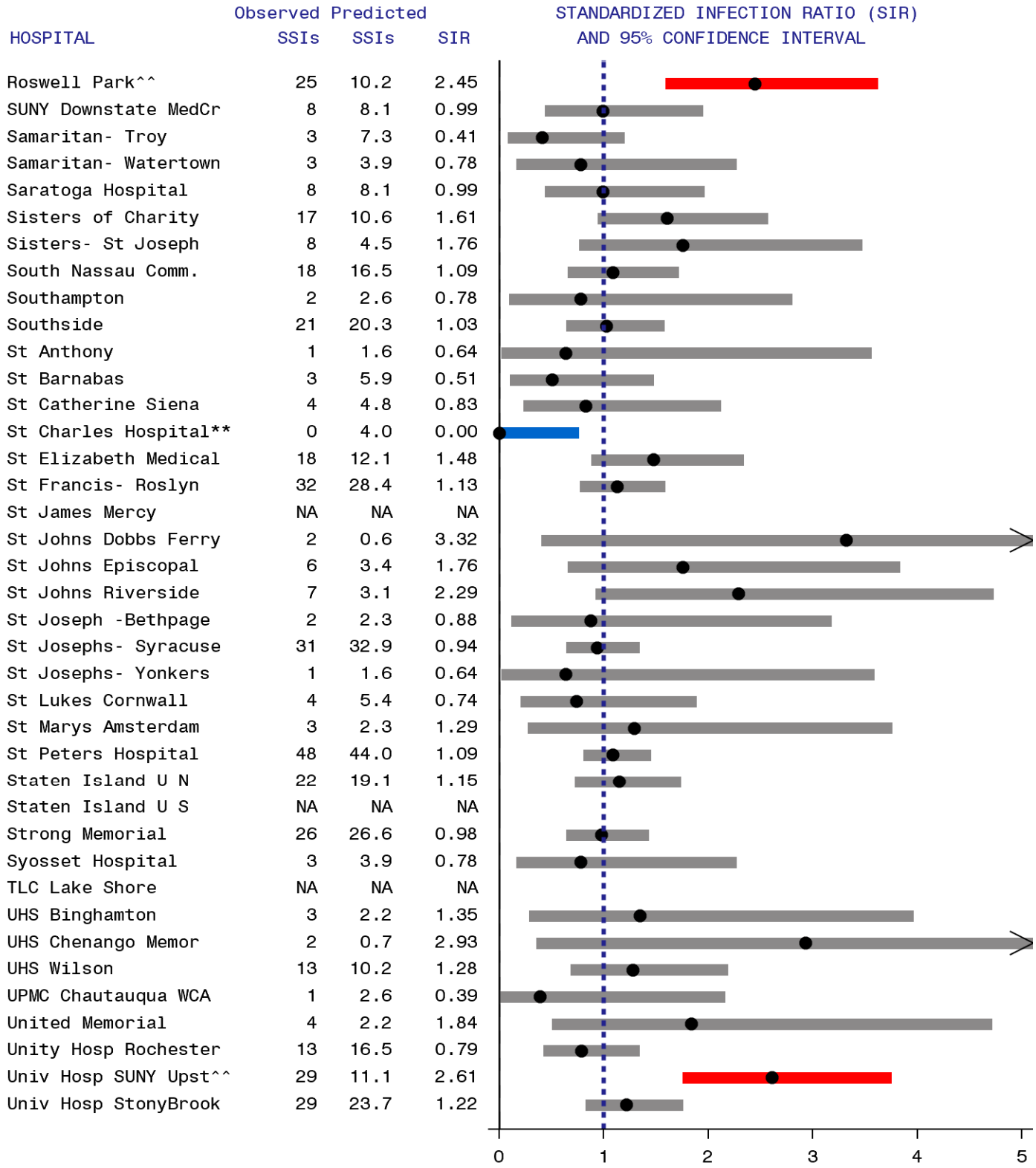


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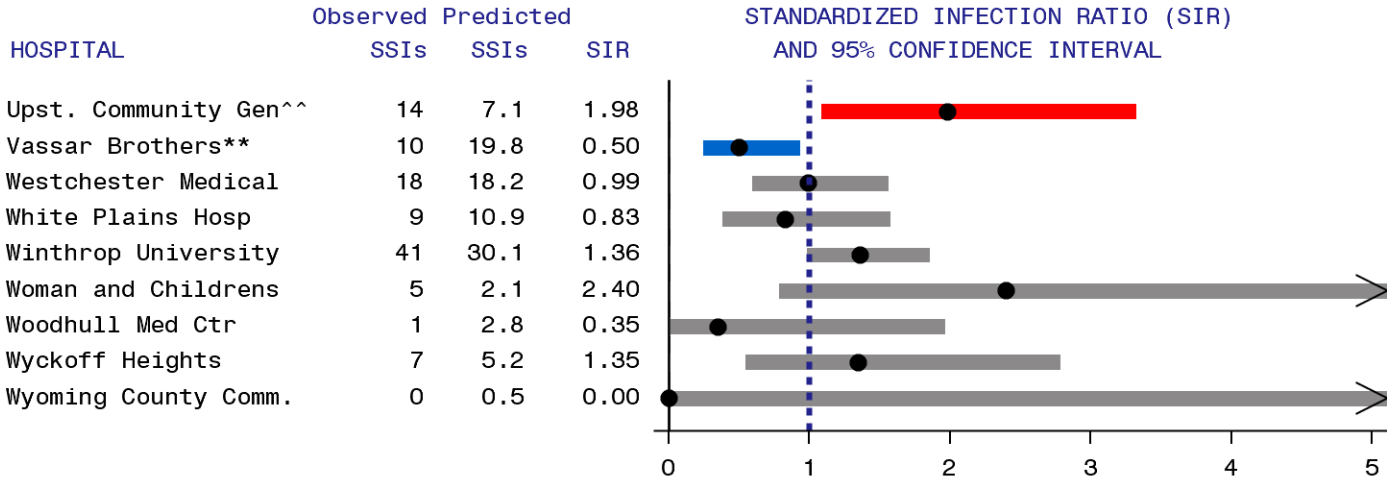
Figure 11. Surgical site infection (SSI) summary for colon, coronary artery bypass, hip, and hysterectomy procedures standardized infection ratio (SIR), New York 2016 (page 5 of 5)



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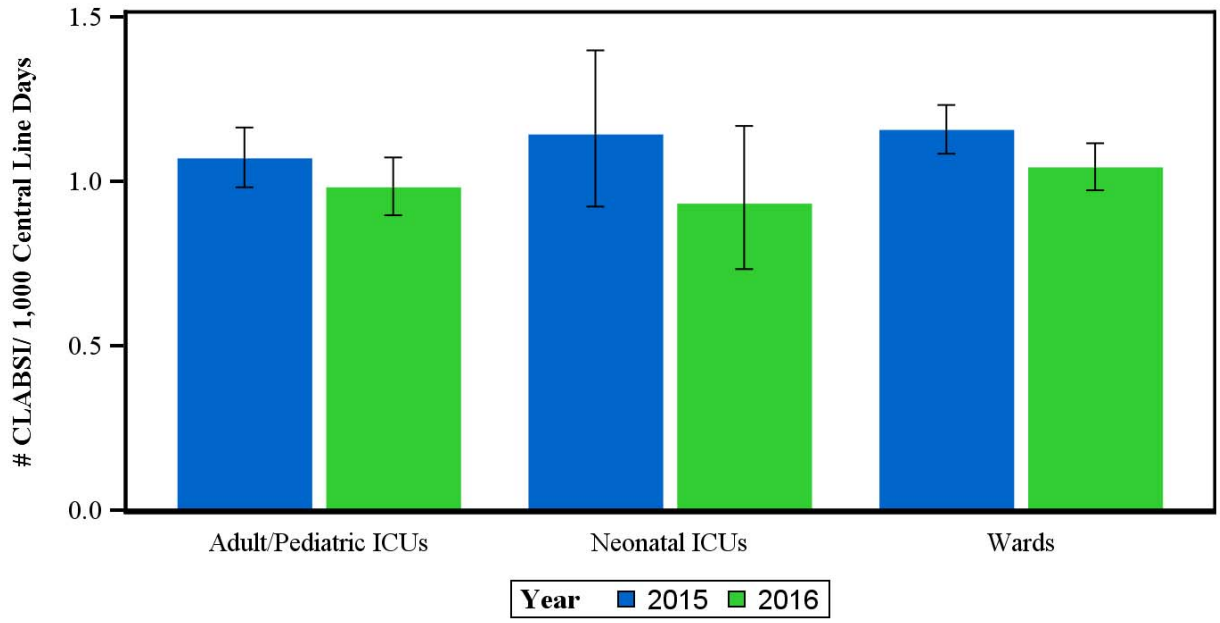
Central Line-Associated Bloodstream Infections (CLABSIs)

In 2016, a total of 1,399 CLABSIs were associated with 1,379,734 days of central line use, for an overall rate of 1.0 infections per 1,000 central line days in selected ICUs and wards. In addition, a total of 61 mucosal barrier injury (MBI)-CLABSIs were reported. An MBI-CLABSI is a type of CLABSI that can occur in cancer patients who have had stem cell transplants or other patients with certain blood disorders. In these patients, BSIs are more likely the result of organisms that enter the bloodstream from the gut, rather than organisms that enter the bloodstream from the central line. HAI CLABSI surveillance is intended to capture BSIs that are associated with the central line itself, so MBI-CLABSI were excluded from CLABSI rates. The 2015-2016 CLABSI, MBI, and device utilization data are summarized by location type in Figure 12. Between 2015 and 2016, the CLABSI rate declined 10%, from 1.12 infections per 1,000 central line days in 2015, to 1.01 infections per 1,000 central line days in 2016.

Figure 12. Central line-associated bloodstream infection (CLABSI) rates by location type, New York State 2015-2016



Year	# Hospitals	# CLABSI (excluding MBI)	# Central Line Days	CLABSI Rate	# MBI	Percent MBI	# Patient Days	Device Utilization ratio
Cardiothoracic surgical ICU								
2015	33	64	79,156	0.81	1	1.54%	112,709	70.2
2016	32	65	80,066	0.81	1	1.52%	114,011	70.2
Coronary ICU								
2015	39	48	45,986	1.04	0	0%	120,051	38.3
2016	35	64	41,843	1.53	0	0%	111,863	37.4
Medical ICU								
2015	55	153	121,410	1.26	10	6.13%	251,564	48.3
2016	61	123	133,035	0.92	10	7.52%	280,049	47.5
Medical/surgical ICU								
2015	100	130	134,390	0.97	2	1.52%	316,405	42.5
2016	95	97	119,210	0.81	2	2.02%	290,685	41.0
Neurosurgical ICU								
2015	12	16	17,781	0.90	0	0%	49,593	35.9
2016	12	14	18,588	0.75	0	0%	51,259	36.3
Pediatric ICU								
2015	27	52	33,476	1.55	1	1.89%	86,129	38.9
2016	27	46	32,733	1.41	0	0%	89,180	36.7
Surgical ICU								
2015	41	81	76,345	1.06	0	0%	156,625	48.7
2016	41	82	74,665	1.10	0	0%	160,881	46.4
-----Subtotal Adult/Pediatric ICUs-----								
2015	307	544	508,544	1.07	14	2.51%	1,093,076	46.5
2016	303	491	500,140	0.98	13	2.58%	1,097,928	45.6
Level II/III Neonatal ICU								
2015	12	8	4,580	1.75	0	0%	42,092	10.9
2016	12	8	4,584	1.75	0	0%	39,549	11.6
Level III Neonatal ICU								
2015	24	23	17,000	1.35	0	0%	112,246	15.1
2016	24	19	15,635	1.22	0	0%	106,830	14.6
Regional Perinatal Center								
2015	17	63	60,702	1.04	0	0%	233,570	26.0
2016	17	48	60,254	0.80	1	2.04%	240,354	25.1
-----Subtotal Neonatal ICUs-----								
2015	53	94	82,282	1.14	0	0%	387,908	21.2
2016	53	75	80,473	0.93	1	1.32%	386,733	20.8
Medical/surgical ward								
2015	136	356	314,875	1.13	17	4.56%	2,811,936	11.2
2016	137	310	297,743	1.04	14	4.32%	2,756,382	10.8

Year	# Hospitals	# CLABSI (excluding MBI)	# Central Line Days	CLABSI Rate	# MBI	Percent MBI	# Patient Days	Device Utilization ratio
Medical ward								
2015	87	339	294,669	1.15	19	5.31%	2,338,541	12.6
2016	85	332	292,058	1.14	17	4.87%	2,378,794	12.3
Pediatric ward								
2015	57	41	34,275	1.20	12	22.6%	267,238	12.8
2016	59	38	34,287	1.11	16	29.6%	273,002	12.6
Step down unit								
2015	56	99	67,370	1.47	1	1%	359,149	18.8
2016	55	68	65,829	1.03	0	0%	366,761	17.9
Surgical ward								
2015	71	118	113,102	1.04	1	0.84%	913,475	12.4
2016	72	85	109,204	0.78	0	0%	907,926	12.0
-----Subtotal wards/step down-----								
2015	407	953	824,291	1.16	50	4.99%	6,690,339	12.3
2016	408	833	799,121	1.04	47	5.34%	6,682,865	12.0
----------Grand total----------								
2015	**166**	**1,591**	**1,415,117**	**1.12**	**64**	**3.87%**	**8,171,323**	**17.3**
2016	**168**	**1,399**	**1,379,734**	**1.01**	**61**	**4.18%**	**8,167,526**	**16.9**

New York State data as of July 31, 2017. CLABSI rate is per 1,000 central line days. MBI = mucosal barrier injury; ICU = intensive care unit; Device utilization = 100* central line days/patient days.

New York State has two cancer hospitals with oncology ICUs: Memorial Sloan Kettering Cancer Center and Roswell Park Cancer Institute. With only two facilities in NYS, the rates could not be risk adjusted. Combined results for the two hospitals are presented in Table 12.

Table 12. Central line-associated blood stream infections (CLABSIs) in oncology intensive care units and wards, New York State cancer hospitals 2015-2016

Year	# Hospitals	# CLABSI (excluding MBI)	Central Line Days	CLABSI Rate	# MBI	Percent MBI	# Patient Days	Device Utilization ratio
2015	2	85	110,673	0.77	68	44.4%	187,803	58.9
2016	2	106	113,456	0.93	109	50.7%	192,588	58.9

New York State data as of July 31, 2017 Rates are per 1,000 central line days. Device utilization = 100* central line days/patient days.

Microorganisms Associated with CLABSIs

The distribution of microorganisms associated with CLABSIs is presented by location in Tables 13 and 14. Yeast was the most common organism in adult and pediatric ICUs and wards. Other common infecting organisms included Enterococci, *Staphylococcus aureus*, and *Klebsiella* spp. The most common organism in neonatal ICUs was *Staphylococcus aureus.*

Table 13. Microorganisms identified in central line-associated bloodstream infections, adult and pediatric intensive care units and wards, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Yeast	326	23.6
(*Candida auris*)	(1)	(0.1)
Enterococci	277	20.0
(VRE)	(137)	(9.9)
Staphylococcus aureus	200	14.5
(MRSA)	(102)	(7.4)
Klebsiella spp.	165	11.9
(CRE-*Klebsiella*)	(33)	(2.4)
Coagulase negative staphylococci	164	11.8
Escherichia coli	100	7.2
(CRE-*E. coli*)	(2)	(0.1)
Enterobacter spp.	58	4.2
(CRE-*Enterobacter*)	(9)	(0.7)
Pseudomonas spp.	56	4.0
Acinetobacter spp.	35	2.5
(MDR-*Acinetobacter*)	(22)	(1.6)
Proteus spp.	33	2.4
Serratia spp.	28	2.0
Stenotrophomonas spp.	20	1.4
Streptococci	18	1.3
Burkholderia cepacia	13	0.9
Bacteroides spp.	8	0.6
Pantoea spp.	8	0.6
Clostridium spp.	7	0.5
Morganella morganii	6	0.4
Corynebacterium spp.	5	0.4
Lactobacillus spp.	5	0.4
Providencia spp.	5	0.4
Other	46	3.3

New York State data reported as of July 31, 2017. Out of 1,384 infections (includes mucosal barrier injury infections). VRE: vancomycin-resistant enterococci; CRE: carbapenem-resistant Enterobacteriaceae; MRSA: methicillin-resistant *Staphylococcus aureus;* MDRO: multi-drug resistant; spp: multiple species.

Table 14. Microorganisms associated with central line-associated bloodstream infections, neonatal intensive care units, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Staphylococcus aureus	28	36.8
(MRSA)	(5)	(6.6)
Coagulase negative staphylococci	12	15.8
Yeast	8	10.5
Enterococci	6	7.9
Escherichia coli	6	7.9
Klebsiella spp.	6	7.9
Enterobacter spp.	5	6.6
Streptococci	5	6.6
Acinetobacter spp.	1	1.3
Other	4	5.3

New York State data reported as of July 31, 2017. Out of 76 infections (includes mucosal barrier injury infections). MRSA: methicillin-resistant *Staphylococcus aureus;* spp: multiple species.

Risk Factors for CLABSIs

Hospitals do not collect patient-specific risk factors for CLABSIs; NHSN requires reporting of only the total number of patient days and total number of central line days per month within each hospital location. CLABSI rates are stratified by type of location. For BSIs in NICUs, the data are collected by birth weight group because lower birth weight babies are more susceptible to CLABSIs than higher birth weight babies. As CLABSI rates decline, risk adjustment of NICU rates becomes more difficult. In 2016, no risk adjustment could be performed by birthweight group in Level II/III facilities because there were only 8 CLABSIs. Level III data were risk-adjusted using two birthweight groups divided at 1000 grams. RPC data were risk-adjusted by three birthweight groups, partitioned at 750 grams and 1000 grams.

Hospital-Specific, Location-Specific CLABSI Rates

Within NYS, hospital-specific CLABSI rates were compared to the state average by hospital location type. The CLABSI rates in Table 15 (ICUs) and Table 16 (wards) help hospital IPs target their CLABSI reduction efforts to specific locations. Overall, thirty-one high flags will be addressed in CLABSI improvement plans by the twenty-one affected hospitals.

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
AO Fox Memorial																	
Adirondack Medical							0/189	0.0									
Albany Med Ctr	2/2089	1.0	6/2895	2.1	2/3882	0.5	5/1350	^^ 3.7	6/6075	1.0			3/1993	1.5	RPC	1/2861	0.3
Albany Memorial							1/512	2.0									
Alice Hyde Med Ctr							0/90	0.0									
Arnot Ogden Med Ctr							4/3807	1.1							Lev 3	2/1054	2.3
Auburn Memorial							0/521	0.0									
Bellevue Hospital	2/1409	1.4	1/1002	1.0	3/1620	1.9			3/1480	2.0	1/362	2.8	1/271	3.7	RPC	3/1312	2.0
Bon Secours							1/591	1.7									
Bronx-Lebanon	2/1085	1.8			2/3275	0.6									Lev 3	1/1092	0.8
Brookdale Hospital	0/591	0.0			2/2222	0.9			0/790	0.0			NA	NA	Lev 3	5/315	^^14.4
Brookhaven Memorial	1/936	1.1			0/1121	0.0			3/1410	2.1							
Brooklyn Hosp Ctr					0/1484	0.0			0/820	0.0			0/133	0.0	Lev 3	0/1154	0.0
Brooks Memorial							0/272	0.0									
Buffalo General			1/3353	0.3	0/7223	** 0.0			2/2009	1.0	1/1894	0.5					
Canton-Potsdam							0/231	0.0									
Catskill Regional							2/513	3.9									
Cayuga Medical Ctr							0/823	0.0									
Champlain Valley							2/1962	1.0									
Claxton-Hepburn							0/394	0.0									
Clifton Springs					1/339	2.9											
Cobleskill Regional																	
Cohens Childrens													2/2712	0.7		1/4323	0.2
Columbia Memorial							0/516	0.0									
Coney Island Hosp	1/460	2.2			7/2349	^^ 3.0			4/1220	3.3							
Corning Hospital							1/409	2.4									
Cortland Reg Med					2/708	2.8											

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
Crouse Hospital							1/2161	0.5							RPC	4/4067	0.9
DeGraff Memorial							0/199	0.0									
East. Niag. Lockport							0/190	0.0									
Eastern Long Island							0/124	0.0									
Ellis Hospital							2/4975	0.4									
Elmhurst Hospital	2/516	3.9			8/1234	^^ 6.5			6/1460	^^ 4.1					Lev 2/3	1/469	2.1
Erie County Med Ctr					1/2132	0.5											
FF Thompson					0/896	0.0											
Faxton St. Lukes							1/2046	0.5									
Flushing Hospital	1/625	1.6			1/1388	0.7			0/568	0.0					Lev 3	2/1608	1.3
Geneva General							0/1036	0.0									
Glen Cove Hospital							2/603	3.3									
Glens Falls Hospital	0/295	0.0					0/1531	0.0									
Good Samar. Suffern			0/739	0.0	1/1632	0.6			0/603	0.0							
Good Samar. W Islip			0/1029	0.0	4/4138	1.0			0/1959	0.0			0/119	0.0	Lev 3	1/738	1.3
Harlem Hospital	0/238	0.0					0/2118	0.0					0/55	0.0	Lev 3	1/615	2.0
HealthAlli Broadway							0/1204	0.0									
HealthAlli MarysAve							NA	NA									
Highland Hospital							0/2492	0.0									
Hosp for Spec Surg							0/178	0.0									
Huntington Hospital	0/443	0.0					1/596	1.7									
Interfaith Med Ctr							4/1553	2.6									
Ira Davenport																	
JT Mather Hospital							3/2141	1.4									
Jacobi Med Ctr	2/485	4.1			2/1169	1.7			0/858	0.0			0/97	0.0	RPC	4/990	3.6
Jamaica Hospital					0/1528	0.0			0/677	0.0					Lev 3	0/532	0.0
Jones Memorial							0/305	0.0									

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
Kenmore Mercy							0/1224	0.0									
Kings County Hosp	2/925	2.2			1/818	1.2			1/778	1.3	0/1053	0.0	0/76	0.0	Lev 2/3	1/1100	0.9
Kingsbrook Jewish MC							5/2356	2.1									
LIJ at Forest Hills					0/2020	0.0											
LIJ at Valley Stream							0/835	0.0									
Lenox Hill Hospital	0/755	0.0	0/2136	0.0	1/1982	0.5			1/1011	1.0					Lev 2/3	1/740	1.4
Lincoln Med Ctr	0/913	0.0			0/1633	0.0			0/1160	0.0					Lev 3	0/726	0.0
Long Isl Jewish(LIJ)					3/1361	2.2	2/745	2.7	0/1072	0.0							
Maimonides Med Ctr	3/1052	2.9	3/2764	1.1	1/2230	0.4			0/1318	0.0			1/631	1.6	RPC	1/2227	0.3
Mary Imogene Bassett							4/2099	1.9									
Massena Memorial							NA	NA									
Mercy Hosp Buffalo	1/2482	0.4	0/1444	0.0			3/3331	0.9									
Mercy Med Ctr							0/1268	0.0							Lev 3	0/287	0.0
Metropolitan Hosp					2/888	2.3			0/338	0.0					Lev 2/3	1/296	3.4
MidHudson Reg of WMC							2/1565	1.3									
Millard Fill. Suburb							1/3032	0.3									
Montefiore-Einstein			3/3318	0.9	3/2853	1.1									RPC	4/2399	1.5
Montefiore-Moses	1/1790	0.6	3/3138	1.0	2/3086	0.6			2/2050	1.0			4/3317	1.2			
Montefiore-Mt Vernon							1/571	1.8									
Montefiore-NewRochl							0/1182	0.0							Lev 3	NA	NA
Montefiore-Wakefield					2/3128	0.6									Lev 2/3	1/442	2.3
Mount St. Marys					0/322	0.0											
Mt Sinai	3/2372	1.3	1/3719	0.3	5/3146	1.6			2/3472	0.6	3/1519	2.0	2/2408	0.8	RPC	2/3217	0.6
Mt Sinai Beth Israel	0/364	0.0	0/1271	0.0	2/1600	1.3			3/1018	2.9			NA	NA	Lev 2/3	NA	NA
Mt Sinai Brooklyn							1/1156	0.9									
Mt Sinai Queens							0/1205	0.0									
Mt Sinai St Lukes	1/732	1.4	0/1175	0.0	0/1365	0.0			2/664	3.0							

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
Mt Sinai West							0/934	0.0			0/236	0.0			Lev 3	0/909	0.0
NY Community Hosp							0/530	0.0									
NYP-Allen							3/1052	2.9									
NYP-Brklyn Methodist	0/693	0.0	0/1749	0.0			1/4245	0.2					0/65	0.0	Lev 3	0/1202	0.0
NYP-Columbia	14/6385	2.2	9/8616	1.0	8/6301	1.3			4/3637	1.1	6/3286	1.8					
NYP-Hudson Valley							1/689	1.5							Lev 2/3	NA	NA
NYP-Lawrence					1/1577	0.6											
NYP-Lower Manhattan							0/2276	0.0									
NYP-Morgan Stanley													4/6694	0.6	RPC	10/7774	1.5
NYP-Queens	1/917	1.1	2/1093	1.8	0/1396	0.0			1/1298	0.8					Lev 3	NA	NA
NYP-Weill Cornell	11/3529	^^ 3.1	2/4501	0.4	3/3564	0.8			4/2517	1.6	1/2033	0.5	3/2014	1.5	RPC	1/3791	0.3
NYU Joint Diseases																	
NYU Lutheran					2/1471	1.4			6/1858	^^ 3.2							
NYU Tisch			2/997	2.0	4/3101	1.3			4/3405	1.2	0/736	0.0	3/3155	1.0	RPC	3/3112	1.2
Nassau University	0/407	0.0			0/1803	0.0			0/645	0.0			2/161	^^12.4	Lev 3	1/481	2.3
Nathan Littauer							0/314	0.0									
Newark Wayne					0/1041	0.0											
Niagara Falls							2/887	2.3									
North Central Bronx							1/432	2.3									
North Shore	2/1696	1.2	1/4346	0.2	3/2848	1.1			1/2149	0.5	0/1244	0.0			RPC	2/2276	0.8
Northern Dutchess							1/337	3.0									
Northern Westchester							1/568	1.8							Lev 3	NA	NA
Noyes Memorial							0/178	0.0									
Nyack Hospital					0/962	0.0			0/557	0.0							
Olean General							3/1277	2.3									
Oneida Healthcare							0/264	0.0									
OrangeReg Goshen-Mid							6/3062	2.0									

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
Oswego Hospital					0/410	0.0											
Our Lady of Lourdes							1/785	1.3									
Peconic Bay Medical							2/730	2.7									
Phelps Memorial							0/567	0.0									
Plainview Hospital							4/1447	2.8									
Putnam Hospital							0/704	0.0									
Queens Hospital					2/1519	1.3									Lev 3	1/283	3.4
Richmond Univ MC	0/255	0.0			1/2225	0.4			4/1388	2.9			NA	NA	Lev 3	0/871	0.0
Rochester General			1/4373	0.2	7/4079	1.7			2/2722	0.7							
Rome Memorial							0/594	0.0									
SUNY Downstate MedCr	0/386	0.0	5/936	^^ 5.3			1/1408	0.7					0/213	0.0	RPC	2/665	3.2
Samaritan- Troy							0/1267	0.0									
Samaritan- Watertown							0/797	0.0									
Saratoga Hospital					0/856	0.0											
Sisters of Charity							1/1381	0.7							Lev 3	1/1141	0.9
Sisters- St Joseph							1/883	1.1									
South Nassau Comm.							3/4224	0.7									
Southampton					3/730	4.1											
Southside			1/1499	0.7			0/1628	0.0									
St Anthony							0/223	0.0									
St Barnabas					1/1026	1.0			0/567	0.0					Lev 2/3	1/263	3.8
St Catherine Siena	1/742	1.3					1/847	1.2									
St Charles Hospital					1/1707	0.6											
St Elizabeth Medical			1/1466	0.7			0/2248	0.0									
St Francis- Roslyn			1/5474	0.2	5/2785	1.8			2/2843	0.7							
St James Mercy																	
St Johns Dobbs Ferry																	

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
St Johns Episcopal	3/1065	2.8			3/1291	2.3											
St Johns Riverside							0/1061	0.0									
St Joseph -Bethpage							1/2053	0.5									
St Josephs- Elmira																	
St Josephs- Syracuse					2/3996	0.5			5/4721	1.1					Lev 2/3	0/204	0.0
St Josephs- Yonkers							0/725	0.0									
St Lukes Cornwall							0/1450	0.0									
St Marys Amsterdam							0/302	0.0									
St Peters Hospital	2/1222	1.6	1/1895	0.5	2/3045	0.7									Lev 3	0/556	0.0
Staten Island U N			1/1457	0.7			4/5863	0.7					0/103	0.0	Lev 3	0/412	0.0
Staten Island U S							0/1079	0.0									
Strong Memorial			12/2921	^^ 4.1	0/3235	0.0			2/2517	0.8			11/3556	^^ 3.1	RPC	4/7789	0.5
Sunnyview Rehab Hosp																	
Syosset Hospital							0/807	0.0									
UHS Binghamton							1/391	2.6									
UHS Chenango Memor							0/56	0.0									
UHS Wilson	4/1844	2.2	3/1660	1.8											Lev 2/3	0/169	0.0
UPMC Chautauqua WCA					1/1056	0.9											
United Memorial							0/294	0.0									
Unity Hosp Rochester							2/3503	0.6									
Univ Hosp SUNY Upst			4/1970	2.0	3/6555	0.5			10/3741	^^ 2.7	2/3311	0.6	2/1097	1.8			
Univ Hosp StonyBrook	0/791	0.0	0/1629	0.0	1/2561	0.4			0/1847	0.0			2/696	2.9	RPC	3/2848	1.1
Upst. Community Gen							0/1146	0.0									
Vassar Brothers			0/1238	0.0			4/3810	1.0							Lev 2/3	2/455	4.4
Westchester Medical	2/1354	1.5	1/4263	0.2	6/2743	2.2			0/1116	0.0	0/1936	0.0	3/1407	2.1	RPC	0/5453	** 0.0
White Plains Hosp							2/2261	0.9							Lev 3	0/222	0.0
Winthrop University					0/2657	0.0			2/4327	0.5	0/978	0.0	1/396	2.5	RPC	2/1692	1.0

Table 15. Central line-associated bloodstream infection rates by intensive care unit type, New York State 2016

	Coronary ICU		Cardiothoracic ICU		Medical ICU		Medical Surgical ICU		Surgical ICU		Neurosurgical ICU		Pediatric ICU		Neonatal ICU		
Hospital	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**CLABSI/ CLDays**	**Rate**	**NICU level**	**CLABSI/ CLDays**	**Adj rate**
State Average Rate	**1.53**		**0.81**		**0.92**		**0.81**		**1.10**		**0.75**		**1.41**		**RPC 0.80 /L3 1.22/ L23 1.75**		
Woman and Childrens													2/1266	1.6	RPC	5/4448	1.2
Woodhull Med Ctr							1/1384	0.7							Lev 2/3	0/410	0.0
Wyckoff Heights					6/1723	^^ 3.5									Lev 3	0/387	0.0
Wyoming County Comm.							NA	NA									

New York State data as of July 31, 2017. ▬ ^^Significantly higher than state average. ▬ **Significantly lower than state average. ▬ Average.
NA: Hospitals with <50 central line days. Rates are per 1000 central line days (CLDAYS). Excludes Mucosal Barrier Injury (MBI)-CLABSIs.

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
AO Fox Memorial	0/396	0.0	0/397	0.0	NA	NA				
Adirondack Medical			0/483	0.0						
Albany Med Ctr	5/14075	** 0.4	4/1129	3.5	3/6876	0.4			3/3372	0.9
Albany Memorial	1/696	1.4			1/445	2.2				
Alice Hyde Med Ctr			0/211	0.0						
Arnot Ogden Med Ctr			6/5938	1.0						
Auburn Memorial			1/879	1.1	0/239	0.0				
Bellevue Hospital	9/4725	1.9	0/993	0.0	0/694	0.0			0/249	0.0
Bon Secours			0/474	0.0						
Bronx-Lebanon	3/3511	0.9	2/2928	0.7			0/226	0.0	NA	NA
Brookdale Hospital	0/564	0.0	6/2042	^^ 2.9	3/579	^^ 5.2	0/145	0.0	0/62	0.0
Brookhaven Memorial			5/3339	1.5			3/1950	1.5		
Brooklyn Hosp Ctr	3/1932	1.6	1/1462	0.7			2/1533	1.3	0/334	0.0
Brooks Memorial			1/178	5.6						
Buffalo General	2/2825	0.7	2/3547	0.6	1/1778	0.6	8/5570	1.4		
Canton-Potsdam			0/1049	0.0						
Catskill Regional			0/637	0.0	0/204	0.0				
Cayuga Medical Ctr			1/1622	0.6						
Champlain Valley			1/4656	0.2			2/3135	0.6		
Claxton-Hepburn			1/1289	0.8						
Clifton Springs	1/867	1.2								
Cobleskill Regional	0/126	0.0								
Cohens Childrens									2/1782	1.1
Columbia Memorial	1/393	2.5	1/1677	0.6						
Coney Island Hosp	19/6542	^^ 2.9	0/195	0.0	2/1456	1.4	1/227	4.4		
Corning Hospital	0/413	0.0			2/401	5.0				

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
Cortland Reg Med			0/382	0.0						
Crouse Hospital			13/8983	1.4						
DeGraff Memorial			0/313	0.0						
East. Niag. Lockport			1/234	4.3						
Eastern Long Island			0/54	0.0						
Ellis Hospital	2/4479	0.4			1/1307	0.8	0/462	0.0		
Elmhurst Hospital	5/2404	2.1	9/2738	^^ 3.3	4/2146	1.9				
Erie County Med Ctr			9/10738	0.8						
FF Thompson	1/1371	0.7	1/547	1.8						
Faxton St. Lukes			3/1857	1.6	0/959	0.0	0/1736	0.0	NA	NA
Flushing Hospital			6/3099	1.9						
Geneva General	1/1011	1.0	0/623	0.0						
Glen Cove Hospital			1/361	2.8						
Glens Falls Hospital	2/2169	0.9	1/1181	0.8	0/916	0.0			NA	NA
Good Samar. Suffern			3/3494	0.9			2/1337	1.5		
Good Samar. W Islip	2/6249	0.3			0/2488	0.0			0/93	0.0
Harlem Hospital	3/1336	2.2			2/1039	1.9			NA	NA
HealthAlli Broadway	0/2753	** 0.0	0/718	0.0	0/482	0.0				
HealthAlli MarysAve					0/576	0.0				
Highland Hospital	2/8652	** 0.2	0/3066	** 0.0	0/1866	0.0				
Hosp for Spec Surg			0/2649	0.0			0/256	0.0	NA	NA
Huntington Hospital	1/911	1.1	1/896	1.1	0/304	0.0			NA	NA
Interfaith Med Ctr			3/1249	2.4						
Ira Davenport			0/74	0.0						

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
JT Mather Hospital			1/2274	0.4	0/1066	0.0	1/1433	0.7		
Jacobi Med Ctr	2/1269	1.6	4/1114	3.6	0/222	0.0	0/134	0.0	0/110	0.0
Jamaica Hospital			4/3808	1.1	1/709	1.4	1/912	1.1	NA	NA
Jones Memorial			0/741	0.0						
Kenmore Mercy			0/1156	0.0	0/361	0.0				
Kings County Hosp	0/2542	0.0	6/4089	1.5	2/1095	1.8			NA	NA
Kingsbrook Jewish MC	19/4441	^^ 4.3	0/689	0.0						
LIJ at Forest Hills	1/2031	0.5			0/254	0.0				
LIJ at Valley Stream			5/1960	2.6	0/163	0.0				
Lenox Hill Hospital	3/2644	1.1	0/264	0.0	0/883	0.0	1/1055	0.9		
Lincoln Med Ctr	2/1365	1.5			1/1205	0.8	6/2633	2.3		
Long Isl Jewish(LIJ)	11/8327	1.3	0/619	0.0	0/1959	0.0				
Maimonides Med Ctr	25/7687	^^ 3.3	3/887	3.4			5/1312	^^ 3.8	1/708	1.4
Mary Imogene Bassett	0/2001	0.0			0/1790	0.0	0/728	0.0		
Massena Memorial			0/86	0.0			NA	NA		
Mercy Hosp Buffalo			2/5036	0.4	2/638	3.1	0/1216	0.0		
Mercy Med Ctr	4/1422	2.8	0/354	0.0			1/626	1.6		
Metropolitan Hosp	0/429	0.0			0/229	0.0				
MidHudson Reg of WMC			0/2298	0.0			0/986	0.0		
Millard Fill. Suburb			2/6778	0.3						
Montefiore-Einstein	9/7736	1.2			6/2564	^^ 2.3				
Montefiore-Moses	15/16158	0.9	1/599	1.7	5/2938	1.7			9/6561	1.4
Montefiore-Mt Vernon			2/767	2.6			1/374	2.7		
Montefiore-NewRochl			2/695	2.9	1/256	3.9	3/693	4.3		

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
Montefiore-Wakefield	2/3119	0.6	0/310	0.0						
Mount St. Marys			2/2555	0.8						
Mt Sinai	19/9575	^^ 2.0	16/7680	^^ 2.1	2/2559	0.8	4/2983	1.3	3/1705	1.8
Mt Sinai Beth Israel	10/4351	2.3	0/698	0.0	1/1083	0.9	0/1571	0.0	0/131	0.0
Mt Sinai Brooklyn	1/688	1.5	6/2207	2.7						
Mt Sinai Queens			6/2865	2.1						
Mt Sinai St Lukes	5/2258	2.2	0/423	0.0	0/646	0.0				
Mt Sinai West			3/2365	1.3						
NY Community Hosp			0/264	0.0			1/741	1.3		
NYP-Allen	0/1590	0.0	0/371	0.0						
NYP-Brklyn Methodist	2/2693	0.7	11/3745	^^ 2.9	2/581	3.4			NA	NA
NYP-Columbia	15/11522	1.3	12/9148	1.3	2/5990	0.3				
NYP-Hudson Valley			0/1649	0.0			1/421	2.4		
NYP-Lawrence			8/3745	2.1					NA	NA
NYP-Lower Manhattan			8/1800	^^ 4.4						
NYP-Morgan Stanley									1/2722	0.4
NYP-Queens	15/6643	^^ 2.3			4/1566	2.6	0/194	0.0		
NYP-Weill Cornell	0/5342	** 0.0	16/12204	1.3	3/3532	0.8			2/1957	1.0
NYU Joint Diseases			0/76	0.0			1/194	5.2		
NYU Lutheran	5/1383	^^ 3.6	3/1320	2.3	3/1396	2.1	4/2241	1.8		
NYU Tisch	15/5414	^^ 2.8			4/6370	0.6	0/3443	** 0.0	2/2064	1.0
Nassau University	0/2052	0.0	0/136	0.0	0/68	0.0			0/54	0.0
Nathan Littauer			1/333	3.0						
Newark Wayne	1/1247	0.8								

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
Niagara Falls					1/772	1.3	2/960	2.1		
North Central Bronx	0/561	0.0	NA	NA						
North Shore	4/6196	0.6	2/2149	0.9	0/4998	** 0.0				
Northern Dutchess			0/805	0.0						
Northern Westchester	1/1769	0.6			0/140	0.0	0/53	0.0	NA	NA
Noyes Memorial	0/367	0.0								
Nyack Hospital			4/1306	3.1			0/723	0.0	0/245	0.0
Olean General	1/674	1.5	1/984	1.0	0/440	0.0				
Oneida Healthcare			0/790	0.0						
OrangeReg Goshen-Mid	5/6465	0.8	0/1257	0.0						
Oswego Hospital			1/1159	0.9						
Our Lady of Lourdes	1/2997	0.3	0/227	0.0	1/1199	0.8	0/236	0.0		
Peconic Bay Medical			4/1308	3.1						
Phelps Memorial	1/1068	0.9	0/313	0.0					NA	NA
Plainview Hospital	1/1751	0.6			0/279	0.0				
Putnam Hospital			2/1503	1.3						
Queens Hospital	0/1248	0.0	1/1005	1.0	0/336	0.0	0/240	0.0		
Richmond Univ MC	7/2023	^^ 3.5			4/533	^^ 7.5				
Rochester General	12/6209	1.9	1/4813	0.2	3/3905	0.8				
Rome Memorial	0/241	0.0					1/332	3.0		
SUNY Downstate MedCr	5/2372	2.1	7/3844	1.8			2/1281	1.6	0/236	0.0
Samaritan- Troy			1/3471	0.3						
Samaritan- Watertown			0/2712	0.0						
Saratoga Hospital	3/3385	0.9			NA	NA				

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
Sisters of Charity			1/3045	0.3	0/1822	0.0				
Sisters- St Joseph			0/1694	0.0	0/478	0.0				
South Nassau Comm.	2/2635	0.8	4/7048	0.6			1/1593	0.6	NA	NA
Southampton			1/514	1.9					0/713	0.0
Southside	1/188	5.3	2/2753	0.7			0/142	0.0	NA	NA
St Anthony			0/513	0.0						
St Barnabas			2/1547	1.3			0/280	0.0		
St Catherine Siena	2/2271	0.9			0/305	0.0				
St Charles Hospital			2/1348	1.5						
St Elizabeth Medical			0/2148	0.0			0/1788	0.0		
St Francis- Roslyn			2/8894	** 0.2			2/1664	1.2		
St James Mercy			0/333	0.0						
St Johns Dobbs Ferry			0/51	0.0						
St Johns Episcopal			11/3689	^^ 3.0						
St Johns Riverside	1/1458	0.7	1/718	1.4						
St Joseph -Bethpage			0/767	0.0			0/285	0.0		
St Josephs- Elmira	0/224	0.0								
St Josephs- Syracuse			11/14437	0.8						
St Josephs- Yonkers			1/840	1.2			2/236	8.5		
St Lukes Cornwall			0/2128	0.0						
St Marys Amsterdam			0/587	0.0	0/614	0.0	0/370	0.0		
St Peters Hospital	3/11396	** 0.3	5/6703	0.7			0/2961	** 0.0		
Staten Island U N			6/4984	1.2	1/2234	0.4			0/122	0.0
Staten Island U S			0/1156	0.0						

Table 16. Central line-associated bloodstream infection rates by ward type, New York State 2016

	Medical Wards		Medical Surgical Wards		Surgical Wards		Step Down Units		Pediatric Wards	
Hospital	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate	CLABSI/ CLDays	Rate
State average rate	**1.14**		**1.04**		**0.78**		**1.03**		**1.11**	
Strong Memorial	14/18204	0.8			4/10330	0.4	0/581	0.0	4/4660	0.9
Sunnyview Rehab Hosp			0/226	0.0						
Syosset Hospital	0/255	0.0			NA	NA				
UHS Binghamton			0/1529	0.0						
UHS Chenango Memor			0/193	0.0						
UHS Wilson			8/5915	1.4	NA	NA				
UPMC Chautauqua WCA	0/714	0.0	0/1060	0.0						
United Memorial	0/540	0.0			0/72	0.0				
Unity Hosp Rochester			0/10780	** 0.0						
Univ Hosp SUNY Upst	4/9517	** 0.4			2/3271	0.6	1/1230	0.8	1/1164	0.9
Univ Hosp StonyBrook	5/4540	1.1			7/8143	0.9	0/380	0.0	1/627	1.6
Upst. Community Gen	0/656	0.0	2/1097	1.8						
Vassar Brothers	1/4144	0.2			1/992	1.0	1/1621	0.6	0/122	0.0
Westchester Medical	4/2814	1.4	8/4486	1.8	2/1834	1.1	6/5062	1.2	5/2796	1.8
White Plains Hosp			3/4374	0.7			2/2294	0.9		
Winthrop University	10/9980	1.0	1/1600	0.6	1/1119	0.9			0/630	0.0
Woman and Childrens	0/867	0.0							3/823	3.6
Woodhull Med Ctr			5/2231	2.2	0/432	0.0	0/1043	0.0		
Wyckoff Heights			3/3773	0.8					NA	NA
Wyoming County Comm.			0/370	0.0						

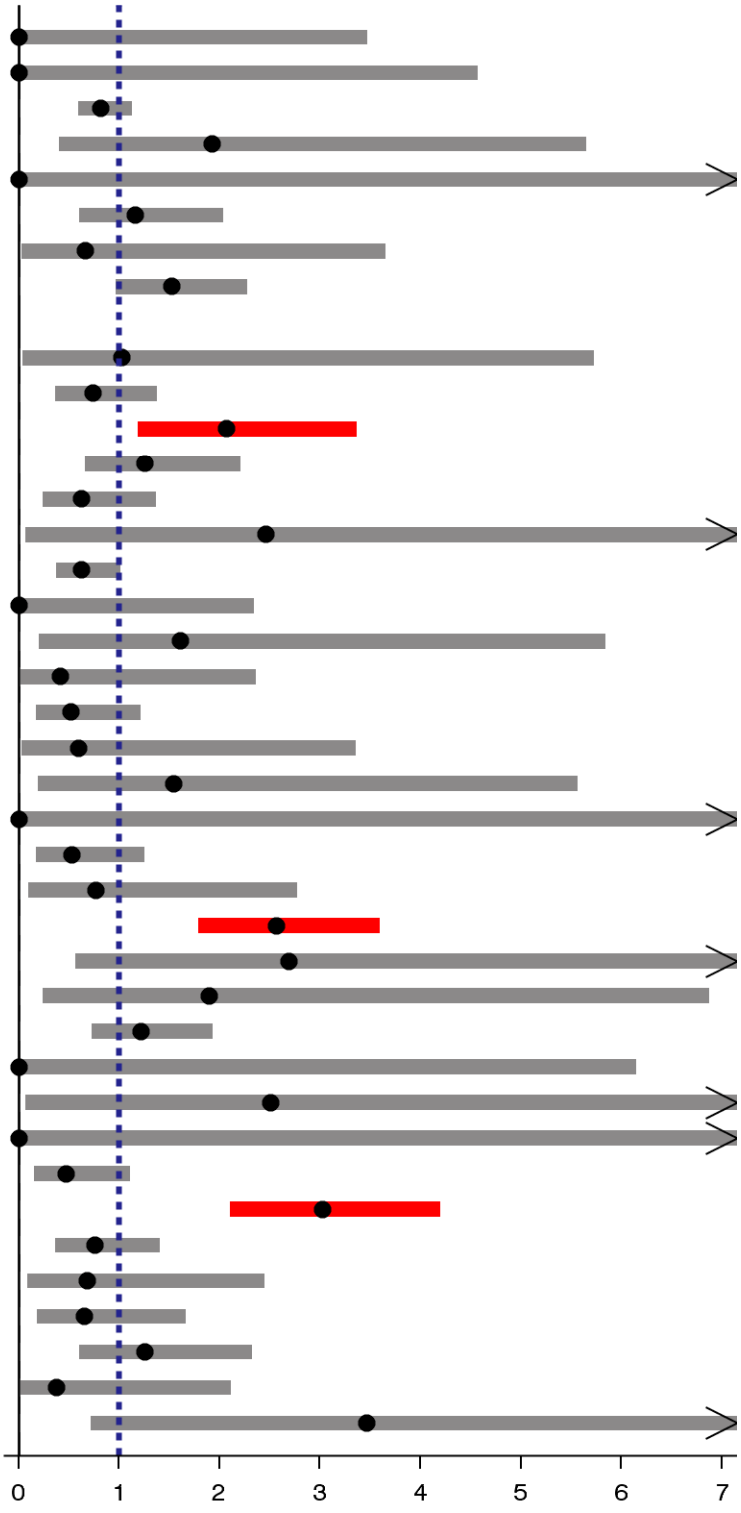
New York State data as of July 31, 2017. ^^Significantly higher than state average. **Significantly lower than state average. Average.
NA: Hospitals with <50 central line days. Rates are per 1000 central line days (CLDAYS). Excludes Mucosal Barrier Injury (MBI)-CLABSIs.

Hospital-Specific, CLABSI Standardized Infection Ratios

Figure 13 provides hospital-specific CLABSI SIRs for each hospital. CLABSI SIRs combine results across the eight different types of ICUs and five types of wards to show the average performance of each hospital for CLABSIs. Fourteen hospitals (8%) had high SIR flags in 2016; one (SUNY Downstate Medical Center) was high for three consecutive years. The fourteen hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Twelve hospitals (7%) had low SIR flags; none were low for three consecutive years.

Figure 13. Central Line-Associated Bloodstream Infection Standardized Infection Ratios for Intensive Care Units and Medical/Surgical/Stepdown Wards: New York 2016 (page 1 of 5)

HOSPITAL	Observed CLABSI	Predicted CLABSI	SIR
AO Fox Memorial	0	0.9	0.00
Adirondack Medical	0	0.7	0.00
Albany Med Ctr	40	48.5	0.82
Albany Memorial	3	1.6	1.93
Alice Hyde Med Ctr	0	0.3	0.00
Arnot Ogden Med Ctr	12	10.3	1.16
Auburn Memorial	1	1.5	0.66
Bellevue Hospital	23	15.2	1.52
Bertrand Chaffee	NA	NA	NA
Bon Secours	1	1.0	1.03
Bronx-Lebanon	10	13.5	0.74
Brookdale Hospital^^	16	7.7	2.07
Brookhaven Memorial	12	9.5	1.26
Brooklyn Hosp Ctr	6	9.6	0.63
Brooks Memorial	1	0.4	2.46
Buffalo General	17	27.1	0.63
Canton-Potsdam	0	1.3	0.00
Catskill Regional	2	1.2	1.61
Cayuga Medical Ctr	1	2.4	0.42
Champlain Valley	5	9.7	0.52
Claxton-Hepburn	1	1.7	0.60
Clifton Springs	2	1.3	1.54
Cobleskill Regional	0	0.1	0.00
Cohens Childrens	5	9.4	0.53
Columbia Memorial	2	2.6	0.77
Coney Island Hosp^^	34	13.2	2.57
Corning Hospital	3	1.1	2.69
Cortland Reg Med	2	1.1	1.90
Crouse Hospital	18	14.7	1.22
DeGraff Memorial	0	0.5	0.00
East. Niag. Lockport	1	0.4	2.51
Eastern Long Island	0	0.2	0.00
Ellis Hospital	5	10.6	0.47
Elmhurst Hospital^^	35	11.6	3.02
Erie County Med Ctr	10	13.2	0.76
FF Thompson	2	3.0	0.68
Faxton St. Lukes	4	6.2	0.65
Flushing Hospital	10	7.9	1.26
Geneva General	1	2.6	0.38
Glen Cove Hospital	3	0.9	3.46



Data reported as of July 31, 2017. ┆State Average. ●SIR. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 50 central line days. Predicted based on NYS 2016 average, adjusting for location and birthweight. Excludes mucosal barrier injury CLABSI.

Figure 13. Central Line-Associated Bloodstream Infection Standardized Infection Ratios for Intensive Care Units and Medical/Surgical/Stepdown Wards: New York 2016 (page 2 of 5)

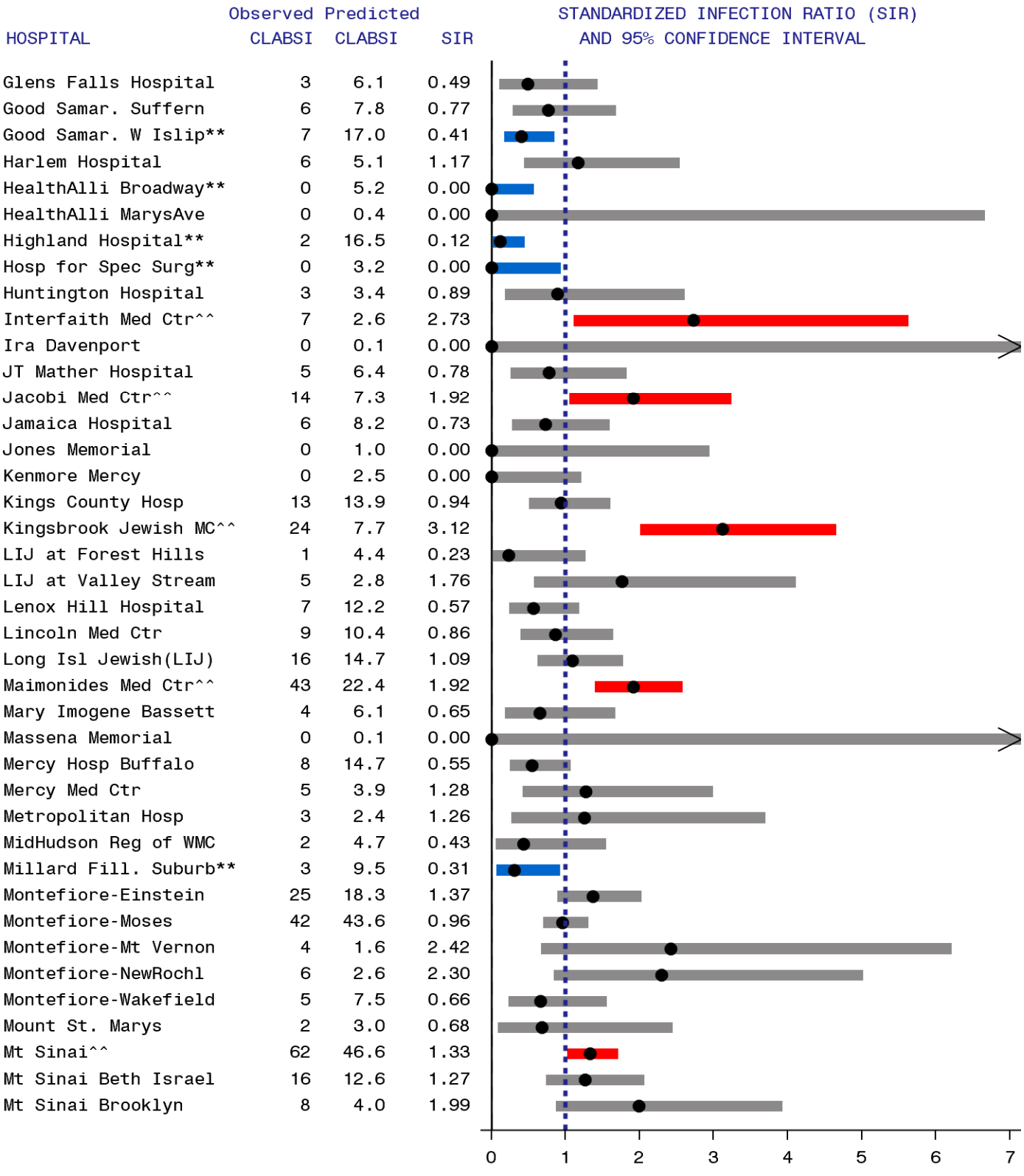


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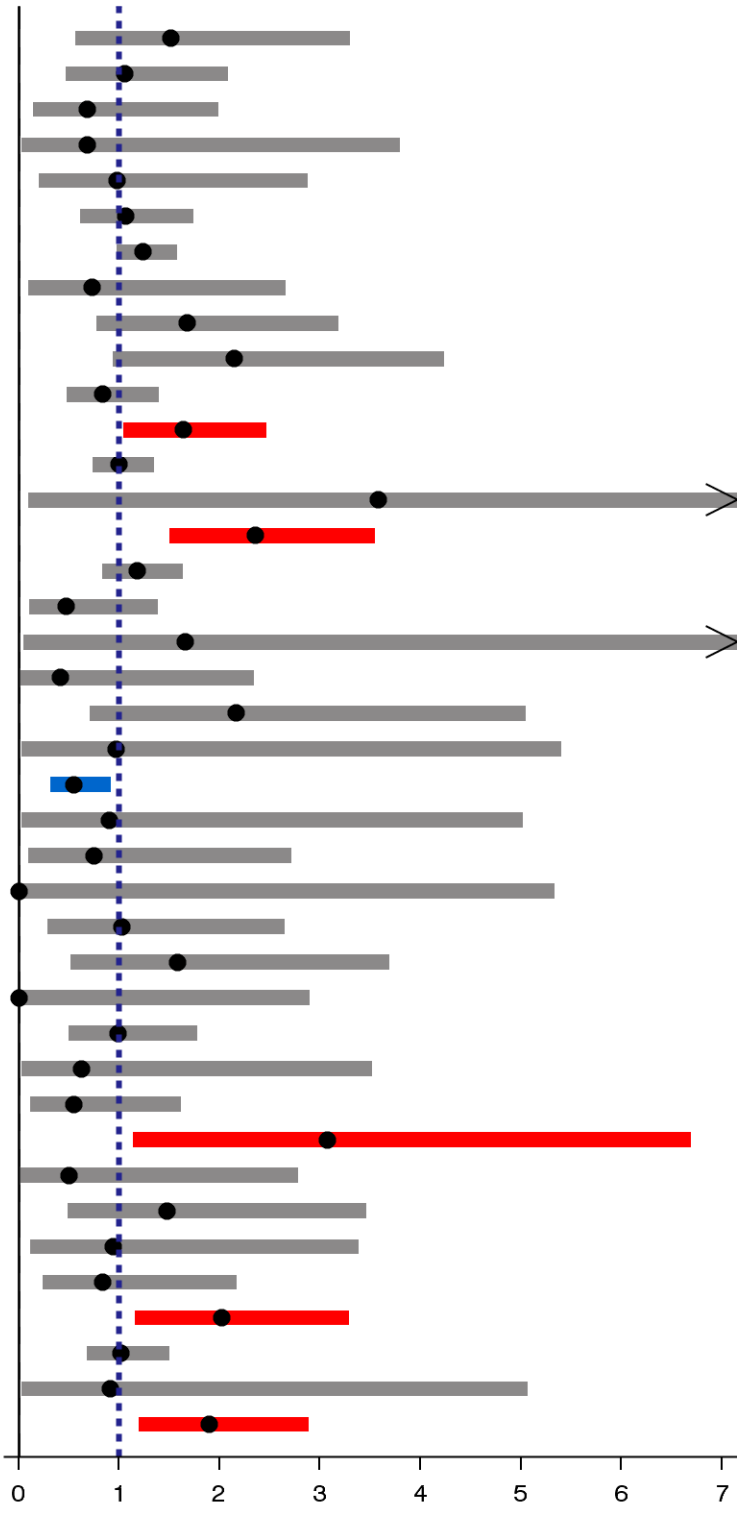
Figure 13. Central Line-Associated Bloodstream Infection Standardized Infection Ratios for Intensive Care Units and Medical/Surgical/Stepdown Wards: New York 2016 (page 3 of 5)

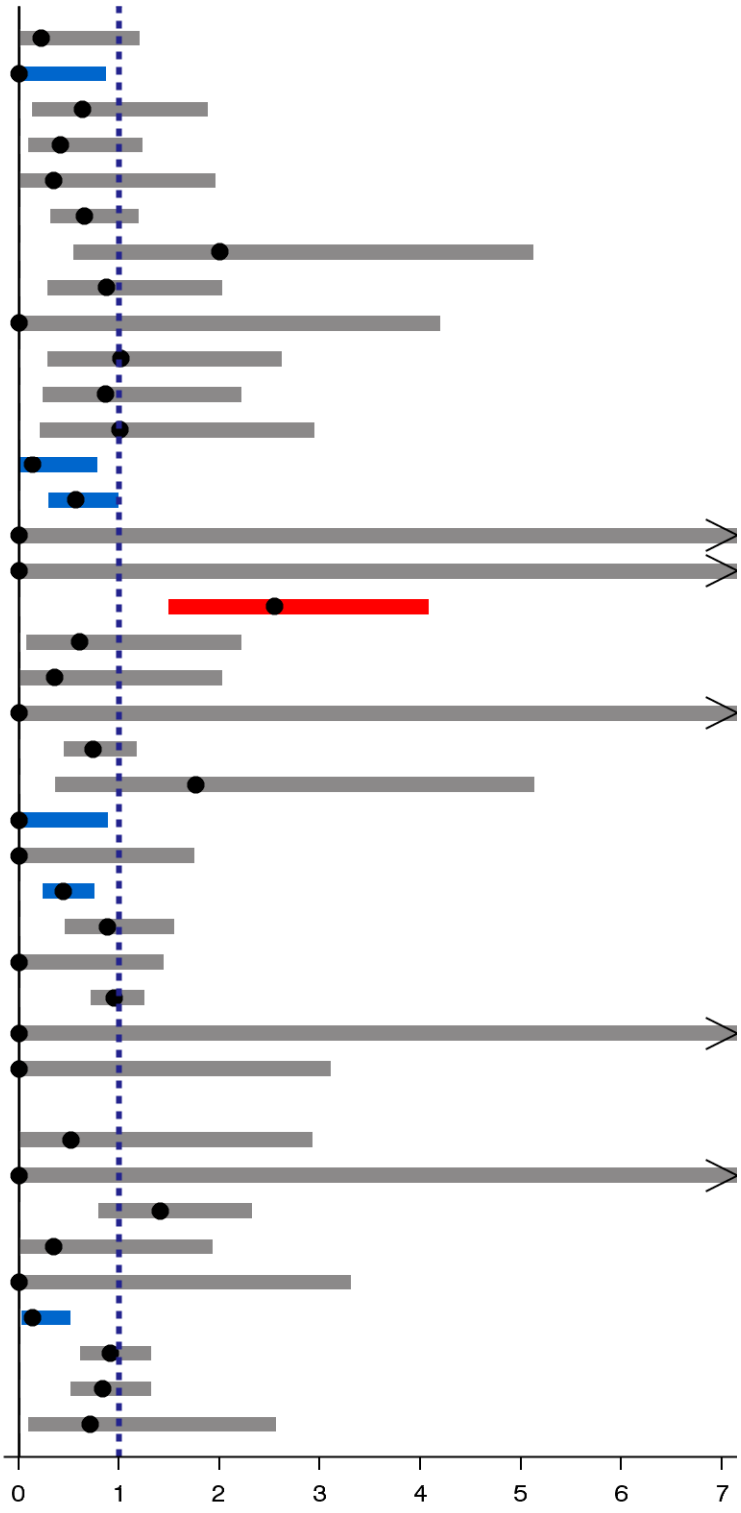
HOSPITAL	Observed CLABSI	Predicted CLABSI	SIR
Mt Sinai Queens	6	4.0	1.51
Mt Sinai St Lukes	8	7.6	1.06
Mt Sinai West	3	4.4	0.68
NY Community Hosp	1	1.5	0.68
NYP-Allen	3	3.0	0.98
NYP-Brklyn Methodist	16	15.0	1.07
NYP-Columbia	70	56.3	1.24
NYP-Hudson Valley	2	2.7	0.73
NYP-Lawrence	9	5.4	1.68
NYP-Lower Manhattan	8	3.7	2.15
NYP-Morgan Stanley	15	17.8	0.84
NYP-Queens^^	23	14.0	1.64
NYP-Weill Cornell	46	45.9	1.00
NYU Joint Diseases	1	0.3	3.58
NYU Lutheran^^	23	9.7	2.36
NYU Tisch	37	31.3	1.18
Nassau University	3	6.3	0.47
Nathan Littauer	1	0.6	1.66
Newark Wayne	1	2.4	0.42
Niagara Falls	5	2.3	2.16
North Central Bronx	1	1.0	0.97
North Shore**	15	27.2	0.55
Northern Dutchess	1	1.1	0.90
Northern Westchester	2	2.7	0.75
Noyes Memorial	0	0.6	0.00
Nyack Hospital	4	3.9	1.03
Olean General	5	3.2	1.58
Oneida Healthcare	0	1.0	0.00
OrangeReg Goshen-Mid	11	11.1	0.99
Oswego Hospital	1	1.6	0.63
Our Lady of Lourdes	3	5.5	0.55
Peconic Bay Medical^^	6	2.0	3.07
Phelps Memorial	1	2.0	0.50
Plainview Hospital	5	3.4	1.48
Putnam Hospital	2	2.1	0.94
Queens Hospital	4	4.7	0.84
Richmond Univ MC^^	16	7.9	2.02
Rochester General	26	25.4	1.02
Rome Memorial	1	1.1	0.91
SUNY Downstate MedCr^^	22	11.6	1.90



Data reported as of July 31, 2107. State Average. ●SIR. ^^Significantly higher than state average. **Significantly lower than state average. Average. > Upper confidence limit exceeds graph area. NA: less than 50 central line days. Predicted based on NYS 2016 average, adjusting for location and birthweight. Excludes mucosal barrier injury CLABSI.

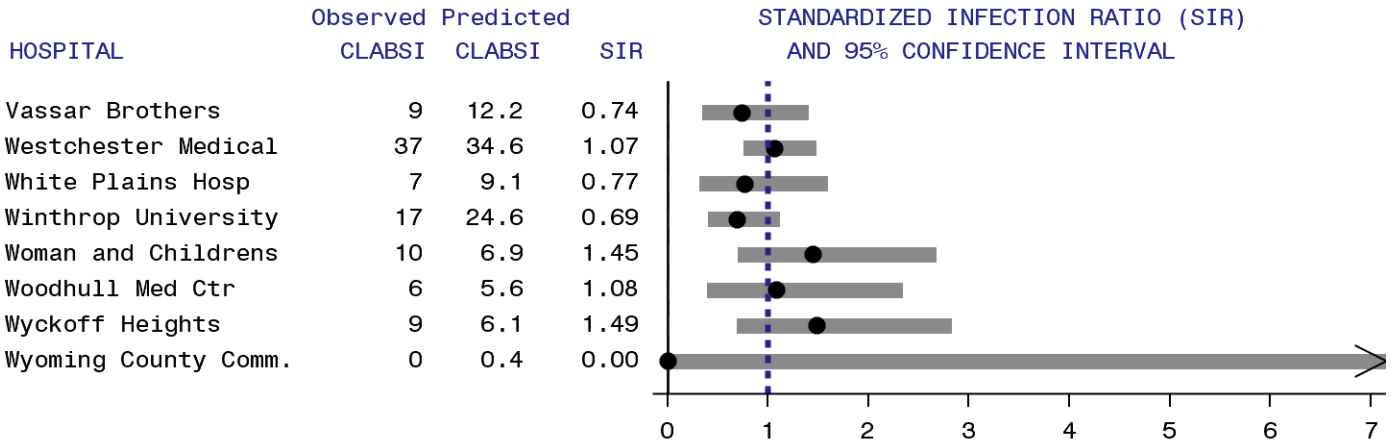
Figure 13. Central Line-Associated Bloodstream Infection Standardized Infection Ratios for Intensive Care Units and Medical/Surgical/Stepdown Wards: New York 2016 (page 4 of 5)

HOSPITAL	Observed CLABSI	Predicted CLABSI	SIR
Samaritan- Troy	1	4.6	0.22
Samaritan- Watertown**	0	3.5	0.00
Saratoga Hospital	3	4.7	0.64
Sisters of Charity	3	7.1	0.42
Sisters- St Joseph	1	2.9	0.35
South Nassau Comm.	10	15.4	0.65
Southampton	4	2.0	2.00
Southside	5	5.8	0.87
St Anthony	0	0.7	0.00
St Barnabas	4	3.9	1.02
St Catherine Siena	4	4.6	0.86
St Charles Hospital	3	3.0	1.01
St Elizabeth Medical**	1	7.1	0.14
St Francis- Roslyn**	12	21.1	0.57
St James Mercy	0	0.3	0.00
St Johns Dobbs Ferry	0	0.1	0.00
St Johns Episcopal^^	17	6.7	2.55
St Johns Riverside	2	3.3	0.61
St Joseph -Bethpage	1	2.8	0.36
St Josephs- Elmira	0	0.3	0.00
St Josephs- Syracuse	18	24.3	0.74
St Josephs- Yonkers	3	1.7	1.76
St Lukes Cornwall**	0	3.4	0.00
St Marys Amsterdam	0	1.7	0.00
St Peters Hospital**	13	29.8	0.44
Staten Island U N	12	13.6	0.88
Staten Island U S	0	2.1	0.00
Strong Memorial	51	53.6	0.95
Sunnyview Rehab Hosp	0	0.2	0.00
Syosset Hospital	0	1.0	0.00
TLC Lake Shore	NA	NA	NA
UHS Binghamton	1	1.9	0.52
UHS Chenango Memor	0	0.2	0.00
UHS Wilson	15	10.6	1.41
UPMC Chautauqua WCA	1	2.9	0.35
United Memorial	0	0.9	0.00
Unity Hosp Rochester**	2	14.1	0.14
Univ Hosp SUNY Upst	29	31.7	0.91
Univ Hosp StonyBrook	19	22.6	0.84
Upst. Community Gen	2	2.8	0.71



Data reported as of July 31, 2017. State Average. ●SIR. ^^Significantly higher than state average. **Significantly lower than state average. Average. > Upper confidence limit exceeds graph area. NA: less than 50 central line days. Predicted based on NYS 2016 average, adjusting for location and birthweight. Excludes mucosal barrier injury CLABSI.

Figure 13. Central Line-Associated Bloodstream Infection Standardized Infection Ratios for Intensive Care Units and Medical/Surgical/Stepdown Wards: New York 2016 (page 5 of 5)



Data reported as of July 31, 2017. ┆State Average. ●SIR. ▬^^Significantly higher than state average. ▬**Significantly lower than state average. ▬Average. > Upper confidence limit exceeds graph area. NA: less than 50 central line days. Predicted based on NYS 2016 average, adjusting for location and birthweight. Excludes mucosal barrier injury CLABSI.

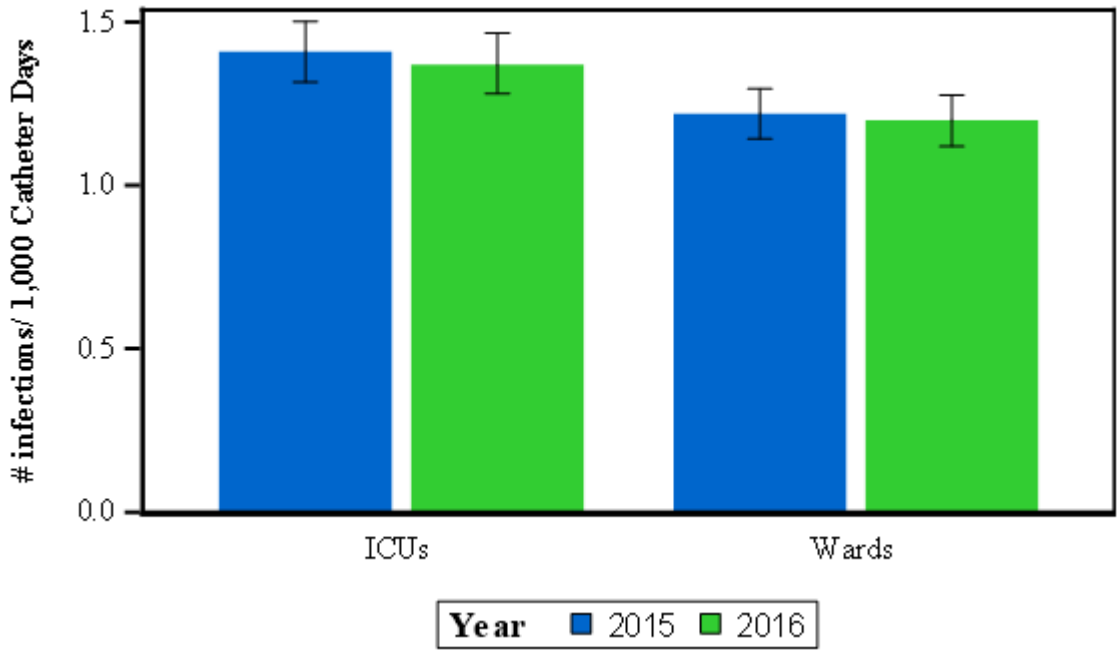
Catheter-Associated Urinary Tract Infections (CAUTIs)

In order to determine if a patient has a healthcare-associated CAUTI, the CDC developed surveillance definitions based on catheter usage, symptoms, and laboratory results. These definitions are used by all facilities entering data into NHSN. Hospitals track the number of CAUTIs, the number of urinary catheter days, and the number of patient days per month.

While CAUTI reporting is not required by NYSDOH, the data are available via the CDC-NYS DUA. This DUA prohibits NYSDOH from publishing hospital-specific rates. NYSDOH does not audit this data.

In 2016, catheters were used 54% of the time in ICU patients and 12% of the time in the medical and surgical wards. Overall, CAUTIs occurred at a rate of 1.3 infections per 1,000 catheter days (Figure 14). CAUTI rates were similar in 2015 and 2016.

Figure 14. Catheter-associated urinary tract infection rates, New York State 2015-2016



Location	Year	# Hospitals	# Catheter-associated urinary tract infections	# Urinary catheter days	Catheter-associated urinary tract infection rate[1]	Number of patient days	Device Utilization[2] (%)
Intensive Care Units	2015	157	902	641,041	1.41	1,160,022	55.3
	2016	160	854	622,605	1.37	1,164,515	53.5
Medical /surgical wards	2015	167	987	810,371	1.22	6,317,808	12.8
	2016	170	905	756,226	1.20	6,305,336	12.0
Total	2015	169	1,889	1,451,412	1.30	7,477,830	19.4
	2016	173	1,759	1,378,853	1.28	7,470,177	18.5

[1] Infection rate is the number of infections divided by the number of catheter days, multiplied by 1,000.
[2] Device utilization is the number of catheter days divided by the number of patient days.
Data downloaded from National Healthcare Safety Network May 25, 2017.

Microorganisms Associated with CAUTIs

The most common microorganisms identified in CAUTIs in intensive care units and wards were *E. coli*, Enterococci, *Pseudomonas* spp., and *Klebsiella* spp. (Table 17).

Table 17. Microorganisms identified in catheter-associated urinary tract infections, New York State 2016

Microorganism	Number of Isolates	Percent of Infections
Escherichia coli	633	36.0
(CRE-*E. coli*)	(1)	(0.1)
Enterococci	333	18.9
(VRE)	(123)	(7.0)
Pseudomonas spp.	281	16.0
Klebsiella spp.	278	15.8
(CRE-*Klebsiella*)	(39)	(2.2)
Proteus spp.	119	6.8
Enterobacter spp.	99	5.6
(CRE-*Enterobacter*)	(5)	(0.3)
Coagulase negative staphylococci	46	2.6
Staphylococcus aureus	40	2.3
(MRSA)	(13)	(0.7)
Serratia spp.	26	1.5
Citrobacter spp.	25	1.4
Morganella morganii	20	1.1
Acinetobacter spp.	17	1.0
(MDRO-A*cinetobacter*)	(12)	(0.7)
Streptococci	14	0.8
Providencia spp.	11	0.6
Stenotrophomonas spp.	7	0.4
Other	21	1.2

New York State data reported as of May 25, 2017. Out of 1,759 infections.
CRE: carbapenem-resistant Enterobacteriaceae;
MDR: multidrug resistant; MRSA: methicillin-resistant *Staphylococcus aureus;*
VRE: vancomycin-resistant Enterococci; spp: multiple species

Infections from *Clostridium difficile* and Multidrug Resistant Organisms (MDROs)

Microbes are extremely small living organisms (e.g. bacteria, fungi) that can only be seen with a microscope. Antimicrobials are drugs used to kill or inhibit the growth of microbes. Antimicrobial resistance is the ability of microbes to resist the effect of these drugs. Infections caused by resistant organisms are difficult to cure, leading to increased sickness and death, increased costs, and increased side effects from drug treatments.

NYS requires hospitals to track *Clostridium difficile* infections (CDI) and carbapenem-resistant Enterobacteriaceae (CRE) infections. CMS programs require hospitals to report methicillin-resistant *Staphylococcus aureus* (MRSA). Some hospitals voluntarily report vancomycin-resistant Enterococci (VRE) and multidrug resistant *Acinetobacter* spp. (MDR-Acinetobacter).

CDI and MDROs are reported following NHSN's "Laboratory-Identified (LabID) Event Reporting" protocol (http://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf). The LabID surveillance method is a simple approach where cases are identified based on laboratory testing and hospital admission and discharge data, rather than by clinical chart review. Only specimens collected for clinical purposes are included (i.e. this excludes active surveillance testing on asymptomatic patients).

LabID numerator data (e.g. admission date and specimen date) and denominator data (e.g. number of outpatient encounters, inpatient admissions and patient days) are reported based on the location of the specimen collection. Because CMS reporting programs are specific to certain types of locations, hospitals' inpatient areas are split for NHSN reporting purposes when they have specific Centers for Medicaid and Medicare Services Certification Numbers (CCNs). The NHSN reporting areas are:

- Outpatient (OP)
    - Emergency department (ED)
    - Observation units (OBS) – *Location used to evaluate whether patients require an inpatient stay. Decision is typically made within 24 hours.*
- Inpatient rehabilitation facilities or units (IRF) - *These units care for patients following traumatic physical injuries (e.g. joint replacement surgery), neurological problems (e.g. stroke, traumatic brain injury and spinal cord injury), and cardiopulmonary illness (e.g. ventilator weaning).*
- Inpatient psychiatric facilities or units (IPF) - *These units cover multiple behavioral health issues including mental illness and alcohol/drug addiction. If the units don't have a separate CMS certification number from the hospital, they are reported as FWI; this occurred for approximately 15% of acute care hospital patient days (based on a comparison of NHSN and SPARCS data).*
- Facility-wide inpatient (FWI) – *all inpatient areas excluding IRF and IPFs. For CDI reporting, well baby nurseries and neonatal ICUs are also excluded from surveillance because babies may carry Clostridium difficile naturally.*

This report will summarize FWI and OP areas only.

LabID cases are categorized based on when the specimen is collected in relation to the admission date. In this report,

- Cases termed "outpatient" are cases in which the positive stool sample was obtained in the ED/OBS unit and the patient was not admitted the same calendar day.

- Cases termed "admission prevalent" are cases in which the positive stool sample was obtained during the first three days of the patient's inpatient stay. (This includes cases identified in the ED/OBS and admitted the same day for CRE and CDI).

    - Cases termed "community onset - possibly my hospital (CO-PMH)" are admission prevalent cases in which the patient was discharged as an inpatient from the same hospital within the previous 4 weeks.

    - Cases termed "community onset - not my hospital (CO-NMH)" are admission prevalent cases in which the patient was not discharged from the same hospital within the previous 4 weeks.

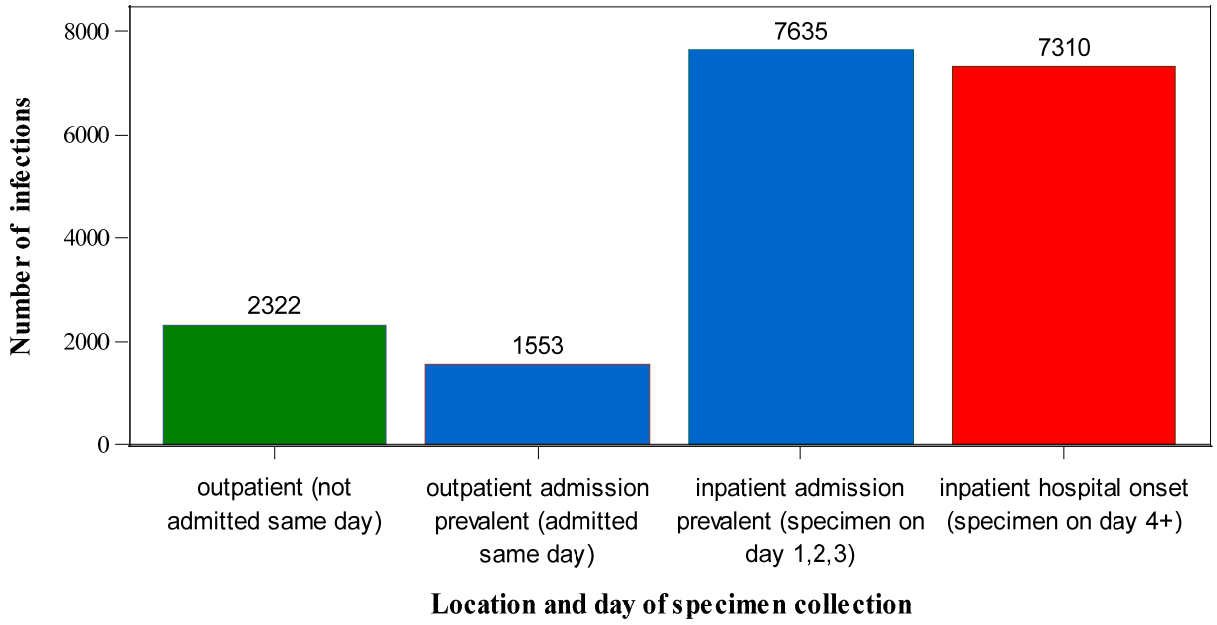
- Cases termed "hospital-onset (HO)" are cases in which the positive stool sample was obtained on day four or later during the hospital stay.

These definitions are slightly different than the ones used in CDC/CMS reports. Admission date is optional in NHSN for ED/OBS reports; however, NYS requires hospitals to enter the admission date if it occurs on the same calendar day as the specimen date for CDI and CRE (to match the 2014 surveillance definition, and because these infected patients increase the risk of transmission in the inpatient area). In the situation where a CDI or CRE specimen is obtained in ED/OBS and the patient is admitted the same day, the case is counted in the admission prevalence rate by NYS, and in the outpatient rate by NHSN; for other MDROs, the specimens are counted in the outpatient rate because NYS did not direct hospitals to enter the admission date for these pathogens.

Clostridium difficile Infections (CDI)

In 2016, 18,820 CDI events were reported by acute care hospitals:12% were identified in ED/OBS units among patients who were not admitted the same day, 8% were identified in ED/OBS units among patients who were admitted the same day, 41% were identified in the FWI area during the first three days of hospitalization, and 39% were identified in the FWI area after the first three days of inpatient stay (Figure 15).

Figure 15. *Clostridium difficile* onset, New York State, 2016



Data reported as of July 31, 2017. Includes recurrent cases. Excludes inpatient rehabilitation and inpatient psychiatric facilities. Specimens identified in the outpatient setting and admitted the next day are counted as outpatient.

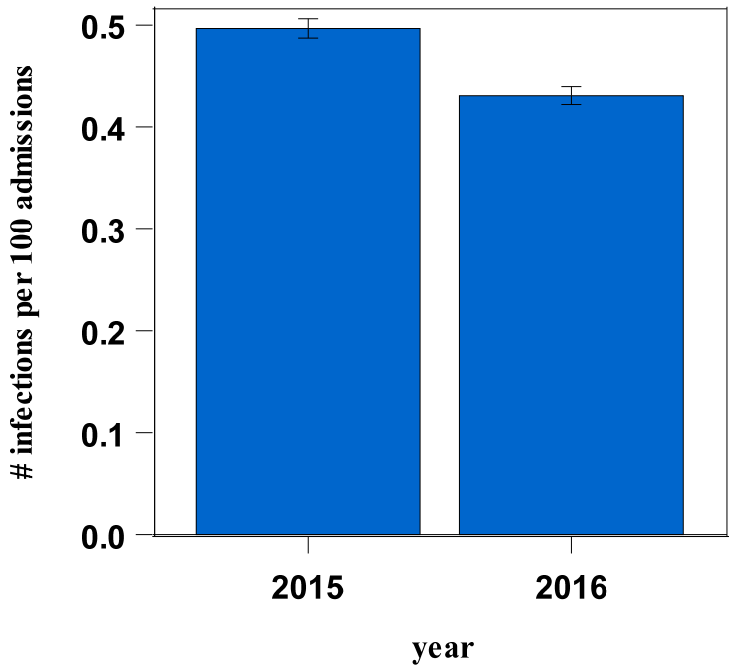
Laboratory Testing for CDI

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 an increased number of cases detected with a change to a more sensitive test. Hospitals report CDI test method quarterly to NHSN. Between December 2015 and December 2016, the percentage of hospitals using more sensitive tests (i.e. nucleic acid amplification tests (NAAT) or multistep screening with confirmation with NAAT) increased from 86% to 91%.

Admission Prevalence

The admission prevalence rate describes the percentage of patients admitted to hospitals with CDIs. In 2016, there were 9,172 of these cases out of 2,129,658 admissions, for a rate of 0.43% (Figure 16). This was a decrease of 13% compared to 2015, despite the increase in use of more sensitive tests.

Figure 16. Trend in *C. difficile* admission prevalence rate, New York State 2015-2016



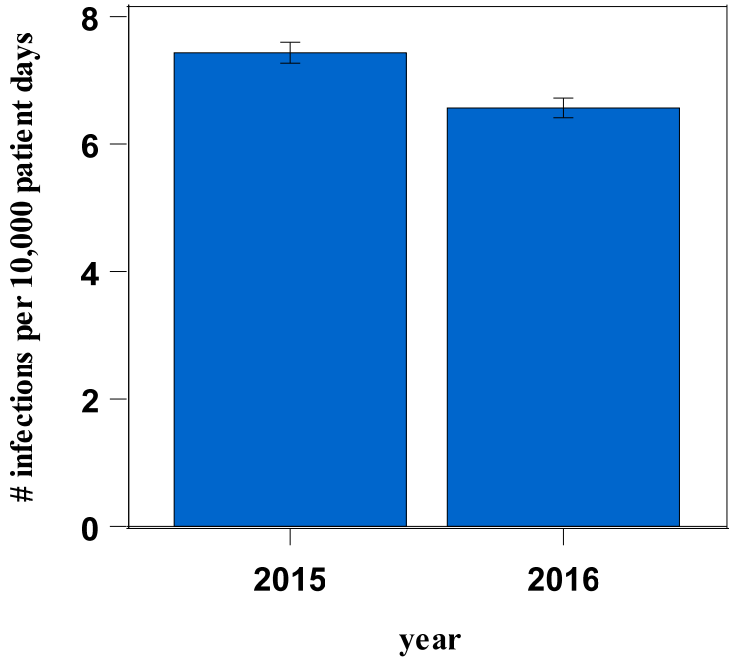
Year	# Hospitals	# Admission Prevalent Infections	# Admissions	Admission Prevalence Rate	% discharged from same hospital in previous 28 days
2015	175	10,454	2,105,102	0.497	25%
2016	178	9,172	2,129,658	0.431	24%

Data reported as of July 31, 2017. Excludes inpatient rehabilitation and inpatient psychiatric facilities.
Rate is number of nonduplicate CDI events per patient per month identified ≤3 days after admission to the facility per 100 admissions. Includes cases identified in the emergency room if admitted the same day.

Hospital onset CDI rates

The longer a person stays in the hospital, the higher the total risk of acquiring an infection in the hospital, so the HO incidence rate is reported using a denominator of patient days. The HO rate is defined as the number of incident events identified more than three days after hospital admission, per 10,000 patient days, where an incident event is the first event for that patient in the same hospital or one that has been obtained more than 8 weeks after the most recent event for that patient in the same hospital. The HO rate was 6.57 per 10,000 patient days in 2016 (Figure 17). This is a decrease of 12% decrease compared to 2015.

Figure 17. Trend in *Clostridium difficile* hospital onset rates, New York State 2015-2016



Year	# hospitals	# Hospital Onset Infections	# Patient days	Hospital onset rate
2015	175	7,872	10,590,759	7.43
2016	178	6,939	10,569,009	6.57

Data reported as of July 31, 2017. Excludes inpatient rehabilitation and inpatient psychiatric facilities.
Rate is number of incident CDI events identified >3 days after admission to the facility per 10,000 patient days.

Risk Adjustment

The following risk factors were associated with FWI HO CDI rates and included in the risk adjustment (negative binomial regression) model.

- Laboratory test method – Testing method was obtained from quarterly NHSN rate tables and expressed as the fraction of the year that a more sensitive test (e.g. nucleic acid amplification tests (NAAT) or multistep screening with confirmation with NAAT) was used. Consistent with previous NYS HAI reports, the HO rate for hospitals performing more sensitive tests was 1.5 times higher than hospitals performing less sensitive tests like EIA.

- Hospital CO-NMH prevalence rate – As the CO-NMH rate increased from 0 to 1 case per 100 admissions, the HO rate increased by a factor of 3.3.

- Hospital bed size, as reported in 2016 NHSN survey – The HO rate at hospitals with 100 to 399 beds was 1.2 times higher than the rate at hospitals with less than 100 beds, and the HO rate at hospitals with greater than 400 beds was 1.5 times higher than the rate at hospitals with less than 100 beds.

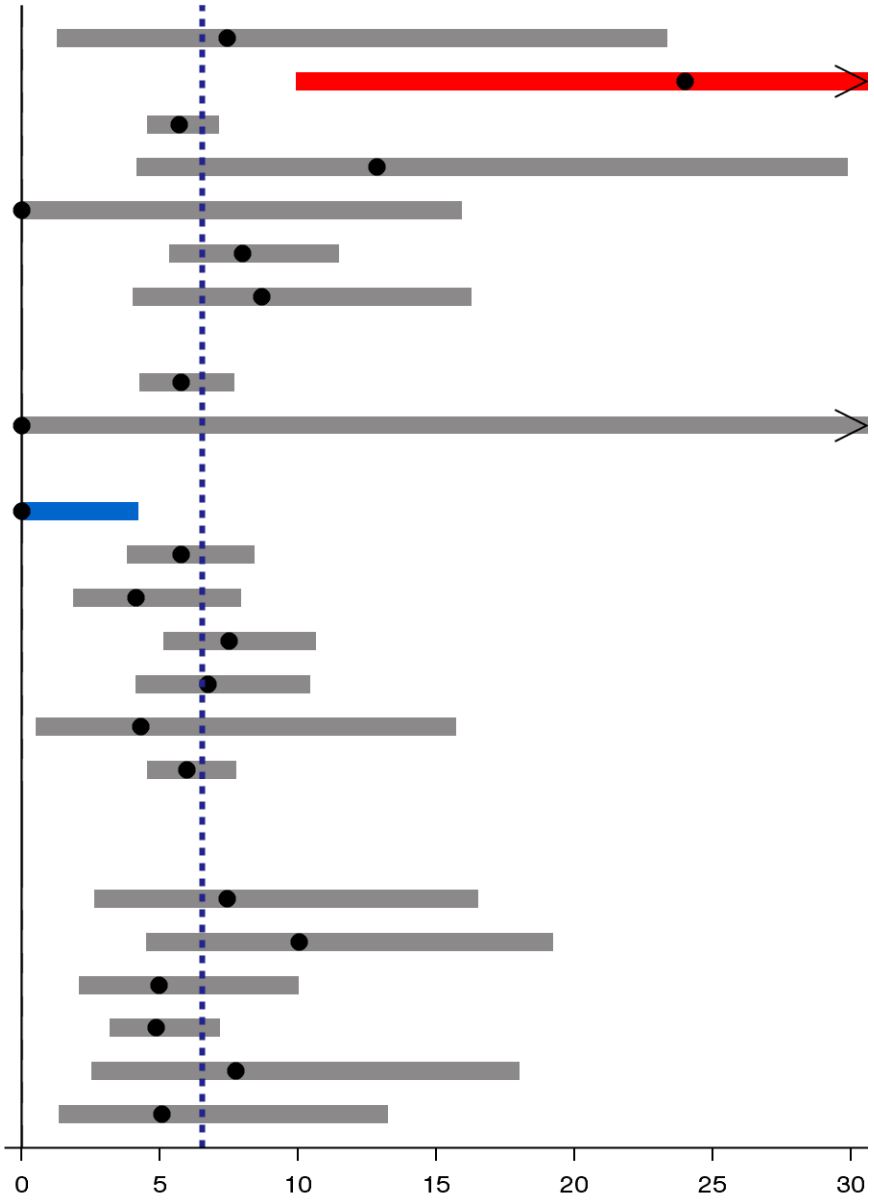
- Percent of patient days in adult intensive care units – This was calculated by dividing the number adult ICU patient days (from the CLABSI summary data) by the number of CDI patient days (from the MDRO summary data). As percent ICU days increased 10%, the HO rate increased by a factor of 1.2.

Hospital-specific FWI HO CDI rates are summarized in Figure 18. Fifteen specialty hospitals (e.g. children's, maternity, orthopedic/surgical, oncology, long term acute care, and freestanding rehabilitation) were excluded from the risk adjustment model because there was insufficient data to compare the hospital rates. One small hospital with an extreme outlying CO-NMH prevalence rate (greater than 4, which is 13 times greater than the interquartile range) was also excluded so as not to distort the model fit. The remaining 162 hospitals contributed 6,474 HO CDIs among 9,996,917 patient days, for an average HO rate of 6.5 per 10,000 patient days.

Hospitals were flagged as having adjusted rates significantly higher or lower than the state average if the 99% confidence interval excluded the state average HO rate. In 2016, 13 hospitals (7%) were flagged with adjusted rates significantly higher than the state average; no hospital was significantly high for more than two consecutive years. The 13 hospitals will submit improvement plans following the NYSDOH HAI Reporting Program's Policy for Facilities with Consecutive Years of High HAI Rates. Twelve hospitals (7%) were flagged significantly lower than average. One hospital (Rochester General) was significantly low for four consecutive years.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 1 of 7)

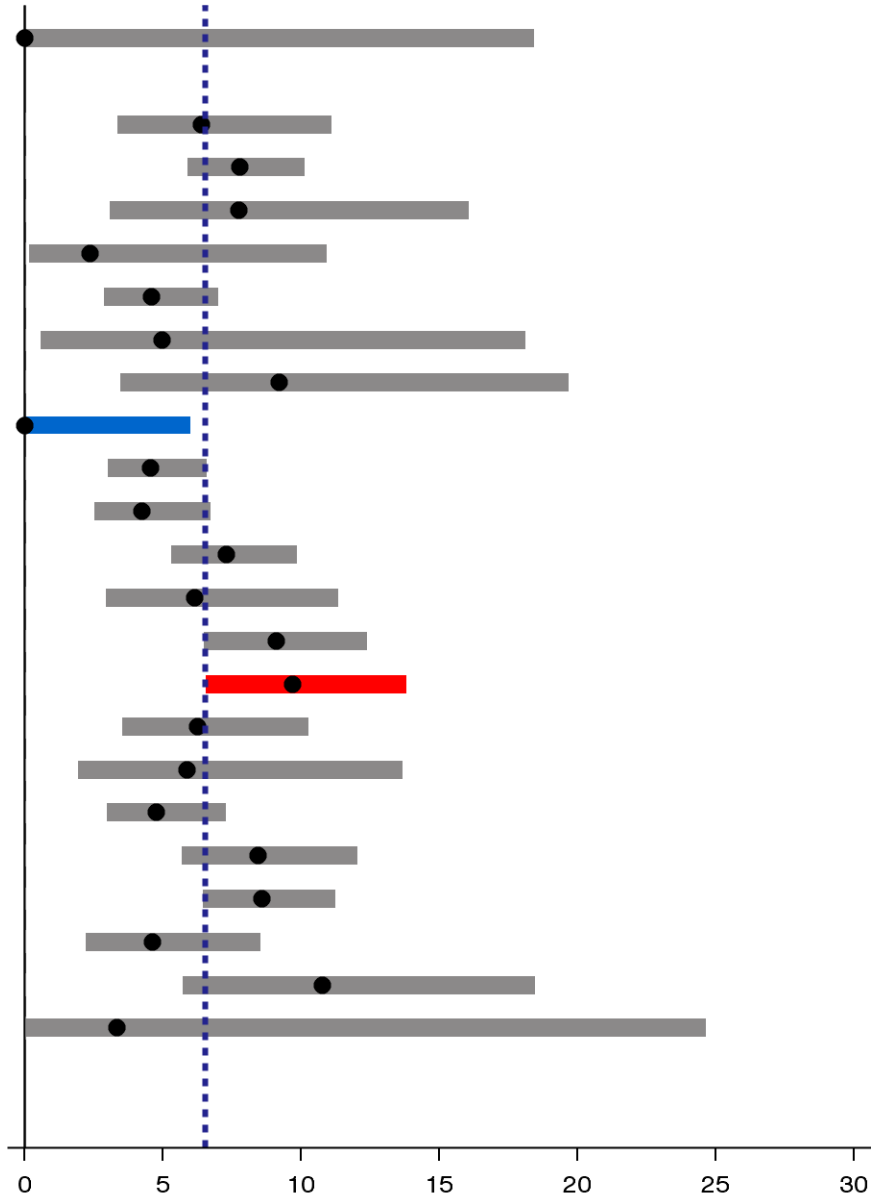
HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
AO Fox Memorial	S	3	12	0	4	8,851	0.5	4.5	7.4
Adirondack Medical^	S	8	4	3	12	7,454	0.2	16.1	24.0
Albany Med Ctr	S	9	127	37	131	194,142	0.3	6.7	5.7
Albany Memorial	N	2	8	0	8	15,445	0.2	5.2	12.9
Alice Hyde Med Ctr	N	1	10	1	0	5,995	0.3	0.0	0.0
Arnot Ogden Med Ctr	S	19	63	8	48	43,377	0.7	11.1	8.0
Auburn Memorial	S	5	23	6	15	18,519	0.5	8.1	8.7
Bellevue Ellis	S	0	0	0	0	6,921	0.0	0.0	NA
Bellevue Hospital	S	5	42	6	78	105,911	0.4	7.4	5.8
Bertrand Chaffee	N	0	2	2	0	3,496	0.1	0.0	0.0
Blythedale Childrens	S	0	1	0	0	27,453	0.2	0.0	NA
Bon Secours**	S	0	13	1	0	13,505	0.4	0.0	0.0
Bronx-Lebanon	S	0	39	21	44	106,294	0.2	4.1	5.8
Brookdale Hospital	N	1	16	2	14	69,643	0.1	2.0	4.1
Brookhaven Memorial	S	34	43	7	52	75,000	0.4	6.9	7.5
Brooklyn Hosp Ctr	S	5	21	7	33	71,968	0.1	4.6	6.7
Brooks Memorial	S	3	11	3	3	7,576	0.5	4.0	4.3
Buffalo General	S	50	65	16	94	131,705	0.3	7.1	6.0
Burdett Care Center	N	0	0	0	0	2,635	0.0	0.0	NA
Calvary Hospital	N	0	5	0	20	79,054	0.2	2.5	NA
Canton-Potsdam	S	14	16	5	9	18,027	0.3	5.0	7.4
Catskill Regional	S	4	20	4	14	14,149	0.6	9.9	10.0
Cayuga Medical Ctr	S	4	30	6	12	19,464	0.6	6.2	5.0
Champlain Valley	S	18	72	27	42	54,830	0.9	7.7	4.8
Claxton-Hepburn	S	7	10	3	8	10,912	0.3	7.3	7.7
Clifton Springs	S	4	11	4	6	13,383	0.5	4.5	5.1



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. ^Significantly higher than state average. **Significantly lower than state average.
Average. > Upper confidence limit exceeds graph area. Test method: N = less sensitive test (e.g. enzyme immunoassay), S = more sensitive test (e.g. nucleic acid amplification test). OP: Outpatient not admitted, CO-NMH: community onset-not my hospital, CO-PMH: community onset-possibly my hospital, HO: hospital onset, HO rate is per 10,000 patient days.
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 2 of 7)

HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
Cobleskill Regional	S	1	1	1	0	5,375	0.1	0.0	0.0
Cohens Childrens	S	6	24	6	28	38,809	0.2	7.2	NA
Columbia Memorial	S	28	36	9	20	24,955	0.7	8.0	6.4
Coney Island Hosp	S	4	92	20	94	84,983	0.7	11.1	7.8
Corning Hospital	S	17	25	7	11	13,862	0.6	7.9	7.7
Cortland Reg Med	N	3	8	5	2	12,802	0.2	1.6	2.3
Crouse Hospital	S	25	88	9	35	78,041	0.5	4.5	4.6
DeGraff Memorial	S	4	10	2	3	6,307	0.5	4.8	4.9
East. Niag. Lockport	N	1	3	2	10	27,449	0.1	3.6	9.2
Eastern Long Island**	S	0	7	0	0	12,420	0.3	0.0	0.0
Ellis Hospital	S	18	93	22	45	80,146	0.6	5.6	4.5
Elmhurst Hospital	S	7	13	6	29	91,039	0.1	3.2	4.2
Erie County Med Ctr	S	15	37	17	72	102,472	0.2	7.0	7.3
FF Thompson	S	31	51	7	16	22,849	0.7	7.0	6.1
Faxton St. Lukes	S	7	88	12	66	62,274	0.6	10.6	9.1
Flushing Hospital^	S	2	22	5	50	77,752	0.1	6.4	9.7
Geneva General	S	14	39	4	25	16,712	1.1	15.0	6.2
Glen Cove Hospital	S	0	4	3	8	16,394	0.1	4.9	5.9
Glens Falls Hospital	S	14	84	14	35	57,626	0.7	6.1	4.7
Good Samar. Suffern	S	29	58	18	50	58,578	0.4	8.5	8.4
Good Samar. W Islip	S	75	61	18	89	131,926	0.2	6.7	8.6
Harlem Hospital	S	0	16	2	16	47,840	0.1	3.3	4.6
HealthAlli Broadway	N	6	33	7	21	32,866	0.4	6.4	10.8
HealthAlli MarysAve	N	0	0	0	1	9,531	0.0	1.0	3.3
Helen Hayes Hospital	S	0	0	0	1	428	0.0	23.4	NA
Henry J. Carter	S	0	4	1	35	53,980	1.2	6.5	NA



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. ^Significantly higher than state average. **Significantly lower than state average. — Average. > Upper confidence limit exceeds graph area. Test method: N = less sensitive test (e.g. enzyme immunoassay), S = more sensitive test (e.g. nucleic acid amplification test). OP: Outpatient not admitted, CO-NMH: community onset-not my hospital, CO-PMH: community onset-possibly my hospital, HO: hospital onset, HO rate is per 10,000 patient days.
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 3 of 7)

HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
Highland Hospital	S	28	62	17	40	82,481	0.4	4.8	5.7
Hosp for Spec Surg	S	0	7	1	24	52,428	0.0	4.6	NA
Huntington Hospital	S	55	41	12	39	74,033	0.3	5.3	6.9
Interfaith Med Ctr	N	0	6	1	14	30,619	0.1	4.6	10.5
Ira Davenport	S	0	0	0	0	1,395	0.0	0.0	0.0
JT Mather Hospital^	N	7	28	17	33	54,799	0.3	6.0	11.3
Jacobi Med Ctr	S	7	25	11	64	90,528	0.2	7.1	7.8
Jamaica Hospital	S	3	42	8	54	87,307	0.2	6.2	6.8
Jones Memorial	S	0	1	1	2	6,221	0.1	3.2	7.0
Kenmore Mercy	S	8	24	3	18	31,863	0.3	5.6	6.7
Kings County Hosp**	N	5	18	1	17	86,298	0.2	2.0	3.2
Kingsbrook Jewish MC	S	2	25	11	40	44,464	0.3	9.0	9.5
LIJ at Forest Hills	S	20	39	13	26	69,386	0.3	3.7	5.0
LIJ at Valley Stream	S	2	23	5	25	43,752	0.2	5.7	7.7
Lenox Hill Hospital	S	22	32	10	45	105,580	0.1	4.3	5.0
Lincoln Med Ctr**	N	4	4	2	10	82,057	0.0	1.2	2.9
Long Isl Jewish(LIJ)	S	52	93	17	104	178,782	0.2	5.8	6.7
Maimonides Med Ctr	N	11	54	20	56	164,780	0.2	3.4	6.0
Mary Imogene Bassett	S	2	39	7	23	48,299	0.4	4.8	5.3
Massena Memorial	N	0	5	0	3	9,941	0.2	3.0	8.8
Memor SloanKettering	S	15	127	46	255	152,503	0.6	16.7	NA
Mercy Hosp Buffalo	S	25	42	7	61	94,106	0.2	6.5	8.2
Mercy Med Ctr	S	14	51	7	47	43,699	0.6	10.8	9.3
Metropolitan Hosp**	S	0	5	4	4	32,848	0.1	1.2	1.7
MidHudson Reg of WMC^	N	0	18	2	20	20,322	0.5	9.8	12.9
Millard Fill. Suburb**	S	20	109	32	30	57,489	0.7	5.2	3.8

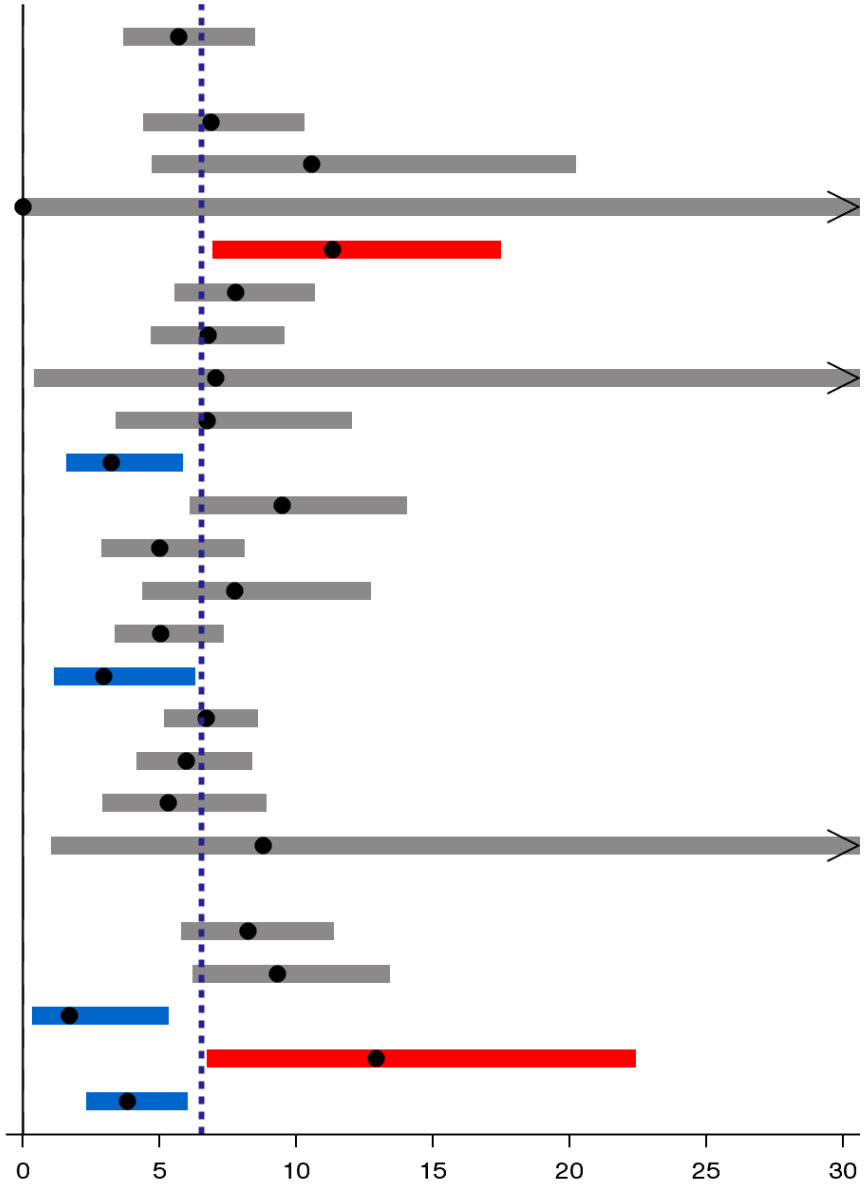


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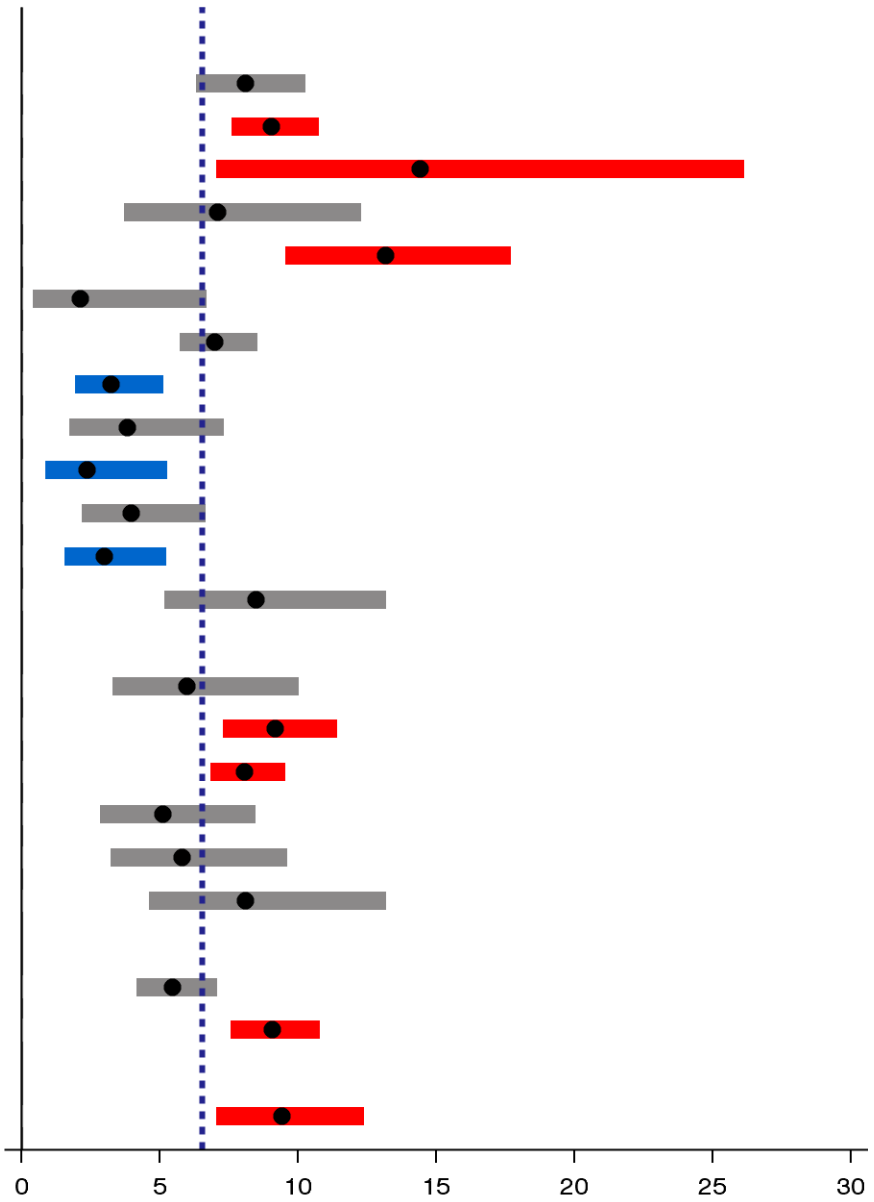
Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 4 of 7)

HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
Monroe Community	S	0	1	0	0	55	6.3	0.0	NA
Montefiore-Einstein	S	7	101	22	117	145,850	0.3	8.0	8.1
Montefiore-Moses^	S	10	139	37	221	258,930	0.3	8.5	9.0
Montefiore-Mt Vernon^	S	1	13	3	17	15,587	0.5	10.9	14.4
Montefiore-NewRochl	S	5	28	3	20	31,255	0.4	6.4	7.1
Montefiore-Wakefield^	S	1	53	8	72	70,315	0.3	10.2	13.1
Mount St. Marys	S	1	7	0	4	29,850	0.1	1.3	2.1
Mt Sinai	S	21	126	36	167	265,621	0.2	6.3	7.0
Mt Sinai Beth Israel**	S	10	30	16	29	108,170	0.1	2.7	3.2
Mt Sinai Brooklyn	S	7	19	9	14	60,289	0.2	2.3	3.8
Mt Sinai Queens**	S	0	30	9	9	48,203	0.3	1.9	2.4
Mt Sinai St Lukes	S	7	28	2	23	71,122	0.2	3.2	4.0
Mt Sinai West**	S	3	28	4	19	78,979	0.2	2.4	3.0
NY Community Hosp	S	0	37	12	32	38,692	0.5	8.3	8.5
NY Eye&Ear Mt Sinai	S	0	1	0	0	833	0.3	0.0	NA
NYP-Allen	S	4	48	17	23	49,902	0.3	4.6	6.0
NYP-Brklyn Methodist^	S	5	81	16	134	168,104	0.2	8.0	9.1
NYP-Columbia^	S	62	176	39	238	224,306	0.4	10.6	8.1
NYP-Hudson Valley	S	2	62	11	24	33,322	0.8	7.2	5.1
NYP-Lawrence	S	12	40	11	24	47,396	0.4	5.1	5.8
NYP-Lower Manhattan	S	14	31	3	26	42,961	0.2	6.1	8.1
NYP-Morgan Stanley	S	18	30	16	52	63,491	0.1	8.2	NA
NYP-Queens	S	0	124	24	97	153,225	0.4	6.3	5.4
NYP-Weill Cornell^	S	112	110	36	218	242,191	0.2	9.0	9.0
NYU Joint Diseases	S	0	1	1	6	17,197	0.0	3.5	NA
NYU Lutheran^	S	5	67	11	86	87,516	0.4	9.8	9.4



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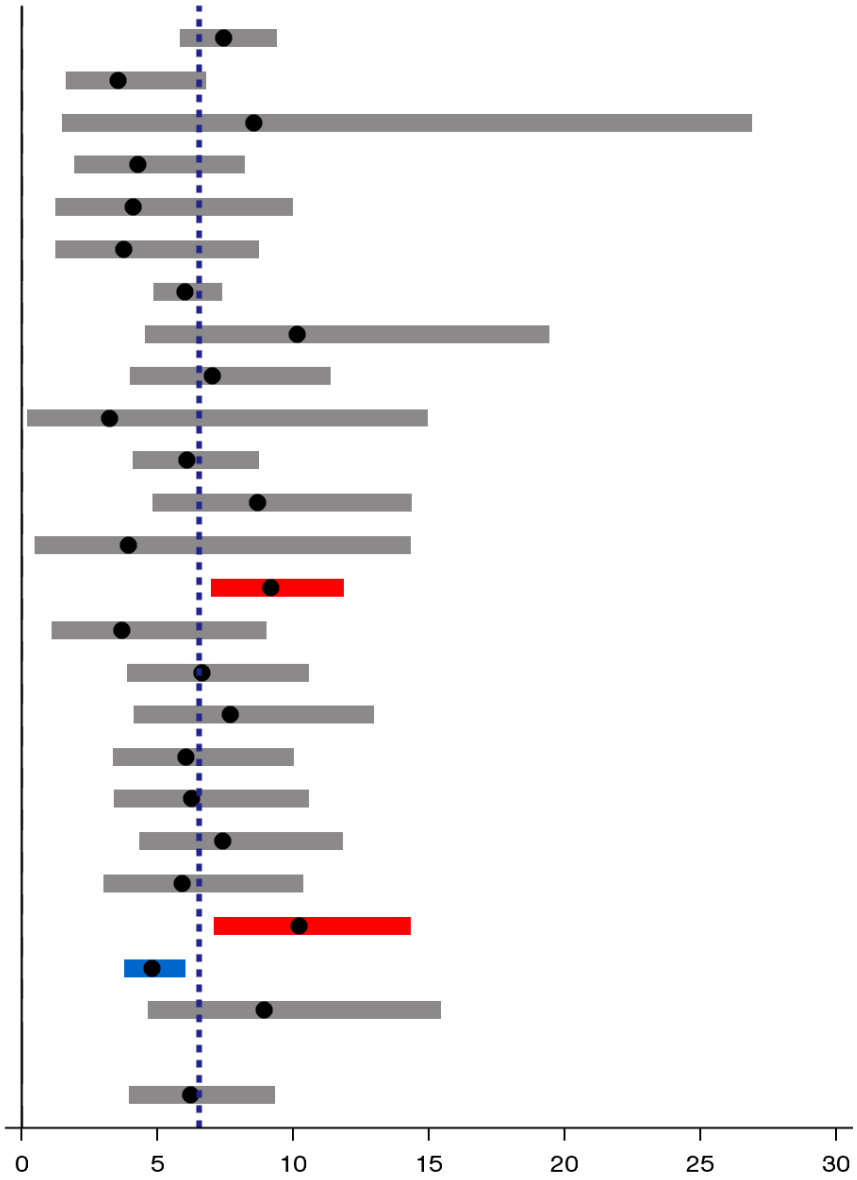
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 5 of 7)

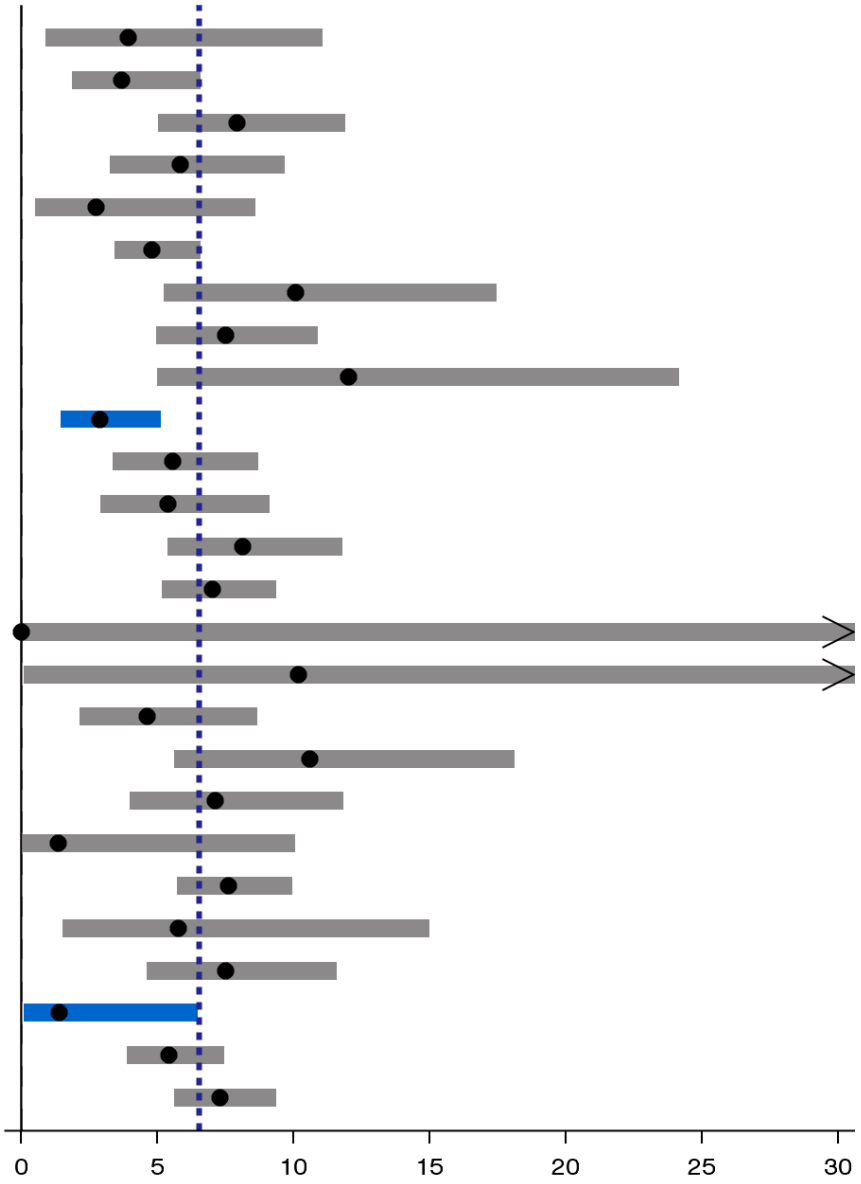
HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
NYU Tisch	S	99	114	37	119	136,626	0.4	8.7	7.4
Nassau University	N	0	4	4	14	69,488	0.0	2.0	3.5
Nathan Littauer	N	2	9	1	4	7,746	0.4	5.2	8.5
Newark Wayne	S	0	37	8	14	20,744	0.8	6.7	4.3
Niagara Falls	S	8	10	0	7	23,527	0.2	3.0	4.1
North Central Bronx	S	8	19	2	8	25,165	0.3	3.2	3.7
North Shore	S	13	139	50	155	263,684	0.3	5.9	6.0
Northern Dutchess	S	8	24	7	14	15,938	0.5	8.8	10.1
Northern Westchester	S	3	40	7	26	38,246	0.5	6.8	7.0
Noyes Memorial	S	1	7	3	2	8,100	0.3	2.5	3.2
Nyack Hospital	S	14	77	11	48	58,728	0.7	8.2	6.1
Olean General	S	16	35	6	24	27,509	0.5	8.7	8.7
Oneida Healthcare	S	10	8	2	3	10,495	0.3	2.9	3.9
OrangeReg Goshen-Mid^	S	18	115	26	97	95,941	0.5	10.1	9.2
Oswego Hospital	S	6	23	4	7	15,446	0.7	4.5	3.7
Our Lady of Lourdes	S	33	48	9	28	44,801	0.5	6.2	6.6
Peconic Bay Medical	S	0	35	5	22	30,704	0.4	7.2	7.7
Phelps Memorial	S	2	40	14	24	37,149	0.7	6.5	6.0
Plainview Hospital	S	28	28	6	22	40,794	0.3	5.4	6.2
Putnam Hospital	S	9	57	5	28	26,127	0.8	10.7	7.4
Queens Hospital	S	0	7	7	19	53,707	0.1	3.5	5.9
Richmond Univ MC^	S	11	25	6	56	67,242	0.1	8.3	10.2
Rochester General**	S	27	127	47	124	200,253	0.5	6.2	4.8
Rome Memorial	S	9	32	3	20	14,664	0.8	13.6	8.9
Roswell Park	S	0	20	15	38	38,914	0.4	9.8	NA
SUNY Downstate MedCr	S	5	37	6	38	72,592	0.3	5.2	6.2



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. —^Significantly higher than state average. —**Significantly lower than state average.
— Average. > Upper confidence limit exceeds graph area. Test method: N = less sensitive test (e.g. enzyme immunoassay), S = more sensitive test (e.g. nucleic acid amplification test). OP: Outpatient not admitted, CO-NMH: community onset-not my hospital, CO-PMH: community onset-possibly my hospital, HO: hospital onset, HO rate is per 10,000 patient days.
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 6 of 7)

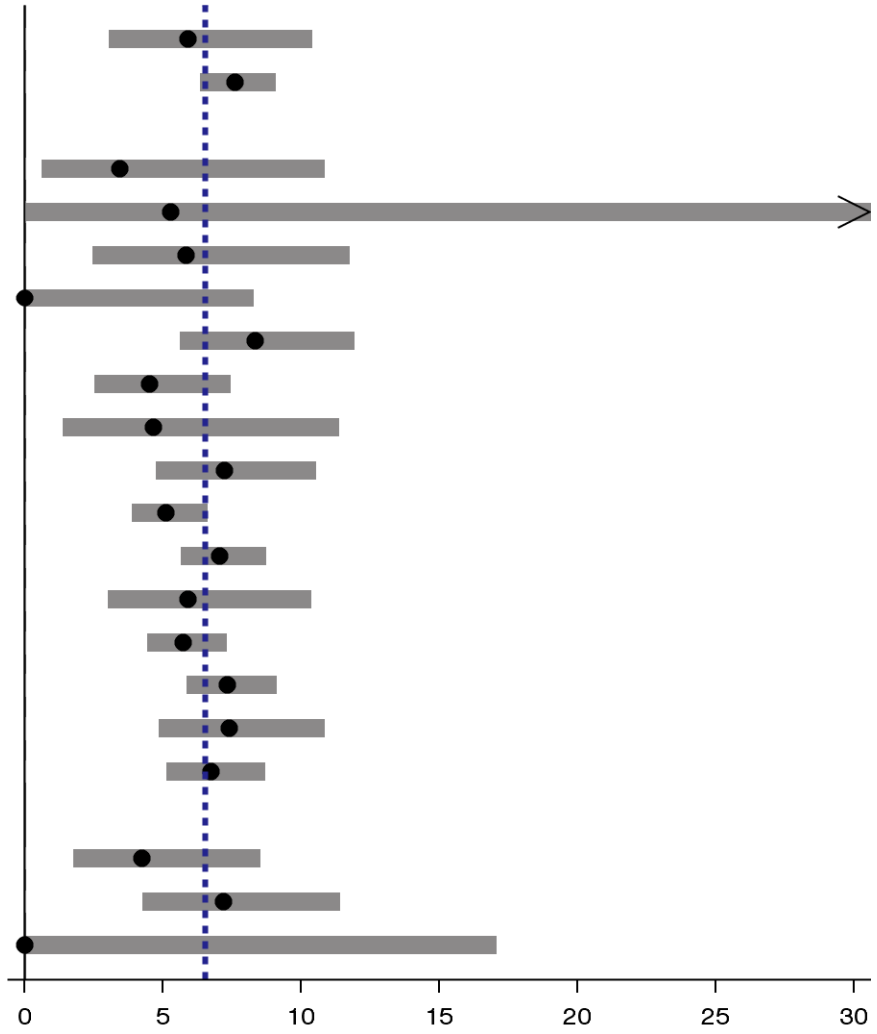
HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
Samaritan- Troy	N	3	11	4	5	29,470	0.1	1.7	3.9
Samaritan- Watertown	S	26	52	9	18	34,014	0.8	5.3	3.7
Saratoga Hospital	S	13	49	8	38	50,333	0.4	7.5	7.9
Sisters of Charity	S	5	43	10	24	48,473	0.4	5.0	5.8
Sisters- St Joseph	S	6	15	3	4	20,282	0.4	2.0	2.7
South Nassau Comm.	S	78	89	17	64	96,521	0.8	6.6	4.8
Southampton	S	11	37	7	20	17,192	0.8	11.6	10.1
Southside	S	73	38	7	45	84,196	0.2	5.3	7.5
St Anthony	S	0	16	4	12	8,721	0.7	13.8	12.0
St Barnabas**	S	7	43	13	18	59,877	0.4	3.0	2.9
St Catherine Siena	S	0	57	9	31	47,187	0.6	6.6	5.5
St Charles Hospital	S	0	25	9	22	50,387	0.3	4.4	5.4
St Elizabeth Medical	S	30	44	9	45	43,916	0.5	10.2	8.1
St Francis- Roslyn	S	27	58	12	77	99,621	0.4	7.7	7.0
St James Mercy	N	0	1	0	0	3,317	0.1	0.0	0.0
St Johns Dobbs Ferry	N	0	1	0	1	3,453	0.1	2.9	10.2
St Johns Episcopal	S	2	9	2	15	49,146	0.1	3.1	4.6
St Johns Riverside	N	3	14	12	21	45,493	0.1	4.6	10.6
St Joseph -Bethpage	S	19	30	2	24	32,056	0.5	7.5	7.1
St Josephs- Elmira	S	0	8	1	1	6,520	0.9	1.5	1.3
St Josephs- Syracuse	S	82	80	21	89	131,028	0.2	6.8	7.6
St Josephs- Yonkers	N	0	11	1	6	18,573	0.3	3.2	5.7
St Lukes Cornwall	S	2	40	14	33	45,508	0.4	7.3	7.5
St Marys Amsterdam**	N	3	17	8	2	27,513	0.3	0.7	1.4
St Peters Hospital	S	7	90	36	65	119,537	0.3	5.4	5.4
Staten Island U N	S	73	83	22	104	137,631	0.3	7.6	7.3



Data reported as of July 31, 2017. State Average. ●Risk-adjusted Infection rate. —^Significantly higher than state average. —**Significantly lower than state average. — Average. > Upper confidence limit exceeds graph area. Test method: N = less sensitive test (e.g. enzyme immunoassay), S = more sensitive test (e.g. nucleic acid amplification test). OP: Outpatient not admitted, CO-NMH: community onset-not my hospital, CO-PMH: community onset-possibly my hospital, HO: hospital onset, HO rate is per 10,000 patient days.
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

Figure 18. Hospital onset facility-wide inpatient *C. difficile* rates, New York State 2016 (Page 7 of 7)

HOSPITAL	TEST METH	# OP	# CO-NMH	# CO-PMH	# HO	# PATDAYS	CO-NMH RATE	RAW HO RATE	ADJ HO RATE
Staten Island U S	S	11	26	7	19	42,031	0.3	4.5	5.9
Strong Memorial	S	95	90	26	210	231,266	0.4	9.1	7.6
Sunnyview Rehab Hosp	S	0	0	0	2	4,673	0.0	4.3	NA
Syosset Hospital	S	9	12	0	4	14,623	0.3	2.7	3.4
TLC Lake Shore	S	1	3	0	1	1,849	0.6	5.4	5.3
UHS Binghamton	S	0	23	4	12	25,802	0.5	4.7	5.8
UHS Chenango Memor	S	2	12	0	0	4,070	0.9	0.0	0.0
UHS Wilson	S	5	65	23	49	57,628	0.4	8.5	8.3
UPMC Chautauqua WCA	S	32	51	15	24	23,559	1.0	10.2	4.5
United Memorial	S	8	22	0	7	12,791	0.6	5.5	4.6
Unity Hosp Rochester	S	44	44	20	44	75,456	0.3	5.8	7.2
Univ Hosp SUNY Upst	S	9	95	29	95	116,588	0.5	8.1	5.1
Univ Hosp StonyBrook	S	105	128	38	141	167,911	0.4	8.4	7.0
Upst. Community Gen	S	3	36	5	19	32,907	0.5	5.8	5.9
Vassar Brothers	S	1	162	58	107	97,586	0.9	11.0	5.7
Westchester Medical	S	14	71	23	139	146,649	0.4	9.5	7.3
White Plains Hosp	S	12	70	15	43	71,038	0.4	6.1	7.4
Winthrop University	S	50	81	16	98	153,847	0.2	6.4	6.7
Woman and Childrens	S	2	9	3	4	32,718	0.1	1.2	NA
Woodhull Med Ctr	S	2	10	2	12	47,259	0.1	2.5	4.2
Wyckoff Heights	S	4	29	9	29	54,938	0.2	5.3	7.2
Wyoming County Comm.	N	1	3	0	0	7,058	0.2	0.0	0.0



Data reported as of July 31, 2017. ┆State Average. ●Risk-adjusted Infection rate. —^Significantly higher than state average. —**Significantly lower than state average.
— Average. > Upper confidence limit exceeds graph area. Test method: N = less sensitive test (e.g. enzyme immunoassay), S = more sensitive test (e.g. nucleic acid amplification test). OP: Outpatient not admitted, CO-NMH: community onset-not my hospital, CO-PMH: community onset-possibly my hospital, HO: hospital onset, HO rate is per 10,000 patient days.
HO rate adjusted using test method, CO-NMH rate, percent intensive care unit days, and number of beds. Rehabilitation and behavioral health units excluded.

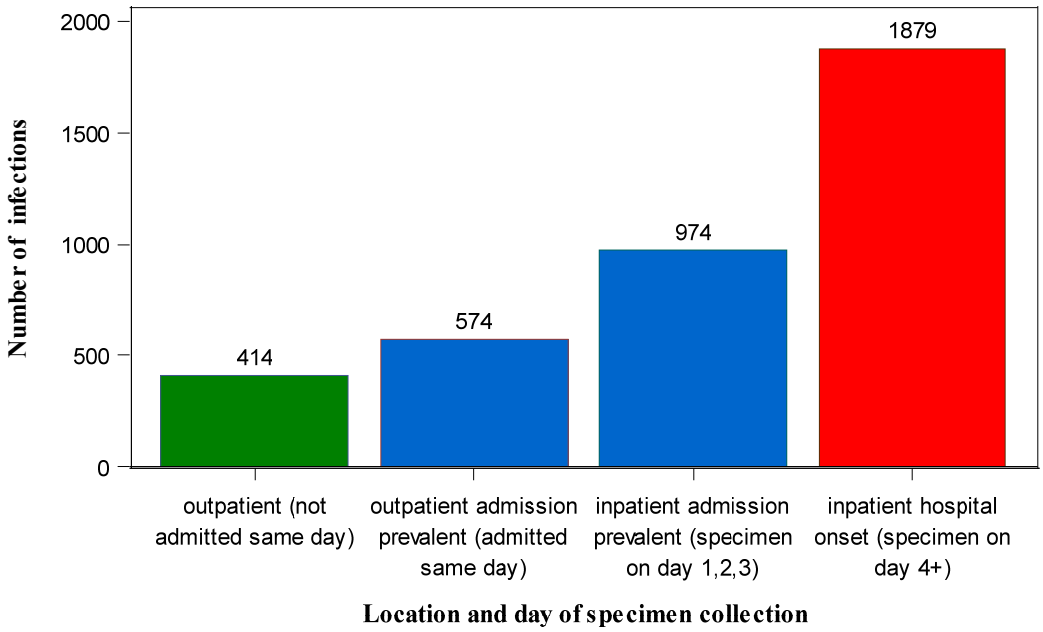
Carbapenem-resistant Enterobacteriaceae (CRE) Infections

The current NHSN LabID CRE surveillance definition is:

> Any *Escherichia coli*, *Klebsiella oxytoca, Klebsiella pneumoniae*, or *Enterobacter* spp. testing resistant to imipenem, meropenem, doripenem, or ertapenem by standard susceptibility testing methods (i.e., minimum inhibitory concentrations of ≥4 mcg/mL for doripenem, imipenem and meropenem or ≥2 mcg/mL for ertapenem) OR by production of a carbapenemase demonstrated using a recognized test.

In 2016, 3,841 CRE cases were reported: 11% were identified in ED/OBS units among patients who were not admitted the same day, 15% were identified in ED/OBS units among patients who were admitted the same day, 25% were identified in the FWI area during the first three days of hospitalization, and 49% were identified in the FWI area after the first three days of inpatient stay (Figure 19).

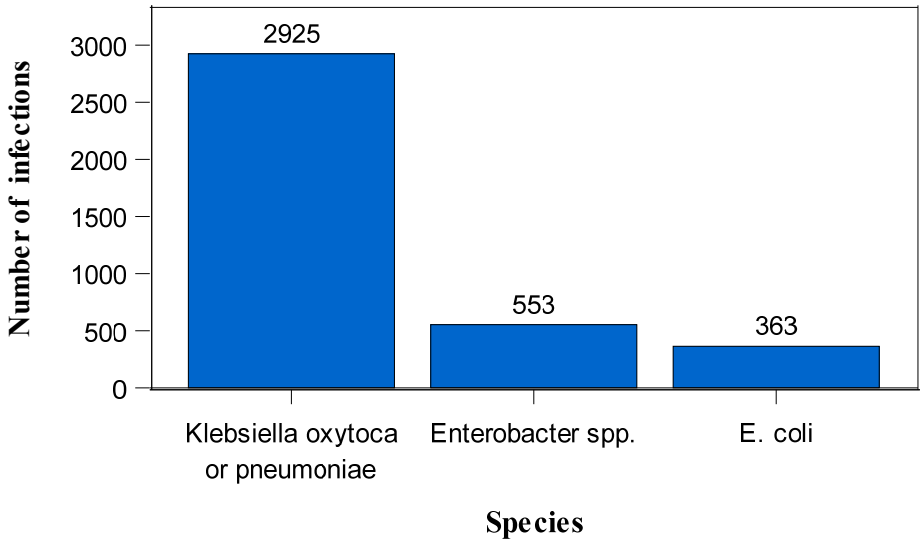
Figure 19. Carbapenem-resistant Enterobacteriaceae Infection Onset, NYS 2016



Data reported as of July 31, 2017. Excludes inpatient rehabilitation and inpatient psychiatric facilities. Specimens identified in the outpatient setting and admitted the next day are counted as outpatient.

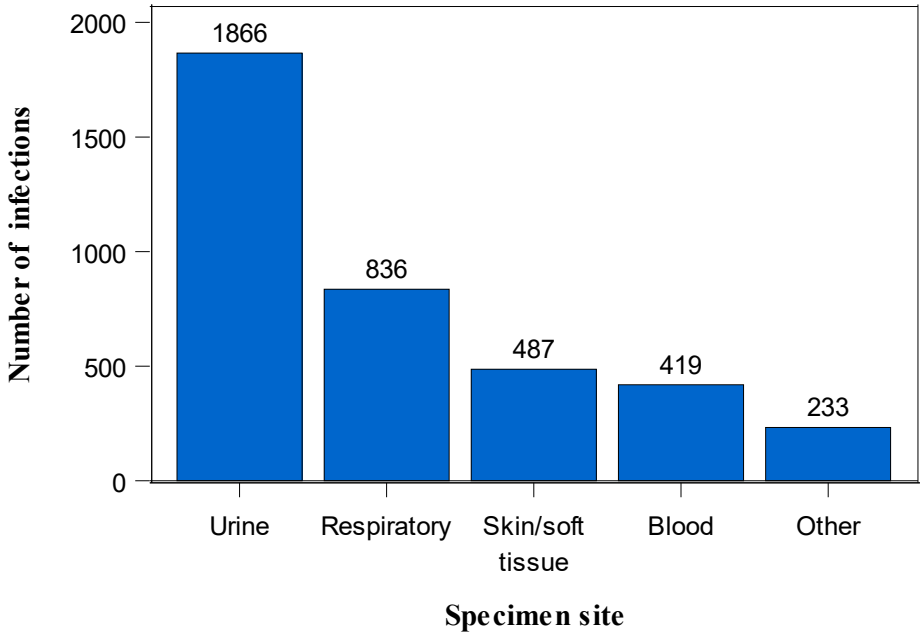
The majority of the CRE cases were CRE-*Klebsiella* spp. (76%) (Figure 20). A small percentage (3%) of patients harbored more than one type of organism.

Figure 20. Carbapenem-resistant Enterobacteriaceae by species, NYS 2016



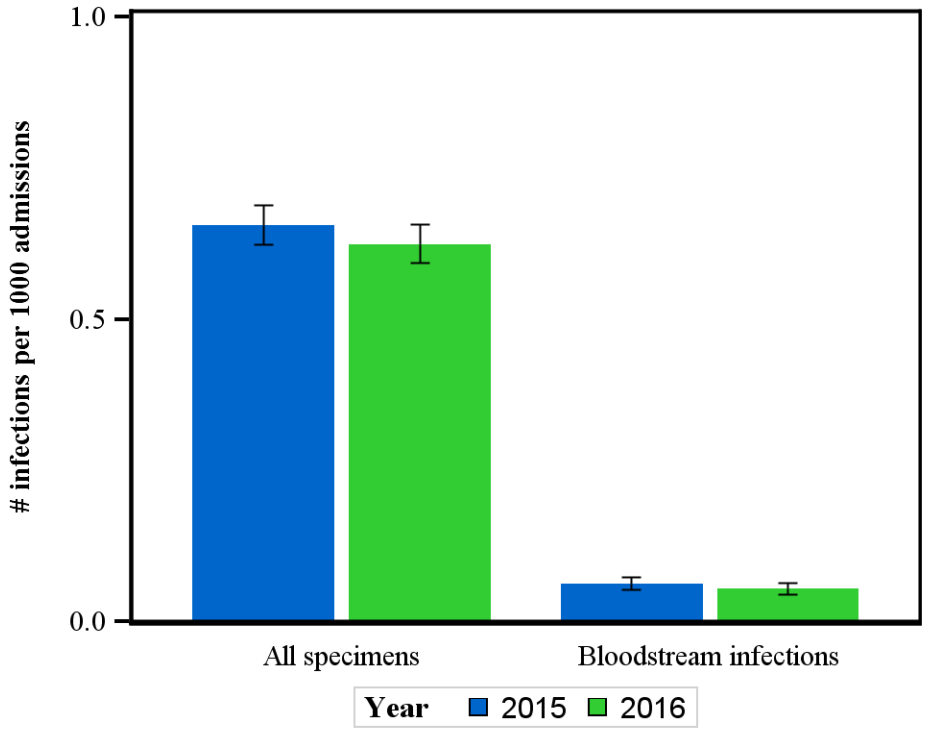
The most common specimen site was the urinary tract (49%, Figure 21).

Figure 21. Carbapenem-resistant Enterobacteriaceae by specimen site, NYS 2016



The admission prevalence rate describes the percentage of patients admitted to hospitals with CRE. In 2016, there were 1,465 of these cases out of 2,346,836 admissions, for a rate of 0.624 infections per 1,000 admissions. The all specimen admission prevalence rate decreased 5% between 2015 and 2016, while the bloodstream infection admission prevalence rate decreased 13% (Figure 22).

Figure 22. Facility-wide Inpatient Carbapenem-Resistant Enterobacteriaceae Admission Prevalence Infection Rates, New York State 2015-2016

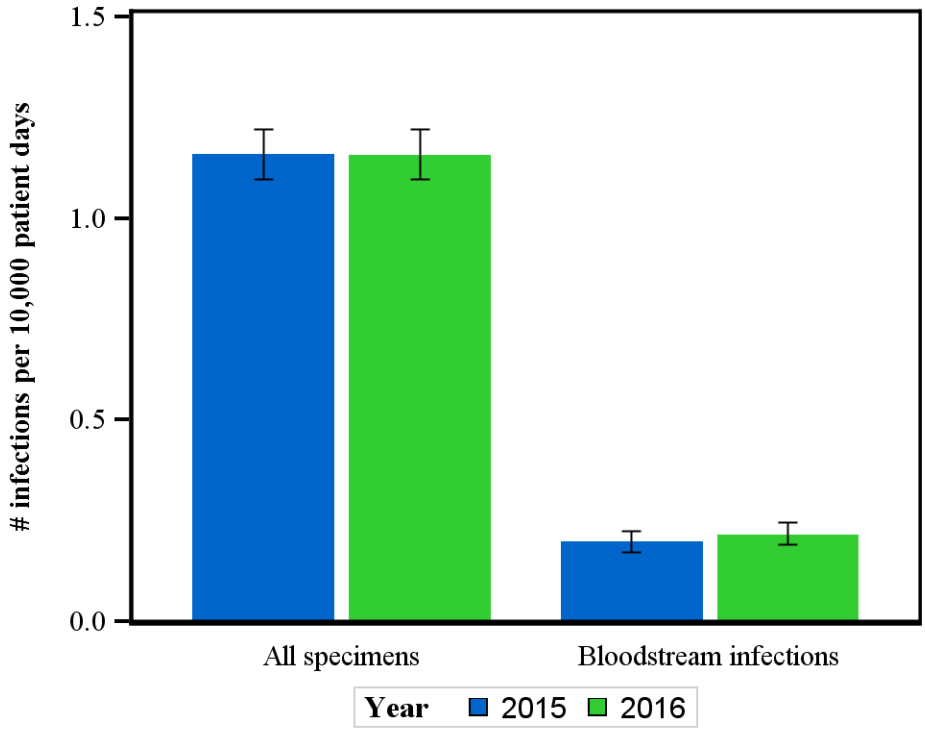


Year	# Bloodstream infections	# Total Infections	# Admissions	Bloodstream Infection Admission Prevalence Rate	All specimen admission prevalence rate
2015	145	1,526	2,328,741	0.0623	0.655
2016	126	1,465	2,346,836	0.0537	0.624

Data reported as of July 31, 2017. Bloodstream Infection Admission Prevalence Rate = number of unique (no others in previous 14 days) blood source infections per patient per month identified ≤ 3 days after admission to the hospital / Number of patient admissions to the hospital x 1000. All Specimen Admission Prevalence Rate = number of first infections per patient per month identified ≤ 3 days after admission to the hospital / Number of patient admissions to the hospital x 1000. Includes cases identified in the emergency room if admitted the same day. Excludes inpatient rehabilitation and inpatient psychiatric locations.

The longer a person stays in the hospital, the higher the total risk of acquiring an infection in the hospital, so the incidence rates are reported using a denominator of patient days. The bloodstream infection incidence rate increased 9% between 2015 and 2016 (Figure 23).

Figure 23. Facility-wide Inpatient Carbapenem-Resistant Enterobacteriaceae Infection Incidence Rates, New York State 2015-2016



Year	# Bloodstream infections	# Total Infections	# Patient days	Bloodstream Infection Incidence Rate	All Specimen Infection/Colonization Incidence Rate
2015	227	1,328	11,467,005	0.198	1.16
2016	247	1,324	11,441,024	0.216	1.16

Bloodstream Infection Incidence Rate = Number of all unique (no others in previous 14 days) blood source infections per patient per month identified > 3 days after admission to the hospital / Number of patient days x 10,000. All Specimen Infection/Colonization Incidence Rate = Number of first events per patient among those with no event with this specific organism type reported in a previous month at this hospital, and identified > 3 days after admission to the hospital / Number of patient days x 10,000. Excludes inpatient rehabilitation and inpatient psychiatric locations.

Overall patient prevalence includes both admission prevalent and hospital onset cases. Overall patient prevalence rates by year and species are summarized in Table 18. The prevalence of *Klebsiella* decreased 6%, the prevalence of *Enterobacter* spp. increased 4%, and the prevalence of *E. coli* increased 23%.

Table 18. Trends in Overall Patient Prevalence Carbapenem-Resistant Enterobacteriaceae Infection Rates by Species, NYS 2016

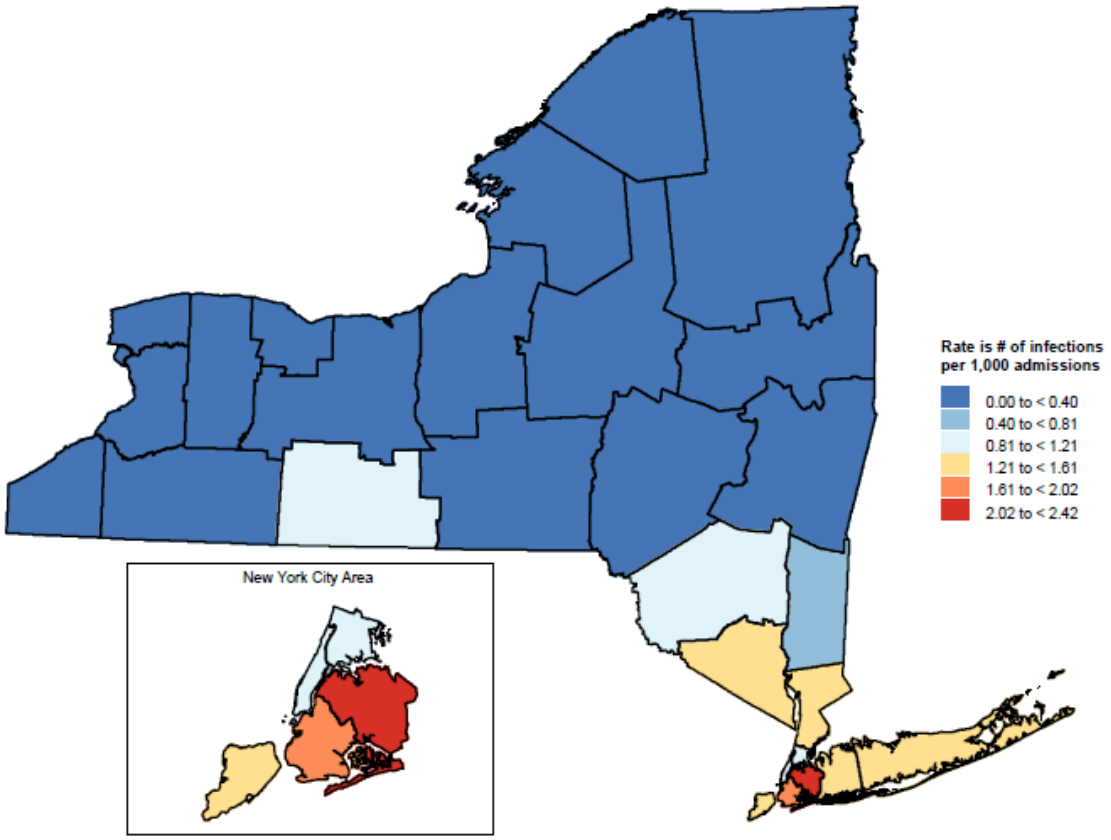
year	*Klebsiella oxytoca and pneumoniae*	*Enterobacter* spp.	*E. coli*
2015	1.098	0.198	0.102
2016	1.029	0.205	0.125

Facilitywide inpatient data reported as of July 31, 2017. Inpatient rehab and pychiatric facility data excluded. Overall patient prevalence rate is the number of first LabID Events per patient per month (e.g. admission prevalent or hospital onset) / Number of patient admissions to the hospital x 1000

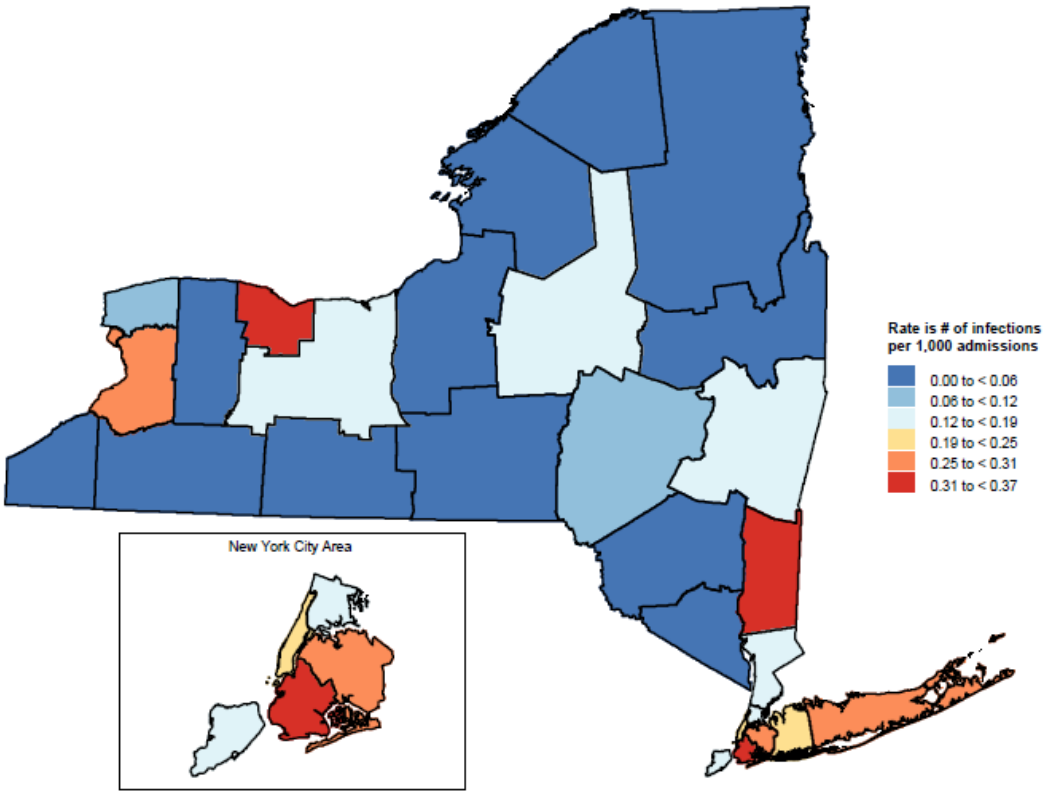
Figures 24 (a,b,c) show the FWI CRE patient prevalence rate by species and county (or merged county for those with few or no hospitals). FWI CRE-*Klebsiella* patient prevalence rates continue to be highest in the New York City area. FWI CRE-*E. coli* and CRE-*Enterobacter* rates are based on smaller numbers, and the maps show greater variability throughout the state. If the CRE-*Enterobacter* and CRE-*E. coli* maps used the same scale as the CRE-*Klebsiella* map, they would be entirely blue.

Figure 24 a-c. Facility-wide Inpatient Carbapenem-resistant Enterobacteriaceae Patient Prevalence Rates, New York State 2016

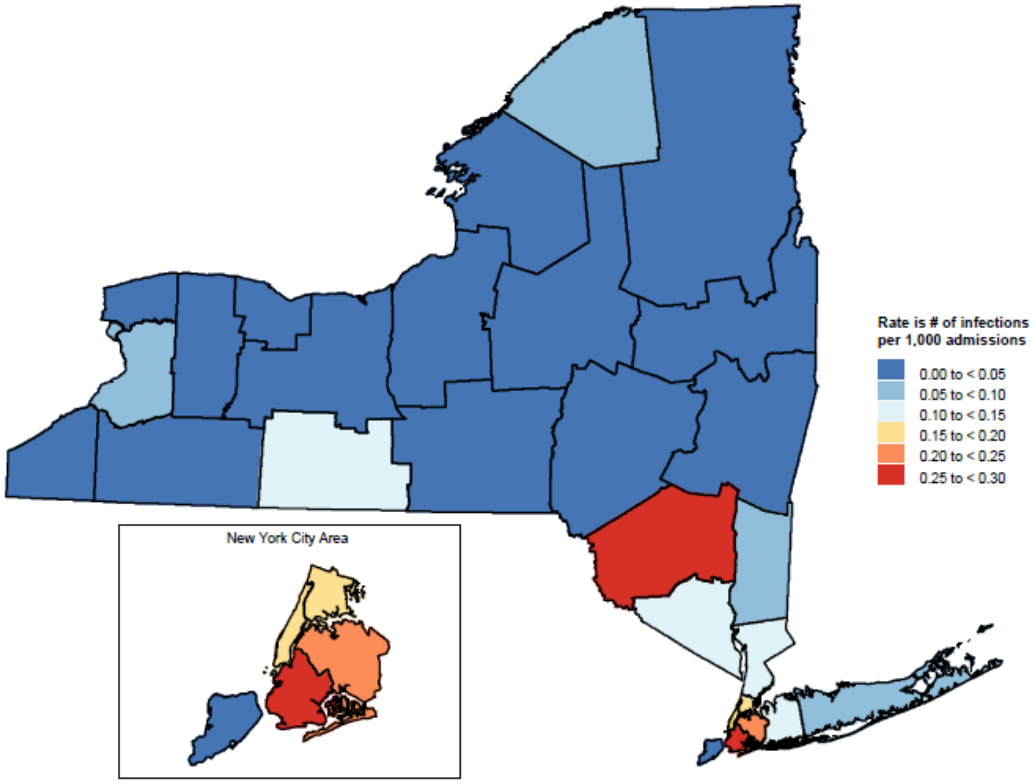
(a) CRE-*Klebsiella* overall patient prevalence rate 2016



(b) CRE-*Enterobacter* overall patient prevalence rate 2016



(c) CRE-*E. coli* overall patient prevalence rate 2016



Data reported as of July 31, 2017. Small counties have been merged.

Laboratory Testing Methods

Breakpoints for determining whether an organism is susceptible, intermediate, or resistant to an antibiotic are published by the Clinical Laboratory Standards Institute (CLSI). However, the CLSI breakpoints are updated more frequently than they can be adopted by manufacturers of susceptibility testing systems because of additional approvals required by the Food and Drug Administration. According to the 2016 NHSN survey, 83% of facilities used the newer more sensitive (CLSI M22 or M23 standard) breakpoints in 2016, while 17% continued to use the old breakpoints. The facilities using the older breakpoints may follow screening algorithms that incorporate additional testing to approximate the newer breakpoints.

Identification of carbapenemases (enzymes that bacteria produce that destroy carbapenem antibiotics), can also be used to meet the CRE LabID definition. In 2016, approximately 18% of specimens were tested for the presence of a carbapenemase. This was most commonly done using the Modified Hodge Test. Among those tested, a carbapenemase was identified 91% of the time.

Facilities using the older breakpoints or not detecting carbapenemases may be undercounting CRE, and testing differences may reduce the comparability of CRE rates between facilities.

There may also be variation in the extent to which facilities identify and perform susceptibility testing of non-sterile specimens. Laboratory identification of CRE can be achieved through several methods, all of which have benefits and drawbacks. There is no standardization for which method should be used in individual health care facility laboratories. As such, hospital-specific CRE rates, particularly in non-blood specimens, may vary based on testing methods.

Hospital-specific CRE rates

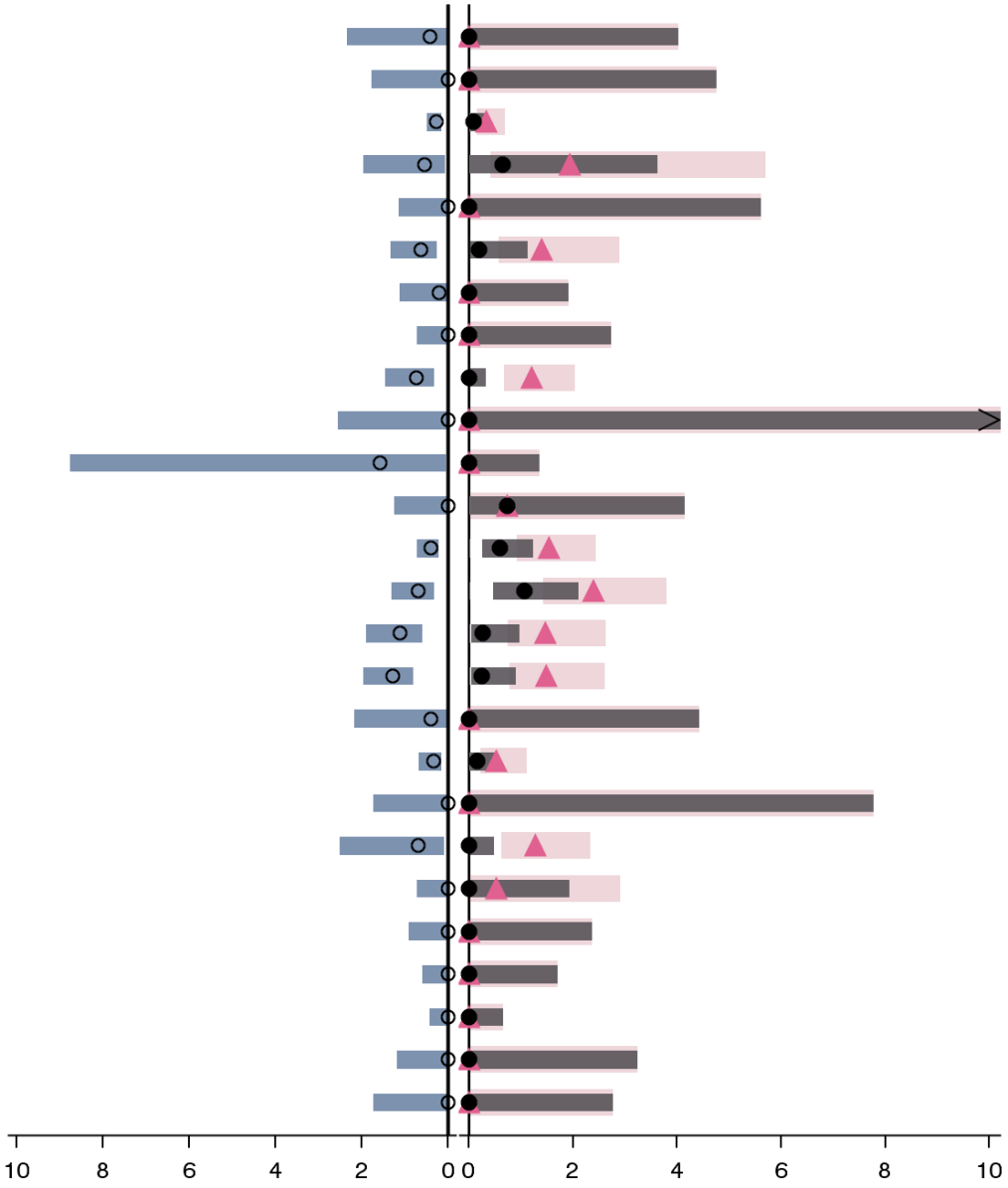
The primary HAI indicator of interest for evaluating hospital performance is the hospital onset BSI rate, because 1) blood specimens are more consistently screened by laboratories across the state; 2) bloodstream infections are very serious and more likely reflect clinical disease than infections detected from nonsterile body sites such as wounds[1]. The prevalence of CRE among patients newly admitted to facilities is also reported because this burden of admission prevalent cases is related to the risk of spread within the facility.

Hospitals should review their HO BSI rates in relation to their admission prevalence rates as shown in Figure 25, e.g. hospitals with high HO rates and low admission prevalence rates should examine whether they are testing patients promptly (days 1-3) and if their cases were clustered. With respect to interpreting the all-site rates, note there are variations in the types of specimens reported among hospitals, e.g. some hospitals have reported a very large proportion of urinary tract infections/colonizations, others reported a very large proportion of skin or respiratory infections/colonizations. The hospital- and region-specific admission prevalence rate, bed size, and percent intensive care unit patient days do not strongly predict the HO BSI rate, therefore, risk-adjusted rates are not presented. More research is needed on CRE risk adjustment to balance the importance of accuracy and fairly comparing rates with the need for having a measure to identify hospitals with higher than predicted rates for public health assistance and quality improvement programs.

Hospitals should continue to evaluate their infection prevention and control practices in relation to CDC recommendations. Challenges include imperfect compliance with handwashing, delays and/or variations in implementing contact precautions and appropriately cohorting patients, delays in discontinuing devices when they are no longer needed, and lack of established protocols to screen epidemiologically linked contacts and perform active surveillance testing in high-risk areas. In addition, the pressures of broad-spectrum antibiotic usage along with the interdependence of acute and long-term care facilities in the spread and transmission of CRE[2] and challenges promptly communicating infection control issues at the time of inter-facility transfer compound the complexity of CRE containment and prevention.

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 1 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
AO Fox Memorial	1	2382	0.4	0.0	0.0	9185	0	0
Adirondack Medical	0	2075	0.0	0.0	0.0	7786	0	0
Albany Med Ctr	11	40027	0.3	0.3	0.1	214498	7	2
Albany Memorial	2	3675	0.5	1.9	0.6	15445	3	1
Alice Hyde Med Ctr	0	3270	0.0	0.0	0.0	6584	0	0
Arnot Ogden Med Ctr	7	10918	0.6	1.4	0.2	50049	7	1
Auburn Memorial	1	4952	0.2	0.0	0.0	19343	0	0
Bellevue Ellis	0	5179	0.0	0.0	0.0	13599	0	0
Bellevue Hospital	8	10791	0.7	1.2	0.0	116504	14	0
Bertrand Chaffee	0	1446	0.0	0.0	0.0	3496	0	0
Blythedale Childrens	1	636	1.6	0.0	0.0	27453	0	0
Bon Secours	0	2971	0.0	0.7	0.7	13505	1	1
Bronx-Lebanon	11	27336	0.4	1.5	0.6	117513	18	7
Brookdale Hospital	9	13023	0.7	2.4	1.1	75192	18	8
Brookhaven Memorial	13	11718	1.1	1.5	0.3	75000	11	2
Brooklyn Hosp Ctr	21	16396	1.3	1.5	0.2	80553	12	2
Brooks Memorial	1	2562	0.4	0.0	0.0	8364	0	0
Buffalo General	8	23270	0.3	0.5	0.2	131705	7	2
Burdett Care Center	0	2123	0.0	0.0	0.0	4750	0	0
Calvary Hospital	2	2886	0.7	1.3	0.0	79054	10	0
Canton-Potsdam	0	5141	0.0	0.5	0.0	19249	1	0
Catskill Regional	0	4025	0.0	0.0	0.0	15628	0	0
Cayuga Medical Ctr	0	6167	0.0	0.0	0.0	21767	0	0
Champlain Valley	0	8909	0.0	0.0	0.0	56767	0	0
Claxton-Hepburn	0	3098	0.0	0.0	0.0	11457	0	0
Clifton Springs	0	2145	0.0	0.0	0.0	13383	0	0



Data reported as of July 31, 2017. Facility-wide inpatient only, rehab and behavioral health units excluded

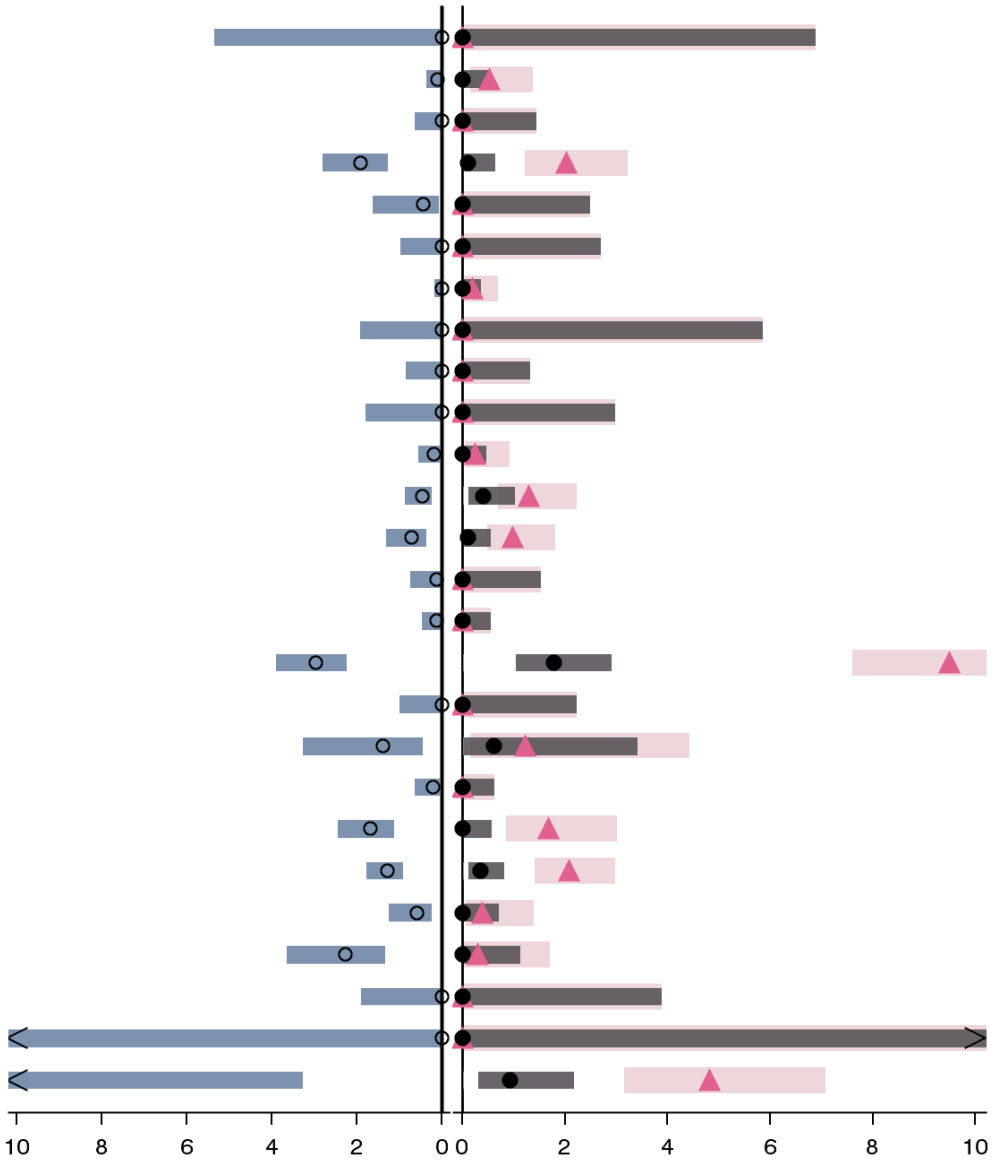
HO-All: hospital onset CRE incidence rate all sites per 10,000 patient days and 95% confidence interval (state average = 1.2)

HO-BSI: hospital onset CRE blood incidence rate per 10,000 patient days and 95% confidence interval (state average = 0.2)

All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 2 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
Cobleskill Regional	0	690	0.0	0.0	0.0	5375	0	0
Cohens Childrens	2	19664	0.1	0.5	0.0	75585	4	0
Columbia Memorial	0	5739	0.0	0.0	0.0	25741	0	0
Coney Island Hosp	27	14054	1.9	2.0	0.1	88764	18	1
Corning Hospital	2	4478	0.4	0.0	0.0	14856	0	0
Cortland Reg Med	0	3767	0.0	0.0	0.0	13726	0	0
Crouse Hospital	0	22341	0.0	0.2	0.0	106012	2	0
DeGraff Memorial	0	1919	0.0	0.0	0.0	6307	0	0
East. Niag. Lockport	0	4395	0.0	0.0	0.0	28271	0	0
Eastern Long Island	0	2057	0.0	0.0	0.0	12420	0	0
Ellis Hospital	3	16288	0.2	0.2	0.0	80146	2	0
Elmhurst Hospital	10	21491	0.5	1.3	0.4	100750	13	4
Erie County Med Ctr	11	15161	0.7	1.0	0.1	102472	10	1
FF Thompson	1	7642	0.1	0.0	0.0	24361	0	0
Faxton St. Lukes	2	15830	0.1	0.0	0.0	68104	0	0
Flushing Hospital	53	17816	3.0	9.5	1.8	89593	85	16
Geneva General	0	3689	0.0	0.0	0.0	16712	0	0
Glen Cove Hospital	5	3582	1.4	1.2	0.6	16394	2	1
Glens Falls Hospital	3	13700	0.2	0.0	0.0	60658	0	0
Good Samar. Suffern	28	16556	1.7	1.7	0.0	65649	11	0
Good Samar. W Islip	36	28076	1.3	2.1	0.3	144358	30	5
Harlem Hospital	7	11672	0.6	0.4	0.0	52337	2	0
HealthAlli Broadway	17	7450	2.3	0.3	0.0	32866	1	0
HealthAlli MarysAve	0	1937	0.0	0.0	0.0	9531	0	0
Helen Hayes Hospital	0	82	0.0	0.0	0.0	428	0	0
Henry J. Carter	4	333	12.0	4.8	0.9	53980	26	5



Data reported as of July 31, 2017. Facility-wide inpatient only, rehab and behavioral health units excluded

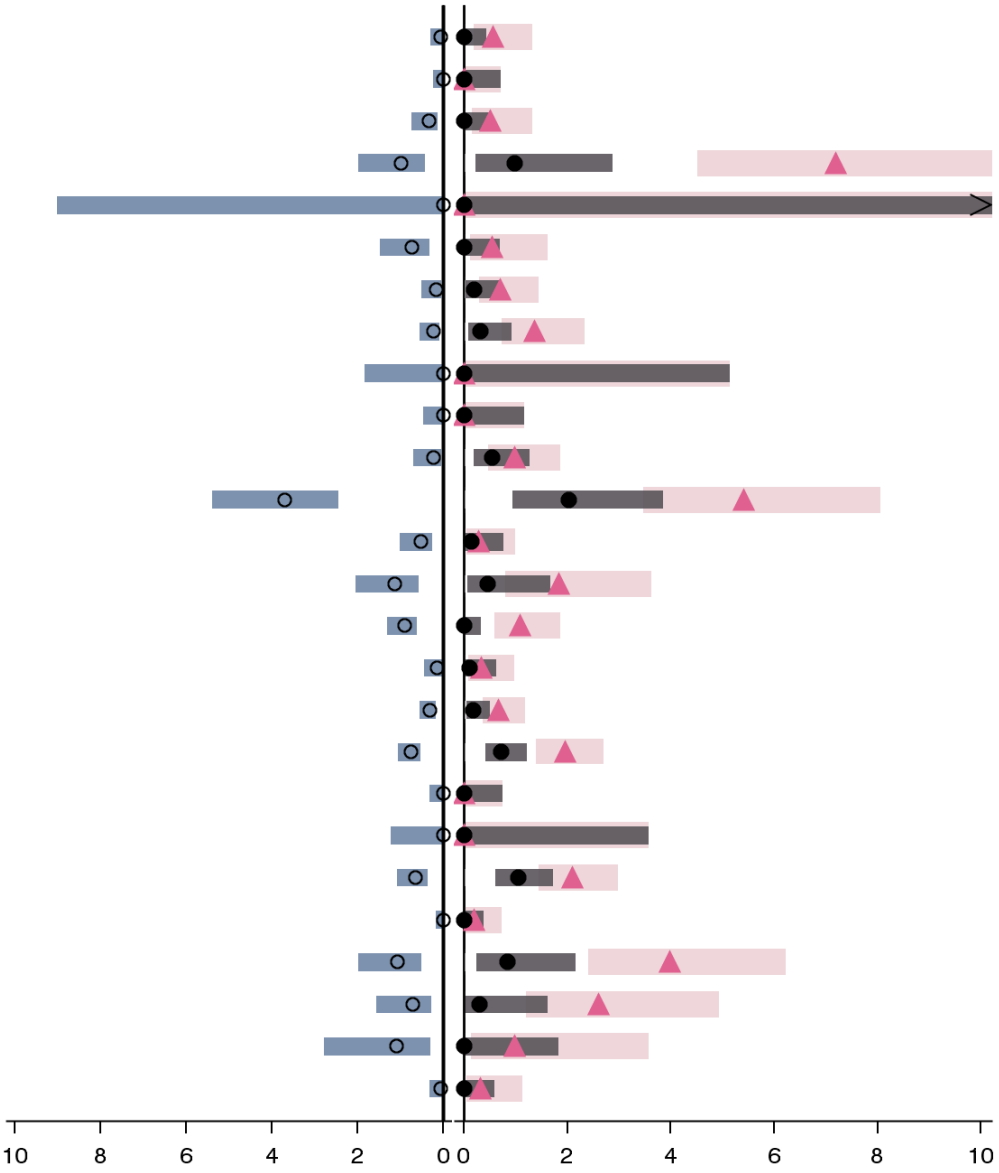
HO-All: hospital onset CRE incidence rate all sites per 10,000 patient days and 95% confidence interval (state average = 1.2)

HO-BSI: hospital onset CRE blood incidence rate per 10,000 patient days and 95% confidence interval (state average = 0.2)

All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 3 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
Highland Hospital	1	18421	0.1	0.6	0.0	89251	5	0
Hosp for Spec Surg	0	16044	0.0	0.0	0.0	52428	0	0
Huntington Hospital	6	17558	0.3	0.5	0.0	78063	4	0
Interfaith Med Ctr	8	7992	1.0	7.2	1.0	30619	22	3
Ira Davenport	0	409	0.0	0.0	0.0	1395	0	0
JT Mather Hospital	8	10762	0.7	0.5	0.0	54799	3	0
Jacobi Med Ctr	3	17600	0.2	0.7	0.2	100601	7	2
Jamaica Hospital	5	21556	0.2	1.4	0.3	96040	13	3
Jones Memorial	0	2018	0.0	0.0	0.0	7192	0	0
Kenmore Mercy	0	7806	0.0	0.0	0.0	31863	0	0
Kings County Hosp	3	12567	0.2	1.0	0.5	92410	9	5
Kingsbrook Jewish MC	27	7285	3.7	5.4	2.0	44464	24	9
LIJ at Forest Hills	9	16753	0.5	0.3	0.1	73879	2	1
LIJ at Valley Stream	11	9603	1.1	1.8	0.5	43752	8	2
Lenox Hill Hospital	29	31994	0.9	1.1	0.0	120743	13	0
Lincoln Med Ctr	3	20068	0.1	0.3	0.1	91148	3	1
Long Isl Jewish(LIJ)	13	40780	0.3	0.7	0.2	178782	12	3
Maimonides Med Ctr	33	43771	0.8	2.0	0.7	194597	38	14
Mary Imogene Bassett	0	11399	0.0	0.0	0.0	50076	0	0
Massena Memorial	0	3033	0.0	0.0	0.0	10363	0	0
Memor SloanKettering	15	23088	0.6	2.1	1.0	152503	32	16
Mercy Hosp Buffalo	0	21518	0.0	0.2	0.0	102195	2	0
Mercy Med Ctr	10	9309	1.1	4.0	0.8	47733	19	4
Metropolitan Hosp	6	8325	0.7	2.6	0.3	34716	9	1
MidHudson Reg of WMC	4	3672	1.1	1.0	0.0	20322	2	0
Millard Fill. Suburb	1	17716	0.1	0.3	0.0	64578	2	0



Data reported as of July 31, 2017. Facility-wide inpatient only, rehab and behavioral health units excluded

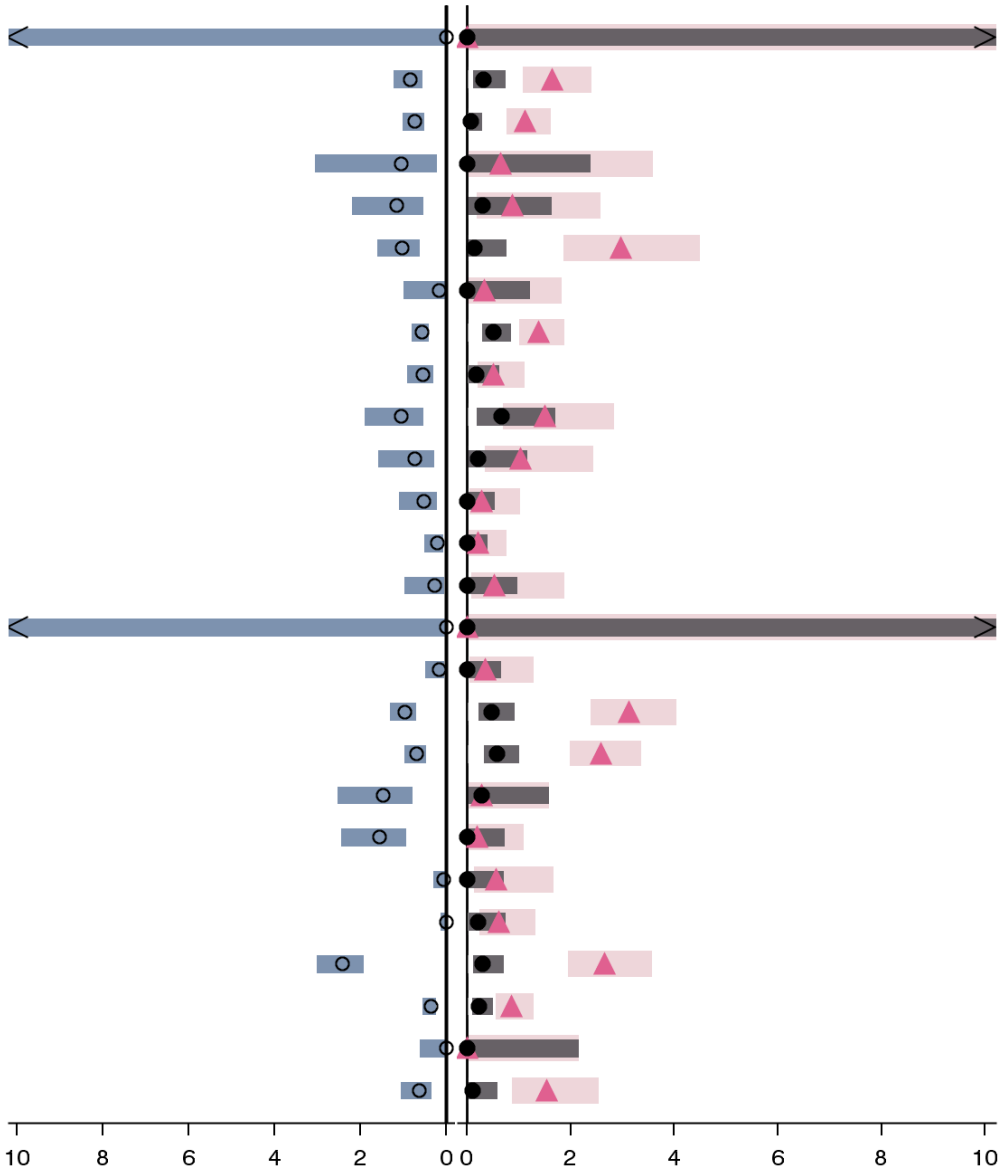
HO-All: hospital onset CRE incidence rate all sites per 10,000 patient days and 95% confidence interval (state average = 1.2)

HO-BSI: hospital onset CRE blood incidence rate per 10,000 patient days and 95% confidence interval (state average = 0.2)

All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 4 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
Monroe Community	0	16	0.0	0.0	0.0	55	0	0
Montefiore-Einstein	26	30999	0.8	1.6	0.3	159260	26	5
Montefiore-Moses	34	46628	0.7	1.1	0.1	258930	29	2
Montefiore-Mt Vernon	3	2865	1.0	0.6	0.0	15587	1	0
Montefiore-NewRochl	9	7770	1.2	0.9	0.3	34196	3	1
Montefiore-Wakefield	19	18523	1.0	3.0	0.1	74236	22	1
Mount St. Marys	1	5594	0.2	0.3	0.0	30783	1	0
Mt Sinai	33	57303	0.6	1.4	0.5	296862	41	15
Mt Sinai Beth Israel	14	25778	0.5	0.5	0.2	118062	6	2
Mt Sinai Brooklyn	11	10370	1.1	1.5	0.7	60289	9	4
Mt Sinai Queens	6	8219	0.7	1.0	0.2	48203	5	1
Mt Sinai St Lukes	7	13123	0.5	0.3	0.0	71122	2	0
Mt Sinai West	5	22754	0.2	0.2	0.0	95624	2	0
NY Community Hosp	2	7429	0.3	0.5	0.0	38692	2	0
NY Eye&Ear Mt Sinai	0	327	0.0	0.0	0.0	833	0	0
NYP-Allen	3	17880	0.2	0.4	0.0	56629	2	0
NYP-Brklyn Methodist	41	42374	1.0	3.1	0.5	188956	59	9
NYP-Columbia	31	44951	0.7	2.6	0.6	224306	58	13
NYP-Hudson Valley	13	8820	1.5	0.3	0.3	35468	1	1
NYP-Lawrence	18	11617	1.5	0.2	0.0	51781	1	0
NYP-Lower Manhattan	1	18613	0.1	0.6	0.0	53022	3	0
NYP-Morgan Stanley	0	28593	0.0	0.6	0.2	99514	6	2
NYP-Queens	77	31829	2.4	2.7	0.3	165849	44	5
NYP-Weill Cornell	25	68407	0.4	0.8	0.2	271285	23	6
NYU Joint Diseases	0	6061	0.0	0.0	0.0	17197	0	0
NYU Lutheran	14	22086	0.6	1.5	0.1	98082	15	1



Data reported as of July 31, 2017. Facility-wide inpatient only, rehab and behavioral health units excluded

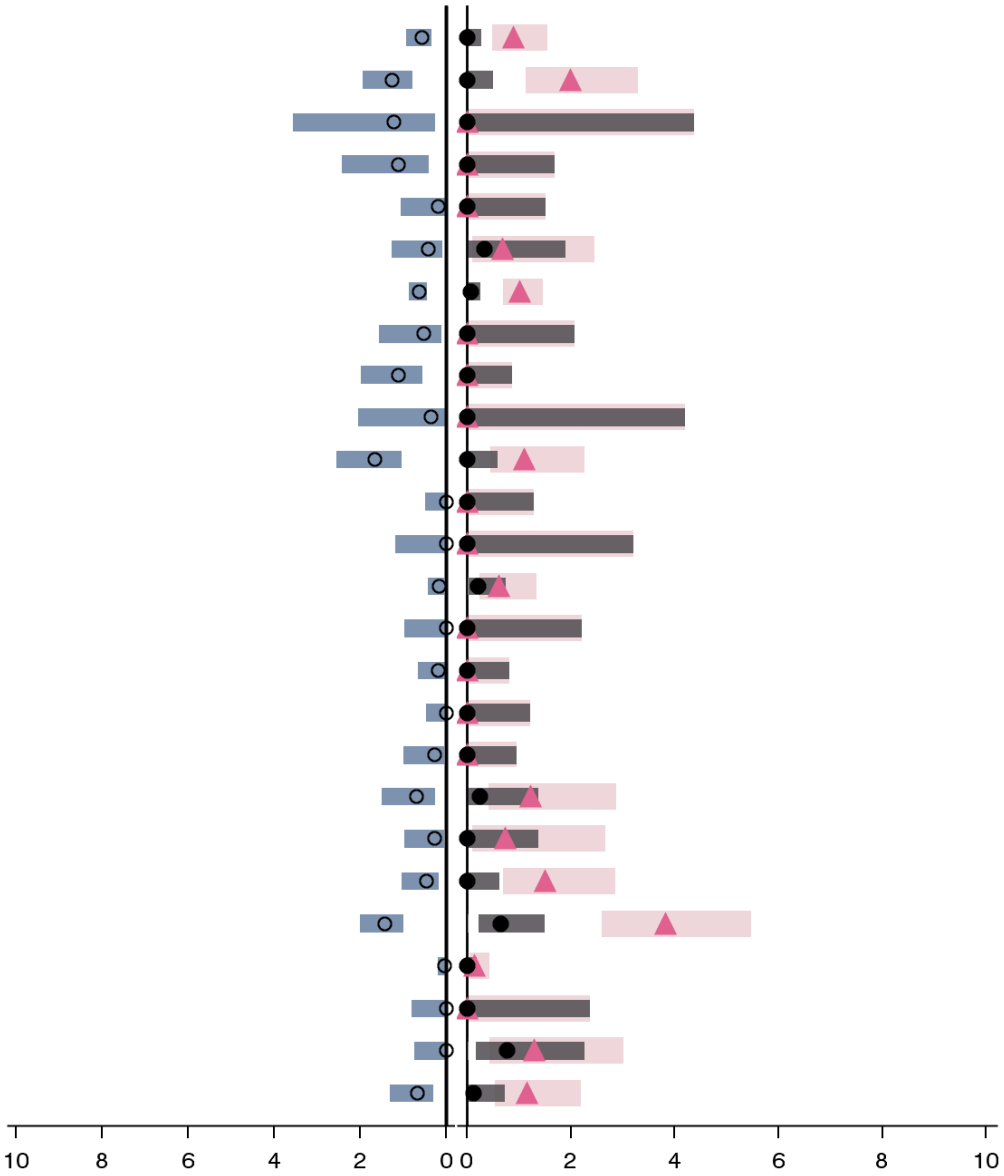
HO-All: hospital onset CRE incidence rate all sites per 10,000 patient days and 95% confidence interval (state average = 1.2)

HO-BSI: hospital onset CRE blood incidence rate per 10,000 patient days and 95% confidence interval (state average = 0.2)

All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 5 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
NYU Tisch	17	29369	0.6	0.9	0.0	145441	13	0
Nassau University	21	16560	1.3	2.0	0.0	75333	15	0
Nathan Littauer	3	2469	1.2	0.0	0.0	8455	0	0
Newark Wayne	6	5395	1.1	0.0	0.0	22117	0	0
Niagara Falls	1	5321	0.2	0.0	0.0	24518	0	0
North Central Bronx	3	6945	0.4	0.7	0.3	29595	2	1
North Shore	34	54422	0.6	1.0	0.1	286809	29	2
Northern Dutchess	3	5617	0.5	0.0	0.0	17970	0	0
Northern Westchester	11	9916	1.1	0.0	0.0	43196	0	0
Noyes Memorial	1	2714	0.4	0.0	0.0	8826	0	0
Nyack Hospital	21	12637	1.7	1.1	0.0	64063	7	0
Olean General	0	7768	0.0	0.0	0.0	29052	0	0
Oneida Healthcare	0	3132	0.0	0.0	0.0	11571	0	0
OrangeReg Goshen-Mid	4	24727	0.2	0.6	0.2	98358	6	2
Oswego Hospital	0	3808	0.0	0.0	0.0	16768	0	0
Our Lady of Lourdes	2	10907	0.2	0.0	0.0	45883	0	0
Peconic Bay Medical	0	7947	0.0	0.0	0.0	30704	0	0
Phelps Memorial	2	7344	0.3	0.0	0.0	39243	0	0
Plainview Hospital	6	8670	0.7	1.2	0.2	40794	5	1
Putnam Hospital	2	7415	0.3	0.7	0.0	27236	2	0
Queens Hospital	6	12658	0.5	1.5	0.0	60117	9	0
Richmond Univ MC	35	24356	1.4	3.8	0.6	78472	30	5
Rochester General	1	28602	0.0	0.1	0.0	206734	3	0
Rome Memorial	0	4576	0.0	0.0	0.0	15694	0	0
Roswell Park	0	5026	0.0	1.3	0.8	38914	5	3
SUNY Downstate MedCr	8	11983	0.7	1.1	0.1	78485	9	1



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HO-All: hospital onset CRE incidence rate all sites per 10,000 patient days and 95% confidence interval (state average = 1.2)

HO-BSI: hospital onset CRE blood incidence rate per 10,000 patient days and 95% confidence interval (state average = 0.2)

All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 6 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
Samaritan- Troy	4	8870	0.5	0.0	0.0	29470	0	0
Samaritan- Watertown	0	7959	0.0	0.0	0.0	38158	0	0
Saratoga Hospital	0	12546	0.0	0.0	0.0	52025	0	0
Sisters of Charity	3	14798	0.2	0.0	0.0	65875	0	0
Sisters- St Joseph	0	3998	0.0	0.5	0.0	20282	1	0
South Nassau Comm.	36	13579	2.7	2.9	0.3	102249	30	3
Southampton	1	5563	0.2	0.0	0.0	18751	0	0
Southside	5	22201	0.2	0.8	0.1	92254	7	1
St Anthony	0	2608	0.0	0.0	0.0	9570	0	0
St Barnabas	4	13178	0.3	0.6	0.0	63759	4	0
St Catherine Siena	6	10200	0.6	0.4	0.0	48413	2	0
St Charles Hospital	5	10283	0.5	0.9	0.0	54265	5	0
St Elizabeth Medical	2	8159	0.2	0.7	0.0	43916	3	0
St Francis- Roslyn	9	15866	0.6	0.9	0.4	99621	9	4
St James Mercy	0	826	0.0	0.0	0.0	3317	0	0
St Johns Dobbs Ferry	1	1323	0.8	0.0	0.0	3453	0	0
St Johns Episcopal	43	9651	4.5	8.2	1.0	51099	42	5
St Johns Riverside	22	11670	1.9	0.4	0.0	49405	2	0
St Joseph -Bethpage	7	6258	1.1	1.9	0.6	32056	6	2
St Josephs- Elmira	3	903	3.3	0.0	0.0	6520	0	0
St Josephs- Syracuse	0	38111	0.0	0.0	0.0	138841	0	0
St Josephs- Yonkers	10	3399	2.9	1.1	0.0	18573	2	0
St Lukes Cornwall	12	10478	1.1	1.0	0.0	48624	5	0
St Marys Amsterdam	0	6200	0.0	0.0	0.0	28480	0	0
St Peters Hospital	8	28668	0.3	0.3	0.2	130276	4	2
Staten Island U N	17	31446	0.5	1.1	0.3	146202	16	4

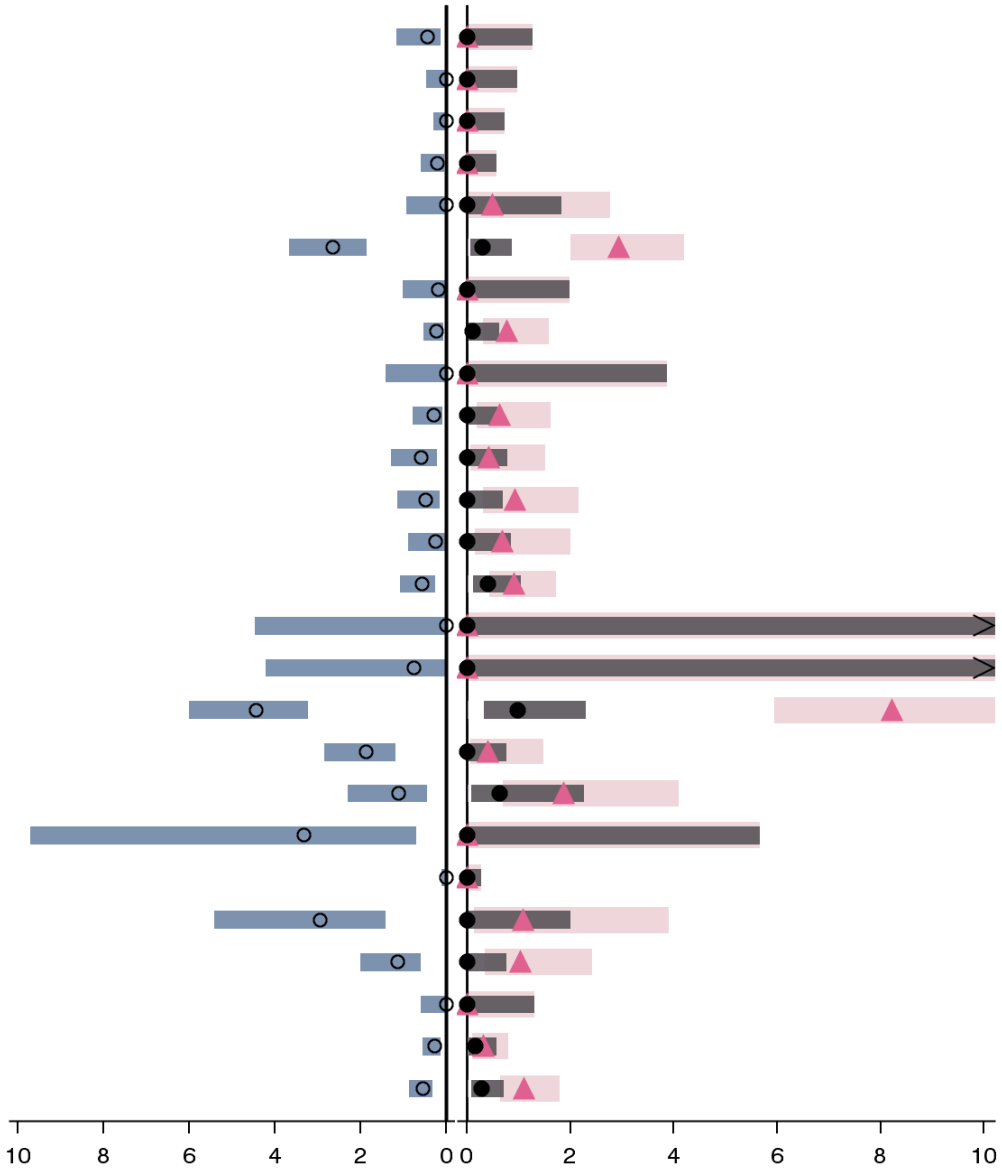

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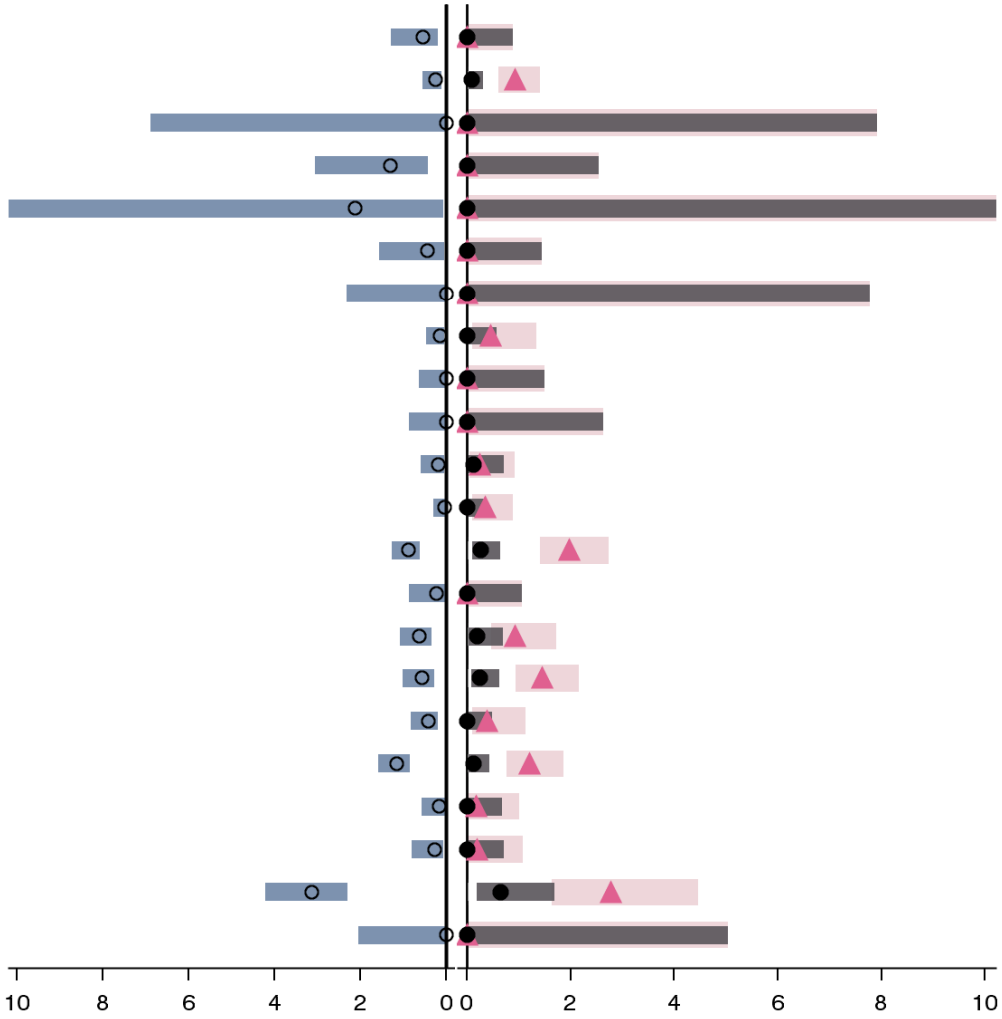
Figure 25. Hospital Carbapenem-Resistant Enterobacteriaceae Infection Rates, NYS 2016 (Page 7 of 7)

Hospital Name	# All AdmPrev	# Adms	AdmPrev Rate	HO-All Rate	HO-BSI Rate	# Patdays	# All	# BSI
Staten Island U S	5	9014	0.6	0.0	0.0	42031	0	0
Strong Memorial	7	26647	0.3	0.9	0.1	247761	23	2
Sunnyview Rehab Hosp	0	536	0.0	0.0	0.0	4673	0	0
Syosset Hospital	5	3822	1.3	0.0	0.0	14623	0	0
TLC Lake Shore	1	469	2.1	0.0	0.0	1849	0	0
UHS Binghamton	2	4607	0.4	0.0	0.0	25802	0	0
UHS Chenango Memor	0	1589	0.0	0.0	0.0	4752	0	0
UHS Wilson	3	18996	0.2	0.5	0.0	66073	3	0
UPMC Chautauqua WCA	0	5834	0.0	0.0	0.0	24936	0	0
United Memorial	0	4278	0.0	0.0	0.0	14149	0	0
Unity Hosp Rochester	3	15082	0.2	0.3	0.1	79691	2	1
Univ Hosp SUNY Upst	1	19564	0.1	0.3	0.0	116588	4	0
Univ Hosp StonyBrook	31	34647	0.9	2.0	0.3	187864	37	5
Upst. Community Gen	2	8343	0.2	0.0	0.0	35195	0	0
Vassar Brothers	13	20682	0.6	0.9	0.2	107202	10	2
Westchester Medical	11	19432	0.6	1.4	0.2	165901	24	4
White Plains Hosp	9	21013	0.4	0.4	0.0	78567	3	0
Winthrop University	42	36118	1.2	1.2	0.1	174149	21	2
Woman and Childrens	2	12504	0.2	0.2	0.0	55698	1	0
Woodhull Med Ctr	3	11041	0.3	0.2	0.0	52518	1	0
Wyckoff Heights	45	14285	3.2	2.8	0.7	61291	17	4
Wyoming County Comm.	0	1802	0.0	0.0	0.0	7349	0	0



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All-Admprev: all body site CRE admissions prevalence rate per 1,000 admissions and 95% confidence interval (state average = 0.6)

Other LabID MDROs

Methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections

Staphylococcus aureus is a common type of bacteria found on the skin or in the nose of many healthy individuals. When *Staphylococcus aureus* is resistant to the antibiotics oxacillin, cefoxitin, or methicillin, it is called MRSA. In 2016, 177 hospitals reported MRSA BSIs for participation in CMS incentive programs. MRSA is not a NYSDOH indicator. NYSDOH does not audit the data and the DUA specifies that MRSA rates cannot be published by hospital.

Between 2015 and 2016, the number of MRSA BSIs identified in the ED increased 30%, while the number of MRSA BSIs identified in the inpatient area on the first three days of hospitalization decreased 21%. This could indicate a change in testing or reporting practices. Reporting outpatient infections was new in 2015, and NYS does not audit MRSA data. The hospital onset MRSA rate decreased 8% between 2015 and 2016 (Table 19).

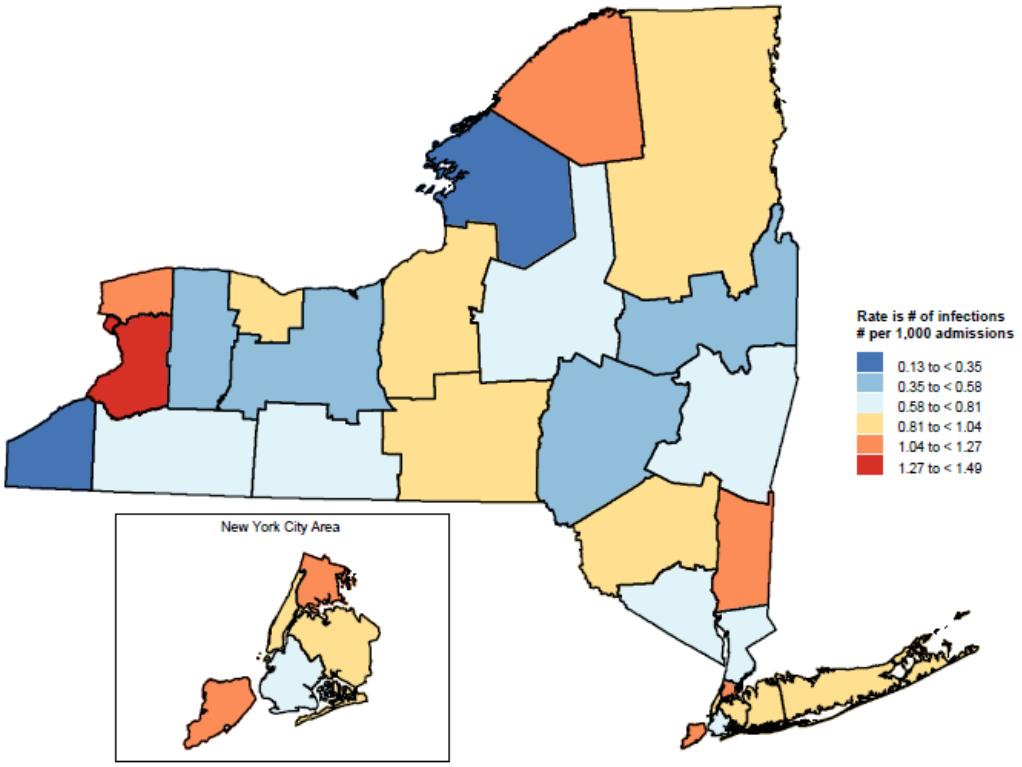
Table 19. MRSA bloodstream infections, New York State 2015-2016

Year	# Hosp	# Emergency Dept. Infections	# Admission Prevalent Infections	# Admissions	Admission Prevalence Rate (per 1,000 admissions)	# Hospital Onset Infections	# Patient Days	Hospital Onset Incidence Rate (per 10,000 patient days)
2015	174	1,457	1,458	2,324,725	0.627	775	11,410,713	0.679
2016	177	1,897	1,158	2,346,200	0.494	717	11,413,571	0.628

Facilitywide inpatient data reported as of August 6, 2017.

Figure 26 shows the FWI MRSA patient prevalence rate county (or merged county for those with few or no hospitals). MRSA is spread throughout the state and has a smaller range of variability than CRE.

Figure 26 Facility-wide Inpatient MRSA Patient Prevalence Rates, New York State 2016



Facilitywide inpatient data reported as of August 6, 2017.

Vancomycin-resistant Enterococci (VRE)

Enterococci are bacteria normally found in the human intestines. These bacteria sometimes cause infections in people who take antibiotics for a long time, have weakened immune systems, are hospitalized, or use catheters. When enterococci are resistant to the antibiotic vancomycin, they are called VRE. If a person has an infection caused by VRE it may be more difficult to treat.

A group of 23 hospitals (13%) in NYS (16 in NYC, 7 Upstate/Long Island) voluntarily performed labID VRE surveillance using NHSN in 2016. The majority (54%) of the cases were urinary tract infections, while 24% were skin/soft tissue infections, and 12% were bloodstream infections. A total of 37 incident hospital onset BSIs and 19 admission prevalent BSIs were reported in the inpatient sample, for a HO BSI incidence rate of 0.37 per 10,000 patient days (Table 20). Extrapolating this small sample by region we would have expected a total of approximately 386 HO VRE BSIs if all hospitals had reported. Between 2015 and 2016, the admission prevalence rate decreased 29%, and the hospital onset rate increased 43%. The small number of hospitals that voluntarily report may not be representative of all NYS hospitals. VRE is not a NYSDOH indicator. NYSDOH does not audit the data and the DUA specifies that VRE rates cannot be published by hospital.

Table 20. Vancomycin-resistant Enterococci infections, New York State 2015-2016

Year	# Hosp	# Admission Prevalent Infections	# Admissions	Admission Prevalence Rate (per 1,000 admissions)	# Hospital Onset Infections	# Patient Days	Hospital Onset Incidence Rate (per 10,000 patient days)
2015	24	29	241,969	0.120	29	1,132,529	0.256
2016	23	19	222,472	0.085	37	1,008,452	0.367

Voluntary facilitywide inpatient data reported as of August 6, 2017. Excludes cases identified in the emergency department.

Multi-drug resistant Acinetobacter (MDR- Acinetobacter)

Acinetobacter is a type of bacteria commonly found in soil and water and sometimes on the skin. These bacteria sometimes cause infections such as pneumonia, and patients on ventilators are particularly at risk. When Acinetobacter are non-susceptible to at least one agent in at least three of the following antimicrobial classes (beta-lactams, aminoglycosides, carbapenems, fluoroquinolones, cephalosporins, sulbactam), they are called MDR-Acinetobacter. If a person has an infection caused by MDR-Acinetobacter it may be more difficult to treat.

A group of 25 hospitals (14%) in NYS (16 in NYC, 9 Upstate/Long Island) voluntarily performed labID MDR-Acinetobacter surveillance using NHSN in 2016. The majority (64%) of the cases were respiratory tract infections, while 19% were skin/soft tissue infections, 9% were urinary tract infections, and 5% were bloodstream infections. A total of 15 incident BSIs were reported in the sample, for a HO BSI incidence rate of 0.14 per 10,000 patient days (Table 21). Extrapolating this small sample by region, we would have expected a total of approximately 132 hospital onset MDR-Acinetobacter BSIs if all hospitals had reported. The small number of hospitals that voluntarily report may not be representative of all NYS hospitals. MDR-Acinetobacter is not a NYSDOH indicator. NYSDOH does not audit the data and the DUA specifies that MDR-Acinetobacter rates cannot be published by hospital.

Table 21. Multi-drug resistant Acinetobacter Infections, New York State 2015-2016

Year	# Hosp	# Admission Prevalent Infections	# Admissions	Admission Prevalence Rate (per 100 admissions)	# Hospital Onset Infections	# Patient Days	Hospital Onset Incidence Rate (per 10,000 patient days)
2015	30	4	257,173	.016	21	1,146,300	0.183
2016	25	2	243,516	.008	15	1,090,214	0.138

Facilitywide inpatient data reported as of August 6, 2017. Excludes cases identified in the emergency department.

Mortality related to CDI and MDROs

NHSN does not collect data on mortality associated with CDI or MDROs. However, by applying information published in the scientific literature to the NYS population, it is possible to estimate the number of deaths associated with these infections in NYS.

The attributable mortality rate is the death rate among a group of people with the infection minus the death rate among a similar (matched) group of people without the infection. The attributable death rates for five types of infections are summarized in Table 22. CRE BSIs have the highest attributable death rate due to the severity of bloodstream infections and the difficulty in treating this particular organism with a safe and effective antibiotic. More details on the derivation of these rates are provided in Appendix 2.

To estimate how many deaths were attributable to these infections in NYS, the attributable mortality rate derived from the scientific literature was multiplied by the total number of reported infections. Only bloodstream infections were counted for CRE, VRE, and MDR-Acinetobacter. Based on this analysis, CDI resulted in the largest number of deaths; even though the attributable death rate is relatively low, the number of people with CDI is very large. The total number of estimated CDI, MRSA, VRE, and MDR-Acinetobacter deaths greatly exceeds the number of deaths due to other well-known infections such as AIDS (581), influenza (308), and tuberculosis (35) reported in NYS in 2015.[3]

Table 22. New York State hospital mortality estimates, 2016

Infection	% Attributable Deaths[3]	# Cases Total[4]	# Hospital Onset Cases	# Deaths Total	# Deaths from Hospital Onset Cases
Clostridium difficile[1]	6%	16,498	6,939	990	416
MRSA BSI	20%	1,875	717	375	143
CRE BSI[1]	34%	373	247	127	84
VRE BSI[2]	28%	603	386	169	108
MDR-Acinetobacter BSI[2]	22%	148	132	33	29
Total		22,025	9,300	1,895	824

NHSN facility-wide inpatient data downloaded 7/31/2017 for CDI and CRE, 8/6/2017 for MRSA, VRE, and MDR-Acinetobacter. BSI = bloodstream infection. [1] Only counting one infection per person. [2] Based on small sample of voluntary reporters. [3] Based on estimations from scientific literature, see Appendix 2. [4] Total cases = community and hospital onset.

MDRO Prevention Practices

NHSN requires all facilities to submit an annual survey. Table 23 summarizes the self-reported 2016 survey results related to MDRO prevention practices.

Table 23. MDRO Prevention Practice Survey, New York State Hospitals 2015-2016

	2015 (n = 175)	2016 (n = 178)
Does the facility routinely place patients infected or colonized with CRE on contact precautions?		
Yes, all infected or colonized patients	93%	94%
Yes, only all infected patients	3%	3%
Yes, only those with high-risk for transmission	4%	3%
No	0%	0%
Facility routinely performs screening cultures for CRE?	11%	13%
Facility uses chlorhexidine bathing to prevent transmission of MDROs?	61%	68%
How often does your facility receive information from the transferring facility about their MDRO status?		
All of the time	15%	15%
More than half of the time	47%	48%
About half of the time	21%	16%
Less than half of the time	11%	17%
Never	5%	4%
Not applicable	1%	1%

National Healthcare Safety Network Surveys, downloaded 5/18/2017.

Results from the 2016 survey were very similar to results reported in 2015. There was an increase in the percent of facilities using chlorhexidine bathing from 61% to 68%. Although 94% of facilities responded that they put colonized and/or infected patients on contact precautions, this data should be interpreted cautiously, especially in areas of high CRE prevalence and incidence. The implementation of "Contact Precautions", i.e., the donning of personal protective equipment (PPE - gowns, gloves, and in some cases masks), has many variations between facilities and even within facilities. Some policies require all persons, i.e. healthcare workers and visitors, who enter a contact isolation room to don PPE; others exclude visitors from wearing PPE.

The last survey question highlights the need to more fully involve long term care facilities (LTCFs) in surveillance and reporting of CRE, particularly in communicating CRE information to the receiving (acute care) facility. In September 2016 CMS finalized a new rule that revises the Conditions of Participation for LTCFs, requiring LTCFs to have an infection prevention and control officer and an antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use.

Antimicrobial Stewardship

Antimicrobial stewardship programs (ASPs) are part of a multidisciplinary approach to address antibiotic resistance. In 2015, the National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB) outlined actions to address antimicrobial resistance (AR) across multiple settings, including the specific goal of having ASPs in all acute healthcare settings.[4] In 2016 CMS updated LTCF standards, requiring that LTCFs have ASPs by November 28, 2017. Also, federal health information technology incentive programs now allow NHSN's Antimicrobial Use and Resistance module reporting to meet public health registry reporting requirements. Continued collaboration between healthcare providers and public health officials is necessary to ensure antibiotics are used appropriately to reduce the development of antibiotic resistant organisms and to address patient safety concerns associated with overuse.

ASPs help ensure that each patient receives "the right antibiotic, at the right dose, at the right time, and for the right duration".[5] Healthcare systems should evaluate the role for ASPs across all healthcare settings. The CDC has published the 'Core Elements for Antibiotic Stewardship', which highlights the major components of a successful antibiotic stewardship program.[5] The Core Elements framework is a useful tool for building a successful program tailored to the needs and capabilities of each facility. Used in conjunction with implementation guidelines from professional societies and from the CDC,[6, 7, 8, 9, 10] ASPs have been shown to improve patient health. For example, use of antibiotics is the biggest risk factor for CDI and improved prescribing of antibiotics will reduce CDI.[11, 12, 13] ASPs also decrease the risk of developing resistant infections.[14, 15] People infected with 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. [16]

Information on 2015 and 2016 hospital stewardship programs was obtained from the NHSN annual survey. The percentage of hospitals that reported having an ASP that included all seven Core Elements increased from 59% to 77% (Table 24). As acute care hospitals increasingly meet all seven Core Elements, they are encouraged to review their antimicrobial stewardship efforts to ensure programs are implemented with fidelity and evaluated for effectiveness. NYSDOH strongly recommends that hospitals measure antibiotic use using the NHSN established definition for Days of Therapy per 1,000 patient days to establish baseline data and identify opportunities for targeted interventions. Additionally, hospitals should evaluate ASP process measures, such as adherence to treatment protocols, to determine the effectiveness of interventions.

Table 24. Antimicrobial stewardship programs in NYS hospitals, 2015 and 2016 surveys

CDC Core Elements of antimicrobial stewardship program	2015 % hospitals with element (n = 175)	2016 % hospitals with element (n = 178)
1. Hospital Leadership Commitment*	**80.6%**	**89.9%**
Hospital has a written statement of support from leadership that supports efforts to improve antibiotic use.	74.9%	85.4%
Hospital financially supports antibiotic stewardship activities.	44%	55.1%
2. Accountability A leader is responsible for program outcomes of stewardship activities.	**88.6%**	**96.6%**
3. Drug Expertise At least one pharmacist is responsible for improving antibiotic use.	**90.9%**	**95.5%**
4. Action (Implementing recommended interventions)*	**98.3%**	**99.4%**
Hospital has a policy that requires prescribers to document an indication for all antibiotic prescriptions in the medical record or during order entry.	50.3%	53.9%
Hospital has facility-specific treatment recommendations, based on national guidelines and local susceptibility, to assist with antibiotic selection for common clinical conditions.	78.9%	83.7%
There is a formal procedure for all clinicians to review the appropriateness of all antibiotics 48 hours after the initial orders (e.g. antibiotic time out).	34.3%	41.0%
Specified antibiotic agents need to be approved by a physician or pharmacist prior to dispensing.	81.7%	79.2%
Physician or pharmacist reviews courses of therapy for specified antibiotic agents and communicates results with prescribers	83.4%	90.4%
5. Tracking*	**86.3%**	**93.3%**
Hospital monitors adherence to policy requiring documentation of indication for antibiotic use.	58.0%	75.0%
Hospital monitors adherence to facility-specific treatment recommendations.	70.3%	68.5%
Hospital monitors antibiotic use at the unit, service, and/or facility wide level (e.g. by defined daily dose, days of therapy, or purchasing data).	83.4%	89.3%
6. Reporting*	**88.6%**	**93.8%**
Physician or pharmacist reviews courses of therapy for specified antibiotic agents and communicates results with prescribers (also counted as an action, above).	83.4%	90.4%
Facility/unit/service-specific reports on antibiotics are shared with prescribers.	63.0%	70.4%
Prescribers receive feedback by the stewardship program about how they can improve their antibiotic prescribing (2015 only).	74.3%	N/A
7. Education Stewardship program provides education to clinicians and other relevant staff on	**75.4%**	**90.4%**
Total:** Meet all 7 Core Elements above	**59.4%**	**77.0%**

* A core element is met when a facility answers "Yes" to at least one survey question within that core element category.
** All seven core elements are met if a facility has "Yes" for ALL seven core elements (bolded rows).

Implementation of the Core Elements varies by hospital size. Stewardship programs reporting antimicrobial stewardship programs with all seven Core Elements are more common in larger hospitals (Table 25).

Table 25. Relationship between hospital size and antimicrobial stewardship programs, New York State 2016

Number of beds	Number of hospitals	% hospitals with all 7 core elements
1-100	43	53.0%
101-200	35	68.6%
201-400	64	87.5%
400+	36	94.4%

Based on NHSN survey data downloaded May 18, 2017.

Antibiotic stewardship should be incorporated into all healthcare settings. Guidelines exist for antibiotic stewardship programs across different healthcare settings.[17] Opportunities for participation in collaborative activities to support antimicrobial stewardship are increasingly available at both state and national levels. Professional associations in NYS have offered in-person and web-based training opportunities for clinicians to improve knowledge and understanding of antimicrobial stewardship among potential ASP leaders. Antimicrobial stewardship is also included as part of ongoing quality improvement projects being conducted by NYS's Partnership for Patients and CMS Quality Improvement Organization (QIO). National programs, such as CDC's Get Smart: Know when Antibiotics Work, provide educational materials for both clinicians and patients, with particular emphasis on outpatient settings.[18] NYSDOH received funding from CDC to conduct outreach using Get Smart materials to increase awareness of appropriate use of antibiotics in ambulatory care settings.

Education and engagement of patients to understand the consequences of antibiotic overuse and misuse is an integral piece in the judicious use of antibiotics. Patients should understand the potential risks associated with taking antibiotics when they are not necessary, including the development of antibiotic resistant infections that are difficult to treat, altering the bacteria in the gut thereby increasing the risk of infection with *Clostridium difficile*, and experiencing adverse reactions to the medication.[19] CDC's Get Smart: Know When Antibiotics Work campaign contains patient-centered education to address patient concerns and provide information about appropriate use of antibiotics.

Comparison of NYS HAI Rates with National HAI Rates

Approximate comparisons of state and national HAI rates are available in annual progress reports published by CDC. The latest report compares 2015 state and national rates. The following summary (Table 26) is extracted from the CDC report for easy reference.

Table 26. Comparison of New York and national hospital-acquired infections for 2015

Type of Hospital-Acquired Infection	New York Standardized Infection Ratio	National Standardized Infection Ratio
Central-line associated bloodstream infections (CLABSIs)*	1.072	0.994
Catheter-associated urinary tract infections (CAUTI)	1.156	0.993
Colon surgical site infections (SSIs)*	1.223	0.999
Abdominal hysterectomy SSIs*	1.136	1.003
MRSA bacteremia	1.060	0.998
Clostridium difficile infections (CDI)*	1.000	0.993

Source of data: The 2015 National and State Healthcare-associated Infection Data Report, January 2018[20]
* Data audited by New York State

New York State rates were between 0% and 22% higher than national rates in 2015. 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. According to the CDC Data Report, only 9% of states audited SSI data, 19% of states audited CLABSI data, and 11% of states audited CDI data for 2015. 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. 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.

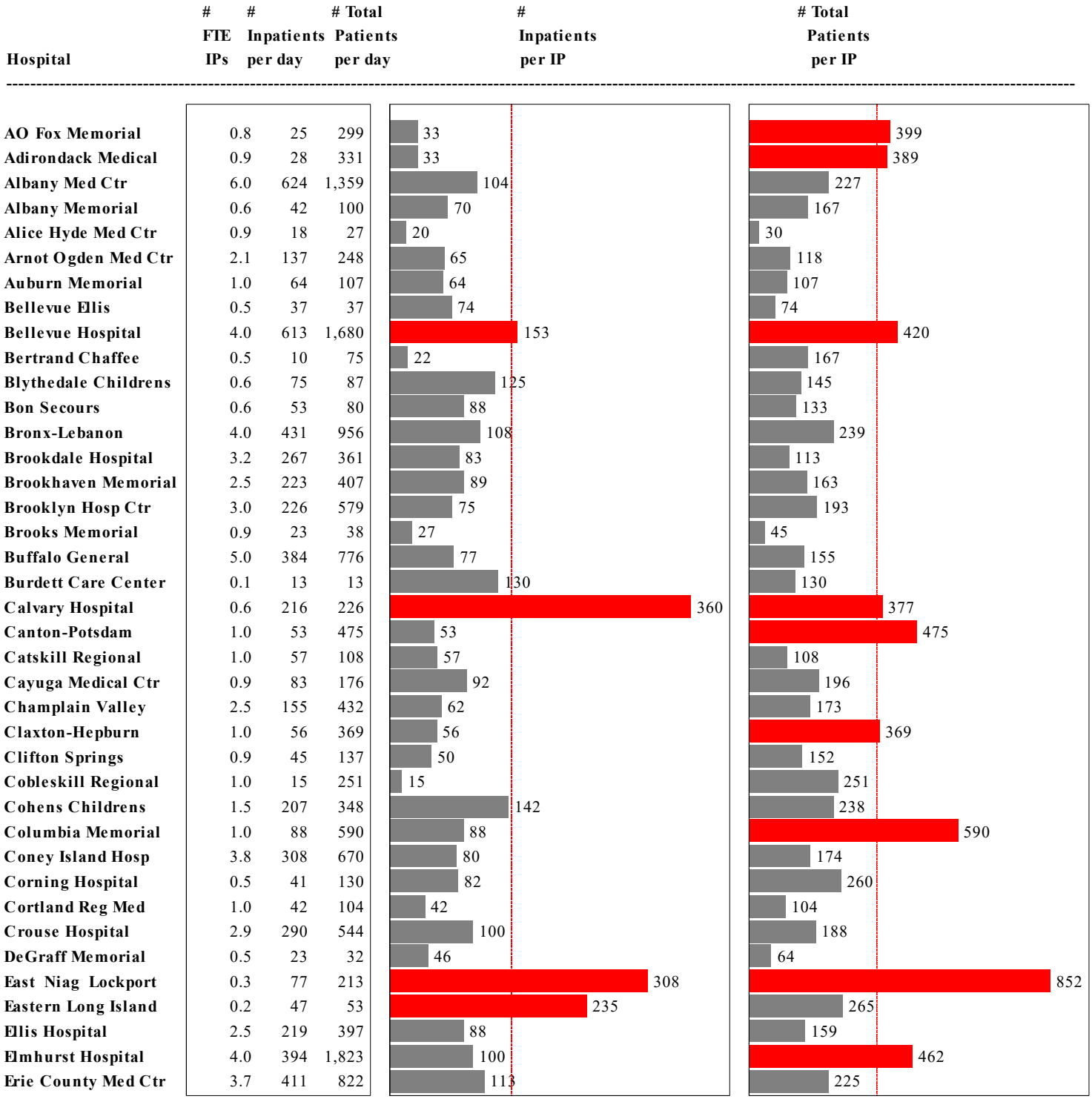
Infection Prevention Resources

NYSDOH conducts a biennial survey to measure hospital infection prevention staffing levels. Information is obtained on the number of IPs; their educational background and certification; infection control program support services; activities and responsibilities of infection prevention and control program staff; and time dedicated to various activities. This section summarizes the highlights of the 2016 survey. A total of 178 hospitals (100%) responded to the survey.

NYS IPs reported having an average of ten years of experience in infection prevention. Fifty-three percent of IPs were board certified (CIC ®), and 78% were members of the Association for Professionals in Infection Control (APIC). IPs spent most of their time (39%) on infection surveillance. The rest of their time was spent on department rounds (11%), daily isolation issues (8%), quality/performance improvement (8%), administrative/policy and procedure development (7%), environment/construction rounds (6%), infection prevention for hospital affiliated outpatient areas (5%), employee/occupational health (4%), emergency preparedness (4%), and other issues (8%). The top three challenges reported by IPs were MDROs/CDI, employee compliance with infection prevention, and staffing/workload.

IP staffing levels are typically calculated as the number of acute care beds (i.e. patients) for which one full-time equivalent (FTE) IP is responsible. In this report, we present that measure (# inpatients per IP), along with another measure (# total patients per IP) that is a weighted aggregate of patients in acute and non-acute settings (i.e. long-term care centers, dialysis centers, ambulatory surgery centers, ambulatory surgery clinics, private physician practices, and EDs). In 2016, the average FTE IP in NYS was responsible for 94 inpatients and 216 total patients per day. These results are not directly comparable with the results published in the 2014 NYS HAI report, because the 2014 report included critical access hospitals, excluded ED visits, and used different data sources (only survey data as opposed to a combination of survey and NHSN data). Figure 27 summarizes the IP staffing levels by hospital. Hospitals in the lowest 15th percentile using either infection prevention staffing measure are graphed in red. Facilities with low IP resources are encouraged to review the responsibilities of their IPs to ensure that staffing levels are appropriate. The review should take into consideration the range of the clinical programs, the risks of the patient population, the scope of the duties covered by the IPs, and the availability of support staff and information technology to assist with surveillance functions and reporting requirements. These detailed factors were not considered in either measure.

Figure 27. Infection Preventionist Personnel Resources in NYS Hospitals, 2016 (page 1 of 5)



FTE = Full Time Equivalent; IP = Infection Preventionist; # Inpatients per day = # facility-wide inpatient days / 366 + # inpatient rehabilitation facility patient days / 366 + # inpatient psychiatric facility patient days / 366 (from NHSN); # Total patients per day = # inpatients per day + intensive care unit patients per day (note: also counted as inpatients) + 0.5 * long term care beds + 50 * dialysis centers + 50 * ambulatory surgery centers + 10 * ambulatory surgery clinics + 5 * private physician practices + 0.2 * emergency department visits per day; Vertical reference lines indicate 15th percentiles;
hospital staffing levels among the lowest 15th percent in the state; hospital staffing resources are not low.

Figure 27. Infection Preventionist Personnel Resources in NYS Hospitals, 2016 (page 2 of 5)

Hospital	# FTE IPs	# Inpatients per day	# Total Patients per day	# Inpatients per IP	# Total Patients per IP
FF Thompson	0.6	67	312	112	520
Faxton St Lukes	4.5	199	933	44	207
Flushing Hospital	2.8	258	934	92	334
Geneva General	0.8	48	199	64	265
Glen Cove Hospital	0.9	87	117	97	130
Glens Falls Hospital	1.0	193	575	193	575
Good Samar Suffern	1.1	179	324	163	295
Good Samar W Islip	4.0	394	563	99	141
Harlem Hospital	3.0	206	455	69	152
HealthAlli Broadway	1.2	90	117	75	98
HealthAlli MarysAve	0.2	58	58	387	387
Helen Hayes Hospital	0.9	71	71	79	79
Henry J Carter	1.0	147	248	147	248
Highland Hospital	2.9	244	480	84	166
Hosp for Spec Surg	4.2	143	325	34	77
Huntington Hospital	2.9	232	639	81	224
Interfaith Med Ctr	4.0	193	383	48	96
Ira Davenport	0.7	4	130	6	200
JT Mather Hospital	3.5	183	222	52	63
Jacobi Med Ctr	5.0	375	1,133	75	227
Jamaica Hospital	2.0	327	431	164	216
Jones Memorial	0.7	20	29	29	41
Kenmore Mercy	1.0	101	130	101	130
Kings County Hosp	4.0	432	1,446	108	362
Kingsbrook Jewish MC	1.0	197	569	197	569
LIJ at Forest Hills	1.5	202	247	135	165
LIJ at Valley Stream	1.5	129	221	86	147
Lenox Hill Hospital	5.0	351	574	70	115
Lincoln Med Ctr	4.1	286	593	70	145
Long Isl Jewish(LIJ)	4.7	488	682	104	146
Maimonides Med Ctr	3.2	600	891	189	280
Mary Imogene Bassett	3.0	137	680	46	227
Massena Memorial	0.3	28	240	93	800
Memor SloanKettering	5.3	417	669	79	127
Mercy Hosp Buffalo	3.0	295	431	98	144
Mercy Med Ctr	2.0	192	234	96	117
Metropolitan Hosp	3.0	227	499	76	166

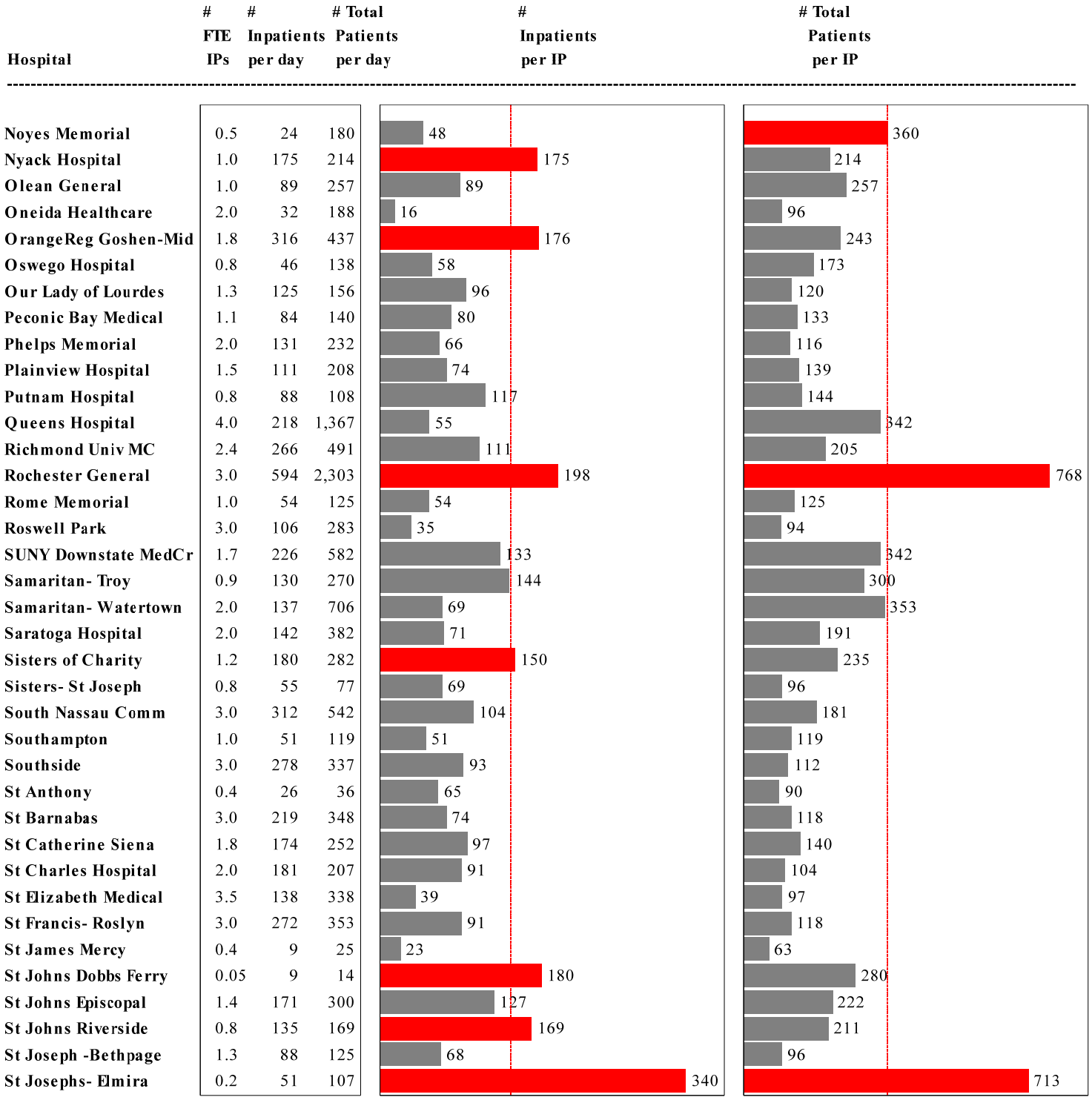
FTE = Full Time Equivalent; IP = Infection Preventionist; # Inpatients per day = # facility-wide inpatient days / 366 + # inpatient rehabilitation facility patient days / 366 + # inpatient psychiatric facility patient days / 366 (from NHSN); # Total patients per day = # inpatients per day + intensive care unit patients per day (note: also counted as inpatients) + 0.5 * long term care beds + 50 * dialysis centers + 50 * ambulatory surgery centers + 10 * ambulatory surgery clinics + 5 * private physician practices + 0.2 * emergency department visits per day; Vertical reference lines indicate 15th percentiles;
hospital staffing levels among the lowest 15th percent in the state; hospital staffing resources are not low.

Figure 27. Infection Preventionist Personnel Resources in NYS Hospitals, 2016 (page 3 of 5)

Hospital	# FTE IPs	# Inpatients per day	# Total Patients per day	# Inpatients per IP	# Total Patients per IP
MidHudson Reg of WMC	1.0	126	210	126	210
Millard Fill Suburb	2.0	176	206	88	103
Monroe Community	1.5	0	283	0	189
Montefiore-Einstein	2.3	435	750	189	326
Montefiore-Moses	5.4	728	1,410	135	261
Montefiore-Mt Vernon	1.0	61	134	61	134
Montefiore-NewRochl	1.0	93	122	93	122
Montefiore-Wakefield	2.3	247	575	107	250
Mount St Marys	1.0	84	213	84	213
Mt Sinai	7.9	898	1,964	114	249
Mt Sinai Beth Israel	6.3	457	1,148	73	182
Mt Sinai Brooklyn	1.0	165	196	165	196
Mt Sinai Queens	2.0	132	201	66	101
Mt Sinai St Lukes	1.5	266	705	177	470
Mt Sinai West	1.5	307	699	205	466
NY Community Hosp	1.0	106	174	106	174
NY Eye&Ear Mt Sinai	0.7	2	102	3	157
NYP-Allen	1.0	179	263	179	263
NYP-Brklyn Methodist	6.0	581	939	97	157
NYP-Columbia	5.0	652	1,112	130	222
NYP-Hudson Valley	1.6	97	248	61	155
NYP-Lawrence	1.7	141	175	85	106
NYP-Lower Manhattan	1.0	145	232	145	232
NYP-Morgan Stanley	3.0	272	406	91	135
NYP-Queens	3.6	453	740	126	206
NYP-Weill Cornell	6.0	792	1,256	132	209
NYU Joint Diseases	0.9	91	329	101	366
NYU Lutheran	4.0	321	376	80	94
NYU Tisch	6.1	433	2,726	71	447
Nassau University	2.4	357	1,779	152	757
Nathan Littauer	1.0	23	250	23	250
Newark Wayne	1.0	70	192	70	192
Niagara Falls	1.0	67	199	67	199
North Central Bronx	1.5	129	261	86	174
North Shore	6.5	805	1,098	124	169
Northern Dutchess	0.5	56	72	112	144
Northern Westchester	2.0	130	235	65	118

FTE = Full Time Equivalent; IP = Infection Preventionist; # Inpatients per day = # facility-wide inpatient days / 366 + # inpatient rehabilitation facility patient days / 366 + # inpatient psychiatric facility patient days / 366 (from NHSN); # Total patients per day = # inpatients per day + intensive care unit patients per day (note: also counted as inpatients) + 0.5 * long term care beds + 50 * dialysis centers + 50 * ambulatory surgery centers + 10 * ambulatory surgery clinics + 5 * private physician practices + 0.2 * emergency department visits per day; Vertical reference lines indicate 15th percentiles;
hospital staffing levels among the lowest 15th percent in the state; hospital staffing resources are not low.

Figure 27. Infection Preventionist Personnel Resources in NYS Hospitals, 2016 (page 4 of 5)



FTE = Full Time Equivalent; IP = Infection Preventionist; # Inpatients per day = # facility-wide inpatient days / 366 + # inpatient rehabilitation facility patient days / 366 + # inpatient psychiatric facility patient days / 366 (from NHSN); # Total patients per day = # inpatients per day + intensive care unit patients per day (note: also counted as inpatients) + 0.5 * long term care beds + 50 * dialysis centers + 50 * ambulatory surgery centers + 10 * ambulatory surgery clinics + 5 * private physician practices + 0.2 * emergency department visits per day; Vertical reference lines indicate 15th percentiles;
hospital staffing levels among the lowest 15th percent in the state; hospital staffing resources are not low.

Figure 27. Infection Preventionist Personnel Resources in NYS Hospitals, 2016 (page 5 of 5)

Hospital	# FTE IPs	# Inpatients per day	# Total Patients per day	# Inpatients per IP	# Total Patients per IP
St Josephs- Syracuse	3.0	379	445	126	148
St Josephs- Yonkers	1.0	93	336	93	336
St Lukes Cornwall	1.0	133	201	133	201
St Marys Amsterdam	1.4	82	185	59	132
St Peters Hospital	3.2	356	747	111	233
Staten Island U N	5.6	445	877	79	157
Staten Island U S	1.0	143	290	143	290
Strong Memorial	6.0	765	1,999	128	333
Sunnyview Rehab Hosp	0.7	89	89	127	127
Syosset Hospital	1.0	58	73	59	74
TLC Lake Shore	0.2	19	25	127	167
UHS Binghamton	0.9	145	221	161	246
UHS Chenango Memor	1.0	13	163	14	172
UHS Wilson	2.0	181	849	91	425
UPMC Chautauqua WCA	1.2	78	173	65	144
United Memorial	1.8	39	234	22	130
Unity Hosp Rochester	3.0	218	1,095	73	365
Univ Hosp SUNY Upst	3.6	360	1,293	100	359
Univ Hosp StonyBrook	6.0	545	1,133	91	189
Upst Community Gen	0.8	107	186	134	233
Vassar Brothers	2.0	293	600	147	300
Westchester Medical	6.2	536	910	86	147
White Plains Hosp	2.5	215	504	86	202
Winthrop University	4.0	476	1,251	119	313
Woman and Childrens	1.8	152	617	84	343
Woodhull Med Ctr	4.0	241	405	60	101
Wyckoff Heights	2.0	167	379	84	190
Wyoming County Comm	0.4	30	174	75	435

FTE = Full Time Equivalent; IP = Infection Preventionist; # Inpatients per day = # facility-wide inpatient days / 366 + # inpatient rehabilitation facility patient days / 366 + # inpatient psychiatric facility patient days / 366 (from NHSN); # Total patients per day = # inpatients per day + intensive care unit patients per day (note: also counted as inpatients) + 0.5 * long term care beds + 50 * dialysis centers + 50 * ambulatory surgery centers + 10 * ambulatory surgery clinics + 5 * private physician practices + 0.2 * emergency department visits per day; Vertical reference lines indicate 15th percentiles;
hospital staffing levels among the lowest 15th percent in the state; hospital staffing resources are not low.

HAI Prevention Projects

NYSDOH Funded Prevention Projects

NYSDOH funds HAI Prevention Projects with non-profit health care organizations to develop, implement, and evaluate strategies to reduce or eliminate targeted HAIs. A Request for Applications (RFA) for 2013-2018 was issued on October 17th, 2012. The following three projects were funded for five years.

University of Rochester Medical Center, Year 4 of 5: April 2016-March 2017, $190,000

This is the fourth year of the five-year prospective cohort study of a collaborative antimicrobial stewardship initiative for the prevention of *Clostridium difficile* infections (CDI) in long term care facilities (LTCFs). There are currently 4 hospitals and 34 LTCFs collaborating in this prevention project. The project continues to focus on collaboration between IPs, medical directors and pharmacists across facilities. Highlights of the prevention project included: region-wide educational sessions, development of a citywide antibiogram for small LTCFs, and development of clinical practice guidelines for urinary tract infections (UTI) and pneumonia. Both UTI and pneumonia guidelines have been widely circulated throughout the community, including to LTCFs not participating in the project and assisted living facilities covered by participating medical directors. Sustainability of interventions after the project is completed remains a concern due to the challenges faced by LTCFs, such as, staff turnover, new reporting methods, and lack of infrastructure to independently implement and maintain an antibiotic stewardship program.

Westchester County Healthcare Corporation (WCHC), Year 4 of 5: April 2016-March 2017, $196,635

The purpose of this project is to define the clinical features and molecular epidemiology of hospital-onset CDI and use data to guide a stringent enhanced environmental disinfection initiative. In Year 4 of this project, participating facilities implemented additional environmental disinfection modes, including increased use of ultraviolet light disinfection. WCHC began analysis of the environmental interventions' impact by comparing pre -and post- intervention rates. The researchers are also using multilocus sequence typing and whole genome sequencing to try to identify transmission events.

Weill Medical College (WMC), Year 4 of 5: April 2016-March 2017, $231,565

The principal objective of this project is to reduce CDI and MDRO infection rates through the development and implementation of strategies to enhance environmental cleaning, increase cross-disciplinary education about basic infection control practices, and promote optimal antimicrobial use. During Year 4 of this project, the Environmental Services (EVS) educational program "Cleaner is Safer: EVS on the Frontline of Infection Prevention" was completed at all five participating campuses during monthly departmental meetings, with a total of 65 education sessions provided. One resource that was desired by >95% of EVS housekeepers that participated in "Cleaner is Safer: EVS on the Frontline of Infection Prevention" was a laminated cleaning checklist to attach to EVS housekeeping carts. This checklist was printed, laminated, and provided to EVS leadership on all campuses with zip ties and erasable markers. Following the REALISE ATP Mapping/Clean-Trace Study completed in Year 2, institution-wide efforts to track cleanliness of shared noncritical patient care equipment were initiated. In Year 4 project staff assessed the cleanliness of select operating rooms (ORs) at one of the acute care hospitals included in this study. Surfaces were sampled in eight ORs to 1) map bioburden following cases, 2) assess cleaning between OR cases, and 3) assess terminal cleaning of ORs. The results of this study were shared with OR leadership and an educational program incorporating the results was developed. This education will be tailored for each of the remaining study hospitals and administered in Year 5.

CDC Funded HAI Prevention Projects

Epidemiology and Laboratory Capacity (ELC) for Infectious Diseases Grant (Aug 2014-July 2019)

New York State Long Term Care *C. difficile* Collaborative

DOH continued its efforts to reduce CDI rates in LTCFs with a project that focused on improvement in infection prevention during LTCF and hospital care transitions. Between July 1, 2015 and June 30, 2016, a group of LTCFs participated in educational webinars and maintained a log of all CDI patients transferring to/from other healthcare facilities, noting the use of transfer forms and contact precautions. The percent of facilities using transfer forms and communicating CDI status increased over the course of the project. During the latter half of 2016, DOH began plans to launch a new quality improvement project focused on improving antibiotic stewardship in LTCFs.

Carbapenem-resistant Enterobacteriaceae (CRE)

An Antimicrobial Resistance/CRE Workgroup was established in 2015 with the intent of creating a statewide CRE/MDRO surveillance and response plan. This group held several conference calls throughout the year to discuss strategies for the timely identification of CRE-colonized patients and prevention measures to control its spread in both acute and long-term care settings. In February 2016, a statewide CRE webinar was conducted, with over 525 call-in attendees, which provided NYS healthcare facilities with updated information regarding hospital, regional and statewide CRE rates as well as CRE prevention resources. Several facilities with higher-than-state-average CRE rates were contacted and on-site visits were conducted. These visits included robust discussions on a variety of topics including facility-wide CRE surveillance and prevention practices, barriers to implementation, antibiotic stewardship activities, inter-facility transfer information between acute and long-term care/nursing home facilities, and other strategies intended to reduce facility incidence rates. Continued CRE- prevention efforts and education have focused on nursing home settings to contain the spread of CRE, especially in NYC neighborhoods where CRE has become endemic.

Educational Efforts to Promote Appropriate Antibiotic Use: Get Smart

In 2016, NYSDOH built on its initial analysis of Medicaid claims data (targeting geographic counties with high "avoidable" rates of antibiotic prescribing for upper respiratory tract infections) by furthering outreach activities. NYSDOH created a new evidence-based "commitment poster" called the "Get Smart Guarantee," which allowed providers to display their picture and signature on a statement saying they would do their best to prescribe antibiotics only when necessary. The posters were displayed to (1) enhance provider commitment to appropriate prescribing via a public statement and (2) serve as educational tools for patients, to whom the guarantee is being made. Accompanying patient palm cards were created and distributed to patients with similar text. NYSDOH also created an evidence-based video showing optimal communications techniques between providers and patients intended to decrease patient demand for unnecessary antibiotics and increase patient understanding of antibiotic resistance. NYSDOH continued analysis of subsequent years of Medicaid data on antibiotic prescribing to determine patterns or trends in prescribing.

Domestic Ebola

The response to the Ebola virus disease (EVD) outbreak has brought to light many opportunities for improvement and enhancement of hospitals' infection control capabilities. NYSDOH continues to institute a plan for comprehensive improvements in the State's infection control infrastructure. An inventory of healthcare settings in NYS was developed to be used during

future outbreaks and public health emergencies. The eleven Ebola treatment centers /assessment hospitals in NYS were surveyed to identify activities (training, etc.) that they view as high-value, as well as to clarify which past activities were most and least valuable. Additionally, hospitals across NYS were surveyed to gauge their understanding of outbreak reporting requirements, the technical assistance available from the Department, the importance of and existence of mechanisms for sustaining institutional knowledge related to outbreak reporting, and outbreak response policies, capabilities, and practices. Infection control assessments are on-going in hospitals, long-term care facilities, dialysis centers, and other healthcare settings.

Candida auris

Candida auris (*C. auris*) is a globally emerging, multidrug-resistant yeast that has caused healthcare-associated outbreaks of invasive infections with high mortality. CDC issued a clinical alert to US healthcare facilities in June 2016 requesting notification of *C. auris* cases. Epidemiologic and laboratory evidence suggest that multidrug-resistant *C. auris* has been transmitted within healthcare facilities in New York City/Metropolitan-area Region of NYS. To curb further spread of *C. auris* and other resistant fungal infections, NYS developed a special investigative team to handle *C. auris* activity in the region. Working with senior staff in both regional and central offices, this team has been investigating cases of *C. auris* and other multi-drug resistant (MDR) fungi. This includes conducting on-site investigations; reviewing patient charts; developing lists of close contacts of confirmed cases; providing infection control education and recommendations to facilities experiencing *C. auris* or other MDR fungal outbreaks; collecting laboratory specimens from patients/residents and environmental surfaces in facilities; monitoring to ensure facility compliance with infection control recommendations; and implementing training programs on infection prevention issues, including training for hospitals, nursing homes, and health care facilities, focusing on MDR fungi and general infection control; and providing guidance on environmental cleaning.

Summary

Table 27 summarizes the total number of each type of HAI for NYS in 2016. The table is sorted from most common to least common.

Table 27. Inpatient infections reported by New York State hospitals in 2016

Type of infection	Number	Rate
Hospital onset *Clostridium difficile* infections (CDIs)	6,939	6.6/10,000 patient days
Surgical site infections (SSIs) following		
Colon surgery[B]	981	5.0/100 procedures
Hip replacement or revision surgery[N]	261	0.8/100 procedures
Abdominal hysterectomy surgery[B]	207	1.1/100 procedures
Coronary artery bypass graft (CABG) - chest site[N]	171	1.6/100 procedures
CABG - donor site[N]	33	0.3/100 procedures
Catheter-associated urinary tract infections (CAUTIs) in intensive care units, and medical/surgical wards	1,759	1.3/1,000 catheter days
Central line-associated bloodstream infections (CLABSIs) in intensive care units and medical and surgical wards[B] and step down units[N]	1,399	1.0/1,000 line days
Hospital onset methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections[C]	717	0.63/10,000 patient days
Hospital onset carbapenem-resistant *Klebsiella, E. coli,* and *Enterobacter* (CRE) bloodstream infections[N]	247	0.22/10,000 patient days

N = required by NYS, C = required by Centers for Medicare and Medicaid Services (CMS; these data are accessible through a data use agreement but cannot be used for public reporting or regulatory action), B = required by both NYS and CMS. CDI, CRE, and MRSA events are from facility-wide inpatient location only. CDI/SSI/CLABSI/CRE data reported as of 7/31/2017; CAUTI data reported as of 5/25/2017; MRSA data reported as of 8/6/2017. Data from inpatient rehabilitation and psychiatric facilities were excluded.

Table 28 summarizes the rates of improvement, number of prevented infections, and direct cost savings associated with the NYS indicators, sorted by cost savings. Improvements were seen in all HAI rates except CRE BSIs. Costs savings are estimated with a range because HAIs vary in severity and studies upon which estimates are based differ somewhat in their cost estimates. Between 2015 and 2016, 1,282 infections were prevented because of reductions in HAI rates; this was related to a cost savings of $15.4 to $33.7 million.

Table 28. Cost savings associated with change in HAI rates between 2015 and 2016

Type of infection	Change	# Prevented infections	Direct Cost Savings (in millions)	
			Minimum	Maximum
Hospital onset *Clostridium difficile* infections (CDI)	Improved 12%	917	$9.7	$13.8
Central line-associated bloodstream infections (CLABSIs)	improved 10%	152	$1.8	$7.3
Colon surgery SSIs	improved 11%	127	$2.5	$7.2
Hip replacement or revision surgery SSIs	improved 20%	61	$1.2	$3.5
Coronary artery bypass graft chest SSIs	improved 15%	30	$0.6	$1.7
Abdominal hysterectomy surgery SSIs	improved 7%	16	$0.3	$0.9
Hospital onset Carbapenem-resistant Enterobacteriaceae (CRE) bloodstream infections	worsened 9%	(21)	($0.7)	($0.8)
Total		1,282	$15.4	$33.7

Cost ranges for CDI, SSI, and CLABSI are from Scott RD. The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention. CDC, Division of Healthcare Quality Promotion, Atlanta GA, March 2009. Report CS200891-A.
Cost ranges for CRE are from Bartsch SM et. al. Potential economic burden of carbapenem-resistant Enterobacteriaceae (CRE) in the United States. Clin Microbiol Infect. 2017; 48:e9-48.e16.
All costs converted to 2016 dollars based on the Consumer Price Index for Hospital Inpatient Services.

Recommendations and Next Steps

NYSDOH will continue to monitor and report HAI rates to encourage continued reduction in HAIs. Following the NYSDOH HAI Program's policy on hospitals that have significantly high rates (available at http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/), NYSDOH will continue to work with hospitals that are underperforming to ensure that they implement effective improvement plans and show progress in decreasing rates. NYSDOH will also continue to notify hospitals of current issues in surveillance and infection prevention practices through email communication and webinars.

NYSDOH will continue to work with the HAI Technical Advisory Workgroup (TAW) to seek guidance on the selection of reporting indicators, methods of risk adjustment, presentation of hospital-identified data, and overall planning for the reduction in HAIs in NYS.

NYSDOH will continue to conduct medical record audits to verify appropriate use of surveillance definitions and accurate reporting by hospitals. Valid data are important for the analysis of HAI rates within the state, as well for the analysis of NYS rates in comparison with other states' rates. Differences in audit coverage and thoroughness across the country currently result in inequitable comparisons of hospital and state average rates. NYSDOH will continue to discuss audit methodology with CDC and advocate that information on auditing be incorporated into performance evaluations.

Efforts to combat the spread of CRE and other MDROs in NYS healthcare facilities will continue. NYSDOH will continue to visit hospitals and LTCFs to evaluate and discuss infection surveillance and prevention practices, barriers to implementation, antibiotic stewardship activities, and other strategies intended to reduce facility incidence rates, and provide assistance as needed. NYSDOH will continue to promote stewardship programs in LTCFs by engaging IPs, medical and nursing directors, pharmacists, and lab staff in a collaborative involving implementation of stewardship elements, and in hospitals through encouragement to report to the NHSN AUR module.

In July 2016, Governor Andrew M. Cuomo and NYS Commissioner of Health Dr. Howard A. Zucker created an Antimicrobial Resistance Prevention and Control Task Force involving federal, state, and local agencies to improve coordination and collaboration of antimicrobial resistance related activities across the health care spectrum and to develop new initiatives aimed at the prevention and control of antimicrobial resistance in NYS.

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

Appendix 1: List of Abbreviations

AR – Antimicrobial resistance
ASA – American Society of Anesthesiologists' classification of physical status
ASP – Antimicrobial stewardship program
BMI – Body mass index
BSI – Bloodstream infection
CABG – Coronary artery bypass graft surgery
CARB - Combating Antibiotic-Resistant Bacteria
CAUTI – Catheter-associated urinary tract infection
CDC – Centers for Disease Control and Prevention
CDI – *Clostridium difficile* infection
C. difficile – *Clostridium difficile*
CI – Confidence interval
CLABSI – Central line-associated bloodstream infection
CLSI - Clinical Laboratory Standards Institute
CMS – Centers for Medicare and Medicaid Services
CO – Community onset
CO-NMH – Community onset-not my hospital
CO-PMH – Community onset-possibly my hospital
CRE – Carbapenem-resistant Enterobacteriaceae
DOH –Department of Health
DU– Device utilization
DUA – Data use agreement
ED – Emergency department
EIA – Enzyme immunoassay
ELC – Epidemiology and Laboratory Capacity
EVD – Ebola virus disease
FWI – Facility-wide inpatient
HAI – Hospital-acquired infection
HO – Hospital onset
ICU – Intensive care unit
IP – Infection preventionist
IPF – Inpatient psychiatric facility
IQR – Inpatient quality reporting
IRF – Inpatient rehabilitation facility
LabID – Laboratory identified
LTCF – Long term care facility
MBI – Mucosal barrier injury
MDR – Multidrug resistant
MDRO – Multidrug resistant organism
MRSA – Methicillin-resistant *Staphylococcus aureus*
NAAT – Nucleic acid amplification test
NICU – Neonatal intensive care unit
NHSN – National Healthcare Safety Network

NYS – New York State
NYSDOH – New York State Department of Health
OBS – Observation unit
OP – Outpatient
OR – Operating room
PATOS – Present at time of surgery
PDS – Post-discharge surveillance
PPE – Personal protective equipment
QIO – Quality Improvement Organization
RFA – Request for applications
RPC – Regional Perinatal Center
SIR – Standardized infection ratio
SPARCS – Statewide Planning and Research Cooperative System
spp – Species (plural)
SSI – Surgical site infection
TAW – Technical Advisory Workgroup
UTI – Urinary tract infection
VRE – Vancomycin-resistant Enterococci

Appendix 2: Glossary of Terms

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.

Admission prevalence rate: The percent of patients that are admitted to the hospital already carrying an infection. This is calculated as the number of admission prevalent cases divided by the number of admissions.

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.

Catheter-associated urinary tract infection (CAUTI): A CAUTI is an infection of the bladder or kidneys associated with the use of a urinary catheter. Hospitalized patients may have a urinary catheter, a thin tube inserted into the bladder through the urethra, to drain urine when they cannot urinate on their own.

Carbapenem: There are four carbapenem antibiotics: ertapenem, meropenem, doripenem, and imipenem. Carbapenems are considered antibiotics of near last resort by medical professionals.

Carbapenem-resistant Enterobacteriaceae infection (CRE): Bacteria in the Enterobacteriaceae family that are resistant to carbapenems are called CRE.

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 but which can cause infections in some situations**.** Overgrowth of *C. difficile* in the bowel sometimes occurs after a patient takes antibiotics, which can kill good bacteria in the bowel. Sometimes people become infected with *C. difficile* from touching their mouth after coming in contact with contaminated environmental surfaces or patient care items. Symptoms range from mild to severe diarrhea; in some instances death can occur.

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 (CO): Documented infection occurring within 3 days of hospital admission.

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 infection occurring 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 bypass 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.

Hospital Onset (HO): Documented infection occurring after the third day of hospital admission.

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. 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.

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 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 specialties 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.

Methicillin-resistant *Staphylococcus aureus* (MRSA): *Staphylococcus aureus* (SA) is a common bacterium normally found on the skin or in the nose of 20 to 30 percent of healthy individuals. When SA is resistant to the antibiotics oxacillin, cefoxitin, or methicillin, it is defined as MRSA for surveillance purposes.

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.
- **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.

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.

Patient day: Patient days are the number of hospitalizations multiplied by the length of stay of each hospitalization. One patient hospitalized for 6 days will contribute 6 patient days to the hospital total, as will two patients each hospitalized for 3 days.

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.

- **Bloodstream 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 site infections:** 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.
- **Admission Prevalent 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: The risk-adjusted rate is based on a comparison of the actual (observed) rate and the rate that would be predicted if, statewide, the patients had the same distribution of risk factors as the hospital.

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

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 is 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:** Operation body sites in which no infection or inflammation 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

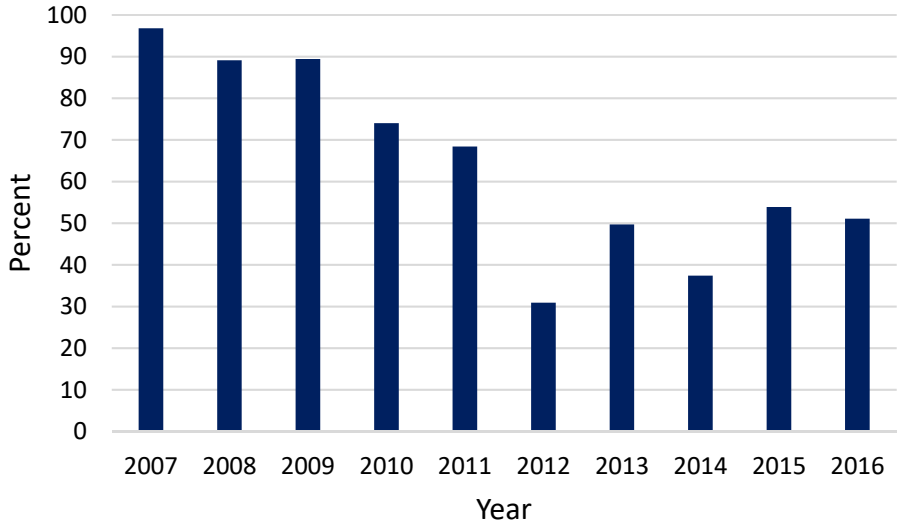
Data reported to the NHSN are validated by the NYSDOH using several methods.

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.

Monthly checks for internal consistency – Every other 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.

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 enhance the reliability and consistency of applying the surveillance definitions; evaluate the adequacy of surveillance methods to detect infections; and 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, and have been conducted continuously through the years. Figure 28 summarizes the percentage of hospitals audited each year. A hospital was 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, or was located in a region covered by an HAI staff member or offered electronic medical record access.

Figure 28. Percent of hospitals audited each year, New York State



For CLABSI audits, staff reviewed the medical records of patients identified as having a positive blood culture during a specified time period. For CDI and CRE audits, staff reviewed a laboratory list of positive laboratory reports during a specified time period. For SSI audits, staff reviewed a targeted selection of medical records to efficiently identify under reporting. Specifically, the SPARCS database was used to preferentially select patients with an infection reported to the SPARCS billing database but not NHSN.

The 2016 audit results will be summarized in the next annual report. In 2015, NYSDOH staff reviewed 6,329 records and agreed with the hospital-reported infection status 93% of the time. Disagreements were discussed with the IPs and corrected in NHSN. Table 29 summarizes the number of inconsistencies in reporting infections out of the total number of qualified records reviewed. The number of unqualified records (e.g. bloodstream infections with no central lines (for CLABSI auditing) and procedures that should not have been reported (for SSI auditing)) that underwent partial review are not included in the summary. Hospitals are more likely to under report than over report infections. The overall agreement rates for this sample should not be used to infer the overall agreement for NYS data because 1) hospitals were not randomly selected for audit 2) the sample of records within each hospital was not random.

Table 29. Brief summary of 2015 HAI audit

Type of infection	# qualified[1] records reviewed	hospital said HAI = Y; auditor agreed	hospital said HAI = Y; auditor disagreed	hospital said HAI = N; auditor agreed	hospital said HAI = N; auditor disagreed	overall % agreement
Colon SSI	732	133	3	517	79	88.8%
CABG SSI	186	30	1	142	13	92.5%
HYST	646	80	2	539	25	95.8%
Hip SSI	712	75	2	629	6	98.9%
CLABSI	735	143	12	541	39	93.1%
CDI	2,384	2,299	5	0	80	96.4%
CRE	934	782	23	0	129	83.7%
TOTAL	**6,329**	**3,542**	**48**	**2,368**	**371**	**93.4%**

The 2015 audit was conducted between July 2015 and June 2016, and predominantly covered 2015 data.
SSI = surgical site infection; CLABSI = central line associated bloodstream infection; CDI = *Clostridium difficile* infection; CRE = carbapenem resistant Enterobacteriaceae.
[1] Unqualified records are not shown; these included patients with no central lines (for CLABSI auditing) and procedures that should not have been reported (for SSI auditing).

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.

- NHSN CABG data are linked to the Cardiac Surgery Reporting System[21] 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.
- NHSN colon, hip, hysterectomy, CDI, and CRE data are linked to the Statewide Planning and Research Cooperative System (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 178 hospitals reporting complete data for 2016. 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.
- For CDI and CRE there must be a minimum of 50 patient days.

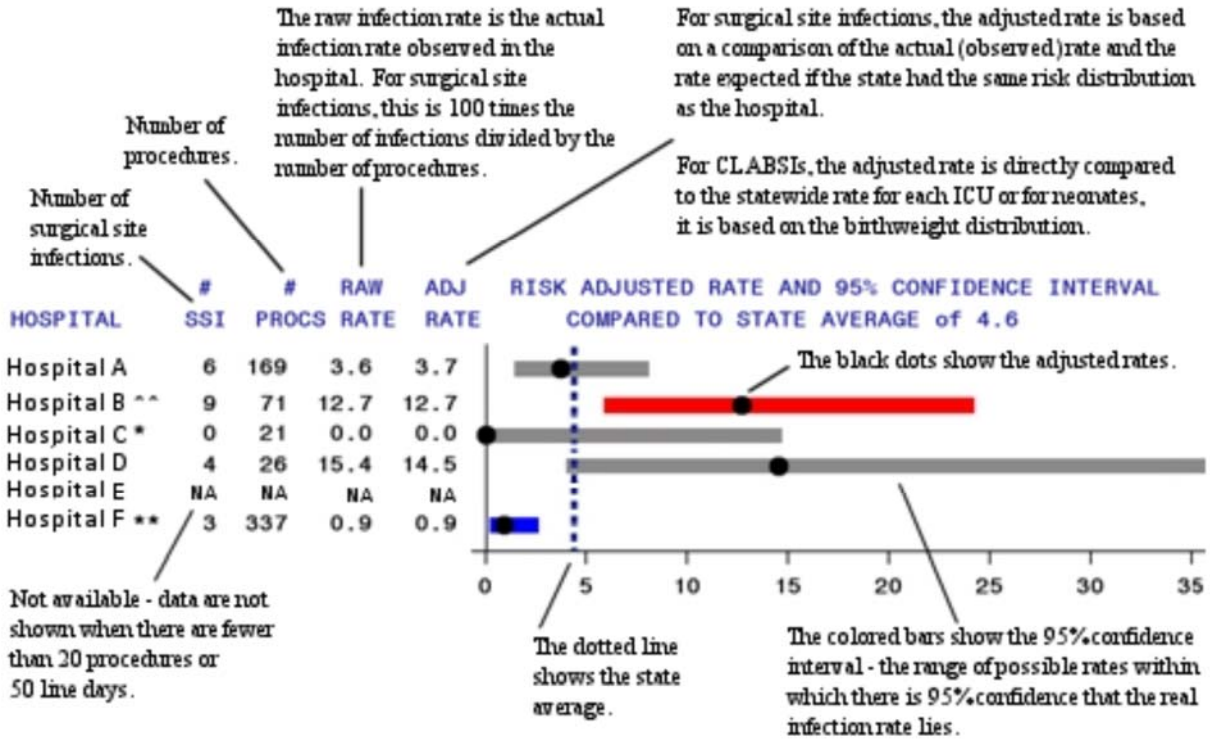
NYSDOH tracks hospital performance over time. Hospitals flagged high or low for at least three consecutive years (i.e. 2014, 2015, 2016) are specifically named in this report.

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 many 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 predicted number of infections for each hospital. The observed infection rate was then divided by the hospital's predicted infection rate. If the resulting ratio is larger than one, the hospital has a higher infection rate than expected based on its patient mix. If it is smaller than one, the hospital 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 95% confidence intervals for all indicators except CDI, for which a 99% CI was used. All data analyses were performed using SAS version 9.4 (SAS Institute, Cary NC). Figure 29 provides an example of how to interpret the hospital-specific SSI and CLABSI infection rate tables.

Figure 29. How to read hospital-specific SSI and CLABSI infection rate



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

Attributable Mortality of CDI/MDROs

Attributable mortality rates were calculated using the data in Table 30. The attributable mortality rate for each indicator was calculated as the average attributable mortality rate over the relevant journal articles, weighted by the number of MDROs considered in each analysis.

Table 30. Attributable mortality estimates from literature review

MDRO	Reference	# MDROs	% Deaths MDROs	% Deaths controls	Attributable Mortality %
CDI	Dodek 2013[22]	227	29	27	2.0
	Gravel 2009[23]	1430	N/A	N/A	5.7
	Kenneally 2007[24]	278	36.7	30.6	6.1
	Loo 2005[25]	1703	N/A	N/A	6.9
	Pepin 2005[26]	161	23	7	16.0
	Tabak 2013[27]	255	11.8	7.3	4.5
	Dubberke 2008[28]	353	36	30.3	5.7
	Hensgens 2013[29]	317	14.8	5.4	9.4
	Barbut 2017[30]	482	9	5	4.0
	Weighted average				**6**
CRE	Borer 2009[11]	32	71.9	21.9	50.0
	Mouloudi 2014[12]	37	NA	NA	27.0
	Gallagher 2014[31]	43	45	18	27
	Weighted average				**34**
MRSA	Harbarth 1998[32]	39	36	28	8.0
	DeKraker 2011[33]	242	30.6	8.4	22.2
	Weighted average				**20**
VRE	Carmeli 2002[34]	21	NA	NA	25.0
	Edmond 1996[35]	27	66.7	29.6	37.0
	Song 2003[36]	159	50.3	27.7	22.6
	Stosor 1998[37]	21	NA	NA	61.9
	Weighted average				**28**
MDR Acinetobacter	Blot 2003[38]	45	42.2	34.4	7.8
	Grupper 2007[39]	52	55.8	19.2	36.5
	Wisplinghoff 1999[40]	29	31.0	13.8	17.2
	Weighted average				**22**

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). The CMS website compares hospital-specific CLABSI, CAUTI, colon SSI, hysterectomy SSI, MRSA bloodstream infection, and CDI infection rates to national benchmarks.

The HAI rates reported by NYS and CMS may differ. Table 31 summarizes the reasons for these differences.

Table 31. Comparison of New York State and Hospital Compare data

	NYSDOH HAI Report	**CMS Hospital Compare**
Question answered	How did each hospital perform in 2016 compared to the NYS 2016 average?	How did each hospital perform in 2016 compared to the National 2015 average?
2016 measures	CLABSI, SSI (colon, hip, CABG, hysterectomy), CDI, CRE	CLABSI, SSI (colon, hysterectomy), CAUTI, CDI, MRSA
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)
Wards	Medical, surgical, medical/surgical, and stepdown units	Medical, surgical, and medical/surgical
SSI Exclusions	SSIs detected using post discharge surveillance and not readmitted to any hospital, PATOS	Children, patients with outlying risk adjustment variables, superficial infections, PATOS
Displayed outcomes	Raw rates, risk-adjusted rates, and standardized infection ratios	Standardized infection ratios
Risk adjustment variables	Vary by indicator	Vary by indicator

Appendix 4: List of Hospitals by County

Table 32 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/.

Table 32. List of hospitals included in this report

County	PFI	CMS ID	Hospital Name
Albany	0001	330013	Albany Med Ctr
	0004	330003	Albany Memorial
	0005	330057	St Peters Hospital
Allegany	0039	330096	Jones Memorial
Bronx	1169	330059	Montefiore-Moses
	1178	330009	Bronx-Lebanon
	1176	330399	St Barnabas
	1186	330385	North Central Bronx
	1165	330127	Jacobi Med Ctr
	1168	330059	Montefiore-Wakefield
	1172	330080	Lincoln Med Ctr
	3058	330059	Montefiore-Einstein
Broome	0058	330394	UHS Wilson
	0043	330011	Our Lady of Lourdes
	0042	330394	UHS Binghamton
Cattaraugus	0066	330103	Olean General
Cayuga	0085	330235	Auburn Memorial
Chautauqua	0103	330239	UPMC Chautauqua WCA
	0098	330229	Brooks Memorial
	0114	330132	TLC Lake Shore
Chemung	0116	330090	Arnot Ogden Med Ctr
	0118	330108	St Josephs- Elmira
Chenango	0128	330033	UHS Chenango Memor
Clinton	0135	330250	Champlain Valley
Columbia	0146	330094	Columbia Memorial
Cortland	0158	330175	Cortland Reg Med
Dutchess	0192	330049	Northern Dutchess
	0180	330234	MidHudson Reg of WMC
	0181	330023	Vassar Brothers

County	PFI	CMS ID	Hospital Name
Erie	0280	330111	Bertrand Chaffee
	0292	330078	Sisters- St Joseph
	0213	330279	Mercy Hosp Buffalo
	0267	330102	Kenmore Mercy
	0218	330078	Sisters of Charity
	0207	330005	Buffalo General
	3067	330005	Millard Fill. Suburb
	0208	333562	Woman and Childrens
	0210	330219	Erie County Med Ctr
	0216	330354	Roswell Park
Franklin	0324	330079	Adirondack Medical
	0325	330084	Alice Hyde Med Ctr
Fulton	0330	330276	Nathan Littauer
Genesee	0339	330073	United Memorial
Jefferson	0367	330157	Samaritan- Watertown
Kings	1320	330350	SUNY Downstate MedCr
	1324	330169	Mt Sinai Brooklyn
	1301	330202	Kings County Hosp
	1306	330236	NYP-Brklyn Methodist
	1305	330194	Maimonides Med Ctr
	1294	330196	Coney Island Hosp
	1315	330201	Kingsbrook Jewish MC
	1304	330306	NYU Lutheran
	1318	330221	Wyckoff Heights
	1692	330396	Woodhull Med Ctr
	1286	330233	Brookdale Hospital
	1288	330056	Brooklyn Hosp Ctr
	1309	330397	Interfaith Med Ctr
	1293	330019	NY Community Hosp
Livingston	0393	330238	Noyes Memorial
Madison	0397	330115	Oneida Healthcare
Monroe	0411	330125	Rochester General
	0413	330285	Strong Memorial
	0409	330164	Highland Hospital
	0471	330226	Unity Hosp Rochester
Montgomery	0484	330047	St Marys Amsterdam

County	PFI	CMS ID	Hospital Name
Nassau	0528	330027	Nassau University
	0550	330106	Syosset Hospital
	0552	330331	Plainview Hospital
	0490	330181	Glen Cove Hospital
	0518	330372	LIJ at Valley Stream
	0541	330106	North Shore
	0551	330332	St Joseph -Bethpage
	0527	330198	South Nassau Comm.
	0563	330182	St Francis- Roslyn
	0511	330167	Winthrop University
	0513	33T259	Mercy Med Ctr
	3376	330195	Cohens Childrens
New York	1438	330204	Bellevue Hospital
	1439	330169	Mt Sinai Beth Israel
	1454	33T199	Metropolitan Hosp
	1469	330046	Mt Sinai St Lukes
	1466	330046	Mt Sinai West
	1450	330119	Lenox Hill Hospital
	1437	330101	NYP-Lower Manhattan
	1456	330024	Mt Sinai
	1463	330214	NYU Tisch
	1453	330154	Memor SloanKettering
	1464	330101	NYP-Columbia
	3975	330101	NYP-Allen
	1464	330101	NYP-Morgan Stanley
	1458	330101	NYP-Weill Cornell
	1445	330240	Harlem Hospital
	1446	330214	NYU Joint Diseases
	1447	330270	Hosp for Spec Surg
	1460	330100	NY Eye&Ear Mt Sinai
Niagara	0583	330188	Mount St. Marys
	0565	330163	East. Niag. Lockport
	0574	330065	Niagara Falls
	0581	330005	DeGraff Memorial
Oneida	0598	330245	St Elizabeth Medical
	0599	330044	Faxton St. Lukes
	0589	330215	Rome Memorial

County	PFI	CMS ID	Hospital Name
Onondaga	0636	330203	Crouse Hospital
	0635	330241	Univ Hosp SUNY Upst
	0628	330241	Upst. Community Gen
	0630	330140	St Josephs- Syracuse
Ontario	0678	330074	FF Thompson
	0676	330265	Clifton Springs
	0671	330058	Geneva General
Orange	0699	330126	OrangeReg Goshen-Mid
	0694	330264	St Lukes Cornwall
	0708	330135	Bon Secours
	0704	330205	St Anthony
Oswego	0727	330218	Oswego Hospital
Otsego	0746	330136	Mary Imogene Bassett
	0739	330085	AO Fox Memorial
Putnam	0752	330273	Putnam Hospital
Queens	1633	330231	Queens Hospital
	1635	330395	St Johns Episcopal
	1638	330353	LIJ at Forest Hills
	1630	330195	Long Isl Jewish(LIJ)
	1629	330014	Jamaica Hospital
	1628	330193	Flushing Hospital
	1639	330024	Mt Sinai Queens
	1637	330055	NYP-Queens
	1626	330128	Elmhurst Hospital
Rensselaer	0756	330180	Samaritan- Troy
Richmond	1740	330160	Staten Island U N
	1738	330028	Richmond Univ MC
	1737	330160	Staten Island U S
Rockland	0779	330158	Good Samar. Suffern
	0776	330104	Nyack Hospital
	0775	330405	Helen Hayes Hospital
Saratoga	0818	330222	Saratoga Hospital
Schenectady	0829	330153	Ellis Hospital
	0831	330406	Sunnyview Rehab Hosp
	0848	330153	Bellevue Ellis
Schoharie	0851	330268	Cobleskill Regional
St.Lawrence	0798	330211	Claxton-Hepburn
	0815	330197	Canton-Potsdam
	0804	330223	Massena Memorial

County	PFI	CMS ID	Hospital Name
Steuben	0873	330144	Ira Davenport
	0870	330151	St James Mercy
	0866	330277	Corning Hospital
Suffolk	0885	330141	Brookhaven Memorial
	0938	330107	Peconic Bay Medical
	0891	330088	Eastern Long Island
	0925	330286	Good Samar. W Islip
	0943	330401	St Catherine Siena
	0896	330246	St Charles Hospital
	0924	330043	Southside
	0889	330340	Southampton
	0245	330393	Univ Hosp StonyBrook
	0913	330045	Huntington Hospital
	0895	330185	JT Mather Hospital
Sullivan	0971	330386	Catskill Regional
Tompkins	0977	330307	Cayuga Medical Ctr
Ulster	0989	330224	HealthAlli MarysAve
	0990	330004	HealthAlli Broadway
Warren	1005	330191	Glens Falls Hospital
Wayne	1028	330030	Newark Wayne
Westchester	1045	330304	White Plains Hosp
	1139	330234	Westchester Medical
	1129	330261	Phelps Memorial
	1117	330162	Northern Westchester
	1039	330267	NYP-Hudson Valley
	1097	330208	St Johns Riverside
	1061	330086	Montefiore-Mt Vernon
	1098	330006	St Josephs- Yonkers
	1122	330061	NYP-Lawrence
	1072	330184	Montefiore-NewRochl
	1138	333301	Blythedale Childrens
	1124	330208	St Johns Dobbs Ferry
Wyoming	1153	330008	Wyoming County Comm.

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