



Inpatient Quality Indicators

Technical Report

*A Supplement to the
Hospital Performance Report*

2023 Data

Health Care Quality Assessment

**Health Care Quality and Informatics
Office of Population Health**

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Executive Summary

The Office of Health Care Quality Assessment (HCQA) within the New Jersey Department of Health (NJDOH) assesses health care quality using qualitative and quantitative data reported by hospitals to support performance monitoring related to patient care and safety. Specifically, HCQA produces consumer reports on cardiac surgery, hospital performance, and hospital quality indicators; reviews confidential reports and root-cause analyses of reportable medical errors; and maintains several databases to support licensure requirements. To enhance information that the Department provides to the public regarding quality of hospital care, HCQA staff apply statistical tools developed by the federal agency called Agency for Healthcare Research and Quality (AHRQ) to the New Jersey hospital discharge data commonly known as Uniform Billing (UB) data. This report presents findings resulting from the application of a statistical tool known as the Inpatient Quality Indicator (IQI) module to the 2023 New Jersey hospital discharge data.

Inpatient Quality Indicators (IQIs) are a set of measures developed at the national level by AHRQ ([AHRQ QI: Quality Indicator Resources](#)) to provide a perspective on the quality of patient care given by hospitals. Quality of care is measured using: 1) in-hospital mortality for certain procedures and medical conditions; 2) utilization of procedures for which there are questions of overuse, underuse, or misuse; and 3) volume of procedures for which there is some evidence that a higher volume of procedures is associated with lower mortality. AHRQ spent years of research and analysis to define these indicators as measures of health care quality.

Since 2009, the Department has been reporting on **heart attack, heart failure, pneumonia and stroke** mortality levels as part of the ‘**Outcome of Care Measures**’. These indicators were recommended by the “The Governor's Commission on Rationalizing Health Care Resources” to create the ‘Hospital Performance Dashboard’ as a supplement to the Hospital Performance Report.

The data in this report present mortality during hospitalization in each of the 70 licensed hospitals currently operating in the state. For each of the four selected IQIs, risk-adjusted rates are provided along with confidence intervals to help make a statistical assessment of patient care in the hospital. Statewide and national estimates are also provided to help compare hospital performance to the state or national rates.

Comparison of a hospital's rate to the statewide rate (presented in the top row of each of the IQIs tables) is one way to assess how well that hospital performed among its peers in the state. A hospital's peers could be defined at many levels (e.g., teaching hospitals, urban hospitals, suburban hospitals, etc.). Based on AHRQ's recommendations, NJDOH suggests that a hospital's performance be assessed by looking at its performance across the four IQI estimates presented in the tables.

The 2023 New Jersey data shows that there are substantial variations in risk-adjusted rates of outcome by hospital. Some hospitals exhibit significantly higher risk-adjusted rates than the corresponding statewide rates while others have significantly lower rates than the statewide rates.

Some Highlights

- Statewide, in 2023 there were a total of 813 in-hospital deaths due to “Acute Myocardial Infarction – AMI” for a risk-adjusted mortality rate of 4.8 per 100 discharges (for patients ages 18 years and older) with a principal ICD-10-CM diagnosis code for AMI. Table 1 shows the distribution of these heart attack (AMI) deaths by hospital.
- Statewide, there were 2,382 in-hospital deaths from “Pneumonia” in 2023, for a risk-adjusted rate of 5.4 per 100 discharges (for patients ages 18 years and older) with a principal ICD-10-CM diagnosis code for pneumonia. Hospital-specific rates for this indicator ranged from a low of 1.9 to a high of 14.0 per 100 discharges with pneumonia (see Table 2).
- Overall, there were 1,132 deaths from “Heart Failure” during hospitalization in 2023 for a risk-adjusted mortality rate of 2.4 per 100 discharges (for patients ages 18 years and older with a principal ICD-10-CM diagnosis code for heart failure). Table 3 shows the distribution of these deaths by hospital. Statewide, there were 1,268 “Acute Stroke” in-hospital deaths in 2023, for a risk-adjusted rate of 6.4 per 100 discharges (for patients ages 18 years and older and with a principal ICD-10-CM diagnosis code for subarachnoid hemorrhage or intracerebral hemorrhage or ischemic stroke). Hospital-specific rates for this indicator ranged from a low of 0.0 to a high of 12.5 per 100 patients with stroke diagnosis. Table 4 shows the distribution of these total acute stroke deaths by hospital, while Tables 4.1, 4.2 and 4.3 present the breakdown of these deaths by subarachnoid hemorrhage stroke, intracerebral hemorrhagic stroke, and ischemic hemorrhagic stroke, by hospital.
- Compared to the national estimates, New Jersey appeared to have death rates that are relatively lower than the national averages for AMI, Pneumonia, Heart Failure, and Stroke.

Essential Information about the IQIs Rates Calculations

The AHRQ Inpatient Quality Indicators (IQI) module software produces **observed rates**, **expected rates**, and **risk-adjusted rates** for mortality and utilization indicators. Explanation of these rates follows:

Observed Rates - An observed mortality rate is defined as the number of patient deaths for a specific condition or surgical procedure divided by the total number of patients admitted for the condition or surgical procedure being treated. Similarly, an observed utilization rate is defined as the number of patient cases for a specific procedure divided by the total number of patients admitted for the condition being treated. Consumers can consider observed rates as crude measures of performance. By comparing observed rates to risk-adjusted rates, consumers can see the impact of patient case-mix on that hospital's performance.

Risk-adjusted rates - In order, for a provider's performance rate to present an accurate indicator of quality of care, the data must be adjusted to account for differences in patients' severity of illness and risk of mortality. “All Patient Refined Diagnosis Related Groups” (“APR- DRGs”) is a proprietary tool of the 3M Health Information Systems Corporation designed to use UB data to adjust for these patient differences. The AHRQ quality indicators methodology requires use of

APR-DRGs in the analysis of UB data. APR-DRG variables leverage available UB data on patient co-morbidities and non-operating room procedures and allow the interaction of the patient's secondary diagnoses, principal diagnoses, and age to influence the assignment of that patient to one of four classes of severity and risk of mortality classes: low, moderate, high and very high. This risk adjustment enables comparisons among hospitals, counties, and/or states with different patient mixes.

The risk-adjusted rate is the best estimate of what the hospital's rates would have been if the hospital had a mix of patients identical to a state-average patient mix for the year in question. Hospitals report present on admission (POA) indicators in their claims data, which enabled the AHRQ Software to distinguish between preexisting conditions and hospital-acquired conditions and/or complications. POA also makes it possible to measure risk of mortality at admission, helping hospitals adopt more meaningful mortality reduction strategies.

Expected Rates - Unlike observed rates, expected rates are derived from applying the average case-mix of a reference population file that reflects a large proportion of the U.S. hospitalized or residential population. The expected mortality rate for a hospital is the hospital's observed rate divided by the hospital's risk-adjusted rate, multiplied by the state average risk-adjusted rate. This adjustment is done to reflect an expectation of hospital performance if that hospital had performed at the level of the state average. While comparing a hospital's risk-adjusted mortality rate to its expected mortality rate provides a measure of the hospital's performance, this comparison will not show if a hospital's mortality rate is statistically significantly different from the state's average mortality rate.

Comparing Observed Rates with Risk-adjusted Rates - The purpose of comparing observed with risk-adjusted rates is to determine which rates the user should look at in evaluating the performance of a provider. If the user's primary interest is to focus on a particular provider without any comparisons to other providers, then they can simply examine the overall observed rate for the entire provider, as well as further breakdowns by age, sex, payer, and race/ethnicity. If the purpose is to compare the performance of a particular provider with national, state, or regional averages or performances of other selected providers, then both the observed and risk-adjusted rates should be examined. Variation in observed rates across providers is attributable to a variety of factors including differences in patient case-mix or population demographics, disparity in access to and quality of care, and other provider characteristics. Comparing observed and risk-adjusted rates can reveal if there is any difference between the provider's patient population and the patient population of other providers.

Users can use this information to assess the quality of care in a hospital, which is useful when making decisions about where to go for treatment. This information, however, is not intended to be used alone, when making these decisions. One must consider the results of all the different data sources that measure quality of care within a hospital. Since IQIs use hospital inpatient discharge data, hospitals can use the IQIs to identify areas within the hospital that need improvement.

The footnote labels, "better than statewide average" and "worse than statewide average", for each table describe the interpretation of the IQI mortality rates in a meaningful way. These labels help identify hospitals that have better than average, average, or worse than average performances compared to the statewide performance, which is shown at the top row of the table and labeled "Statewide Rate."

When a hospital's rate is marked by a single asterisk (*), it means the hospital's performance is better than the statewide average, meaning fewer deaths than the statewide average deaths for a given

condition. When a hospital's rate is marked by double asterisks (**), it means the hospital's performance is worse than the statewide average, meaning more deaths than the statewide average. When a hospital's rate is not marked by an asterisk, it means the hospital's performance is the same as, or similar to, the statewide rate.

Hospital rates are determined after adjusting for the risk factors of their patients. A hospital's rate is "worse than average" if its 95% confidence interval falls completely above the statewide rate. By comparison, a hospital's rate is "better than average" if its 95% confidence interval falls completely below the statewide rate.

Some rates that appear very large are not marked as "worse than average" while others that appear very small are not marked as "better than average" since rates calculated from small numbers of events tend to have wider confidence intervals that make the statewide rate fall within the interval, giving the appearance of good performance by that hospital compared to a hospital whose rate is based on a higher volume.

If observed rate > risk-adjusted rate, then: the provider's patient population for the condition or procedure has a *higher* risk of mortality due to its case-mix (for example, older patients or a greater proportion of a higher-risk APR-DRG).

If observed rate < risk-adjusted rate, then: the provider's patient population for the condition or procedure has a *lower* risk of mortality due to its case-mix (for example, younger or a greater proportion of a lower-risk APR-DRG).

If observed rate = risk-adjusted rate, then: the provider's patient case-mix for the condition or procedure is similar to other providers, suggesting that patient composition is not a contributing factor to the provider's performance for the mortality indicator.

The tables in this report present results of analysis made on the IQIs recommended for "Hospital Performance Dashboard" based on the 2023 UB data. The tables show the number of in-hospital deaths (numerator), the number of discharges (denominator), the observed, the expected, and the risk-adjusted mortality rates for each of the four indicators selected for the dashboard. Risk-adjusted rates are given along with their respective 95% confidence intervals.

Basic Descriptions of the IQIs - Heart Attack, Pneumonia, Heart Failure, and Stroke

This section presents brief descriptions of each of the four IQIs selected to be reported along with other indicators of health care quality included in NJDOH's Hospital Performance Report. As stated above, NJDOH recommended that these quality indicators are reported as part of the "Outcome of Care" measures.

Acute Myocardial Infarction (AMI)

AMI is a heart attack and can occur if the arteries supplying blood to the heart are blocked, and the blood supply is slowed or stopped. When arteries are blocked, the heart cannot get the oxygen and nutrients it needs to function properly. **Symptoms** of AMI includes chest pain (crushing, squeezing or burning pain in the center of the chest which may radiate to the arm or jaw), shortness of breath, dizziness, faintness, chills, sweating or nausea. Skin may feel cold or clammy, and patients may appear gray and look ill. Sometimes there are no symptoms.

This indicator measures the chance or likelihood that an AMI patient admitted to a hospital dies in the hospital. According to the American Heart Association, if a heart attack victim gets to an emergency room fast enough, prompt care dramatically reduces heart damage ([American Heart Association CPR & First Aid](#)). Timely and effective treatments for acute myocardial infarction, which are essential for patient survival, include appropriate use of revascularization or thrombolytic therapy. The indicator is defined as the number of deaths per 100 patients with a principal diagnosis code (ICD-10-CM) of AMI (age 18 years and older).

For inclusion and exclusion criteria in calculating this rate, visit the following website and select IQI 15 Acute Myocardial Infarction (AMI) Mortality Rate: [AHRQ QI: IQI Technical Specifications Updates](#)

This information is important because it tells you how well hospitals take care of patients with heart attacks. This measure takes into consideration several factors such as how quickly hospital staff treats such patients once they are in the emergency room.

Table 1: In hospital mortality rates for acute myocardial infarction (AMI) (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National	79,701	1,536,577	5.2	NA	NA	NA - NA
Statewide	813	13,859	5.9	6.3	4.8	4.6 - 5.1
AtlantiCare Regional MC-City Campus	1	22	4.5	8.1	2.9 ^	0.0 - 8.0
AtlantiCare Regional MC-Mainland Campus	28	628	4.5	7.8	3.0 *	1.9 - 4.1
Bayshore Medical Center	8	175	4.6	5.7	4.1	1.5 - 6.7
Bergen New Bridge Medical Center	1	7	14.3	10.9	6.8 ^	0.0 - 15.2
Cape Regional Medical Center	6	22	27.3	11.8	12.0 ^	6.8 - 17.2
Capital Health Medical Center-Hopewell	5	80	6.3	4.4	7.4	2.4 - 12.4
Capital Health Regional Medical Center	8	134	6.0	5.5	5.7	2.5 - 8.9
CarePoint Health-Bayonne Medical Center	27	291	9.3	8.4	5.7	4.0 - 7.4
CarePoint Health-Christ Hospital	10	93	10.8	7.1	7.8	4.6 - 11.1
CarePoint Health-Hoboken University MC	0	24	0.0	3.4	0.0 ^	0.0 - 10.8
Carewell Health Medical Center-East Orange	1	39	2.6	2.6	5.0	0.0 - 14.8
CentraState Medical Center	7	155	4.5	5.8	4.1	1.4 - 6.8
Chilton Memorial Hospital	6	89	6.7	8.7	4.0	1.3 - 6.8
Clara Maass Medical Center	17	268	6.3	4.6	7.1	4.6 - 9.6
Community Medical Center	31	523	5.9	4.7	6.6	4.8 - 8.4
Cooper University Hospital	42	605	6.9	5.6	6.5 **	5.1 - 7.9
Cooperman Barnabas Medical Center	3	268	1.1	3.9	1.5 *	0.0 - 4.3
Deborah Heart and Lung Center	15	227	6.6	5.3	6.4	3.8 - 9.1
Englewood Hospital and Medical Center	5	254	2.0	4.0	2.6 **	0.0 - 5.4
Hackensack Meridian Health, Mountainside MC	10	106	9.4	8.3	5.9	3.7 - 8.2
Hackensack Meridian Health-Pascack Valley MC	0	3	0.0	21.0	0.0 ^	0.0 - 11.0
Hackensack University Medical Center	40	727	5.5	10.2	2.8 *	1.9 - 3.7
Hackettstown Medical Center	0	20	0.0	9.7	0.0 ^	0.0 - 6.5
Holy Name Medical Center	13	166	7.8	5.3	7.6	4.8 - 10.5
Hudson Regional Hospital	0	7	0.0	4.3	0.0 ^	0.0 - 17.9
Hunterdon Medical Center	6	126	4.8	4.4	5.7	1.9 - 9.5
Inspira Medical Center Elmer	0	21	0.0	4.0	0.0 ^	0.0 - 10.5
Inspira Medical Center Mullica Hill	8	206	3.9	4.4	4.5	1.7 - 7.4
Inspira Medical Center Vineland	7	264	2.7	5.4	2.5 *	0.4 - 4.7
Jefferson Cherry Hill Hospital	0	25	0.0	4.6	0.0 ^	0.0 - 8.7
Jefferson Stratford Hospital	2	30	6.7	7.2	4.8	0.0 - 9.6
Jefferson Washington Township Hospital	9	115	7.8	8.1	5.0	2.6 - 7.4
Jersey City Medical Center	15	325	4.6	4.7	5.0	3.0 - 7.1
Jersey Shore University Medical Center	32	799	4.0	6.2	3.4 *	2.2 - 4.5
JFK University Medical Center	9	271	3.3	4.8	3.6	1.2 - 6.0
Monmouth Medical Center	6	111	5.4	3.9	7.1	2.7 - 11.6
Monmouth Medical Center-Southern Campus	4	27	14.8	8.6	8.9 ^	3.2 - 14.6
Morristown Medical Center	45	736	6.1	6.5	4.9	3.7 - 6.1
Newark Beth Israel Medical Center	25	312	8.0	6.1	6.8 **	5.0 - 8.6
Newton Medical Center	9	89	10.1	7.7	6.9	3.7 - 10.1

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Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National	79,701	1,536,577	5.2	NA	NA	NA - NA
Statewide	813	13,859	5.9	6.3	4.8	4.6 - 5.1
Ocean University Medical Center	12	276	4.3	5.7	4.0	1.8 - 6.1
Old Bridge Medical Center	3	79	3.8	5.8	3.4	0.0 - 7.2
Overlook Medical Center-Summit	12	240	5.0	7.0	3.7	1.7 - 5.7
Palisades Medical Center	4	31	12.9	9.4	7.1	2.8 - 11.3
Penn Medicine Princeton Medical Center	6	142	4.2	5.4	4.1	0.9 - 7.3
Raritan Bay Medical Center	2	77	2.6	5.9	2.3	0.0 - 5.8
Riverview Medical Center	5	125	4.0	5.4	3.8	0.8 - 6.8
Robert Wood Johnson University Hospital	48	712	6.7	6.6	5.3	4.1 - 6.5
Robert Wood Johnson University Hospital at Rahway	6	68	8.8	8.0	5.7	2.3 - 9.1
Robert Wood Johnson University Hospital Hamilton	2	168	1.2	3.1	2.0	0.0 - 6.2
Robert Wood Johnson University Hospital Somerset	8	200	4.0	5.8	3.5	1.2 - 5.9
Saint Clare's Hospital-Denville	12	122	9.8	10.1	5.0	2.9 - 7.2
Saint Clare's Hospital-Dover	5	42	11.9	11.5	5.4	2.1 - 8.6
Saint Michael's Medical Center	4	80	5.0	3.0	8.7	2.7 - 14.6
Saint Peter's University Hospital	3	94	3.2	6.2	2.7	0.0 - 5.9
Salem Medical Center	0	10	0.0	3.8	0.0 ^	0.0 - 15.9
Shore Medical Center	3	15	20.0	5.7	18.2 **^	7.7 - 28.8
Southern Ocean Medical Center	2	64	3.1	5.3	3.1	0.0 - 8.1
St. Joseph's University Medical Center	95	862	11.0	8.9	6.4 **	5.5 - 7.3
St. Joseph's Wayne Medical Center	9	39	23.1	12.5	9.6	6.0 - 13.2
St. Luke's Warren Hospital	0	20	0.0	2.0	0.0 ^	0.0 - 15.9
St. Mary's General Hospital	4	188	2.1	5.2	2.1	0.0 - 5.1
Trinitas Regional Medical Center	6	133	4.5	6.0	3.9	1.0 - 6.8
University Hospital	10	135	7.4	7.7	5.0	2.5 - 7.5
Valley Hospital	24	345	7.0	6.0	6.0	4.2 - 7.9
Virtua Mount Holly Hospital-Burlington County	12	243	4.9	4.7	5.5	2.9 - 8.1
Virtua Our Lady of Lourdes Hospital	45	584	7.7	5.7	7.0 **	5.5 - 8.4
Virtua West Jersey Hospital-Marlton	6	238	2.5	3.8	3.4	0.5 - 6.4
Virtua West Jersey Hospital-Voorhees	2	77	2.6	3.0	4.4	0.0 - 10.6
Virtua Willingboro Hospital	2	59	3.4	5.7	3.1	0.0 - 7.8

Source: National numbers are derived from 2019, 2020 & 2021 National Inpatient Sample (NIS) databases using the AHRQ SAS Software, Version 2024.1 while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

^ = Rate is based on a denominator less than 30 and should be taken with caution. ⚠ = Could be coding error.

* = Statistically significantly below state average, ** = Statistically significantly above state average. NA = National rates are not risk-adjusted.

Expected rate is the rate the hospital would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the reference or statewide population. If the observed rate is higher than the expected rate (i.e., the ratio of observed to expected is greater than 1.0), it suggests that the hospital performed worse than the reference population on that indicator.

Pneumonia

Pneumonia is inflammation of the lungs, frequently caused by an infection. Many different organisms can cause pneumonia, including bacteria, viruses and fungi. Pneumonia can range from very mild to very severe, even fatal, depending on the type of organism causing it as well as the age and current health of the individual. **Symptoms** for pneumonia can include fever, fatigue, difficulty breathing, chills, “wet” cough, and chest pain. Pneumonia, when caused by bacteria, can often be treated with antibiotics, sometimes in an outpatient setting. However, death may occur when the patient is in the hospital, especially in patients with a weakened respiratory system or other chronic health problems. Patient comorbidities and physician admitting practices, where criteria for admission vary from facility to facility, have a significant impact on outcomes.

This indicator measures the chance or likelihood that a patient with pneumonia admitted to a hospital will die from that condition during hospitalization. In-hospital pneumonia mortality rate is defined as deaths per 100 discharges with principal (ICD-10-CM) diagnosis code of pneumonia (age 18 years and older).

This information is important because it tells you how well hospitals take care of their pneumonia patients.

Table 2: In hospital mortality rates for pneumonia (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National	238,409	3,496,000	6.8	NA	NA	NA - NA
Statewide	2,382	36,189	6.6	8.3	5.4	5.2 - 5.6
AtlantiCare Regional MC-City Campus	8	320	2.5	6.4	2.7	0.0 - 5.3
AtlantiCare Regional MC-Mainland Campus	41	519	7.9	8.9	6.0	4.3 - 7.7
Bayshore Medical Center	18	697	2.6	9.3	1.9	0.5 - 3.3
Bergen New Bridge Medical Center	5	77	6.5	6.9	6.4	1.1 - 11.7
Cape Regional Medical Center	31	398	7.8	5.8	9.2 **	6.7 - 11.8
Capital Health Medical Center-Hopewell	39	466	8.4	7.0	8.1 **	6.0 - 10.3
Capital Health Regional Medical Center	28	337	8.3	6.3	8.9 **	6.4 - 11.5
CarePoint Health-Bayonne Medical Center	43	550	7.8	10.4	5.1	3.6 - 6.6
CarePoint Health-Christ Hospital	8	169	4.7	6.0	5.4	1.7 - 9.1
CarePoint Health-Hoboken University MC	8	151	5.3	7.5	4.8	1.3 - 8.3
Carewell Health Medical Center-East Orange	5	156	3.2	4.5	4.9	0.4 - 9.4
CentraState Medical Center	58	730	7.9	7.0	7.8 **	6.1 - 9.4
Chilton Memorial Hospital	24	482	5.0	8.2	4.1	2.2 - 6.0
Clara Maass Medical Center	71	523	13.6	7.3	12.7 **	10.8 - 14.6
Community Medical Center	138	1,482	9.3	7.3	8.7 **	7.6 - 9.8
Cooper University Hospital	55	745	7.4	8.3	6.1	4.7 - 7.5
Cooperman Barnabas Medical Center	119	1,048	11.4	7.6	10.2 **	8.9 - 11.5
Deborah Heart and Lung Center	6	130	4.6	7.4	4.2	0.3 - 8.2
Englewood Hospital and Medical Center	62	657	9.4	9.1	7.1 **	5.5 - 8.6
Hackensack Meridian Health, Mountainside MC	36	528	6.8	9.4	4.9	3.3 - 6.6
Hackensack Meridian Health-Pascack Valley MC	18	244	7.4	7.9	6.4	3.7 - 9.1
Hackensack University Medical Center	79	1,429	5.5	10.3	3.7 *	2.7 - 4.6
Hackettstown Medical Center	14	296	4.7	7.4	4.4	1.8 - 7.0
Holy Name Medical Center	30	595	5.0	6.6	5.2	3.3 - 7.2
Hudson Regional Hospital	9	70	12.9	6.2	14.0 **	8.1 - 19.9
Hunterdon Medical Center	18	461	3.9	8.2	3.3 *	1.3 - 5.2
Inspira Medical Center Elmer	3	104	2.9	7.3	2.7	0.0 - 6.9
Inspira Medical Center Mullica Hill	20	601	3.3	7.0	3.3 *	1.4 - 5.1
Inspira Medical Center Vineland	29	678	4.3	8.9	3.3 *	1.8 - 4.8
Jefferson Cherry Hill Hospital	12	245	4.9	4.9	6.7	3.3 - 10.2
Jefferson Stratford Hospital	10	212	4.7	4.4	7.3	3.4 - 11.2
Jefferson Washington Township Hospital	31	396	7.8	5.9	9.1 **	6.6 - 11.5
Jersey City Medical Center	37	479	7.7	5.3	10.0 **	7.5 - 12.4
Jersey Shore University Medical Center	33	913	3.6	8.1	3.0 *	1.7 - 4.4
JFK University Medical Center	62	1,454	4.3	10.8	2.7 *	1.8 - 3.6
Monmouth Medical Center	21	269	7.8	7.3	7.3	4.7 - 9.9
Monmouth Medical Center-Southern Campus	40	434	9.2	8.3	7.6 **	5.6 - 9.6
Morristown Medical Center	53	1,092	4.9	8.3	4.0 *	2.8 - 5.2

Table 2: In hospital mortality rates for pneumonia (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
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Statewide	2,382	36,189	6.6	8.3	5.4	5.2 - 5.6
Newark Beth Israel Medical Center	48	406	11.8	6.5	12.4 **	10.1 - 14.7
Newton Medical Center	24	509	4.7	7.5	4.3	2.4 - 6.2
Ocean University Medical Center	21	835	2.5	8.3	2.1 *	0.7 - 3.4
Old Bridge Medical Center	17	463	3.7	7.5	3.3 *	1.3 - 5.3
Overlook Medical Center-Summit	60	841	7.1	9.2	5.3	4.0 - 6.6
Palisades Medical Center	15	489	3.1	10.9	1.9 *	0.4 - 3.4
Penn Medicine Princeton Medical Center	19	263	7.2	6.9	7.1	4.3 - 9.9
Raritan Bay Medical Center	3	232	1.3	6.9	1.3 *	0.0 - 4.2
Riverview Medical Center	13	411	3.2	9.3	2.3 *	0.5 - 4.2
Robert Wood Johnson University Hospital	73	891	8.2	8.7	6.4	5.2 - 7.7
Robert Wood Johnson University Hospital at Rahway	42	369	11.4	11.5	6.8	5.1 - 8.5
Robert Wood Johnson University Hospital Hamilton	12	520	2.3	7.5	2.1 *	0.2 - 4.0
Robert Wood Johnson University Hospital Somerset	59	756	7.8	9.7	5.5	4.2 - 6.8
Saint Clare's Hospital-Denville	27	295	9.2	12.1	5.2	3.4 - 6.9
Saint Clare's Hospital-Dover	23	232	9.9	9.1	7.4	4.8 - 10.0
Saint Michael's Medical Center	11	318	3.5	6.5	3.6	1.1 - 6.1
Saint Peter's University Hospital	9	415	2.2	6.0	2.5 *	0.0 - 4.9
Salem Medical Center	4	97	4.1	4.8	5.8	0.0 - 11.7
Shore Medical Center	24	622	3.9	6.0	4.4	2.4 - 6.4
Southern Ocean Medical Center	11	490	2.2	8.2	1.9 *	0.1 - 3.7
St. Joseph's University Medical Center	215	1,560	13.8	11.9	7.9	7.1 - 8.7
St. Joseph's Wayne Medical Center	57	628	9.1	10.4	5.9	4.5 - 7.4
St. Luke's Warren Hospital	10	296	3.4	8.8	2.6 *	0.3 - 5.0
St. Mary's General Hospital	15	265	5.7	11.4	3.4 *	1.4 - 5.3
Trinitas Regional Medical Center	70	577	12.1	11.4	7.3 **	5.9 - 8.6
University Hospital	19	296	6.4	9.5	4.6	2.6 - 6.7
Valley Hospital	46	578	8.0	9.4	5.8	4.2 - 7.3
Virtua Mount Holly Hospital-Burlington County	18	486	3.7	5.0	5.1	2.6 - 7.6
Virtua Our Lady of Lourdes Hospital	16	322	5.0	6.7	5.1	2.5 - 7.6
Virtua West Jersey Hospital-Marlton	27	455	5.9	7.2	5.6	3.6 - 7.6
Virtua West Jersey Hospital-Voorhees	44	921	4.8	5.5	5.9	4.2 - 7.6
Virtua Willingboro Hospital	8	208	3.8	5.7	4.6	1.2 - 8.1

Source: National numbers are derived from 2019, 2020 & 2021 National Inpatient Sample (NIS) databases using the AHRQ SAS Software, Version 2024.1 while New Jersey's numbers are derived from the 2023 NJ UB Data using the same software version.

* = Statistically significantly below state average, ** = Statistically significantly above state average. NA = National rates are not risk-adjusted.

Expected rate is the rate the hospital would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the reference or statewide population. If the observed rate is higher than the expected rate (i.e., the ratio of observed to expected is greater than 1.0), it suggests that the hospital performed worse than the reference population on that indicator.

Heart Failure (HF)

Heart Failure (HF) refers to the weakening of the heart's muscle which reduces its pumping power. The body does not get sufficient oxygen and nutrients when the heart muscle is too weak to pump blood in a normal flow. The heart tries to compensate and pump more blood, but over time the heart muscle walls weaken, exacerbating heart failure. **Symptoms** for HF can include shortness of breath from fluid in the lungs, dizziness, fatigue, weakness, cold and clammy skin, or rapid and irregular heartbeat. HF can result from coronary artery disease, heart attack, cardiomyopathy (heart muscle damage from infection, alcohol, or drugs), or an overworked heart caused by high blood pressure, kidney disease, diabetes, or a defect from birth. HF is one of the most common and severe heart diseases affecting Americans, and one of the most common reasons for hospitalization. Though, HF has many possible underlying causes, the result is an inability of the heart muscle to function well enough to meet the demands of the rest of the body.

This indicator measures the chance or likelihood that a patient experiencing heart failure and admitted to a hospital will die from that condition during hospitalization. The mortality rate for this measure is defined as the number of deaths per 100 patients with principal (ICD-10-CM) diagnosis code of CHF (age 18 years and older).

This information is important because it tells you how well hospitals take care of their patients with heart failure. Since HF mortality is affected by other medical problems, including lung disease, high blood pressure, cancer and liver disease, the score measures how well the hospital can control these influences.

Table 3: In hospital mortality rates for heart failure (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National	89,335	3,289,432	2.7	NA	NA	NA - NA
Statewide	1,132	35,822	3.2	3.6	2.4	2.3 - 2.5
AtlantiCare Regional MC-City Campus	5	351	1.4	2.7	1.4	0.0 - 3.1
AtlantiCare Regional MC-Mainland Campus	26	804	3.2	4.0	2.2	1.3 - 3.0
Bayshore Medical Center	7	420	1.7	3.6	1.3	0.0 - 2.6
Bergen New Bridge Medical Center	2	24	8.3	3.0	7.5 ^	1.4 - 13.6
Cape Regional Medical Center	16	367	4.4	3.2	3.7	2.2 - 5.1
Capital Health Medical Center-Hopewell	21	424	5.0	3.4	4.0 **	2.6 - 5.3
Capital Health Regional Medical Center	10	436	2.3	2.4	2.6	1.0 - 4.2
CarePoint Health-Bayonne Medical Center	14	469	3.0	3.5	2.3	1.1 - 3.5
CarePoint Health-Christ Hospital	12	271	4.4	2.1	5.8 **	3.6 - 8.0
CarePoint Health-Hoboken University MC	3	100	3.0	2.5	3.3	0.0 - 6.6
Carewell Health Medical Center-East Orange	2	167	1.2	1.6	2.0	0.0 - 5.2
CentraState Medical Center	24	520	4.6	4.3	2.9	1.9 - 3.9
Chilton Memorial Hospital	4	326	1.2	4.0	0.8 *	0.0 - 2.2
Clara Maass Medical Center	24	676	3.6	2.4	4.1 **	2.8 - 5.4
Community Medical Center	49	1,145	4.3	2.9	4.0 **	3.1 - 4.8
Cooper University Hospital	27	971	2.8	3.0	2.5	1.6 - 3.4
Cooperman Barnabas Medical Center	29	950	3.1	2.7	3.1	2.1 - 4.1
Deborah Heart and Lung Center	29	664	4.4	2.7	4.4 **	3.2 - 5.6
Englewood Hospital and Medical Center	19	544	3.5	3.2	3.0	1.8 - 4.2
Hackensack Meridian Health, Mountainside MC	12	373	3.2	3.8	2.3	1.0 - 3.5
Hackensack Meridian Health-Pascack Valley MC	2	112	1.8	3.9	1.2	0.0 - 3.7
Hackensack University Medical Center	57	1,231	4.6	5.1	2.5	1.9 - 3.1
Hackettstown Medical Center	3	161	1.9	4.5	1.1	0.0 - 3.0
Holy Name Medical Center	7	484	1.4	2.9	1.3	0.0 - 2.7
Hudson Regional Hospital	8	59	13.6	3.0	12.1 **	8.4 - 15.9
Hunterdon Medical Center	15	343	4.4	3.8	3.1	1.7 - 4.5
Inspira Medical Center Elmer	2	132	1.5	3.7	1.1	0.0 - 3.4
Inspira Medical Center Mullica Hill	12	527	2.3	3.9	1.6	0.5 - 2.7
Inspira Medical Center Vineland	13	667	1.9	4.2	1.3 *	0.3 - 2.2
Jefferson Cherry Hill Hospital	9	270	3.3	3.1	3.0	1.2 - 4.7
Jefferson Stratford Hospital	2	266	0.8	2.1	1.0	0.0 - 3.1
Jefferson Washington Township Hospital	28	783	3.6	3.1	3.2	2.2 - 4.2
Jersey City Medical Center	9	606	1.5	2.0	2.0	0.6 - 3.5
Jersey Shore University Medical Center	38	1,317	2.9	4.0	2.0	1.3 - 2.6
JFK University Medical Center	7	885	0.8	2.7	0.8 *	0.0 - 1.8
Monmouth Medical Center	7	215	3.3	3.1	2.9	1.0 - 4.8
Monmouth Medical Center-Southern Campus	8	226	3.5	2.6	3.7	1.6 - 5.9
Morristown Medical Center	51	1,416	3.6	5.8	1.7 *	1.2 - 2.2
Newark Beth Israel Medical Center	38	899	4.2	2.6	4.4 **	3.4 - 5.5
Newton Medical Center	12	412	2.9	5.8	1.4 *	0.4 - 2.3

Table 3: In hospital mortality rates for heart failure (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National	89,335	3,289,432	2.7	NA	NA	NA - NA
Statewide	1,132	35,822	3.2	3.6	2.4	2.3 - 2.5
Ocean University Medical Center	11	828	1.3	3.9	0.9 *	0.0 - 1.8
Old Bridge Medical Center	11	359	3.1	4.1	2.0	0.7 - 3.3
Overlook Medical Center-Summit	58	760	7.6	6.1	3.4 **	2.7 - 4.1
Palisades Medical Center	4	260	1.5	4.5	0.9	0.0 - 2.4
Penn Medicine Princeton Medical Center	21	490	4.3	4.1	2.8	1.8 - 3.9
Raritan Bay Medical Center	2	263	0.8	3.5	0.6 *	0.0 - 2.3
Riverview Medical Center	7	452	1.5	4.7	0.9 *	0.0 - 2.0
Robert Wood Johnson University Hospital	32	1,261	2.5	3.1	2.2	1.4 - 3.0
Rahway	6	400	1.5	3.2	1.3	0.0 - 2.6
Robert Wood Johnson University Hospital Hamilton	8	486	1.6	2.8	1.6	0.3 - 3.0
Robert Wood Johnson University Hospital Somerset	13	707	1.8	3.6	1.4	0.4 - 2.4
Saint Clare's Hospital-Denville	14	238	5.9	4.2	3.8	2.3 - 5.2
Saint Clare's Hospital-Dover	5	191	2.6	4.1	1.7	0.0 - 3.5
Saint Michael's Medical Center	2	299	0.7	2.3	0.8	0.0 - 2.8
Saint Peter's University Hospital	9	302	3.0	2.6	3.1	1.3 - 5.0
Salem Medical Center	0	75	0.0	2.2	0.0	0.0 - 4.0
Shore Medical Center	5	403	1.2	2.8	1.2	0.0 - 2.7
Southern Ocean Medical Center	5	478	1.0	3.5	0.8 *	0.0 - 2.0
St. Joseph's University Medical Center	66	1,146	5.8	4.8	3.3 **	2.6 - 3.9
St. Joseph's Wayne Medical Center	17	342	5.0	5.4	2.5	1.4 - 3.6
St. Luke's Warren Hospital	3	268	1.1	3.3	0.9	0.0 - 2.6
St. Mary's General Hospital	5	368	1.4	4.1	0.9 *	0.0 - 2.1
Trinitas Regional Medical Center	46	516	8.9	4.1	5.9 **	4.9 - 6.9
University Hospital	6	417	1.4	2.2	1.7	0.1 - 3.4
Valley Hospital	47	860	5.5	4.3	3.4 **	2.6 - 4.2
Virtua Mount Holly Hospital-Burlington County	9	559	1.6	2.3	1.9	0.5 - 3.4
Virtua Our Lady of Lourdes Hospital	21	720	2.9	2.9	2.7	1.6 - 3.8
Virtua West Jersey Hospital-Marlton	20	474	4.2	3.1	3.7	2.4 - 5.1
Virtua West Jersey Hospital-Voorhees	13	627	2.1	2.6	2.2	0.9 - 3.4
Virtua Willingboro Hospital	3	254	1.2	2.2	1.4	0.0 - 3.5

Source: National numbers are derived from 2019, 2020 & 2021 National Inpatient Sample (NIS) databases using the AHRQ SAS Software, Version 2024.1 while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

^ = Rate is based on a denominator less than 30 and should be taken with caution.

* = Statistically significantly below state average, ** = Statistically significantly above state average. NA = National rates are not risk-adjusted.

Expected rate is the rate the hospital would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the reference or statewide population. If the observed rate is higher than the expected rate (i.e., the ratio of observed to expected is greater than 1.0), it suggests that the hospital performed worse than the reference population on that indicator.

Acute Stroke

Acute Stroke occurs when there is a disruption in the blood supply to the brain. A stroke occurs when a blood vessel (artery) bringing oxygen and nutrients to the brain bursts or is blocked by a blood clot, or fatty deposits called plaques. Within minutes, the nerve cells in that area of the brain are damaged and may die within a few hours. As a result, the part of the body controlled by the damaged section of the brain cannot function properly.

There are different types of strokes, including ischemic, subarachnoid, and intracerebral hemorrhagic strokes. Ischemic strokes are those caused by clots or blockages, preventing or reducing oxygenation to parts of the brain, leading to brain cell death in minutes. Both subarachnoid and intracerebral hemorrhagic strokes are those caused by burst blood vessels or excessive bleeding in a region of the brain. This bleeding can cause pressure, swelling, and compression of surrounding brain tissue, damaging it. When the bleeding occurs within the space between the brain and the protective membranes that surround it, it is called a subarachnoid stroke. When the bleeding occurs within the brain matter, it is called an intracerebral stroke.

Treatment for stroke must be timely and efficient to prevent brain tissue death and differs significantly based on, which of the three types of strokes a patient has suffered. For example, clot-busting drugs (called thrombolytics) are appropriate for ischemic strokes when caused by clots but could be fatal in the case of a hemorrhagic stroke where they would cause excessive bleeding and failure of the hemorrhaging blood to clot. **Symptoms** for acute stroke can include sudden numbness or weakness of the face, arm, or leg, particularly on one side of the body, sudden confusion, trouble speaking or understanding, sudden trouble seeing in one or both eyes, sudden trouble walking, dizziness, loss of balance or coordination.

This indicator measures the chance or likelihood that a patient admitted to a hospital with acute stroke will die from that condition during hospitalization. Hospital specific stroke mortality rates will vary based on the cause of the stroke, the severity of the stroke, other patient illnesses, speed of arrival at the hospital, and speed of diagnosis of the type of stroke. Moreover, clinical factors, including use of mechanical ventilation on the first day, may vary by hospital and influence mortality. The mortality rate for Acute Stroke is defined as the number of deaths per 100 patients with principal (ICD-9-CM) diagnosis code of stroke (age 18 years and older).

This information is important because it indicates how well hospitals take care of their stroke patients. Treatment for stroke must be quick and efficient to prevent brain tissue death.

Table 4: In hospital mortality rates for acute stroke (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National, 2019	124,201	1,818,710	6.8	NA	NA	NA - NA
Statewide	1,268	18,168	7.0	7.4	6.4	6.1 - 6.7
AtlantiCare Regional MC-City Campus	46	588	7.8	8.3	6.4	4.9 - 8.0
AtlantiCare Regional MC-Mainland Campus	3	137	2.2	3.3	4.5	0.0 - 10.0
Bayshore Medical Center	2	120	1.7	3.5	3.3	0.0 - 9.2
Bergen New Bridge Medical Center	1	9	11.1	4.9	15.5 ^	0.0 - 34.5
Cape Regional Medical Center	1	129	0.8	2.9	1.8	0.0 - 8.2
Capital Health Medical Center-Hopewell	2	114	1.8	3.2	3.7	0.0 - 10.1
Capital Health Regional Medical Center	56	515	10.9	8.8	8.4 **	6.9 - 9.9
CarePoint Health-Bayonne Medical Center	8	153	5.2	4.6	7.7	3.8 - 11.7
CarePoint Health-Christ Hospital	19	182	10.4	10.3	6.9	4.4 - 9.4
CarePoint Health-Hoboken University MC	3	36	8.3	5.8	9.7	2.0 - 17.5
Carewell Health Medical Center-East Orange	1	32	3.1	3.3	6.5	0.0 - 19.0
CentraState Medical Center	7	204	3.4	4.2	5.5	1.5 - 9.6
Chilton Memorial Hospital	5	203	2.5	4.7	3.6	0.0 - 7.3
Clara Maass Medical Center	7	240	2.9	4.4	4.6	0.9 - 8.2
Community Medical Center	44	544	8.1	5.1	10.9 **	8.7 - 13.0
Cooper University Hospital	116	755	15.4	11.1	9.5 **	8.3 - 10.6
Cooperman Barnabas Medical Center	54	557	9.7	6.6	10.1 **	8.2 - 12.0
Deborah Heart and Lung Center	0	4	0.0	8.7	0.0 ^	0.0 - 20.2
Englewood Hospital and Medical Center	21	248	8.5	8.5	6.8	4.6 - 9.0
Hackensack Meridian Health, Mountainside MC	14	172	8.1	7.3	7.6	4.7 - 10.5
Hackensack Meridian Health-Pascack Valley MC	2	36	5.6	9.2	4.1	0.0 - 9.4
Hackensack University Medical Center	55	845	6.5	9.2	4.8 *	3.6 - 6.0
Hackettstown Medical Center	3	87	3.4	5.7	4.1	0.0 - 9.1
Holy Name Medical Center	10	189	5.3	5.3	6.8	3.2 - 10.4
Hudson Regional Hospital	0	16	0.0	1.4	0.0 ^	0.0 - 27.9
Hunterdon Medical Center	8	170	4.7	6.5	4.9	1.7 - 8.1
Inspira Medical Center Elmer	0	9	0.0	1.3	0.0 ^	0.0 - 38.1
Inspira Medical Center Mullica Hill	2	197	1.0	3.5	2.0	0.0 - 6.6
Inspira Medical Center Vineland	3	233	1.3	4.3	2.0 *	0.0 - 5.7
Jefferson Cherry Hill Hospital	2	116	1.7	2.5	4.7	0.0 - 12.4
Jefferson Stratford Hospital	1	108	0.9	3.1	2.1	0.0 - 9.1
Jefferson Washington Township Hospital	26	455	5.7	5.2	7.5	5.1 - 9.8
Jersey City Medical Center	18	299	6.0	5.1	8.0	5.1 - 10.9
Jersey Shore University Medical Center	64	853	7.5	9.9	5.2 *	4.1 - 6.3
JFK University Medical Center	38	797	4.8	8.5	3.9 *	2.6 - 5.1
Monmouth Medical Center	7	115	6.1	6.2	6.7	2.4 - 11.0
Monmouth Medical Center-Southern Campus	11	80	13.8	7.5	12.5 **	8.6 - 16.4
Morristown Medical Center	37	568	6.5	8.5	5.3	3.8 - 6.7
Newark Beth Israel Medical Center	17	220	7.7	4.7	11.2 **	7.8 - 14.6
Newton Medical Center	4	168	2.4	4.1	4.0	0.0 - 8.3
Ocean University Medical Center	11	274	4.0	4.5	6.0	2.8 - 9.3
Old Bridge Medical Center	0	76	0.0	2.5	0.0	0.0 - 9.4
Overlook Medical Center-Summit	48	783	6.1	9.8	4.3 *	3.1 - 5.4

Table 4: In hospital mortality rates for acute stroke (Deaths per 100 conditions)

Hospital	# of Deaths	# of Patients	Observed Rate	Expected Rate	Risk-Adjusted Rate	95% Confidence Interval
						LL - UL
National, 2019	124,201	1,818,710	6.8	NA	NA	NA - NA
Statewide	1,268	18,168	7.0	7.4	6.4	6.1 - 6.7
Palisades Medical Center	8	127	6.3	5.8	7.4	3.5 - 11.4
Penn Medicine Princeton Medical Center	10	238	4.2	6.3	4.6	1.8 - 7.4
Raritan Bay Medical Center	0	61	0.0	3.4	0.0	0.0 - 8.6
Riverview Medical Center	0	164	0.0	4.6	0.0 *	0.0 - 4.5
Robert Wood Johnson University Hospital	100	979	10.2	8.9	7.9 **	6.7 - 9.0
Robert Wood Johnson University Hospital at Rahway	3	87	3.4	5.2	4.5	0.0 - 9.6
Robert Wood Johnson University Hospital Hamilton	3	136	2.2	4.0	3.8	0.0 - 8.4
Robert Wood Johnson University Hospital Somerset	5	251	2.0	5.4	2.5 *	0.0 - 5.7
Saint Clare's Hospital-Denville	16	150	10.7	9.1	8.0	5.2 - 10.8
Saint Clare's Hospital-Dover	5	73	6.8	7.4	6.3	1.4 - 11.2
Saint Michael's Medical Center	4	57	7.0	4.5	10.6	2.9 - 18.3
Saint Peter's University Hospital	1	90	1.1	4.9	1.5	0.0 - 6.9
Salem Medical Center	0	11	0.0	2.1	0.0 ^	0.0 - 26.8
Shore Medical Center	3	94	3.2	4.1	5.3	0.0 - 11.3
Southern Ocean Medical Center	0	157	0.0	4.1	0.0 *	0.0 - 4.7
St. Joseph's University Medical Center	160	1,062	15.1	13.7	7.5	6.7 - 8.4
St. Joseph's Wayne Medical Center	4	121	3.3	3.8	5.9	0.1 - 11.8
St. Luke's Warren Hospital	4	88	4.5	5.2	5.9	1.1 - 10.8
St. Mary's General Hospital	5	88	5.7	9.3	4.2	0.8 - 7.6
Trinitas Regional Medical Center	13	190	6.8	6.7	7.0	4.1 - 9.9
University Hospital	35	569	6.2	9.1	4.6 *	3.2 - 6.1
Valley Hospital	34	472	7.2	7.4	6.6	4.7 - 8.5
Virtua Mount Holly Hospital-Burlington County	3	192	1.6	2.8	3.8	0.0 - 8.9
Virtua Our Lady of Lourdes Hospital	69	663	10.4	7.5	9.5 **	7.9 - 11.1
Virtua West Jersey Hospital-Marlton	4	135	3.0	3.3	6.1	0.3 - 11.8
Virtua West Jersey Hospital-Voorhees	1	198	0.5	2.0	1.8	0.0 - 8.4
Virtua Willingboro Hospital	1	79	1.3	2.2	4.0	0.0 - 13.9

Source: National numbers are derived from 2019, 2020 & 2021 National Inpatient Sample (NIS) databases using the AHRQ SAS Software, Version 2024.1 while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

^ = Rate is based on a denominator less than 30 and should be taken with caution.

* = Statistically significantly below state average, ** = Statistically significantly above state average., NA = National rates are not risk-adjusted.

Missing (.) = Hospital did not perform the procedure during the year in question; or it performed less than 3 procedures (rate is not computed when the denominator is less than 3).

Expected rate is the rate the hospital would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the reference or statewide population. If the observed rate is higher than the expected rate (i.e., the ratio of observed to expected is greater than 1.0), it suggests that the hospital performed worse than the reference population on that indicator.

Stratification of Indicator

The indicator, 'Acute Stroke Mortality' is stratified into three groups by the type of stroke. Cases are assigned to strata according to a hierarchy based on risk of mortality, with cases being assigned to the stratum with the highest mortality for which the case qualifies. In the case of stroke mortality, the hierarchy is as follows:

Strata hierarchy (listed from highest mortality to lowest mortality)

1. Intracerebral hemorrhage
2. Subarachnoid hemorrhage
3. Ischemic stroke

The strata are mutually exclusive. Patients cannot qualify for more than one stratum. If a discharge qualifies for more than one stratum, it is assigned to the stratum with the highest risk of mortality which is in the following order:

- Intracerebral hemorrhage,
- Subarachnoid hemorrhage,
- Ischemic stroke

Tables 4.1, 4.2, and 4.3 show the total stroke deaths in 2023 by the three strata stated above.

Table 4.1 In hospital mortality rates for intracerebral hemorrhagic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	52,240	281,178	18.6
Statewide	553	2,967	18.6
AtlantiCare Regional MC-City Campus	28	95	29.5
AtlantiCare Regional MC-Mainland Campus	1	4	25.0
Bayshore Medical Center	0	4	0.0
Bergen New Bridge Medical Center	0	1	0.0
Cape Regional Medical Center	1	2	50.0
Capital Health Medical Center-Hopewell	0	2	0.0
Capital Health Regional Medical Center	23	104	22.1
CarePoint Health-Bayonne Medical Center	3	8	37.5
CarePoint Health-Christ Hospital	3	56	5.4
CarePoint Health-Hoboken University MC	1	1	100.0
Carewell Health Medical Center-East Orange	1	2	50.0
CentraState Medical Center	1	17	5.9
Chilton Memorial Hospital	1	14	7.1
Clara Maass Medical Center	4	38	10.5
Community Medical Center	22	46	47.8
Cooper University Hospital	42	156	26.9
Cooperman Barnabas Medical Center	16	89	18.0
Deborah Heart and Lung Center	0	1	0.0
Englewood Hospital and Medical Center	13	41	31.7
Hackensack Meridian Health, Mountainside MC	7	32	21.9
Hackensack Meridian Health-Pascack Valley MC	1	5	20.0
Hackensack University Medical Center	23	170	13.5
Hackettstown Medical Center	0	3	0.0
Holy Name Medical Center	4	25	16.0
Hudson Regional Hospital	.	.	.
Hunterdon Medical Center	7	26	26.9
Inspira Medical Center Elmer	.	.	.
Inspira Medical Center Mullica Hill	0	13	0.0
Inspira Medical Center Vineland	1	15	6.7
Jefferson Cherry Hill Hospital	0	12	0.0
Jefferson Stratford Hospital	0	16	0.0
Jefferson Washington Township Hospital	7	57	12.3
Jersey City Medical Center	10	49	20.4
Jersey Shore University Medical Center	35	211	16.6
JFK University Medical Center	24	178	13.5
Monmouth Medical Center	2	19	10.5
Monmouth Medical Center-Southern Campus	4	7	57.1
Morristown Medical Center	20	99	20.2
Newark Beth Israel Medical Center	6	22	27.3
Newton Medical Center	2	5	40.0
Ocean University Medical Center	2	7	28.6
Old Bridge Medical Center	.	.	.
Overlook Medical Center-Summit	22	182	12.1
Palisades Medical Center	0	8	0.0

Table 4.1 In hospital mortality rates for intracerebral hemorrhagic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	52,240	281,178	18.6
Statewide	553	2,967	18.6
Penn Medicine Princeton Medical Center	8	35	22.9
Raritan Bay Medical Center	0	1	0.0
Riverview Medical Center	0	27	0.0
Robert Wood Johnson University Hospital	51	193	26.4
Robert Wood Johnson University Hospital at Rahway	1	8	12.5
Robert Wood Johnson University Hospital Hamilton	2	13	15.4
Robert Wood Johnson University Hospital Somerset	3	45	6.7
Saint Clare's Hospital-Denville	8	30	26.7
Saint Clare's Hospital-Dover	3	12	25.0
Saint Michael's Medical Center	0	4	0.0
Saint Peter's University Hospital	0	14	0.0
Salem Medical Center	0	1	0.0
Shore Medical Center	1	4	25.0
Southern Ocean Medical Center	0	3	0.0
St. Joseph's University Medical Center	70	275	25.5
St. Joseph's Wayne Medical Center	0	7	0.0
St. Luke's Warren Hospital	3	8	37.5
St. Mary's General Hospital	2	14	14.3
Trinitas Regional Medical Center	4	21	19.0
University Hospital	14	103	13.6
Valley Hospital	8	87	9.2
Virtua Mount Holly Hospital-Burlington County	1	6	16.7
Virtua Our Lady of Lourdes Hospital	35	204	17.2
Virtua West Jersey Hospital-Marlton	1	6	16.7
Virtua West Jersey Hospital-Voorhees	0	3	0.0
Virtua Willingboro Hospital	1	1	100.0

Source: National numbers are derived from 2019 National Inpatient Sample (NIS) Data using the AHRQ SAS Software, Version 2022.0.1 while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

Rates are not risk-adjusted.

Missing (.) = Hospital did not perform the procedure during the year in question.

Table 4.2 In hospital mortality rates for subarachnoid hemorrhagic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	12,887	66,331	19.4
Statewide	124	721	17.2
AtlantiCare Regional MC-City Campus	4	31	12.9
AtlantiCare Regional MC-Mainland Campus	.	.	.
Bayshore Medical Center	.	.	.
Bergen New Bridge Medical Center	.	.	.
Cape Regional Medical Center	.	.	.
Capital Health Medical Center-Hopewell	1	2	50.0
Capital Health Regional Medical Center	7	21	33.3
CarePoint Health-Bayonne Medical Center	1	1	100.0
CarePoint Health-Christ Hospital	3	23	13.0
CarePoint Health-Hoboken University MC	.	.	.
Carewell Health Medical Center-East Orange	.	.	.
CentraState Medical Center	0	2	0.0
Chilton Memorial Hospital	.	.	.
Clara Maass Medical Center	1	1	100.0
Community Medical Center	1	5	20.0
Cooper University Hospital	12	44	27.3
Cooperman Barnabas Medical Center	9	52	17.3
Deborah Heart and Lung Center	.	.	.
Englewood Hospital and Medical Center	1	8	12.5
Hackensack Meridian Health, Mountainside MC	2	8	25.0
Hackensack Meridian Health-Pascack Valley MC	.	.	.
Hackensack University Medical Center	4	60	6.7
Hackettstown Medical Center	.	.	.
Holy Name Medical Center	2	3	66.7
Hudson Regional Hospital	.	.	.
Hunterdon Medical Center	0	5	0.0
Inspira Medical Center Elmer	.	.	.
Inspira Medical Center Mullica Hill	0	1	0.0
Inspira Medical Center Vineland	.	.	.
Jefferson Cherry Hill Hospital	0	3	0.0
Jefferson Stratford Hospital	0	2	0.0
Jefferson Washington Township Hospital	2	18	11.1
Jersey City Medical Center	1	5	20.0
Jersey Shore University Medical Center	10	58	17.2
JFK University Medical Center	4	48	8.3
Monmouth Medical Center	2	3	66.7
Monmouth Medical Center-Southern Campus	.	.	.
Morristown Medical Center	2	11	18.2
Newark Beth Israel Medical Center	1	2	50.0

Table 4.2 In hospital mortality rates for subarachnoid hemorrhagic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	12,887	66,331	19.4
Statewide	124	721	17.2
Newton Medical Center	0	1	0.0
Ocean University Medical Center	1	2	50.0
Old Bridge Medical Center	.	.	.
Overlook Medical Center-Summit	8	70	11.4
Palisades Medical Center	.	.	.
Penn Medicine Princeton Medical Center	.	.	.
Raritan Bay Medical Center	.	.	.
Riverview Medical Center	0	1	0.0
Robert Wood Johnson University Hospital	10	75	13.3
Robert Wood Johnson University Hospital at Rahway	1	1	100.0
Robert Wood Johnson University Hospital Hamilton	.	.	.
Robert Wood Johnson University Hospital Somerset	0	2	0.0
Saint Clare's Hospital-Denville	0	3	0.0
Saint Clare's Hospital-Dover	.	.	.
Saint Michael's Medical Center	0	2	0.0
Saint Peter's University Hospital	.	.	.
Salem Medical Center	.	.	.
Shore Medical Center	0	1	0.0
Southern Ocean Medical Center	0	3	0.0
St. Joseph's University Medical Center	23	72	31.9
St. Joseph's Wayne Medical Center	.	.	.
St. Luke's Warren Hospital	.	.	.
St. Mary's General Hospital	1	3	33.3
Trinitas Regional Medical Center	0	4	0.0
University Hospital	1	35	2.9
Valley Hospital	3	10	30.0
Virtua Mount Holly Hospital-Burlington County	.	.	.
Virtua Our Lady of Lourdes Hospital	6	18	33.3
Virtua West Jersey Hospital-Marlton	.	.	.
Virtua West Jersey Hospital-Voorhees	0	1	0.0
Virtua Willingboro Hospital	.	.	.

Source: National numbers are derived from 2019 National Inpatient Sample (NIS) Data using the AHRQ SAS Software, Version 2022.0.1, while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

Rates are not risk-adjusted.

Missing (.) = Hospital did not perform the procedure during the year in question.

Table 4.3 In hospital mortality rates for ischemic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	59,074	1,471,201	4.0
Statewide	591	14,480	4.1
AtlantiCare Regional MC-City Campus	14	462	3.0
AtlantiCare Regional MC-Mainland Campus	2	133	1.5
Bayshore Medical Center	2	116	1.7
Bergen New Bridge Medical Center	1	8	12.5
Cape Regional Medical Center	0	127	0.0
Capital Health Medical Center-Hopewell	1	110	0.9
Capital Health Regional Medical Center	26	390	6.7
CarePoint Health-Bayonne Medical Center	4	144	2.8
CarePoint Health-Christ Hospital	13	103	12.6
CarePoint Health-Hoboken University MC	2	35	5.7
Carewell Health Medical Center-East Orange	0	30	0.0
CentraState Medical Center	6	185	3.2
Chilton Memorial Hospital	4	189	2.1
Clara Maass Medical Center	2	201	1.0
Community Medical Center	21	493	4.3
Cooper University Hospital	62	555	11.2
Cooperman Barnabas Medical Center	29	416	7.0
Deborah Heart and Lung Center	0	3	0.0
Englewood Hospital and Medical Center	7	199	3.5
Hackensack Meridian Health, Mountainside MC	5	132	3.8
Hackensack Meridian Health-Pascack Valley MC	1	31	3.2
Hackensack University Medical Center	28	615	4.6
Hackettstown Medical Center	3	84	3.6
Holy Name Medical Center	4	161	2.5
Hudson Regional Hospital	0	16	0.0
Hunterdon Medical Center	1	139	0.7
Inspira Medical Center Elmer	0	9	0.0
Inspira Medical Center Mullica Hill	2	183	1.1
Inspira Medical Center Vineland	2	218	0.9
Jefferson Cherry Hill Hospital	2	101	2.0
Jefferson Stratford Hospital	1	90	1.1
Jefferson Washington Township Hospital	17	380	4.5
Jersey City Medical Center	7	245	2.9
Jersey Shore University Medical Center	19	584	3.3
JFK University Medical Center	10	571	1.8
Monmouth Medical Center	3	93	3.2
Monmouth Medical Center-Southern Campus	7	73	9.6
Morristown Medical Center	15	458	3.3
Newark Beth Israel Medical Center	10	196	5.1
Newton Medical Center	2	162	1.2
Ocean University Medical Center	8	265	3.0

Table 4.3 In hospital mortality rates for ischemic stroke (Deaths per 100)

Hospital	# of Deaths	# of Patients	Observed Rate
National	59,074	1,471,201	4.0
Statewide	591	14,480	4.1
Old Bridge Medical Center	0	76	0.0
Overlook Medical Center-Summit	18	531	3.4
Palisades Medical Center	8	119	6.7
Penn Medicine Princeton Medical Center	2	203	1.0
Raritan Bay Medical Center	0	60	0.0
Riverview Medical Center	0	136	0.0
Robert Wood Johnson University Hospital	39	711	5.5
Robert Wood Johnson University Hospital at Rahway	1	78	1.3
Robert Wood Johnson University Hospital Hamilton	1	123	0.8
Robert Wood Johnson University Hospital Somerset	2	204	1.0
Saint Clare's Hospital-Denville	8	117	6.8
Saint Clare's Hospital-Dover	2	61	3.3
Saint Michael's Medical Center	4	51	7.8
Saint Peter's University Hospital	1	76	1.3
Salem Medical Center	0	10	0.0
Shore Medical Center	2	89	2.2
Southern Ocean Medical Center	0	151	0.0
St. Joseph's University Medical Center	67	715	9.4
St. Joseph's Wayne Medical Center	4	114	3.5
St. Luke's Warren Hospital	1	80	1.3
St. Mary's General Hospital	2	71	2.8
Trinitas Regional Medical Center	9	165	5.5
University Hospital	20	431	4.6
Valley Hospital	23	375	6.1
Virtua Mount Holly Hospital-Burlington County	2	186	1.1
Virtua Our Lady of Lourdes Hospital	28	441	6.3
Virtua West Jersey Hospital-Marlton	3	129	2.3
Virtua West Jersey Hospital-Voorhees	1	194	0.5
Virtua Willingboro Hospital	0	78	0.0

Source: National numbers are derived from 2019 National Inpatient Sample (NIS) Data using the AHRQ SAS Software, Version 2022.0.1, while New Jersey's numbers are derived from the **2023 NJ UB Data** using the same software version.

Rates are not risk-adjusted.

Missing (.) = Hospital did not perform the procedure during the year in question; or it performed less than 3 procedures (rate is not computed when the denominator is less than 3).

References:

Updated Technical Specifications for each of the 4 IQIs presented in this report can be accessed on the AHRQ site below: [AHRQ QI: IQI Technical Specifications Updates](#)

[AHRQ QI: Inpatient Quality Indicators Overview](#)

[AHRQ QI: Quality Indicator Resources](#)

[American Heart Association CPR & First Aid](#)

[CDC Wonder | Underlying Cause of Death \(1999-2020\)](#)

[CDC | Nationally Notifiable Diseases Surveillance System \(NNDSS\) Weekly and Annual Tables](#)