

**New York State Report on Sepsis
Care Improvement Initiative:
Hospital Quality Performance**

**Office of the Medical Director
Office of Quality and Patient Safety**
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**Department
of Health**

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Introduction

Sepsis is a life-threatening condition that requires early detection and timely, appropriate interventions to improve the chances of survival for patients of all ages. Since 2014, the New York State Sepsis Care Improvement Initiative has been a resource for quality improvement in sepsis care. The New York State Department of Health (the Department) is pleased to present this report of updated data from the New York State Sepsis Care Improvement Initiative. This report contains 2016 results for hospitals' use of sepsis protocols to identify and treat adults and children with sepsis, hospitals' adherence to time-dependent key interventions within those protocols and risk adjusted mortality rates (for adults) for each reporting hospital in New York State. The report details sepsis data collection on adult and pediatric cases, the sepsis quality measures and outcomes on which hospitals are compared, statewide trends for key quality measures and outcomes, and key ongoing collaborations between the Department and external partners. The report represents considerable efforts by New York State hospitals and clinicians, over the past four years, to measure and improve care for individuals with this common, complex, and lethal condition.

Sepsis is defined as a clinical syndrome in which patients have an infection that is accompanied by an extreme systemic response. Sepsis of sufficient severity that the function of major organ systems in the body (such as heart, kidney, brain and others) is impaired is referred to as 'severe sepsis'. Patients with severe sepsis that have continued organ system impairment and/or low blood pressure that does not respond to treatment with adequate fluid replacement are considered to be in 'septic shock'. In addition, many more may experience lifelong impairments because of the broad impact that sepsis may have on organ and tissue function. For purposes of this report, the term 'sepsis' will be used to indicate severe sepsis and septic shock. Severe sepsis and septic shock impact approximately 50,000 patients in NY each year, and on average almost 30% of patients died from this syndrome prior to the implementation of this initiative.

The combination of early detection of sepsis coupled with timely, appropriate interventions can significantly improve the chances of survival for patients with all types of sepsis. This public report is one part of a statewide initiative to reduce the impact of this deadly condition by improving early detection and intervention for patients with sepsis, focused on the deadliest forms – severe sepsis and septic shock. This report highlights some important and promising results, including a decrease in overall mortality and an increase in hospital protocol initiation. The observed decrease in adult mortality and concomitant improvement in processes of care measures suggest a relationship between statewide improvement in sepsis care and the New York Sepsis Care Improvement Initiative. While the number of pediatric deaths was small and therefore trends were difficult to interpret, pediatric processes of care have also increase over baseline at implementation.

The New York State Sepsis Initiative

Beginning in 2014, each acute care hospital in New York that provides care to patients with sepsis was required by amendment of Title 10 of the New York State Codes, Rules and Regulations (Sections 405.2 and 405.4) to develop and implement evidence-informed sepsis protocols, which describe their approach to both early recognition and treatment of sepsis patients. In addition, hospitals were required to report data to the Department beginning in 2014 that are used to calculate each hospital's performance on key measures of early treatment and protocol use. Hospitals were also required to submit sufficient clinical information for each patient with sepsis to allow the Department to develop a methodology to evaluate 'risk adjusted' mortality rates for each hospital. Risk adjustment takes into consideration the different mix of characteristics and comorbid conditions, including sepsis severity, of patients cared for within each hospital and permits comparison of hospital performance.

Data Collection

Patient Population

This report presents hospital-reported data for all adult and pediatric patients with a diagnosis of severe sepsis or septic shock seen at the facility from the second quarter (Q2) of 2014 through the fourth quarter (Q4) of 2016. Patient populations differ in various sections of this report. This difference reflects the intention of understanding care for all versus hospital comparison. In the first section, aggregate data from all reporting hospitals for presenting statewide trends includes all patients diagnosed with severe sepsis or septic shock, with limited exceptions. The next section describes hospital-specific data, which includes all patients for some measures relevant to all hospitals, while other measures are limited to patients who are not transferred. These differences are fully described in each section.

Adult patients are defined as those age 18 years or older, and pediatric patients are those age younger than 18 years. Data in this report are presented through 2016 to align with risk-adjusted mortality data, which are available for calendar year 2016.

Data Source and Data Submission

The hospital data evaluated in the New York State Sepsis Care Improvement Initiative are abstracted from hospital medical records by hospital staff. These collected data are submitted electronically to a secure web portal hosted by IPRO, the External Quality Review Organization for New York State, for validation. IPRO conducts an independent audit of a sample of medical records for each hospital to ensure data integrity and accuracy.

Quality Measures

Quality measures are calculated for reporting statewide rates and trends, and an additional set of quality measures is calculated for hospital-specific rates and trends. The Adult New York State sepsis process of care measures were developed using a National Quality Forum (NQF) measure for guidance: NQF #500 Severe Sepsis and Septic Shock: Management Bundle. These measures, reported as statewide and hospital-specific rates, reflect several key processes of care that can increase the probability of surviving an episode of sepsis. There is one important outcome measure, mortality, included in this report. Statewide mortality rates and hospital-specific risk adjusted mortality rates are reported.

Statewide Trends

Statewide rates and trends are reported using data for all patients diagnosed with severe sepsis or septic shock, with measure-specific exclusions as noted below. The measures calculated using aggregate data from all hospitals for statewide reporting are briefly summarized below.

- The percentage of patients with severe sepsis or septic shock who received care using a hospital developed sepsis protocol.
- The percentage of adult patients with severe sepsis or septic shock treated with the hospital's sepsis protocol who received all the recommended early interventions in the 3-hour early management bundle within three (3) hours of time zero, which for this measure is the date and time when each hospital determined that its protocol had been initiated for each patient. If a hospital did not initiate a protocol, 'time zero' is the earliest time documented in the clinical data for the patient, such as triage time or hospital arrival time. This measure is not calculated for patients who were excluded from the hospital's protocol or from specific care interventions, or who died within 3 hours.
- The percentage of adult patients with septic shock treated with the hospital's sepsis protocol who received all the recommended interventions in the 6-hour early management bundle within six (6) hours of time zero, which for this measure is the date and time when each hospital determined that its protocol had been initiated for each patient. If a hospital did not initiate a protocol, 'time zero' is the earliest time documented in the clinical data for the patient, such as triage time or hospital arrival time. This measure is not calculated for patients who were excluded from the hospital's protocol or from specific care interventions, or who died within 6 hours.
- The percentage of pediatric patients with sepsis treated with the hospital's sepsis protocol who received all the recommended early interventions within one (1) hour of time zero, which for this measure is the date and time when each hospital determined that its protocol had been initiated for each patient. If a hospital did not initiate a protocol, 'time zero' is the earliest time documented in the clinical data for the patient, such as triage time or hospital arrival time. This measure is not calculated for patients who were excluded from the hospital's protocol or from specific care interventions, or who died within 1 hour.
- The percentage of adult and pediatric patients with in-hospital mortality.

Figures 1-5 depict trend analyses based on aggregated data submitted by hospitals from Quarter 2 2014 through Quarter 4 2016. For the measures with specified time parameters in the trend graphs for this section (Figures 2-5), 'time zero' is defined as the date and time when each hospital determined that its protocol had been initiated for each patient. If a hospital did not initiate a protocol, 'time zero' is the earliest time documented in the clinical data for the patient, such as triage time or hospital arrival time. Overall, there has been observed improvement in the adult measure of protocol initiation and the process measurement bundles from 2015 results to 2016 results.

Protocol Initiation

Figure 1 shows the percentage of adult patients (age ≥ 18) with severe sepsis or septic shock for whom the hospital’s evidence-informed sepsis protocol was initiated at the treating hospital. Reasons that protocols may not be implemented include late diagnoses, lack of clarity about interventions at a transferring hospital, or lack of documentation in the medical record. Patients with clinical contraindications to interventions in the protocol or advanced directives, who are enrolled in a clinical study, who refuse interventions or who die within six hours are excluded from this measure. Figure 1 shows that the percentage of adult patients with severe sepsis or septic shock who had a sepsis protocol initiated increased progressively over time from 73.7% in Q2 2014 to 84.3% by Q4 2016.

Figure 1. Adult Protocol Initiation: Quarter Two, 2014 through Quarter Four, 2016*

(*) excludes patients with clinical contraindications for protocol interventions or who died within six hours

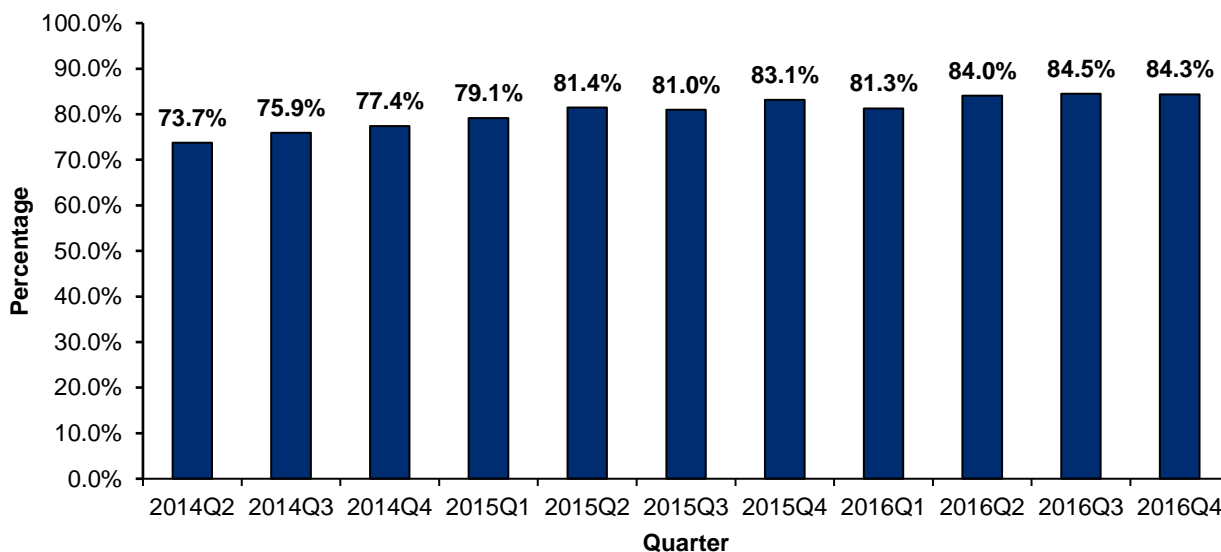
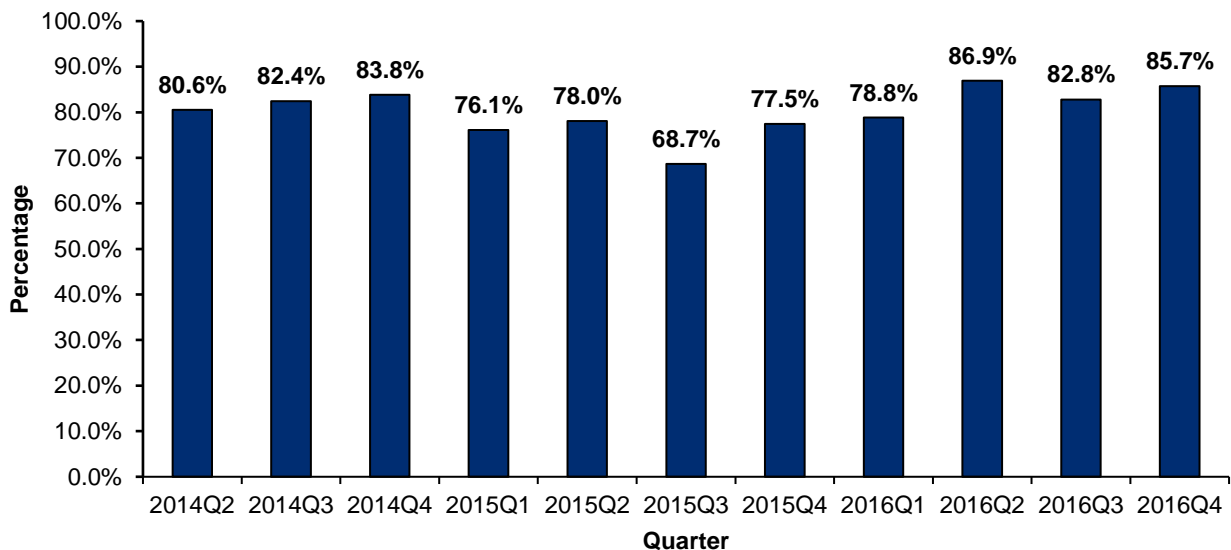


Figure 2 shows the percentage of pediatric patients (age < 18) with severe sepsis or septic shock for whom a protocol was initiated at the treating hospital. There is a small number of pediatric patients with severe sepsis or septic shock relative to the number of adult patients. This small volume of pediatric cases in each quarter could contribute to the fluctuation seen over time in the percentage of pediatric patients with severe sepsis and septic shock for whom a sepsis protocol was initiated. In Q2 2014, 80.6% of pediatric patients had a sepsis protocol initiated, and in Q4 2016, 85.7% had a sepsis protocol initiated.

Figure 2. Pediatric Protocol Initiation: Quarter Two, 2014 through Quarter Four, 2016*

(*) excludes patients with clinical contraindications for protocol interventions or who died within one hour



Early Intervention Bundles

Timely intervention for severe sepsis and septic shock is critical. Current guidelines recommend timely collection of blood cultures and lactate level and early administration of antibiotics for patients with severe sepsis or septic shock. Repeat lactate levels, fluids and vasopressors for blood pressure support are recommended for a subset of patients with certain manifestations of severe sepsis.

Figure 3 shows the percentage of adult patients (age ≥ 18) with severe sepsis or septic shock for whom all the recommended early interventions in the 3-hour early management bundle were administered within the recommended timeframe. These interventions include measurement of lactate level, blood culture collection prior to antibiotics, and antibiotic administration. Patients who died within three hours of time zero and those with clinical contraindications to any of the recommended interventions are excluded from this measure bundle. At the onset of the initiative, 41.5% of eligible patients with severe sepsis or septic shock received all three interventions within the recommended timeframe, while by Q4 2016 the percentage had increased to 59.5%.

**Figure 3. Adult Early Intervention (3-Hour Early Management Bundle):
Quarter Two, 2014 through Quarter Four, 2016***

(*) excludes patients with clinical contraindications for protocol interventions or who died within three hours

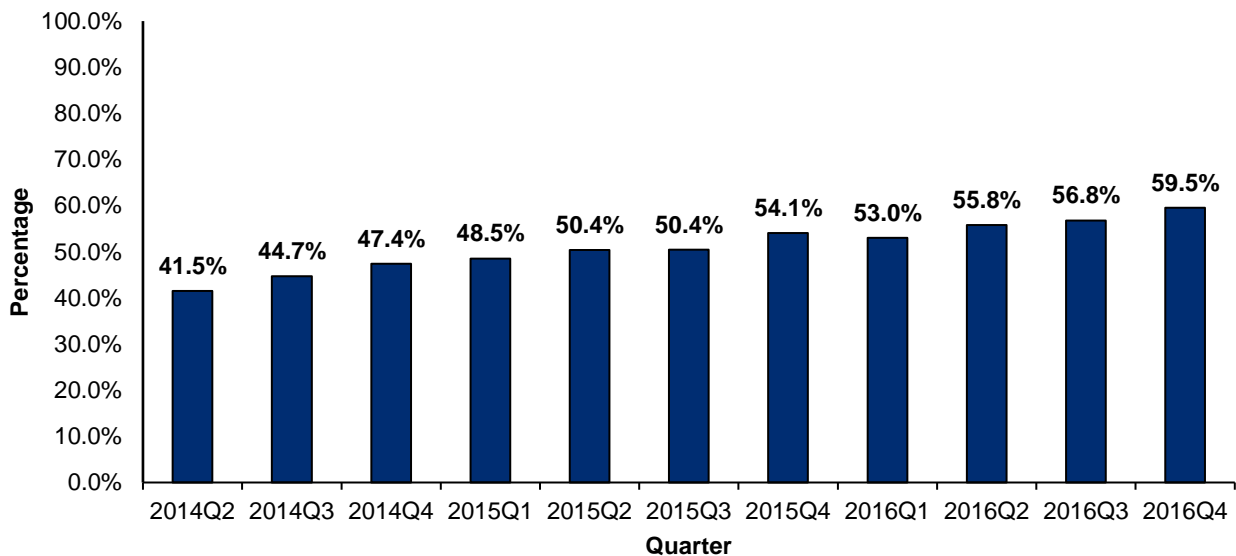


Figure 4 shows the percentage of adult patients (age ≥ 18) with severe sepsis or septic shock for whom all the recommended interventions in the 6-hour early management bundle were administered. These interventions include the three-hour bundle interventions and a repeat lactate level, crystalloid fluid administration and administration of vasopressors for blood pressure support for patients who require these interventions. Patients who died within six hours of time zero and patients with clinical contraindications to any of the interventions are not included in the measure calculation. In Q2 2014, 22.6% of patients received all required interventions within the recommended timeframe. This percentage progressively increased to 39.7% by Q4 2016.

Figure 4. Adult Early Intervention (6-Hour Early Management Bundle): Quarter Two, 2014 through Quarter Four, 2016*

(*) excludes patients with clinical contraindications for protocol interventions or who died within six hours

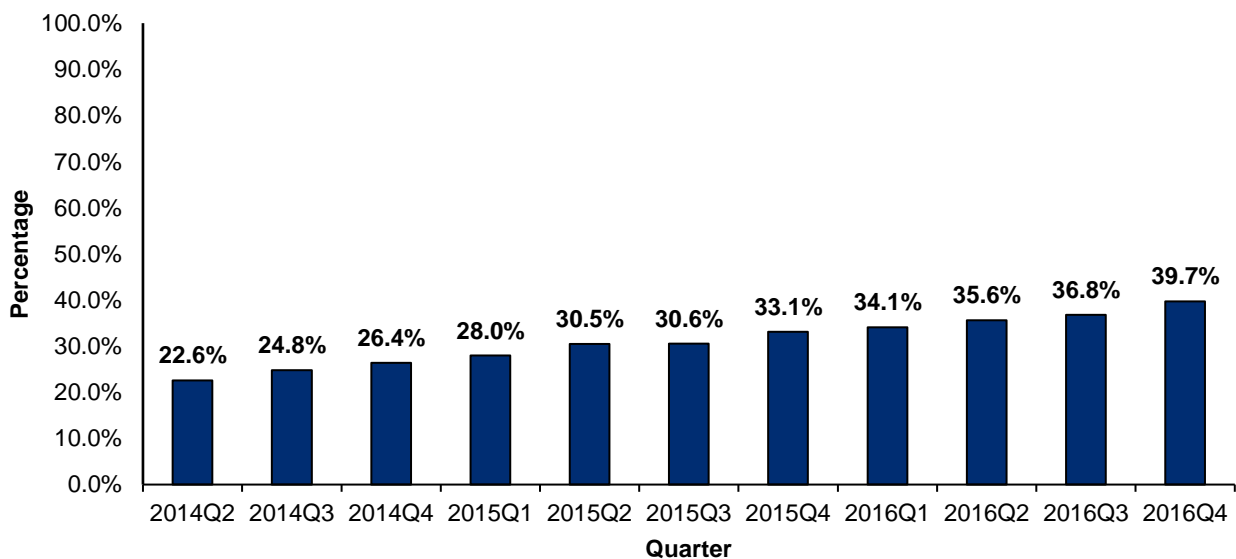
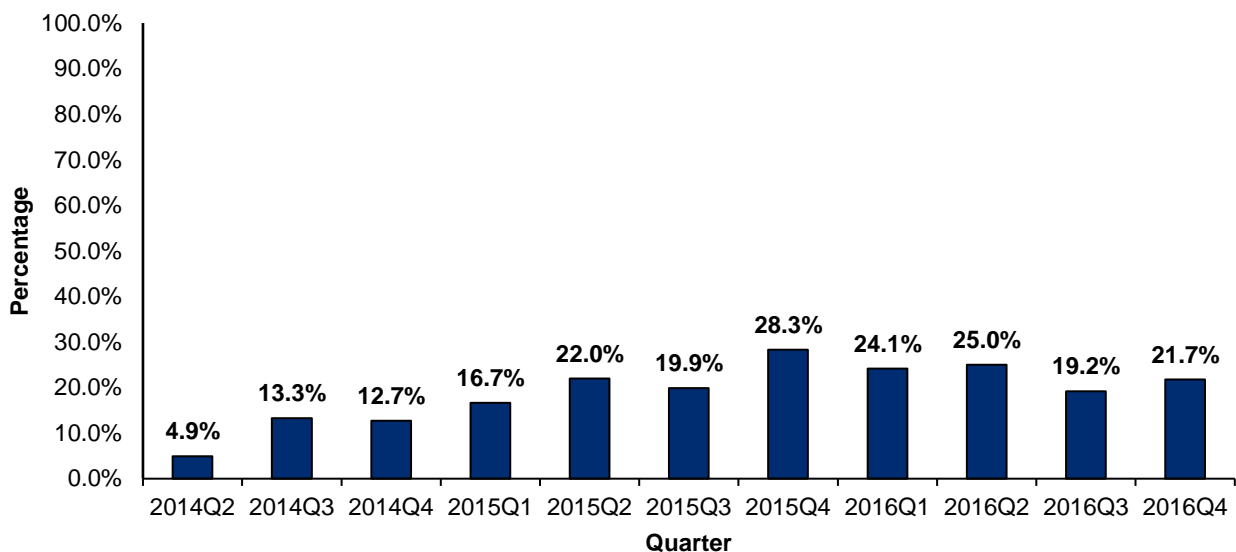


Figure 5 shows the percentage of pediatric patients (age <18) with severe sepsis or septic shock who received all interventions in the early management bundle within one hour. For pediatric patients, these timely interventions include blood cultures, antibiotics and the administration of 20 cc/kg of crystalloid fluid. Pediatric patients who died within one hour of time zero or who have clinical contraindications to any of the interventions are excluded from the measure bundle. Fluctuations are again seen across quarters, likely due to small case volumes. At the onset of the initiative, 4.9% of pediatric patients with severe sepsis or septic shock received all recommended interventions within one hour, and in Q4 2016 21.7% of patients received all recommended interventions.

**Figure 5. Pediatric Early Intervention (1-Hour Early Management Bundle):
Quarter Two, 2014 through Quarter Four, 2016***

(*) excludes patients with clinical contraindications for protocol interventions or who died within one hour



Outcome Measure

To evaluate the impact of the New York State Sepsis Care Improvement Initiative on the outcomes of patients with severe sepsis and septic shock, the percentage of sepsis patients with in-hospital mortality is calculated. Trends in overall mortality from severe sepsis or septic shock are presented in Figures 6 and 7. All patients with severe sepsis or septic shock are included in the mortality calculation. Figure 6 shows the percentage of adult patients (age ≥ 18) with severe sepsis or septic shock who died during their hospital stay. The overall mortality continued to decrease in 2016, from 30.2% in Q2 2014 to 26.0% in Q4 2016.

Figure 6. Adult In-Hospital Mortality: Quarter Two, 2014 through Quarter Four, 2016

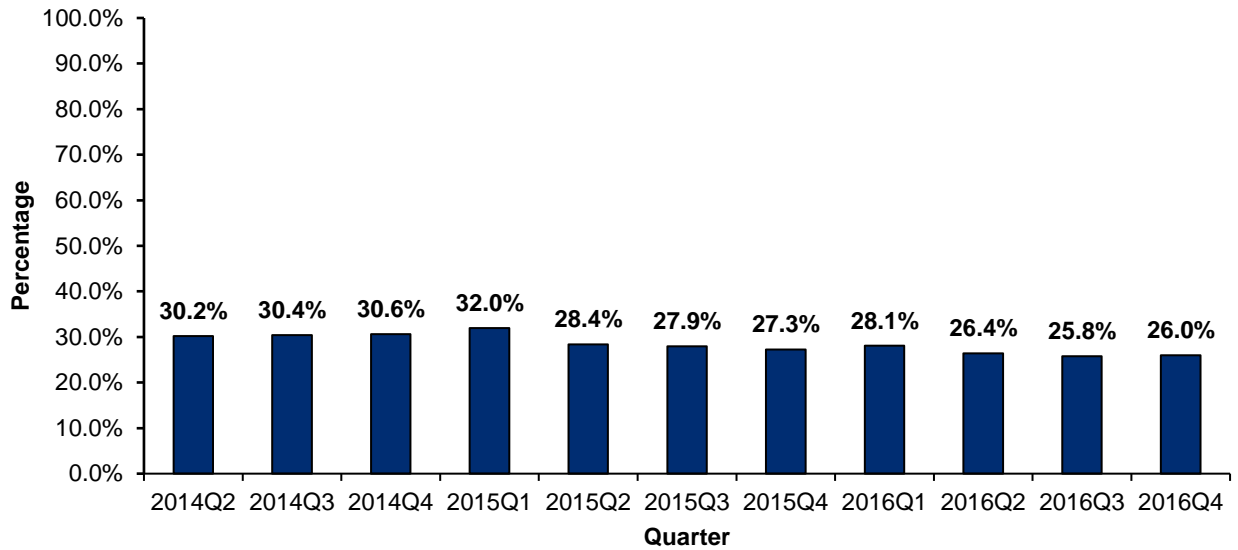
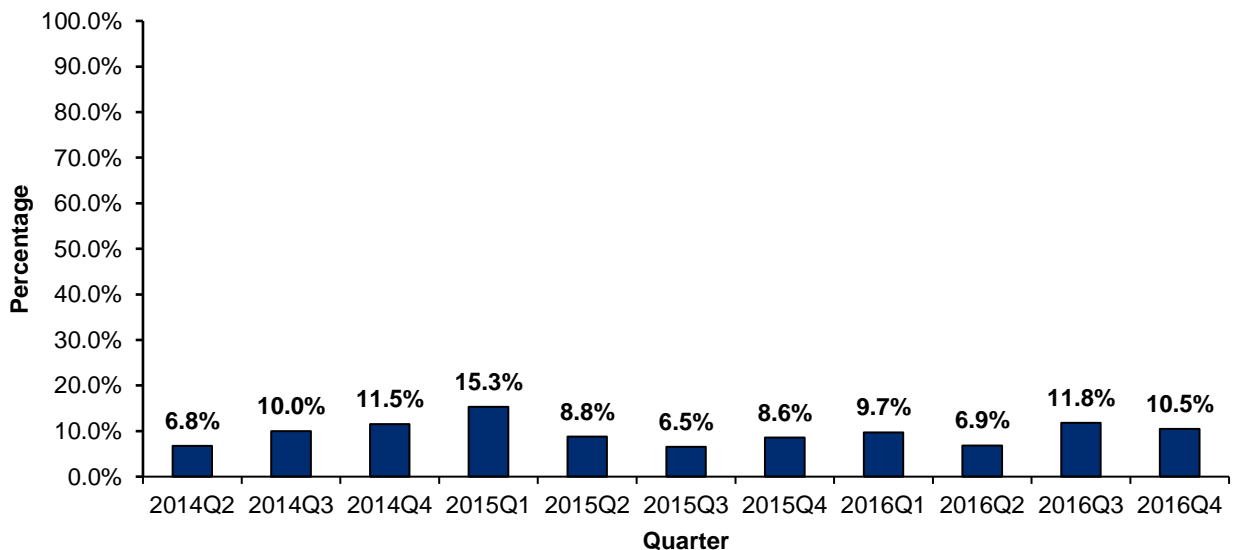


Figure 7 shows the percentage of pediatric patients with severe sepsis or septic shock (age < 18) who died during their hospital stay. The percentages of mortality for pediatric patients fluctuated across quarters, with mortality of 10.5% reported in Q4 2016. Mortality ranged from a low of 6.5% reported in Q3 2015 to the highest percentage of 15.3% reported in Q1 2015. Again, the fluctuation in percentages is likely influenced by the low volume of pediatric cases in each quarter.

Figure 7. Pediatric In-Hospital Mortality: Quarter Two, 2014 through Quarter Four, 2016



Hospital Performance

The hospital-specific measures are described below. For hospital-specific measures that are presented for hospital performance comparison, all patients with severe sepsis or septic shock are included in the measure of sepsis protocol initiation, except for those excluded from protocols for clinical contraindications or other valid reasons. Furthermore, for processes of care measures, only patients treated in the Emergency Department (ED) are included. For hospital-specific processes of care measures and adult risk-adjusted mortality, transferred patients are excluded, since they have received care at more than one hospital.

The hospital-specific measures include the following:






- **Protocol Initiation.** The percentage of adult and pediatric patients with severe sepsis or septic shock who received care using the hospital-developed sepsis protocol. The initiation of the protocol is measured, and this does not necessarily indicate that the entire protocol was implemented.
- **Adult 3-Hour Bundle.** The percentage of adult patients with severe sepsis or septic shock treated in the emergency room with the hospital's sepsis protocol who received all the recommended early interventions in the 3-hour early management bundle within three (3) hours of Emergency Department triage time, or earliest arrival time if triage time is not documented. The 3-hour bundle includes measurement of a blood lactate level, collection of blood cultures and administration of broad spectrum antibiotics. Patients with clinical exclusions for any of the interventions and patients who have been transferred from or to another acute care hospital are excluded from this measure.
- **Adult 6-Hour Bundle.** The percentage of adult patients with septic shock treated in the emergency room with the hospital's sepsis protocol who received all the recommended early interventions in the 6-hour early management bundle within six (6) hours of their Emergency Department triage time, or earliest arrival time if triage time is not documented. The 6-hour bundle includes the interventions in the 3-hour bundle plus fluid administration, vasopressors and remeasurement of lactate for eligible patients. Patients with clinical contraindications to any of the interventions and patients who have been transferred from or to another acute care hospital are excluded from this measure.
- **Pediatric 1-Hour Bundle.** The percentage of pediatric patients with sepsis treated in the emergency room with the hospital's sepsis protocol who received all the recommended pediatric early interventions within one (1) hour of their Emergency Department triage time, or earliest arrival time if triage time is not documented. The pediatric 1-hour bundle includes blood culture collection, antibiotic administration and fluid administration. Patients with clinical exclusions and patients who have been transferred from or to another acute care hospital are excluded from this measure.
- **Risk Adjusted Mortality.** The risk adjusted inpatient mortality (death) rate of adult patients in each hospital.

Performance Data - Adults

Hospital-reported data was used to calculate the hospital-specific performance measures described above. Hospitals with ten or fewer sepsis cases are not included in hospital comparisons in this report. Table 1 shows how hospitals were categorized and ranked according to performance on the measures. After calculating the performance measures for each hospital, the data for each individual measure were ordered from the lowest percentage to

the highest percentage achieved and divided into quintiles. Each hospital was assigned to a “performance level” category based on the quintile into which their percentage fell for a given measure. Those hospitals ranked in quintile 1 are the lowest performers and those hospitals ranked in quintile 5 are the highest performers. Table 1 shows the quintiles, category assignment, and the range of percentages represented in each category for the three adult measures – protocol initiated, 3-hour bundle, and 6-hour bundle.

Table 1. Category Assignment for the Adult Sepsis Performance Measures, 2016

Quintile	Category (Performance Level)	Summary Table Symbol	Ranking Percentiles	Protocol Initiated (%)	3-Hour Bundle (%)	6-Hour Bundle (%)
Quintile 5	Highest	 Best	80 th – 100 th	99.76 - 100.00	72.51 - 93.30	48.11 - 86.70
Quintile 4	High		60 th – 80 th	94.81 - 99.75	64.01 - 72.50	39.51 - 48.10
Quintile 3	Middle		40 th – 60 th	86.81 - 94.80	56.51 - 64.00	30.91 - 39.50
Quintile 2	Low		20 th – 40 th	70.11 - 86.80	47.41 - 56.50	22.91 - 30.90
Quintile 1	Lowest	 Worst	0 th – 20 th	5.50 - 70.10	10.70 - 47.40	0.00 - 22.90

Hospitals’ performance on the ‘Protocol Initiated’ measure for adults (age >= 18) is presented in Table 2. The Protocol Initiated measure includes all patients except for those excluded from the protocol or those who died within six hours. This measure indicates the percentage of patients in the denominator for whom a protocol was initiated. The protocol can be initiated in the ED, hospital floor, or ICU. This measure is only reported for those hospitals with greater than 10 adult sepsis cases in 2016.

In addition to the hospital's performance level by quintile, the change in the hospital's performance level between 2015 and 2016 is presented, reflecting whether the hospitals' performance category improved, declined or remained unchanged. The cells that contain an S.S. indicate that the data was suppressed due to low counts. The cells that contain an N.C. indicate that the measure was not calculated because the hospital did not have any patients that satisfied the criteria for inclusion in the measure. The cells that contain an N.A. indicate that a measure result was not available for that hospital in at least one of the years compared.

Table 2. Adult Sepsis Protocol Initiated Measure Summary Report by Hospital, 2016

Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Adirondack Medical Center-Saranac Lake Site	25	32.0		
Albany Medical Center Hospital	825	95.5		
Albany Memorial Hospital	98	74.5		
Alice Hyde Medical Center	38	76.3		
Arnot Ogden Medical Center	225	95.1		
Auburn Community Hospital	107	57.0		
Aurelia Osborn Fox Memorial Hospital	55	92.7		
Bellevue Hospital Center	474	99.2		
Bertrand Chaffee Hospital	12	91.7		
Bon Secours Community Hospital	141	64.5		
Bronx-Lebanon Hospital Center - Concourse Division	654	84.3		
Brookdale Hospital Medical Center	64	89.1		
Brookhaven Memorial Hospital Medical Center Inc	654	55.7		
Brooklyn Hospital Center - Downtown Campus	463	91.1		
Brooks Memorial Hospital	54	48.1		
Buffalo General Medical Center	772	45.2		
Canton-Potsdam Hospital	40	85.0		
Carthage Area Hospital Inc	24	100.0		N.A.
Catskill Regional Medical Center	91	50.5		
Cayuga Medical Center at Ithaca	203	63.1		
Champlain Valley Physicians Hospital Medical Center	269	48.7		
Chenango Memorial Hospital Inc	35	100.0		

Current Quintile

- Highest Performer
- High Performer
- Middle Performer
- Low Performer
- Lowest Performer

Quintile Change

- Improved Performance
- Unchanged Performance
- Declined Performance

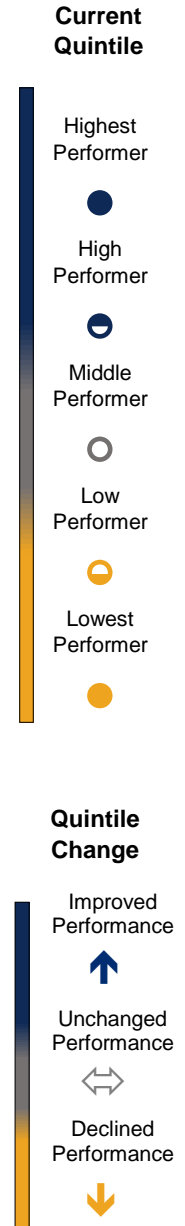
S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

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Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Claxton-Hepburn Medical Center	63	79.4		
Clifton Springs Hospital and Clinic	76	42.1		
Columbia Memorial Hospital	42	90.5		
Coney Island Hospital	292	100.0		
Corning Hospital	128	82.8		
Cortland Regional Medical Center Inc	146	97.3		
Crouse Hospital	241	80.1		
Degraff Memorial Hospital	65	46.2		
Eastern Long Island Hospital	25	92.0		
Eastern Niagara Hospital - Lockport Division	12	91.7		
Elizabethtown Community Hospital	43	93.0		
Ellis Hospital	297	85.2		
Elmhurst Hospital Center	670	99.4		
Erie County Medical Center	239	97.50		
F F Thompson Hospital	102	95.1		
Faxton-St Lukes Healthcare St Lukes Division	272	51.5		
Flushing Hospital Medical Center	231	100.0		
Forest Hills Hospital	558	100.0		
Franklin Hospital	224	100.0		
Geneva General Hospital	71	100.0		
Glen Cove Hospital	103	100.0		
Glens Falls Hospital	270	65.2		
Good Samaritan Hospital Medical Center	782	99.6		
Good Samaritan Hospital of Suffern	527	61.9		
Harlem Hospital Center	180	92.8		
HealthAlliance Hospital Broadway Campus	195	94.9		
Highland Hospital	424	95.0		
Hospital for Special Surgery	11	81.8		N.A.
Hudson Valley Hospital Center	323	86.7		



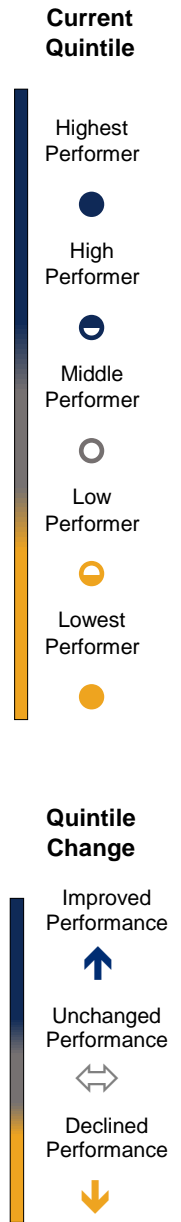
S.S. = Sample Size

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Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Huntington Hospital	398	100.0	●	↔
Interfaith Medical Center	156	95.5	◐	↑
Jacobi Medical Center	369	98.1	◐	↑
Jamaica Hospital Medical Center	340	78.2	◑	↑
John T Mather Memorial Hospital of Port Jefferson New York Inc	402	97.8	◐	↔
Kenmore Mercy Hospital	256	66.8	●	↓
Kings County Hospital Center	304	99.7	◐	↔
Kingsbrook Jewish Medical Center	249	99.6	◐	↓
Lawrence Hospital Center	239	88.3	○	↑
Lenox Hill Hospital	484	100.0	●	↔
Lewis County General Hospital	32	15.6	●	↔
Lincoln Medical & Mental Health Center	227	96.9	◐	↑
Little Falls Hospital	74	93.2	○	↓
Long Island Jewish Medical Center	794	100.0	●	↔
Lutheran Medical Center	599	99.8	●	↑
Maimonides Medical Center	567	98.9	◐	↔
Mary Imogene Bassett Hospital	199	92.0	○	↓
Massena Memorial Hospital	28	25.0	●	↓
Medina Memorial Health Care System	13	38.5	●	↓
Memorial Hosp of Wm F & Gertrude F Jones A/K/A Jones Memorial Hosp	41	100.0	●	↑
Memorial Hospital for Cancer and Allied Diseases	458	85.2	◑	↓
Mercy Hospital	526	66.5	●	↓
Mercy Medical Center	259	97.3	◐	↔
Metropolitan Hospital Center	84	77.4	◑	↓
Millard Fillmore Suburban Hospital	401	48.1	●	↔
Montefiore Med Center - Jack D Weiler Hosp of A Einstein College Div	1,139	16.5	●	↔
Montefiore Medical Center - Henry & Lucy Moses Div	1,001	9.6	●	↔
Montefiore Medical Center-Wakefield Hospital	505	5.5	●	↔
Montefiore Mount Vernon Hospital	78	98.7	◐	↔



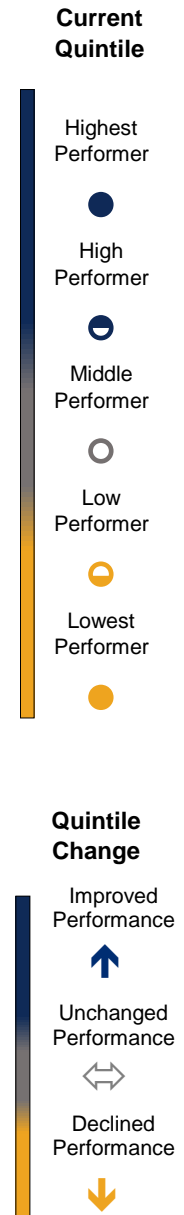
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Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Montefiore New Rochelle Hospital	248	91.9	○	↓
Moses-Ludington Hospital	26	92.3	○	↓
Mount Sinai Beth Israel	736	94.8	○	↓
Mount Sinai Beth Israel Brooklyn	147	100.0	●	↔
Mount Sinai Hospital	889	100.0	●	↔
Mount Sinai Hospital - Mount Sinai Hospital of Queens	203	100.0	●	↔
Mount Sinai Roosevelt	501	92.6	○	↔
Mount Sinai St. Lukes	796	92.0	○	↔
Mount St Marys Hospital and Health Center	190	48.9	●	↔
Nassau University Medical Center	436	74.1	●	↔
Nathan Littauer Hospital	123	24.4	●	↔
New York Community Hospital of Brooklyn, Inc	170	81.2	●	↔
New York Hospital Medical Center of Queens	1,184	97.5	●	↔
New York Methodist Hospital	328	100.0	●	↔
New York Presbyterian Hospital - Allen Hospital	171	100.0	●	↔
New York Presbyterian Hospital - Columbia Presbyterian Center	699	99.9	●	↑
New York Presbyterian Hospital - New York Weill Cornell Center	484	100.0	●	↑
New York-Presbyterian/Lower Manhattan Hospital	209	100.0	●	↔
Newark-Wayne Community Hospital	73	71.2	●	↑
Niagara Falls Memorial Medical Center	61	93.4	○	↓
Nicholas H Noyes Memorial Hospital	15	93.3	○	↑
North Central Bronx Hospital	61	86.9	○	↑
North Shore University Hospital	1,040	100.0	●	↔
Northern Dutchess Hospital	42	83.3	●	↔
Northern Westchester Hospital	198	96.5	●	↓
Nyack Hospital	368	83.7	●	↓
NYU Hospitals Center	360	97.2	●	↑
OConnor Hospital	12	100.0	●	↑
Olean General Hospital	176	100.0	●	↔



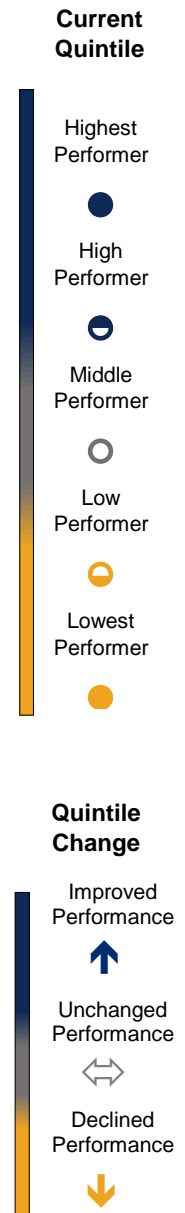
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Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Oneida Healthcare	21	100.0	●	↑
Orange Regional Medical Ctr-Goshen Campus	599	63.6	●	↔
Oswego Hospital	275	81.8	○	↔
Our Lady of Lourdes Memorial Hospital Inc	213	99.1	●	↑
Peconic Bay Medical Center	226	84.1	○	↑
Phelps Memorial Hospital Assn	364	100.0	●	↑
Plainview Hospital	215	100.0	●	↔
Putnam Hospital Center	233	96.1	●	↑
Queens Hospital Center	349	98.6	●	↔
Richmond University Medical Center	313	76.7	○	↓
River Hospital, Inc.	14	57.1	●	↓
Rochester General Hospital	1,041	76.3	○	↑
Rome Memorial Hospital, Inc	166	98.8	●	↔
Roswell Park Cancer Institute	93	100.0	●	↑
Samaritan Hospital	160	58.8	●	↓
Samaritan Medical Center	149	87.2	○	↔
Saratoga Hospital	205	78.0	○	↔
SBH Health System	363	91.5	○	↔
Schuyler Hospital	13	100.0	●	N.A.
Sisters of Charity Hospital	126	77.0	○	↔
Sisters of Charity Hospital - St Joseph Campus	63	79.4	○	↔
SJRH - Andrus Pavilion	215	63.7	●	↔
South Nassau Communities Hospital	573	90.2	○	↔
Southampton Hospital	146	100.0	●	↑
Southside Hospital	276	100.0	●	↔
St Anthony Community Hospital	93	73.1	○	↔
St Catherine of Siena Hospital	662	98.9	●	↔
St Charles Hospital	221	93.2	○	↓
St Elizabeth Medical Center	179	86.6	○	↔



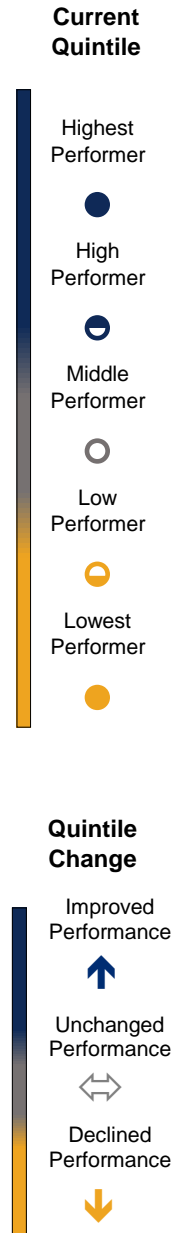
S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
St Francis Hospital	380	94.2	○	↔
St Francis Hospital - Poughkeepsie	112	87.5	○	↔
St James Mercy Hospital	14	28.6	●	↔
St Johns Episcopal Hospital So Shore	555	69.0	●	↔
St Josephs Hospital Health Center	568	89.6	○	↔
St Josephs Medical Center	108	90.7	○	↑
St Lukes Cornwall Hospital/Newburgh	184	90.8	○	↔
St Peters Hospital	486	99.2	◐	↓
St. Joseph Hospital	292	94.5	○	↑
St. Marys Healthcare	91	100.0	●	↑
St. Marys Hospital	60	80.0	◐	↔
Staten Island University Hosp-North	960	93.4	○	↓
Staten Island University Hosp-South	192	93.8	○	↓
Strong Memorial Hospital	954	95.5	◐	↔
Syosset Hospital	78	100.0	●	↔
The Unity Hospital of Rochester	236	95.3	◐	↔
United Health Services Hospitals Inc. - Binghamton General Hospital	63	71.4	◐	↔
United Health Services Hospitals Inc. - Wilson Medical Center	352	73.3	◐	↔
United Memorial Medical Center North Street Campus	153	94.8	○	↔
University Hospital	937	97.8	◐	↑
University Hospital of Brooklyn	336	99.4	◐	↔
University Hospital SUNY Health Science Center	565	69.0	●	↓
Upstate University Hospital at Community General	131	74.0	◐	↔
Vassar Brothers Medical Center	777	80.4	◐	↔
Westchester Medical Center	313	99.4	◐	↔
White Plains Hospital Center	304	93.8	○	↔
Winthrop-University Hospital	883	76.1	◐	↔
Womans Christian Association	121	52.9	●	↔
Women And Childrens Hospital Of Buffalo	11	72.7	◐	N.A.



S.S. = Sample Size

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2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

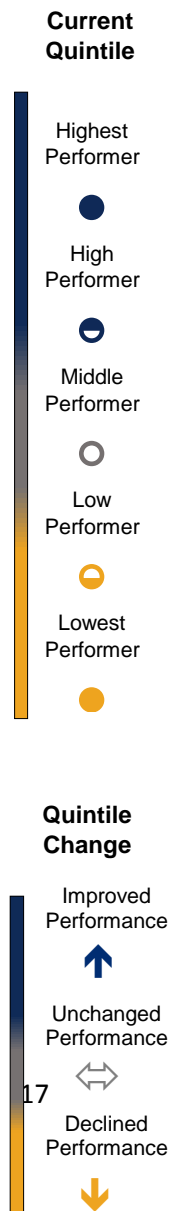
Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Woodhull Medical & Mental Health Center	202	90.6	○	↓
Wyckoff Heights Medical Center	257	56.8	●	↔
Wyoming County Community Hospital	34	100.0	●	↑
Statewide	50,461	83.48		

Hospitals' performance on adult 3-hour and 6-hour bundle measures are presented in Table 3. The interventions within these measures collectively have been demonstrated to help direct appropriate care. The 3-hour bundle includes patients with severe sepsis and septic shock with a protocol initiated in the Emergency Department and the 6-hour bundle measure includes patients with septic shock with a protocol initiated in the Emergency Department. The start time for the measures, or 'time zero', is defined as the recorded Emergency Department triage time, or earliest time if triage time is not documented. This measure is only reported for those hospitals with greater than 10 adult sepsis cases in 2016.

In addition to the hospital's performance level by quintile, the change in the hospital's performance level between 2015 and 2016 is presented, reflecting whether the hospitals' performance category improved, declined or remained unchanged.

Table 3. Adult Sepsis Bundle Measure Summary Report by Hospital, 2016

Facility Name	3-Hour Bundle (Adult)				6-Hour Bundle (Adult)			
	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
Adirondack Medical Center-Saranac Lake Site	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Albany Medical Center Hospital	326	35.0	●	↔	325	22.5	●	↓
Albany Memorial Hospital	62	58.1	○	↑	61	34.4	○	↑
Alice Hyde Medical Center	22	72.7	●	↔	21	42.9	●	↑
Arnot Ogden Medical Center	136	54.4	●	↔	133	15.0	●	↔
Auburn Community Hospital	48	41.7	●	↓	48	33.3	○	↓
Aurelia Osborn Fox Memorial Hospital	35	57.1	○	N.A.	34	38.2	○	N.A.
Bellevue Hospital Center	323	69.3	●	↑	318	61.6	●	↑
Bertrand Chaffee Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Bon Secours Community Hospital	83	62.7	○	↓	83	38.6	○	↓
Bronx-Lebanon Hospital Center - Concourse Division	274	48.2	●	↑	273	26.4	●	↑



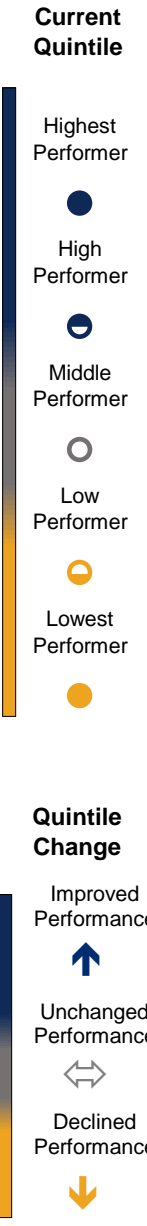
S.S. = Sample Size

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N.C. = Not Calculated

2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	3-Hour Bundle (Adult)				6-Hour Bundle (Adult)			
	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
Brookdale Hospital Medical Center	56	10.7	●	↓	56	0.0	●	↔
Brookhaven Memorial Hospital Medical Center Inc	357	68.6	●	↔	352	56.5	●	↑
Brooklyn Hospital Center - Downtown Campus	410	51.0	●	↓	406	40.1	●	↑
Brooks Memorial Hospital	22	36.4	●	N.A.	21	28.6	●	N.A.
Buffalo General Medical Center	202	43.6	●	↔	200	22.0	●	↓
Canton-Potsdam Hospital	27	74.1	●	↑	27	55.6	●	↑
Carthage Area Hospital Inc	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Catskill Regional Medical Center	39	87.2	●	↔	39	15.4	●	↓
Cayuga Medical Center at Ithaca	126	65.1	●	↓	124	39.5	○	↓
Champlain Valley Physicians Hospital Medical Center	92	84.8	●	↑	92	45.7	●	↑
Chenango Memorial Hospital Inc	22	81.8	●	↑	22	40.9	●	↓
Claxton-Hepburn Medical Center	37	78.4	●	↑	36	36.1	○	↓
Clifton Springs Hospital and Clinic	25	40.0	●	N.A.	25	32.0	○	N.A.
Columbia Memorial Hospital	33	60.6	○	↔	33	21.2	●	↓
Coney Island Hospital	291	55.7	●	↓	288	39.9	●	↓
Corning Hospital	92	46.7	●	↓	92	19.6	●	↓
Cortland Regional Medical Center Inc	121	47.9	●	↓	120	25.0	●	↔
Crouse Hospital	138	56.5	●	↑	137	38.0	○	↑
Degraff Memorial Hospital	20	50.0	●	↓	20	20.0	●	↓
Eastern Long Island Hospital	15	66.7	●	N.A.	14	35.7	○	N.A.
Eastern Niagara Hospital - Lockport Division	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Elizabethtown Community Hospital	20	80.0	●	N.A.	20	45.0	●	N.A.
Ellis Hospital	186	46.8	●	↔	181	25.4	●	↑
Elmhurst Hospital Center	557	40.0	●	↓	555	25.4	●	↔
Erie County Medical Center	133	39.1	●	↔	128	23.4	●	↑
F F Thompson Hospital	86	50.0	●	↓	86	29.1	●	↓
Faxton-St Lukes Healthcare St Lukes Division	127	64.6	●	↑	127	27.6	●	↑



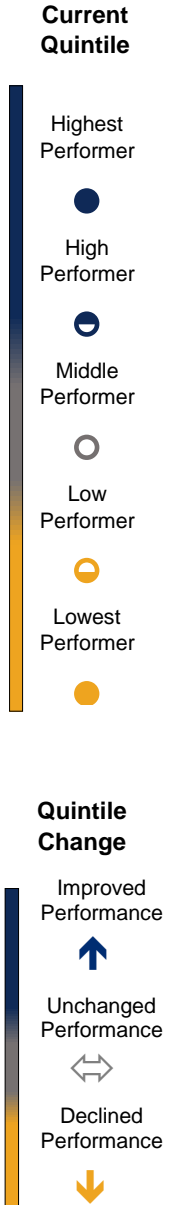
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2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	3-Hour Bundle (Adult)				6-Hour Bundle (Adult)			
	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
Flushing Hospital Medical Center	155	64.5			155	31.0		
Forest Hills Hospital	374	70.3			370	40.0		
Franklin Hospital	171	62.0			168	44.6		
Geneva General Hospital	54	72.2			54	48.1		
Glen Cove Hospital	86	70.9			86	55.8		
Glens Falls Hospital	125	62.4			121	34.7		
Good Samaritan Hospital Medical Center	656	66.0			644	54.2		
Good Samaritan Hospital of Suffern	319	50.2			316	19.0		
Harlem Hospital Center	118	53.4			117	6.0		
HealthAlliance Hospital Broadway Campus	129	65.9			127	39.4		
Highland Hospital	294	62.6			288	45.5		
Hospital for Special Surgery	N.C.	N.C.	N.C.	N.A.	N.C.	N.C.	N.C.	N.A.
Hudson Valley Hospital Center	262	74.0			254	47.6		
Huntington Hospital	332	59.9			330	41.8		
Interfaith Medical Center	117	34.2			115	14.8		
Jacobi Medical Center	291	53.3			276	33.7		
Jamaica Hospital Medical Center	211	39.3			206	17.0		
John T Mather Memorial Hospital of Port Jefferson New York Inc	361	49.0			360	26.1		
Kenmore Mercy Hospital	167	73.7			167	34.7		
Kings County Hospital Center	220	55.9			219	37.0		
Kingsbrook Jewish Medical Center	223	51.6			223	22.0		
Lawrence Hospital Center	180	75.0			173	42.2		
Lenox Hill Hospital	399	62.2			397	43.8		
Lewis County General Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Lincoln Medical & Mental Health Center	157	38.2			157	20.4		
Little Falls Hospital	19	47.4		N.A.	19	31.6		N.A.
Long Island Jewish Medical Center	614	39.4			613	24.8		



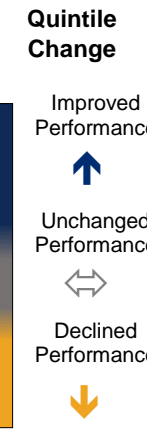
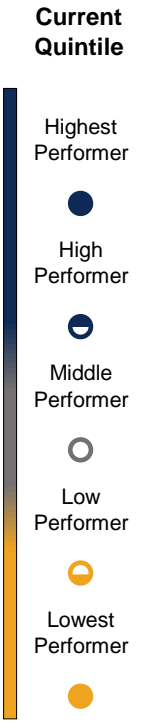
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	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
Lutheran Medical Center	403	64.8			400	52.5		
Maimonides Medical Center	522	42.7			521	20.5		
Mary Imogene Bassett Hospital	79	78.5			79	44.3		
Massena Memorial Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Medina Memorial Health Care System	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Memorial Hosp of Wm F & Gertrude F Jones A/K/A Jones Memorial Hosp	32	68.8			32	43.8		
Memorial Hospital for Cancer and Allied Diseases	188	67.6			188	44.7		
Mercy Hospital	328	57.9			318	30.2		
Mercy Medical Center	209	77.0			201	63.7		
Metropolitan Hospital Center	60	43.3			60	20.0		
Millard Fillmore Suburban Hospital	126	51.6			126	27.0		
Montefiore Med Center - Jack D Weiler Hosp of A Einstein College Div	153	22.9			153	8.5		
Montefiore Medical Center - Henry & Lucy Moses Div	73	19.2			69	7.2		
Montefiore Medical Center-Wakefield Hospital	20	50.0			20	10.0		
Montefiore Mount Vernon Hospital	63	44.4			63	19.0		
Montefiore New Rochelle Hospital	198	51.0			198	27.8		
Moses-Ludington Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Mount Sinai Beth Israel	528	60.4			524	42.7		
Mount Sinai Beth Israel Brooklyn	120	75.8			120	55.8		
Mount Sinai Hospital	380	42.6			377	27.6		
Mount Sinai Hospital - Mount Sinai Hospital of Queens	148	53.4			146	30.1		
Mount Sinai Roosevelt	398	57.8			396	48.0		
Mount Sinai St. Lukes	687	62.6			665	51.3		
Mount St Marys Hospital and Health Center	78	70.5			78	39.7		
Nassau University Medical Center	297	59.6			287	33.1		
Nathan Littauer Hospital	15	93.3			15	86.7		
New York Community Hospital of Brooklyn, Inc	139	84.9			135	56.3		



S.S. = Sample Size

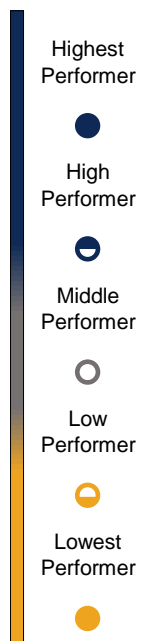
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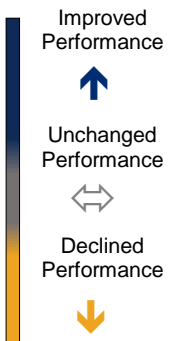
2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	3-Hour Bundle (Adult)				6-Hour Bundle (Adult)			
	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
New York Hospital Medical Center of Queens	1,093	28.9	●	↔	1,082	14.3	●	↓
New York Methodist Hospital	269	34.9	●	↔	248	12.5	●	↔
New York Presbyterian Hospital - Allen Hospital	138	58.0	○	↑	123	27.6	◐	↔
New York Presbyterian Hospital - Columbia Presbyterian Center	439	37.6	●	↔	419	14.1	●	↔
New York Presbyterian Hospital - New York Weill Cornell Center	328	48.2	◐	↔	304	21.7	●	↔
New York-Presbyterian/Lower Manhattan Hospital	175	61.1	○	↑	163	42.3	◑	↑
Newark-Wayne Community Hospital	44	72.7	●	↑	40	50.0	●	↔
Niagara Falls Memorial Medical Center	43	58.1	○	↑	43	25.6	◐	↑
Nicholas H Noyes Memorial Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
North Central Bronx Hospital	39	64.1	◑	↓	39	35.9	○	↓
North Shore University Hospital	727	46.4	●	↔	727	24.8	◐	↑
Northern Dutchess Hospital	34	70.6	◑	↓	31	48.4	●	↔
Northern Westchester Hospital	133	80.5	●	↑	132	50.8	●	↑
Nyack Hospital	313	66.8	◑	↑	296	45.6	◑	↑
NYU Hospitals Center	265	74.7	●	↔	253	62.1	●	↔
OConnor Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Olean General Hospital	135	47.4	●	↓	131	26.7	◐	↓
Oneida Healthcare	12	58.3	○	↑	12	16.7	●	N.A.
Orange Regional Medical Ctr-Goshen Campus	330	72.4	◑	↓	328	34.8	○	↓
Oswego Hospital	189	66.1	◑	↔	189	54.0	●	↑
Our Lady of Lourdes Memorial Hospital Inc	183	53.0	◐	↓	183	34.4	○	↓
Peconic Bay Medical Center	164	55.5	◐	↓	162	30.9	◐	↓
Phelps Memorial Hospital Assn	308	73.1	●	↑	305	54.8	●	↑
Plainview Hospital	153	72.5	◑	↓	153	41.2	◑	↔
Putnam Hospital Center	195	78.5	●	↔	190	69.5	●	↔
Queens Hospital Center	259	48.3	◐	↔	255	28.2	◐	↑
Richmond University Medical Center	79	51.9	◐	↔	77	14.3	●	↔

Current Quintile



Quintile Change



S.S. = Sample Size

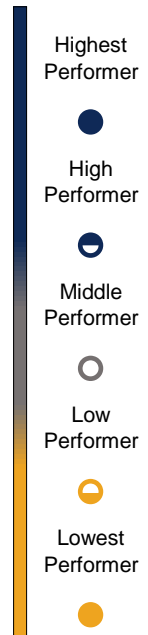
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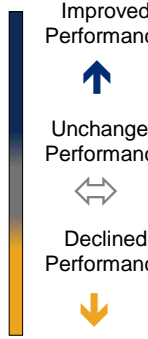
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	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
River Hospital, Inc.	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Rochester General Hospital	734	62.1	○	↓	694	44.1	●	↓
Rome Memorial Hospital, Inc	134	55.2	●	↑	132	26.5	●	↑
Roswell Park Cancer Institute	N.C.	N.C.	N.C.	N.A.	N.C.	N.C.	N.C.	N.A.
Samaritan Hospital	81	72.8	●	↑	77	53.2	●	↑
Samaritan Medical Center	101	62.4	○	↔	97	29.9	●	↔
Saratoga Hospital	151	78.1	●	↔	147	59.2	●	↔
SBH Health System	274	41.2	●	↓	273	21.6	●	↓
Schuyler Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Sisters of Charity Hospital	76	72.4	●	↑	76	30.3	●	↔
Sisters of Charity Hospital - St Joseph Campus	41	68.3	●	↑	40	37.5	○	↑
SJRH - Andrus Pavilion	121	77.7	●	↔	121	38.8	○	↓
South Nassau Communities Hospital	463	69.8	●	↔	453	41.3	●	↔
Southampton Hospital	128	64.8	●	↑	127	50.4	●	↔
Southside Hospital	224	56.7	○	↑	223	28.3	●	↔
St Anthony Community Hospital	60	60.0	○	↓	59	27.1	●	↓
St Catherine of Siena Hospital	602	75.4	●	↔	591	64.0	●	↔
St Charles Hospital	170	62.9	○	↓	169	56.2	●	↔
St Elizabeth Medical Center	121	44.6	●	↔	119	16.0	●	↔
St Francis Hospital	265	62.3	○	↔	254	32.7	○	↔
St Francis Hospital - Poughkeepsie	77	66.2	●	↔	74	44.6	●	↑
St James Mercy Hospital	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
St Johns Episcopal Hospital So Shore	342	61.7	○	↓	339	33.6	○	↔
St Josephs Hospital Health Center	422	54.0	●	↑	399	32.3	○	↑
St Josephs Medical Center	87	60.9	○	↓	87	44.8	●	↑
St Lukes Cornwall Hospital/Newburgh	140	85.0	●	↔	140	74.3	●	↔
St Peters Hospital	334	59.3	○	↓	328	32.3	○	↑
St. Joseph Hospital	241	71.0	●	↑	238	61.3	●	↑
St. Marys Healthcare	62	56.5	●	↓	61	27.9	●	↓

Current Quintile



Quintile Change



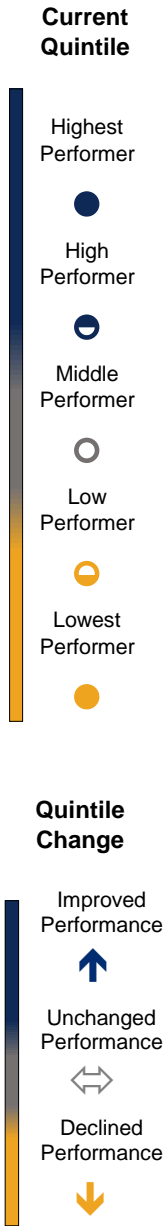
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	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
St. Marys Hospital	39	89.7	●	↔	39	76.9	●	↑
Staten Island University Hosp-North	570	47.0	●	↔	568	28.3	○	↓
Staten Island University Hosp-South	118	66.1	●	↑	118	40.7	●	↔
Strong Memorial Hospital	580	43.1	●	↓	552	33.5	○	↓
Syosset Hospital	60	91.7	●	↔	59	64.4	●	↑
The Unity Hospital of Rochester	136	64.0	○	↓	129	27.9	○	↓
United Health Services Hospitals Inc. - Binghamton General Hospital	33	45.5	●	↔	33	15.2	●	↔
United Health Services Hospitals Inc. - Wilson Medical Center	193	64.2	●	↑	191	37.2	○	↑
United Memorial Medical Center North Street Campus	109	61.5	○	↓	108	45.4	●	↑
University Hospital	754	51.9	○	↓	737	30.9	○	↓
University Hospital of Brooklyn	255	47.1	●	↔	253	22.9	●	↓
University Hospital SUNY Health Science Center	278	64.7	●	↑	275	41.1	●	↔
Upstate University Hospital at Community General	84	79.8	●	↑	82	50.0	●	↑
Vassar Brothers Medical Center	585	79.0	●	↔	573	65.3	●	↔
Westchester Medical Center	90	57.8	○	↑	88	34.1	○	↑
White Plains Hospital Center	234	53.4	○	↔	232	26.7	○	↔
Winthrop-University Hospital	601	55.6	○	↓	599	41.9	●	↔
Womans Christian Association	54	64.8	●	↔	52	32.7	○	↑
Women And Childrens Hospital Of Buffalo	S.S.	S.S.	S.S.	N.A.	S.S.	S.S.	S.S.	N.A.
Woodhull Medical & Mental Health Center	136	50.7	○	↔	135	33.3	○	↑
Wyckoff Heights Medical Center	129	52.7	○	↓	124	21.8	●	↓
Wyoming County Community Hospital	30	80.0	●	N.A.	30	53.3	●	N.A.
Statewide	32,472	56.88			31,886	36.38		



S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

Performance Data - Pediatrics

Table 5 shows the quintiles, category assignment, and the percentages assigned to each category for the two pediatric measures – protocol initiation and 1-hour bundle. For the protocol initiation measure, all hospitals with a protocol treatment measure percentage of 100% were assigned to quintile 5, so this measure includes “highest” performer but not “high” performers. Risk adjusted mortality rates were not calculated for the pediatric population due to the significantly smaller volume of cases for each hospital compared to adult cases and the current lack of a standardized, validated risk adjustment model for the pediatric sepsis population.

Table 5. Category Assignment for the Pediatric Sepsis Performance Measures






Quintile	Category (Performance Level)	Summary Table Symbol	Percentiles Included	Protocol Initiation (%)	1-Hour Bundle (%)
Quintile 5	Highest	 Best	80 th – 100 th	100.00	23.10
Quintile 4	High		60 th – 80 th	100.00	13.31 – 23.09
Quintile 3	Middle		40 th – 60 th	87.51 – 99.99	10.01 – 13.30
Quintile 2	Low		20 th – 40 th	70.81 – 87.50	4.31 – 10.00
Quintile 1	Lowest	 Worst	0 th – 20 th	30.40 – 70.80	4.00 – 4.30

Table 6 shows the “performance level” category for each hospital for the pediatric performance measures using symbols that correspond to the “performance level” category symbols shown in Table 5. The data are not reported for small sample sizes (S.S.) when a hospital did not have more than 10 patients for the measure. An N.C. indicates that the measure was not calculated because the hospital did not have any patients that satisfied the criteria for inclusion in the measure. Table 6 also shows the change in the hospital’s performance level category from 2015 to 2016, reflecting whether the hospitals’ performance category improved, declined or remained unchanged.

Table 6. Pediatric Sepsis Protocol Initiated Measure Summary Report by Hospital

Facility Name	Number of Cases (N1)	Protocol Initiated (%)	Current Quintile	Quintile Change from CY2015
Albany Medical Center Hospital	26	80.8		
Kings County Hospital Center	19	100.0		
Long Island Jewish Schneiders Children's Hospital Division	45	100.0		
Maimonides Medical Center	30	100.0		
Memorial Hospital for Cancer and Allied Diseases	32	59.4		N.A.
Mercy Medical Center	12	100.0		N.A.
Montefiore Medical Center - Henry & Lucy Moses Div	46	30.4		
Mount Sinai Hospital	14	100.0		
New York Presbyterian Hospital - Columbia Presbyterian Center	78	100.0		
New York Presbyterian Hospital - New York Weill Cornell Center	23	100.0		
NYU Hospitals Center	16	87.5		
Strong Memorial Hospital	46	95.7		
University Hospital	26	88.5		
University Hospital SUNY Health Science Center	18	50.0		
Westchester Medical Center	26	100.0		
Winthrop-University Hospital	15	73.3		
Women And Childrens Hospital Of Buffalo	120	70.8		
Statewide	683	83.31		

Current Quintile

- Highest Performer
- High Performer
- Middle Performer
- Low Performer
- Lowest Performer

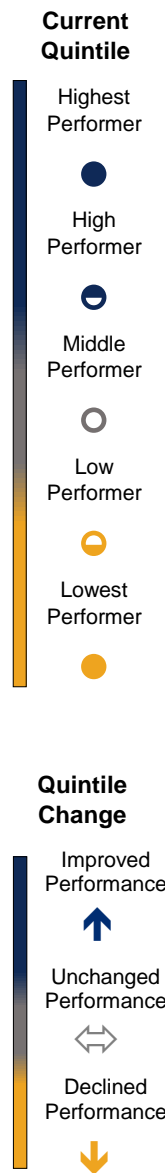
Quintile Change

- Improved Performance
- Unchanged Performance
- Declined Performance

Table 7 shows the percentage of pediatric patients (age <18) with severe sepsis or septic shock who received all interventions in the early management bundle within one hour. For pediatric patients, these timely interventions include blood cultures, antibiotics and the administration of 20 cc/kg of crystalloid fluid. Pediatric patients who died within one hour of time zero or who have clinical contraindications to any of the interventions are excluded from the measure bundle.

Table 7. Pediatric Sepsis 1-Hour Bundle Measure Summary Report by Hospital

Facility Name	Number of Cases (N2)	Met Bundle (%)	Current Quintile	Quintile Change from CY2015
Albany Medical Center Hospital	S.S.	S.S.	S.S.	N.A.
Kings County Hospital Center	S.S.	S.S.	S.S.	N.A.
Long Island Jewish Schneiders Children's Hospital Division	23	4.3	●	↓
Maimonides Medical Center	25	4.0	●	↓
Memorial Hospital for Cancer and Allied Diseases	S.S.	S.S.	S.S.	N.A.
Mercy Medical Center	N.C.	N.C.	N.C.	N.A.
Montefiore Medical Center - Henry & Lucy Moses Div	S.S.	S.S.	S.S.	N.A.
Mount Sinai Hospital	N.C.	N.C.	N.C.	N.A.
New York Presbyterian Hospital - Columbia Presbyterian Center	45	13.3	○	↑
New York Presbyterian Hospital - New York Weill Cornell Center	S.S.	S.S.	S.S.	N.A.
NYU Hospitals Center	S.S.	S.S.	S.S.	N.A.
Strong Memorial Hospital	20	15.0	◐	N.A.
University Hospital	13	23.1	●	↑
University Hospital SUNY Health Science Center	S.S.	S.S.	S.S.	N.A.
Westchester Medical Center	S.S.	S.S.	S.S.	N.A.
Winthrop-University Hospital	S.S.	S.S.	S.S.	N.A.
Women And Childrens Hospital Of Buffalo	30	10.0	◐	N.A.
Statewide	245	8.16		



Risk Adjusted Mortality

Hospital performance on management of sepsis is a key factor that directly relates to patient outcomes. The use of sepsis protocols and measures of protocol adherence are important to

S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

patients because of their impact on improvement in the probability of survival. It is difficult, however, to compare outcomes among hospitals when assessing performance, because different hospitals treat different types of patients. Hospitals with sicker patients may have higher rates of mortality than other hospitals.

In order to fairly compare hospitals on the critical outcome of survival, risk adjustment was used to account for differences in the characteristics of the hospitals' populations of sepsis patients, since patient characteristics can impact the risk of dying from sepsis. Risk adjustment takes into account accompanying chronic illnesses that can complicate treatment and outcomes for patients with sepsis, patient demographic factors such as age, and the severity of sepsis for each patient. The risk-adjusted mortality rate represents the best estimate, after accounting for these factors, of what the hospital's mortality rate would have been if the hospital had a mix of patients identical to the statewide mix. Risk adjusted mortality describes the 'risk adjusted' percentage of all patients with sepsis at each hospital who died during that hospital stay. More detail regarding the risk adjustment methodology can be found in Technical Appendix A.

Adult risk-adjusted sepsis mortality rates for each hospital is presented in Table 4. All adult patients with severe sepsis or septic shock are included in the risk-adjusted mortality measure (N3), except for those who are transfer patients, those who have advanced directives that restricted the use of any protocol interventions, or those who refused any of the protocol interventions. Hospitals with a significantly lower risk-adjusted mortality rates relative to the statewide mortality rate are identified as high performers, while hospitals with significantly higher risk adjusted mortality rates are identified as low performers.

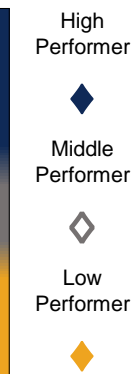
The number of patients that each hospital discharged to hospice is also presented in Table 4. Discharge to hospice suggests that these patients, although not included in mortality rates, were not expected to survive. The numbers indicate that most hospitals discharge some patients to hospice, though the proportion of patients discharged to hospice varies among hospitals.

Hospitals' change in RAMR performance status relative to the previous year is presented in Table 4 as well. This change does not necessarily indicate an increase or decrease in RAMR, but rather represents hospital movement between the high, middle, and low performance statuses across years and should be interpreted with caution given the differences in RAMR methodology between the two years.

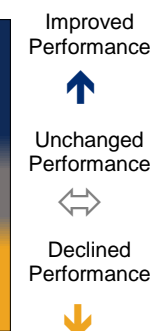
Table 4. Adult Sepsis Risk Adjusted Mortality Rate (RAMR) Summary Report by Hospital

Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Adirondack Medical Center-Saranac Lake Site	21	5	17.89	0	◇	↔
Albany Medical Center Hospital	488	143	23.24	10	◇	↔
Albany Memorial Hospital	92	10	15.42	5	◇	↔
Alice Hyde Medical Center	31	4	15.93	3	◇	↓
Arnot Ogden Medical Center	168	36	18.30	6	◆	↔
Auburn Community Hospital	102	40	45.10	1	◇	↔

Current Performance



Performance Change



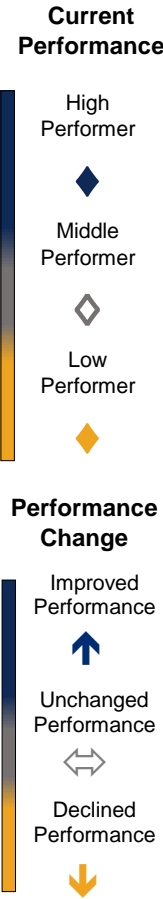
S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Aurelia Osborn Fox Memorial Hospital	42	12	24.76	1	◇	↑
Bellevue Hospital Center	426	52	13.90	21	◆	↔
Bertrand Chaffee Hospital	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Bon Secours Community Hospital	135	23	23.44	6	◇	↓
Bronx-Lebanon Hospital Center - Concourse Division	696	187	25.48	83	◇	↓
Brookdale Hospital Medical Center	63	24	21.23	1	◇	↔
Brookhaven Memorial Hospital Medical Center Inc	638	148	25.93	8	◇	↑
Brooklyn Hospital Center - Downtown Campus	456	91	18.73	45	◆	↑
Brooks Memorial Hospital	44	6	15.52	0	◇	↔
Buffalo General Medical Center	643	235	31.40	30	◇	↓
Canton-Potsdam Hospital	32	5	12.85	5	◇	↔
Carthage Area Hospital Inc	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Catskill Regional Medical Center	82	30	34.69	0	◇	↓
Cayuga Medical Center at Ithaca	196	39	29.57	7	◇	↔
Champlain Valley Physicians Hospital Medical Center	236	47	15.96	5	◆	↑
Chenango Memorial Hospital Inc	23	6	22.27	0	◇	↔
Claxton-Hepburn Medical Center	45	9	26.29	2	◇	↔
Clifton Springs Hospital and Clinic	63	9	21.63	0	◇	↔
Columbia Memorial Hospital	38	14	27.43	1	◇	↔
Coney Island Hospital	293	68	25.70	2	◇	↓
Corning Hospital	112	21	20.36	4	◇	↔
Cortland Regional Medical Center Inc	130	33	31.38	3	◇	↔
Crouse Hospital	215	66	34.54	1	◇	↔
Degraff Memorial Hospital	62	4	8.55	3	◆	↑
Eastern Long Island Hospital	20	6	25.96	1	◇	↑
Eastern Niagara Hospital - Lockport Division	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Elizabethtown Community Hospital	23	1	9.31	0	◇	N.A.
Ellis Hospital	236	83	29.73	9	◇	↔



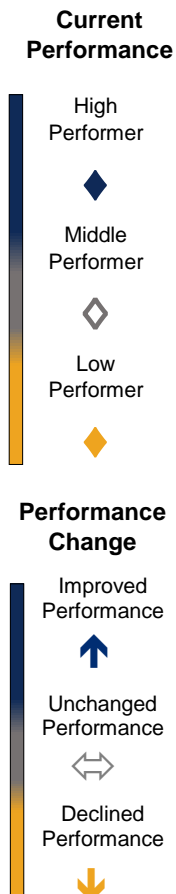
S.S. = Sample Size

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Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Elmhurst Hospital Center	644	160	23.82	16	◇	↔
Erie County Medical Center	241	69	23.74	2	◇	↔
F F Thompson Hospital	94	25	23.44	1	◇	↔
Faxton-St Lukes Healthcare St Lukes Division	244	112	30.21	6	◆	↓
Flushing Hospital Medical Center	229	112	29.34	25	◆	↓
Forest Hills Hospital	542	118	21.96	88	◇	↔
Franklin Hospital	213	86	29.67	13	◇	↔
Geneva General Hospital	62	24	31.86	2	◇	↔
Glen Cove Hospital	97	19	21.94	13	◇	↔
Glens Falls Hospital	278	47	16.80	4	◆	↔
Good Samaritan Hospital Medical Center	770	184	28.50	32	◇	↔
Good Samaritan Hospital of Suffern	513	108	15.52	38	◆	↔
Harlem Hospital Center	176	63	27.77	3	◇	↔
HealthAlliance Hospital Broadway Campus	168	67	29.52	1	◇	↔
Highland Hospital	367	69	22.68	54	◇	↔
Hospital for Special Surgery	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Hudson Valley Hospital Center	307	111	28.10	10	◇	↔
Huntington Hospital	378	78	20.31	37	◆	↑
Interfaith Medical Center	156	59	25.32	5	◇	↔
Jacobi Medical Center	416	124	25.78	27	◇	↔
Jamaica Hospital Medical Center	326	117	25.65	43	◇	↓
John T Mather Memorial Hospital of Port Jefferson New York Inc	391	79	16.52	30	◆	↔
Kenmore Mercy Hospital	253	53	26.29	7	◇	↔
Kings County Hospital Center	291	111	30.92	2	◆	↓
Kingsbrook Jewish Medical Center	275	95	18.88	0	◆	↑
Lawrence Hospital Center	237	43	20.31	38	◇	↔
Lenox Hill Hospital	467	76	18.63	28	◆	↑



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2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Lewis County General Hospital	21	2	14.94	1	◇	↔
Lincoln Medical & Mental Health Center	208	78	26.01	4	◇	↔
Little Falls Hospital	24	2	13.69	0	◇	N.A.
Long Island Jewish Medical Center	765	176	27.61	37	◇	↔
Lutheran Medical Center	572	194	26.67	8	◇	↔
Maimonides Medical Center	633	155	18.73	46	◆	↔
Mary Imogene Bassett Hospital	119	28	22.88	10	◇	↔
Massena Memorial Hospital	22	3	13.34	1	◇	↔
Medina Memorial Health Care System	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Memorial Hosp of Wm F & Gertrude F Jones A/K/A Jones Memorial Hosp	36	4	14.51	1	◇	↔
Memorial Hospital for Cancer and Allied Diseases	428	169	22.34	17	◆	↑
Mercy Hospital	511	154	25.45	14	◇	↑
Mercy Medical Center	253	79	26.72	12	◇	↔
Metropolitan Hospital Center	83	24	25.40	6	◇	↔
Millard Fillmore Suburban Hospital	405	100	25.04	23	◇	↔
Montefiore Med Center - Jack D Weiler Hosp of A Einstein College Div	1,083	302	22.88	63	◆	↑
Montefiore Medical Center - Henry & Lucy Moses Div	907	314	30.64	65	◇	↓
Montefiore Medical Center- Wakefield Hospital	496	135	24.30	25	◇	↓
Montefiore Mount Vernon Hospital	68	12	16.08	3	◇	↔
Montefiore New Rochelle Hospital	241	82	34.74	9	◇	↓
Moses-Ludington Hospital	11	0	0.00	0	◇	N.A.
Mount Sinai Beth Israel	708	117	18.45	60	◆	↔
Mount Sinai Beth Israel Brooklyn	140	60	28.15	13	◇	↑
Mount Sinai Hospital	835	219	22.01	73	◆	↑
Mount Sinai Hospital - Mount Sinai Hospital of Queens	199	70	29.34	15	◇	↔
Mount Sinai Roosevelt	495	59	16.21	53	◆	↔

Current Performance

High Performer



Middle Performer



Low Performer



Performance Change

Improved Performance



Unchanged Performance



Declined Performance



S.S. = Sample Size

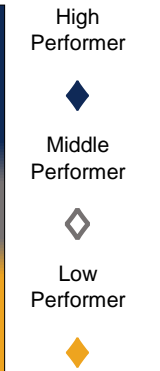
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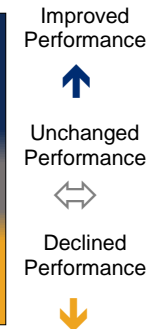
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Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Mount Sinai St. Lukes	801	114	16.82	47	◆	↔
Mount St Marys Hospital and Health Center	188	36	25.53	10	◇	↔
Nassau University Medical Center	465	155	30.21	22	◆	↔
Nathan Littauer Hospital	72	14	17.33	1	◇	↑
New York Community Hospital of Brooklyn, Inc	172	64	31.02	2	◇	↔
New York Hospital Medical Center of Queens	1,118	234	19.72	42	◆	↔
New York Methodist Hospital	284	69	18.68	18	◆	↔
New York Presbyterian Hospital - Allen Hospital	160	51	22.65	7	◇	↔
New York Presbyterian Hospital - Columbia Presbyterian Center	663	221	23.80	22	◇	↔
New York Presbyterian Hospital - New York Weill Cornell Center	507	171	25.58	31	◇	↔
New York-Presbyterian/Lower Manhattan Hospital	211	50	22.29	9	◇	↔
Newark-Wayne Community Hospital	53	3	9.82	2	◇	↔
Niagara Falls Memorial Medical Center	56	23	34.18	0	◇	↔
Nicholas H Noyes Memorial Hospital	13	5	27.00	0	◇	↔
North Central Bronx Hospital	50	9	24.02	2	◇	↔
North Shore University Hospital	945	274	27.97	64	◇	↔
Northern Dutchess Hospital	42	16	28.02	1	◇	↔
Northern Westchester Hospital	184	47	23.29	9	◇	↔
Nyack Hospital	376	95	21.05	17	◆	↔
NYU Hospitals Center	445	102	16.08	77	◆	↔
OConnor Hospital	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Olean General Hospital	159	32	19.62	2	◇	↔
Oneida Healthcare	14	5	25.58	1	◇	↔
Orange Regional Medical Ctr-Goshen Campus	542	118	23.16	34	◇	↔
Oswego Hospital	250	30	17.97	5	◆	↔
Our Lady of Lourdes Memorial Hospital Inc	205	55	33.54	4	◆	↔
Peconic Bay Medical Center	211	51	27.21	8	◇	↔

Current Performance



Performance Change



S.S. = Sample Size

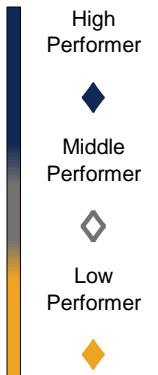
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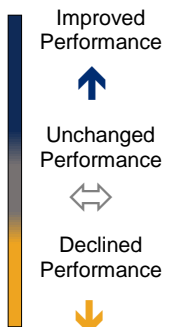
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Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Phelps Memorial Hospital Assn	346	46	18.30	8	◆	↔
Plainview Hospital	202	52	25.12	6	◇	↔
Putnam Hospital Center	220	36	21.23	3	◇	↔
Queens Hospital Center	342	82	24.20	6	◇	↔
Richmond University Medical Center	311	133	27.99	9	◇	↔
River Hospital, Inc.	S.S.	S.S.	S.S.		S.S.	N.A.
Rochester General Hospital	897	104	17.15	47	◆	↔
Rome Memorial Hospital, Inc	149	28	20.08	3	◇	↔
Roswell Park Cancer Institute	70	18	20.56	2	◇	↔
Samaritan Hospital	163	36	19.39	16	◇	↓
Samaritan Medical Center	135	16	13.21	5	◆	↑
Saratoga Hospital	198	50	25.53	7	◇	↔
SBH Health System	362	74	22.68	42	◇	↓
Schuyler Hospital	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Sisters of Charity Hospital	107	35	28.96	3	◇	↑
Sisters of Charity Hospital - St Joseph Campus	64	22	27.41	1	◇	↔
SJRH - Andrus Pavilion	215	66	27.15	6	◇	↔
South Nassau Communities Hospital	572	195	25.58	30	◇	↔
Southampton Hospital	140	28	21.56	7	◇	↔
Southside Hospital	271	64	31.05	15	◇	↔
St Anthony Community Hospital	86	12	17.61	4	◇	↔
St Catherine of Siena Hospital	661	107	20.69	29	◆	↔
St Charles Hospital	207	22	17.36	13	◆	↑
St Elizabeth Medical Center	167	80	31.33	4	◆	↓
St Francis Hospital	366	141	28.20	34	◇	↔
St Francis Hospital - Poughkeepsie	110	23	21.43	3	◇	↔
St James Mercy Hospital	13	4	36.60	1	◇	N.A.
St Johns Episcopal Hospital So Shore	539	184	29.27	5	◆	↓

Current Performance



Performance Change



S.S. = Sample Size

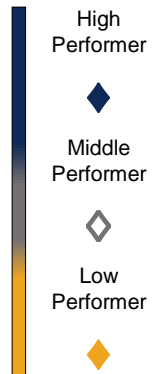
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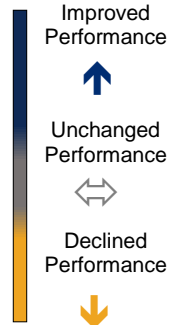
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Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
St Josephs Hospital Health Center	458	82	19.06	10	◆	↔
St Josephs Medical Center	103	27	23.26	6	◇	↔
St Lukes Cornwall Hospital/Newburgh	186	55	24.69	3	◇	↑
St Peters Hospital	451	80	15.93	54	◆	↔
St. Joseph Hospital	274	57	20.49	24	◇	↔
St. Marys Healthcare	73	24	27.59	1	◇	↔
St. Marys Hospital	55	4	8.07	5	◆	↔
Staten Island University Hosp-North	929	301	30.39	12	◆	↔
Staten Island University Hosp-South	196	66	36.77	7	◆	↓
Strong Memorial Hospital	794	159	22.83	31	◇	↓
Syosset Hospital	70	21	32.24	2	◇	↔
The Unity Hospital of Rochester	207	34	20.44	8	◇	↔
United Health Services Hospitals Inc. - Binghamton General Hospital	59	12	19.90	2	◇	↔
United Health Services Hospitals Inc. - Wilson Medical Center	314	71	23.92	21	◇	↓
United Memorial Medical Center North Street Campus	120	20	19.21	1	◇	↔
University Hospital	880	168	19.77	53	◆	↔
University Hospital of Brooklyn	306	88	27.43	1	◇	↑
University Hospital SUNY Health Science Center	442	142	33.47	5	◆	↓
Upstate University Hospital at Community General	133	30	22.57	2	◇	↓
Vassar Brothers Medical Center	770	166	20.82	31	◆	↔
Westchester Medical Center	193	85	34.66	7	◆	↓
White Plains Hospital Center	298	88	27.74	16	◇	↔
Winthrop-University Hospital	842	145	21.40	67	◆	↔
Womans Christian Association	94	20	19.06	2	◇	↔
Women And Childrens Hospital Of Buffalo	S.S.	S.S.	S.S.	S.S.	S.S.	N.A.
Woodhull Medical & Mental Health Center	202	56	24.15	3	◇	↔
Wyckoff Heights Medical Center	252	67	20.84	27	◆	↑

Current Performance



Performance Change



S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement

Facility Name	Number of Cases (N3)	Number of Deaths (N)	RAMR	Discharged To Hospice (N)	High/Low Performer	Performance Change from CY2015
Wyoming County Community Hospital	32	8	36.16	0	◇	↔
Statewide	47,081	11,982	25.45	2,494		

S.S. = Sample Size

N.A. = Not Available

N.C. = Not Calculated

New York State Quality Improvement Efforts

The development and implementation of the New York State Sepsis Care Improvement Initiative are the result of ongoing Department collaboration with federal, state, private initiatives and hospital partners to improve sepsis awareness, advance sepsis care, and to make maximal use of the data collected from hospitals to better understand which clinical practices are influencing survival and other important outcomes for patients. Several of these collaborations to improve sepsis care are described below.

Sepsis Advisory Group

The Department convenes a group of clinicians from across New York State that assisted with the development and implementation of the initiative since 2013. This diverse expert group includes both adult and pediatric specialists who treat patients with sepsis. The advisory group has provided key input into the structure of on-going quarterly performance reports presented to each hospital on their protocol use, protocol adherence, and mortality results compared to statewide averages as well as trended over time. These interim feedback performance reports have provided information for hospitals to target implementation of the improvements we have seen over time.

In addition to providing input in the refinement of our data collection and measurement process, the Sepsis Advisory Group will advise the department on new developments and interventions for patients with sepsis, including treatments and processes of care delivery, that show promise for improving outcomes for patients with sepsis throughout New York State. With the completion of the second quality reporting cycle for hospitals, the advisory group will focus increasingly on data evaluation for identifying and disseminating promising clinical interventions and system improvements from those hospitals with exceptional results.

A smaller group has been convened of pediatric specialists to address pediatric sepsis care, refining data collection and ensuring alignment with updated guidelines.

I PRO, Implementation Business Partner

I PRO (formerly Island Peer Review Organization) assisted the Department throughout the initiative, including the review of hospital sepsis protocols, development of the data dictionary, feedback reports, validation and analyses. Key activities included the streamlining of electronic data collection, ensuring data integrity, customizing reports, providing webinars, and helpdesk support to hospitals.

Partnership For Patients (P4P)

The Center for Medicare and Medicaid Services (CMS) has awarded the hospital associations in New York State with grants to support a variety of quality and safety improvements focused on inpatient care. The Healthcare Association of New York State (HANYS) and the Greater New York Hospital Association (GNYHA) work in collaboration with participating hospitals and the New York State Department of Health (the Department) to assist hospitals to continue improvements in this priority area.

The P4P sepsis initiative aims to help hospitals improve sepsis care processes by supporting front line staff adherence to hospital protocols. With agreement from the hospitals, the Department shares sepsis data for P4P-participant hospitals to inform customized quality improvement work on key clinical interventions for each hospital. The result is focused improvement activities on key clinical interventions and sharing of best practices. Activities include webinars, sepsis regional forums, and project manager on site hospital support.

Participating Hospitals

In 2017, the Department surveyed participating hospitals and convened meetings of staff involved in sepsis reporting to identify challenges and best practices, quality improvement initiatives and hospitals' data needs. Insight obtained from the survey and meetings informed improvements to data definitions and specifications and planning for data sharing with hospitals to facilitate future quality improvement initiatives.

Private Foundations

Several private foundations have provided support and assistance in raising public awareness regarding sepsis which has amplified the work of the initiative in New York State. In addition, the Rory Staunton Foundation created by the Staunton family and named for Rory Staunton, a 12-year-old New York State resident who died from sepsis in 2012, was instrumental in advocating for the existing regulations ('Rory's Regulations') in New York and now, in other states as well. Other organizations, such as the Sepsis Alliance, have also played an important national role in bringing attention and focus to sepsis care.

Support for Research

The Department is supporting research around sepsis. An article titled 'Time To Treatment and Mortality during Mandated Emergency Care for Sepsis' was published in the New England Journal of Medicine with the support of the Department in May 2017 which details the importance of timely intervention in sepsis care. This article and other articles in submission will add to the evidence to improve sepsis care in New York State.

International Support for Sepsis

In 2017, the World Health Organization (WHO) recognized sepsis as a global health priority and adopted a resolution on improving the prevention, diagnosis, and management of sepsis. The resolution calls for health workers to increase awareness of sepsis by using the term "sepsis" in communications with patients, relatives, and other parties because greater awareness is a crucial step in reducing the global burden of sepsis. The resolution also calls for clear treatment guidelines and performance targets tailored to local environments. The resolution, with its implicit recognition of sepsis as a major threat to patient safety and global health, has the potential to save millions of lives around the world.

Next Steps

The Department plans to continue working with partners to improve identification and care of sepsis patients to optimize outcomes.

Data Collection Improvement and Alignment

The Department will continue to work with CMS and hospitals to refine the data dictionary to ensure complete and accurate data collection. The Department will finalize measure specifications and data element definitions to align the New York State initiative where possible

2016 New York State Report on Sepsis Care Improvement Initiative: Hospital Quality Improvement with the Center for Medicare and Medicaid Services (CMS) severe sepsis and septic shock measure (SEP-1) to reduce hospital burden. The Department will develop methodology for linking and reporting episodes of care for patients who are transferred between acute care facilities, and for reporting patients who are transferred to hospice following an episode of sepsis. The Department will continue work with the Pediatric Sepsis Advisory Workgroup to refine pediatric data definitions.

Facilitation of Quality Improvement

The Department will investigate ways to share data with hospitals that can be used to identify opportunities for improvement and to identify high-risk populations that can benefit from targeted interventions. The Department will continue to provide a mechanism for sharing of best practices among hospitals for early identification of sepsis patients and ensuring timely, appropriate treatment.

Alignment with Current Guidelines

The Department will work with the Sepsis Advisory Group and Pediatric Sepsis Advisory Workgroup to monitor the evolving evidence and guidelines for identification and management of sepsis and to ensure that data collection and reports align with the latest evidence.

Definitions of Key Terms

Sepsis - a clinical syndrome in which patients have an infection that is accompanied by an extreme systemic response to the infection.

Severe sepsis (adult) - proven or suspected infection, two or more manifestations of systemic response to infection, and organ dysfunction.

Severe sepsis (pediatric) - proven or suspected infection, abnormal temperature or white blood cell count and one other manifestation of systemic response to infection, and organ dysfunction.

Septic shock (adult) - severe sepsis and persistent hypotension (low blood pressure) after fluid administration or severe sepsis and evidence of low perfusion (initial lactate level greater than or equal to 4).

Septic shock (pediatric) - sepsis and cardiovascular organ dysfunction despite 20cc/kg of crystalloid fluid administration.

Protocol initiation - patients in each hospital who received care consistent with the initiation of their formal protocol, excluding those cases with identified (and justified) clinical or advanced directive exceptions.

Time zero - the start time for reported bundle measures. For aggregated data, time zero is the time that the hospital's protocol was initiated, or, if protocol was not initiated, the earliest time documented in the clinical data, such as triage time or arrival time. For hospital-specific measures, time zero is defined as Emergency Department triage time.

3-hour bundle (adult) - composite measure that includes receipt of measurement of blood lactate level, blood culture collection prior to antibiotics, and broad spectrum antibiotic administration within three hours of "time zero" for patients with severe sepsis and septic shock presenting in the Emergency Department. Patients with clinical exclusions for any of the

interventions and patients who have been transferred from or to another acute care hospital are excluded from this measure.

6-hour bundle (adult) - composite measure that includes receipt of the 3-hour bundle interventions plus three additional interventions for patients with septic shock: supporting blood pressure and organ function with both fluids and other medications if needed (vasopressors), as well as re-measuring blood lactate levels when the initial lactate level is elevated. This measure, using the same 'time zero' as the three-hour bundle, measures the percentage of patients with septic shock (a subset of all patients) that received all of the three-hour bundle interventions as well as the three additional interventions described in this section. Patients with clinical contraindications to any of the interventions and patients who have been transferred from or to another acute care hospital are excluded from this measure.

1-hour bundle (pediatric) - composite measure for pediatric patients with sepsis that includes receipt of parenteral fluids, blood cultures, and antibiotics within one hour of their presentation in the emergency room. Patients with clinical exclusions and patients who have been transferred from or to another acute care hospital are excluded from this measure.

Technical Appendix A: Risk Adjustment Methodology

The objective of the risk adjustment process is to assess hospital performance after accounting for differences in patient case mix among hospitals. In the first part of the process, a mortality model estimates the probability of in-hospital mortality for each patient with sepsis. This estimate is based on patient demographic, comorbidity, and severity of illness characteristics. Multivariable logistic regression was used to determine which variables are important and accurate in estimating the probability of mortality for each patient. Table A1 contains the patient demographic, comorbidity and severity of illness variables included in this analysis.

The risk adjusted model in this report makes use of the most recent complete and audited data from four quarters of patient data submission in 2016. All patients who were discharged and transferred from one hospital to another were excluded from model development and the application of the model to each hospital's result. Patients with advanced care directives in place prior to the episode of sepsis, who declined sepsis protocol interventions, or who refused sepsis protocol interventions at the time of presentation, were removed from the data set. Patients admitted more than once in 2016 for sepsis are represented only once for purposes of development of the risk adjusted model (using their last admission only). For purposes of evaluating each hospital's performance, each admission is included.

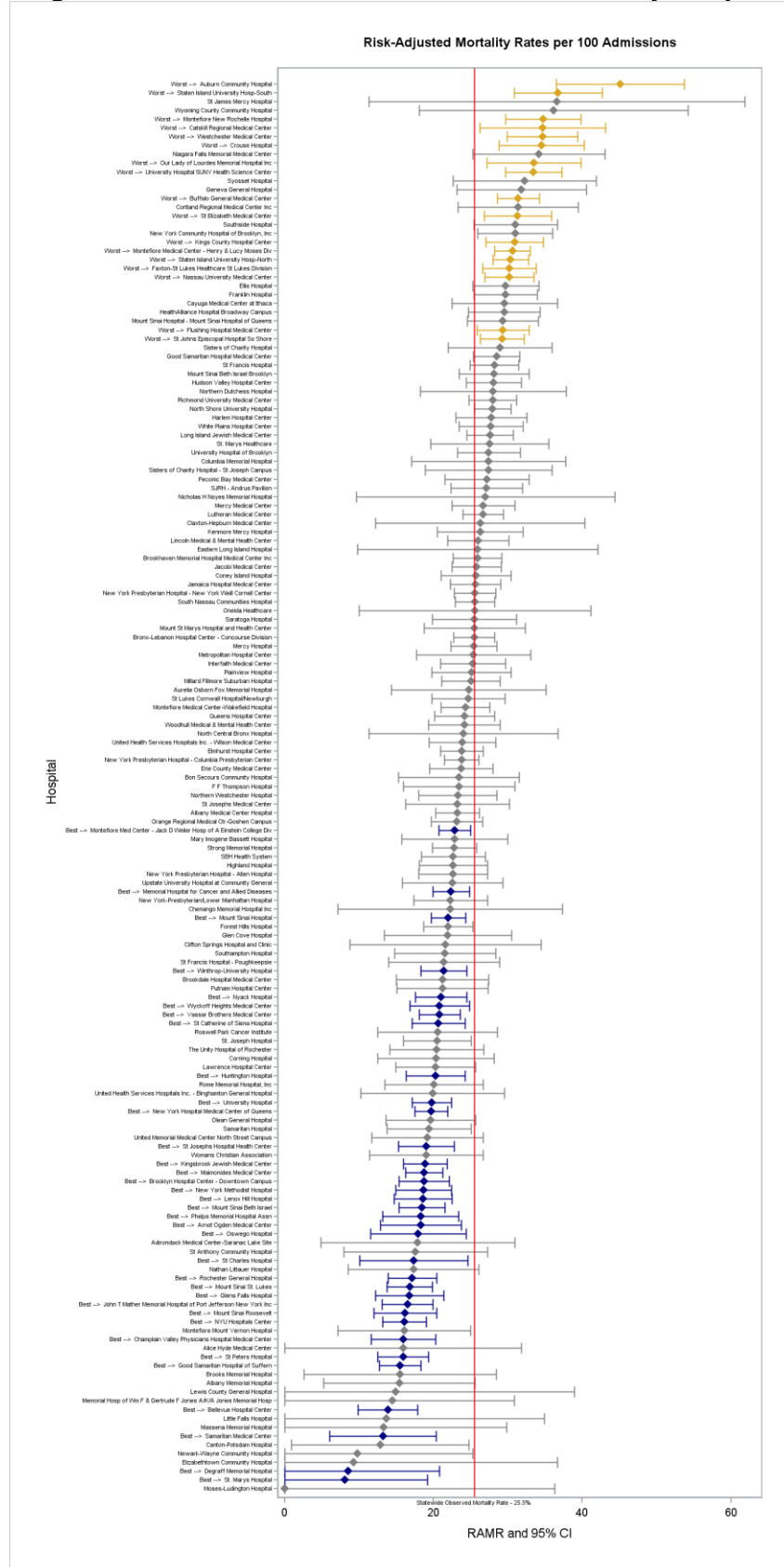
To assess hospital performance, the probability of hospital mortality is calculated for every patient from that hospital using the logistic regression model. These probabilities are summed over all the patients at that hospital to calculate the expected number of deaths for that hospital. The actual number of deaths is determined for all patients in that hospital as well. The 'standardized' mortality ratio (SMR) is calculated by dividing the observed by the expected number of deaths in each hospital. The SMR was then multiplied by the statewide mortality rate to obtain a risk adjusted mortality rate (RAMR) and a 95% confidence interval for the RAMR. The RAMR provides the best estimate of what each hospital's mortality rate would have been if the state had a case mix that was identical to the hospital. If the confidence interval for a hospital's RAMR is entirely below the statewide rate, the hospital performed significantly better than the state average. If the hospital's confidence interval was entirely above the statewide rate the hospital performed significantly worse than the statewide rate. Figure A1 contains a plot showing the RAMR and confidence interval for each hospital. The highest performing hospitals are displayed in blue and the lowest performing hospitals are displayed in gold.

Table A1. Variables in the Risk Adjusted Mortality Rate (RAMR) model

Main effects or Interactions	%	β	Adjusted OR	p-value
Race/Ethnicity – main effect				
White, Non-Hispanic	56.6	-Reference-		
Black, Non-Hispanic	15.4	0.054	1.06	0.144
Hispanic	10.2	-0.169	0.84	< 0.001
Multi-racial	1.1	0.089	1.09	0.470
Other, Non-Hispanic	7.0	-0.110	0.90	0.034
Other, Unknown Ethnicity	9.6	0.142	1.15	0.001
Payer - main effect				
Private HMO	17.9	-Reference-		
Medicare	61.1	-0.015	0.99	0.690
Medicaid	14.9	0.057	1.06	0.240
Self-pay	1.5	0.359	1.43	0.002
Other	4.6	0.015	1.01	0.827
Site of infection - main effect				
Urinary	24.4	-Reference-		
Respiratory	40.0	0.734	2.08	< 0.001
Gastrointestinal	11.9	0.783	2.19	< 0.001
Skin	7.5	0.505	1.66	< 0.001
Central Nervous System	0.5	0.704	2.02	< 0.001
Other	7.7	0.753	2.12	< 0.001
Unknown	7.9	1.106	3.02	< 0.001
Admission source - main effect				
Non-health facility, POA	72.7	-Reference-		
Clinic	2.8	0.078	1.08	0.312
SNF/ICF	20.9	0.383	1.47	< 0.001
Another HC facility	0.9	0.100	1.10	0.465
Between unit transfer	0.4	0.490	1.63	0.009
Other	2.2	0.086	1.09	0.288
Lower respiratory infection				
No	52.7	-Reference-		
Yes	47.3	0.319	--	< 0.001
MV prior to PI				
No	89.5	-Reference-		
Yes	10.5	0.648	--	< 0.001
Lower respiratory infection#MV severity				
Yes#Yes	--	-0.447	--	< 0.001
Septic shock diagnosis				
Severe Sepsis	50.0	-Reference-		
Septic Shock	50.0	1.039	2.83	< 0.001
Platelet count or Thrombocytopenia				
No	78.2	-Reference-		
Yes	21.8	0.308	1.36	< 0.001
Chronic Renal Failure				
No	89.4	-Reference-		
Yes	10.6	0.261	1.30	< 0.001
Metastatic cancer				
No	89.9	-Reference-		
Yes	10.1	0.619	1.86	< 0.001
Lymphoma/Leukemia/Multiple Myeloma				
No	95.0	-Reference-		
Yes	5.0	0.363	1.44	< 0.001
Age	--	0.043	--	< 0.001
Square root of the count of comorbidity	--	1.558	--	< 0.001
Age#Square root of the count of comorbidity	--	-0.015	--	< 0.001
First serum lactate, mmol/L	--	0.189	--	< 0.001
First serum lactate², (mmol/L)²	--	-0.002	--	0.012
First serum lactate #Square root of the count of comorbidity	--	-0.020	--	0.022

Intercept= -6.992
C Statistic= 0.783

Figure A1. RAMR and 95% Confidence Interval by Hospital



Technical Appendix B

The following tables show statewide comparisons of performance and outcome measures for inpatient sepsis care for New York State between CY2015 and CY2016.

Table B1 contains statewide performance and outcome measure results for inpatient adult (age ≥ 18) sepsis care in New York State for 2015 and 2016. This table includes the statewide crude mortality rates per 100 sepsis patients along with the following quality measures: protocol initiated, 3-hour bundle, and 6-hour bundle. Patient eligibility for each measure follows the guidelines explained in detail in the 'Hospital Performance' section of this report and did not change from CY2015 to CY2016. All eligible cases are included in the calculation of the statewide measure results, regardless of the number of cases at the individual hospital where the patient was seen.

Table B2 summarizes how New York State hospitals' inpatient adult (age ≥ 18) sepsis care Risk Adjusted Mortality Rate (RAMR) performance status changed between 2015 and 2016. Performance status for RAMR was determined by a significant ($\alpha=0.05$) difference between the facilities' RAMR and the statewide rate; 'LOW' facilities performed significantly worse than the statewide rate and 'HIGH' facilities performed significantly better than the statewide rate. Only hospitals with a calculated RAMR in both 2015 and 2016 are included in this table.

Table B3 summarizes how New York State hospitals' performance changed from 2015 to 2016 among the following inpatient adult (age ≥ 18) sepsis care quality measures: protocol initiated, 3-hour bundle, and 6-hour bundle. Facilities in the 'Improved Performance' category had a higher measure result in 2016 relative to 2015, while facilities in the 'Declined Performance' category had a lower measure result in 2016.

Figures B1 to B3 plot facility 2016 performance by the change in performance from 2015 to 2016 for each of the inpatient adult (age ≥ 18) protocol initiated, 3-hour bundle, and 6-hour bundle measures. Each mark on the plots represents a hospital eligible for the comparison. Only hospitals with a calculated measure result in both 2015 and 2016 are included in these tables and figures.

Table B4 contains statewide performance and outcome measure results for inpatient pediatric (age < 18) sepsis care in New York State for 2015 and 2016. This table includes the following quality measures: protocol initiated and 1-hour bundle. Patient eligibility for each measure follows the guidelines explained in detail in the 'Hospital Performance' section of this report and did not change from 2015 to 2016. All eligible cases are included in the calculation of the statewide measure results, regardless of the number of cases at the individual hospital where the patient was seen.

Table B5 summarizes how New York State hospitals' performance changed from 2015 to 2016 among the following inpatient pediatric (age < 18) sepsis care quality measures: protocol initiated and 1-hour bundle. Facilities in the 'Improved Performance' category had a higher measure result in 2016 relative to 2015, while facilities in the 'Declined Performance' category had a lower measure result in 2016. Only hospitals with a calculated measure result in both 2015 and 2016 are included in this table.

Table B1. Adult Sepsis Performance and Outcome Measures Calendar Year Comparison

Year	Mortality Rate		Protocol Initiated		3-Hour Bundle (Adult)		6-Hour Bundle (Adult)	
	Number of Cases (N3)	Crude Mortality Rate	Number of Cases (N1)	Protocol Initiated (%)	Number of Cases (N2)	Met Bundle (%)	Number of Cases (N2)	Met Bundle (%)
2016	47,081	25.45	50,461	83.48	32,472	56.88	31,886	36.38
2015	43,604	27.33	46,845	81.19	27,937	54.07	27,354	31.53
Difference (CY2016-CY2015)	3,477	-1.88	3,616	2.29	4,535	2.81	4,532	4.85

Table B2. Facility Changes in Adult Sepsis Risk Adjusted Mortality Performance Status from 2015

2016 Performance Status	2015 Performance Status	Risk Adjusted Mortality Rate	
		Hospitals (N)	Hospitals (%)
HIGH	HIGH	23	51.11
	NORMAL	12	44.44
	LOW	0	4.44
	Total	35	100.00
NORMAL	HIGH	11	11.46
	NORMAL	86	81.25
	LOW	9	7.29
	Total	106	100.00
LOW	HIGH	0	0.00
	NORMAL	12	70.59
	LOW	5	29.41
	Total	17	100.00
Improved Performance Status in CY2016		21	18.35
Unchanged Performance Status in CY2016		114	67.09
Declined Performance Status in CY2016		23	14.56
Grand Total		158	100.00

Table B3. Facility Changes in Adult Sepsis Performance Measures from 2015

Performance Change	Protocol Initiated (Adult)		3-Hour Bundle (Adult)		6-Hour Bundle (Adult)	
	Hospitals (N)	Hospitals (%)	Hospitals (N)	Hospitals (%)	Hospitals (N)	Hospitals (%)
Improved Performance	86	51.81	90	61.22	101	68.71
Same Performance	19	11.45	0	0.00	0	0.00
Declined Performance	61	36.75	57	38.78	46	31.29
Total	166	100.00	147	100.00	147	100.00

Figure B1. Adult Sepsis Care Protocol Initiated Measure Performance in CY2016 vs Change from CY2015 by Facility (N=166)

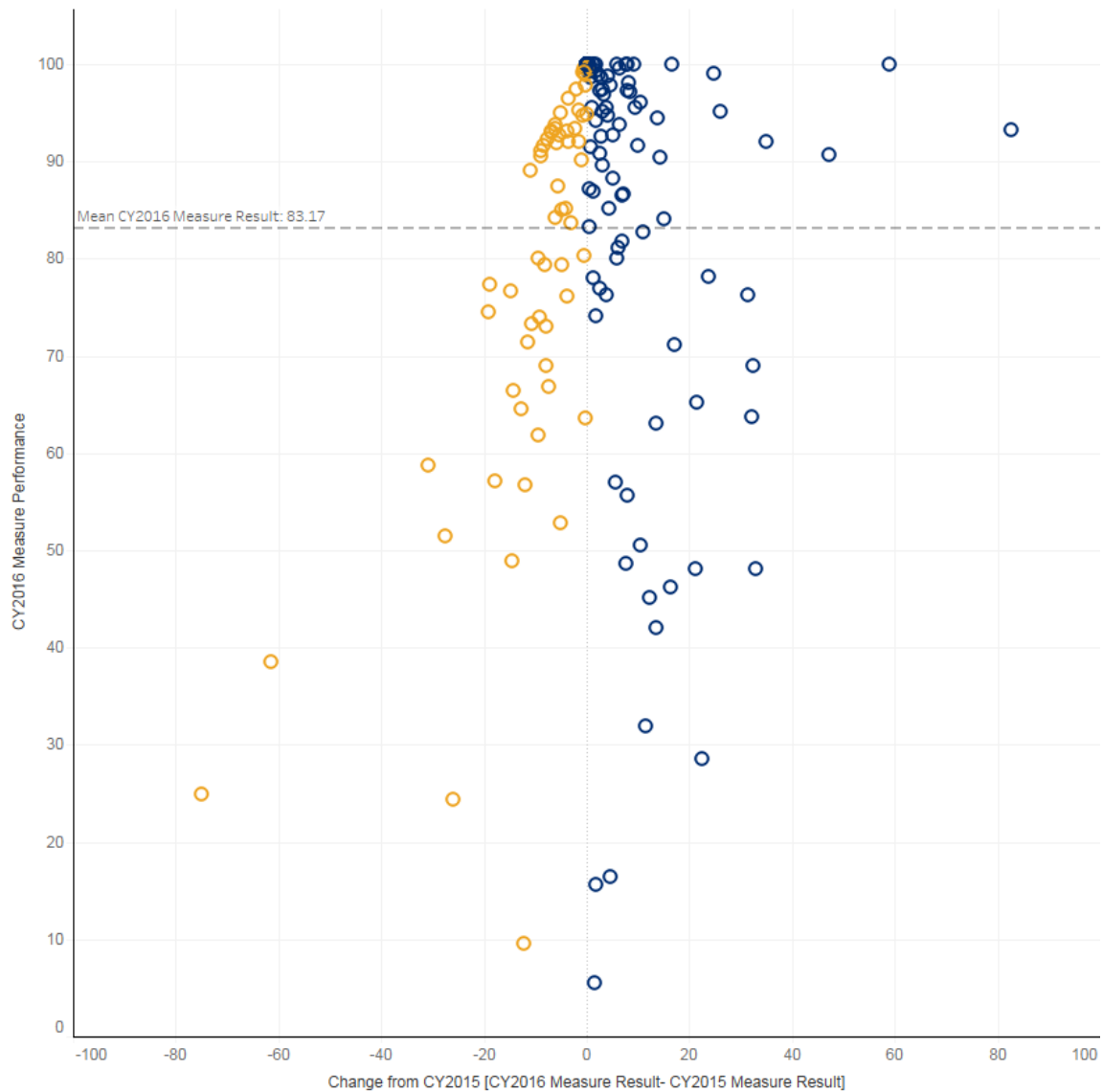


Figure B2. Adult Sepsis Care 3-Hour Bundle Measure Performance in CY2016 vs Change from CY2015 by Facility (N=147)

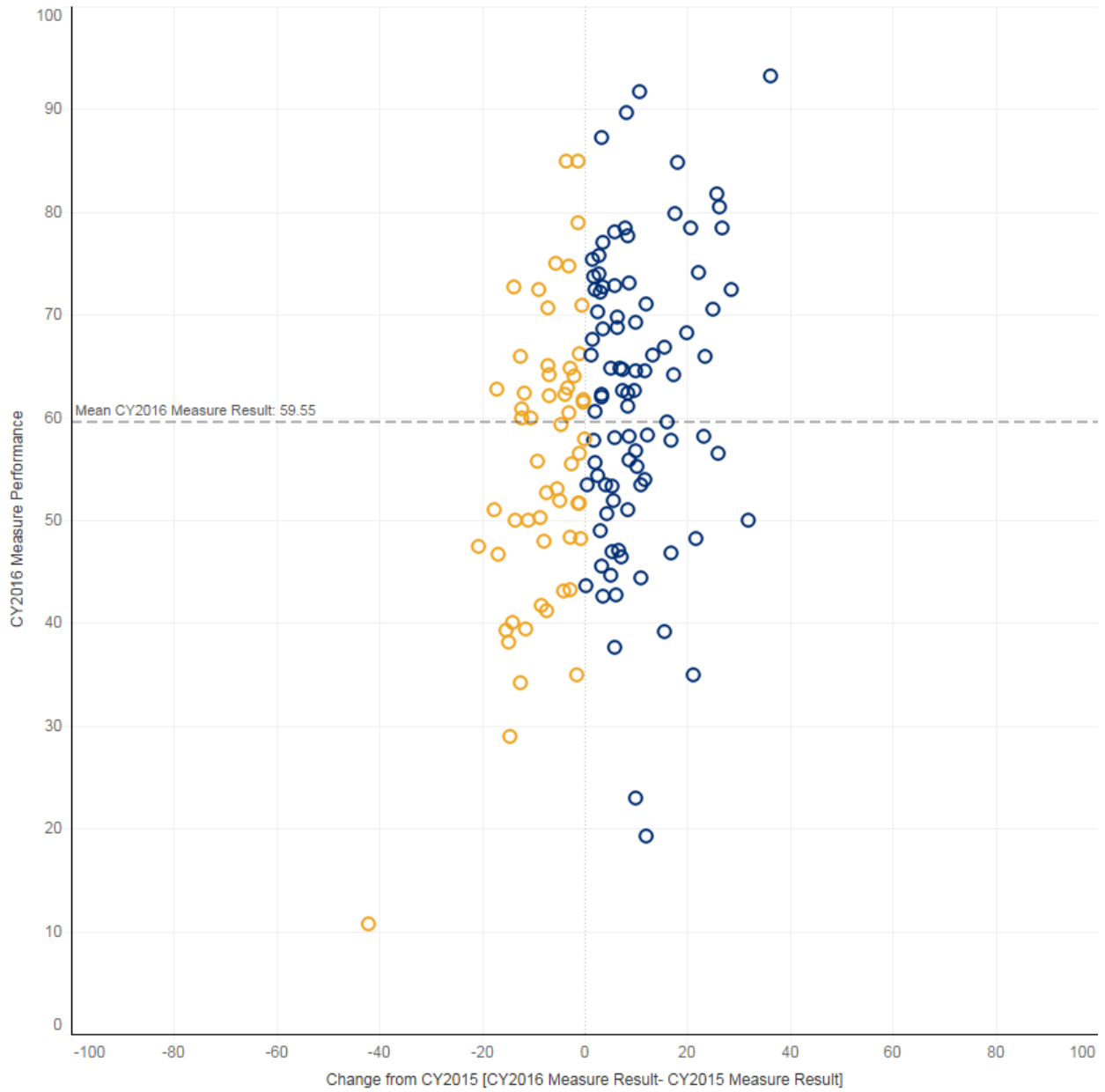


Figure B3. Adult Sepsis Care 6-Hour Bundle Measure Performance in CY2016 vs Change from CY2015 by Facility (N=147)

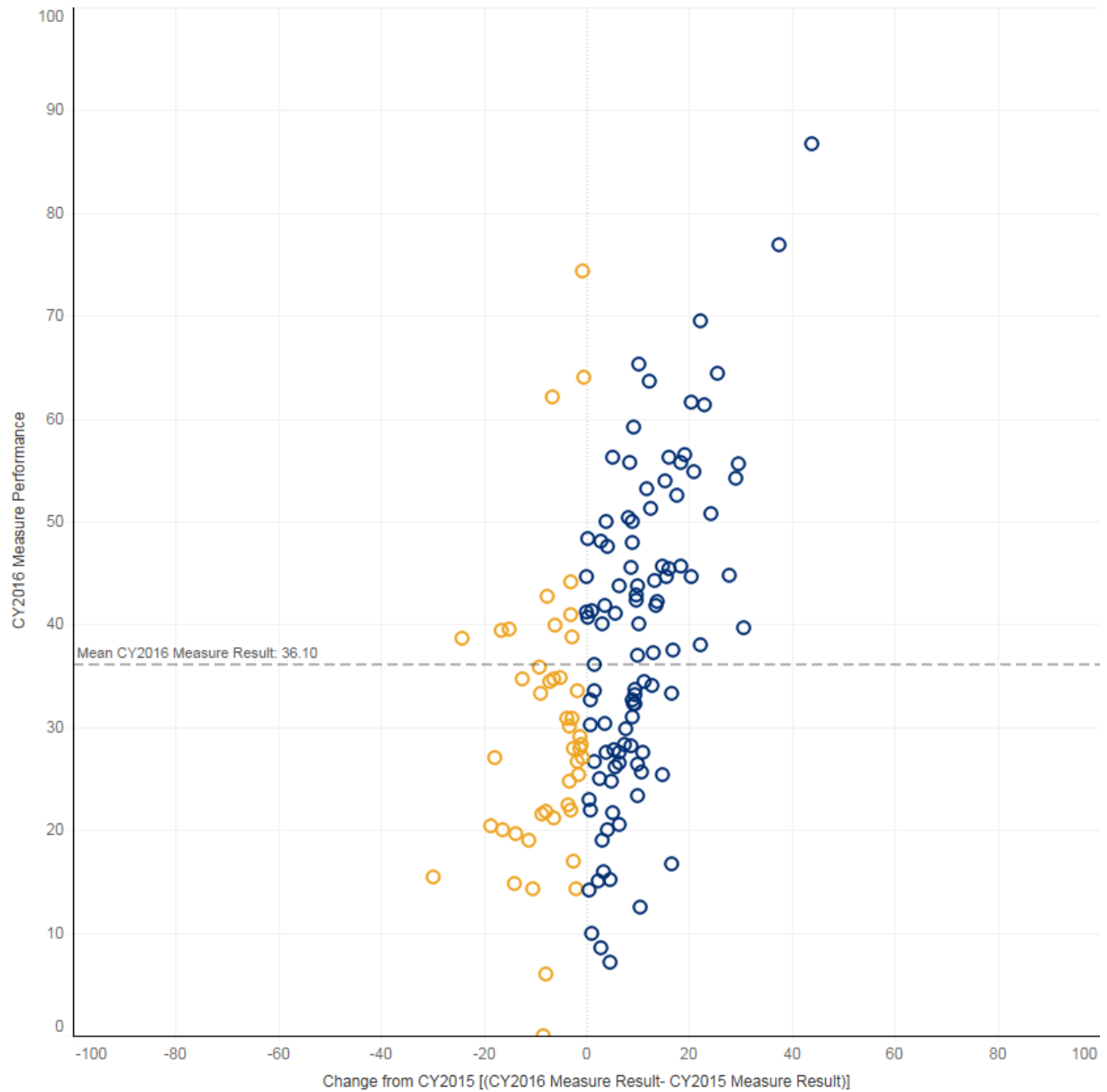


Table B4. Pediatric Sepsis Performance and Outcome Measures Calendar Year Comparison

Year	Protocol Initiated (Pediatric)		1-Hour Bundle (Pediatric)	
	Number of Cases (N1)	Protocol Initiated (%)	Number of Cases (N2)	Met Bundle (%)
2016	683	83.31	245	8.16
2015	683	75.11	241	7.88
Difference (CY2016-CY2015)	0	8.20	4	0.28

Table B5. Facility Changes in Pediatric Sepsis Performance Measures from 2015

Performance Change	Protocol Initiated (Pediatric)		1-Hour Bundle (Pediatric)	
	Hospitals (N)	Hospitals (%)	Hospitals (N)	Hospitals (%)
Improved Performance	3	20.00	2	50.00
Same Performance	7	46.67	0	0.00
Declined Performance	5	33.33	2	50.00
Total	15	100.00	4	100.00

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