# Inpatient Quality Indicators

## Technical Report

# Hospital Performance Dashboard

***A Supplement to the***

***Hospital Performance Report***

# 2022 Data

## Health Care Quality Assessment


**Health Care Quality & Informatics**
**Office of Population Health**
**New Jersey Department of Health**

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# Executive Summary

The Office of Health Care Quality Assessment (HCQA) of the New Jersey Department of Health 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. In order 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 2022 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 healthcare 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 Measurers'**. 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 71 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 to the 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, DOH suggests that a hospital's performance be assessed by looking at its performance across the four IQIs estimates presented in the tables.

The 2022 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 2022 there were a total of 758 in-hospital deaths due to ACUTE MYOCARDIAL INFARCTION – AMI for a risk-adjusted mortality rate of 5.3 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 1,716 in-hospital deaths from PNEUMONIA in 2022, for a risk-adjusted rate of 4.6 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 1.6 to a high of 23.4 per 100 discharges with pneumonia (see Table 2).

- Overall, there were 923 deaths from HEART FAILURE during hospitalization in 2022 for a risk-adjusted mortality rate of 2.8 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 Heart Failure deaths by hospital.

- Statewide, there were 1,059 ACUTE STROKE in-hospital deaths in 2022, for a risk-adjusted rate of 6.8 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 19.0 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 higher 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 take advantage of 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 mixes of patients.

AHRQ's risk-adjusted rates are derived from applying to the observed rates, the average case-mix of a baseline data file derived from the HCUP State Inpatient Data (SID) from all participating States (i.e., 48 States and the District of Columbia as of 2022). 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 national-average patient mix for the year in

question. The risk-adjusted rates reflect the age and sex distribution as well as the APR-DRG distribution of the data in the baseline file. This risk adjustment procedure enables comparisons among hospitals, counties, and/or states with different mixes of patients. 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", shown at the bottom of 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 2022 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 4 IQIs selected to be reported along with other indicators of healthcare quality included in DOH's Hospital Performance Report. As stated earlier, DOH recommended that these quality indicators are reported as part of the "Outcome of Care" measures (https://www.nj.gov/health/healthcarequality/health-care-professionals/quality-indicators/usingiqi.shtml). AHRQ as well as NJDOH believe that, with good care, in-hospital patient deaths from these conditions can be minimized considerably.

# 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 can't 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 (AMI), 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: http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx

**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)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **27,395** | **555,579** | **4.9** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **758** | **12,386** | **6.1** | **5.7** | **5.3** | **5.0 - 5.6** |
| AtlantiCare Regional MC-City Campus | 1 | 16 | 6.3 | 5.4 | 5.7 | 0.0 - 14.9 |
| AtlantiCare Regional MC-Mainland Campus | 22 | 499 | 4.4 | 7.0 | 3.1 * | 1.8 - 4.4 |
| Bayshore Medical Center | 9 | 154 | 5.8 | 4.6 | 6.2 | 3.2 - 9.2 |
| Bergen New Bridge Medical Center | 0 | 6 | 0.0 | 1.2 | 0.0 ^ | 0.0 - 35.1 |
| Cape Regional Medical Center | 3 | 27 | 11.1 | 10.1 | 5.4 ^ | 0.9 - 9.9 |
| Capital Health Medical Center-Hopewell | 7 | 154 | 4.5 | 3.8 | 6.0 | 2.7 - 9.2 |
| Capital Health Regional Medical Center | 5 | 23 | 21.7 | 5.0 | 21.3 **^ | 13.2 - 29.5 |
| CarePoint Health-Bayonne Medical Center | 7 | 122 | 5.7 | 5.8 | 4.9 | 1.9 - 7.8 |
| CarePoint Health-Christ Hospital | 7 | 115 | 6.1 | 6.3 | 4.8 | 2.0 - 7.5 |
| CarePoint Health-Hoboken University MC | 0 | 19 | 0.0 | 2.8 | 0.0 ^ | 0.0 - 12.7 |
| Carewell Health Medical Center-East Orange | 2 | 20 | 10.0 | 5.5 | 9.0 ^ | 0.5 - 17.5 |
| CentraState Medical Center | 5 | 64 | 7.8 | 4.3 | 8.9 | 3.5 - 14.4 |
| Chilton Memorial Hospital | 2 | 84 | 2.4 | 5.5 | 2.1 | 0.0 - 5.8 |
| Clara Maass Medical Center | 14 | 198 | 7.1 | 4.7 | 7.5 | 4.8 - 10.2 |
| Community Medical Center | 31 | 482 | 6.4 | 5.5 | 5.8 | 4.2 - 7.3 |
| Cooper University Hospital | 38 | 624 | 6.1 | 4.1 | 7.2 ** | 5.7 - 8.8 |
| Cooperman Barnabas Medical Center | 11 | 206 | 5.3 | 4.0 | 6.5 | 3.5 - 9.5 |
| Deborah Heart and Lung Center | 14 | 312 | 4.5 | 3.8 | 5.8 | 3.3 - 8.3 |
| Englewood Hospital and Medical Center | 9 | 282 | 3.2 | 4.4 | 3.5 | 1.1 - 6.0 |
| Hackensack Meridian Health, Mountainside MC | 6 | 116 | 5.2 | 7.9 | 3.2 | 0.8 - 5.6 |
| Hackensack Meridian Health-Pascack Valley MC | 1 | 6 | 16.7 | 8.0 | 10.3 ^ | 0.0 - 23.4 |
| Hackensack University Medical Center | 44 | 689 | 6.4 | 7.7 | 4.1 * | 3.0 - 5.1 |
| Hackettstown Medical Center | 2 | 8 | 25.0 | 24.2 | 5.1 | 0.8 - 9.4 |
| Holy Name Medical Center | 6 | 146 | 4.1 | 4.0 | 5.1 | 1.7 - 8.6 |
| Hudson Regional Hospital | 1 | 16 | 6.3 | 4.0 | 7.7 ^ | 0.0 - 18.5 |
| Hunterdon Medical Center | 6 | 100 | 6.0 | 6.5 | 4.6 | 1.6 - 7.6 |
| Inspira Medical Center Elmer | 1 | 19 | 5.3 | 4.1 | 6.4 ^ | 0.0 - 16.9 |
| Inspira Medical Center Mullica Hill | 16 | 207 | 7.7 | 6.4 | 5.9 | 3.8 - 8.1 |
| Inspira Medical Center Vineland | 12 | 201 | 6.0 | 7.4 | 4.0 | 2.0 - 6.0 |
| Jefferson Cherry Hill Hospital | 0 | 23 | 0.0 | 3.2 | 0.0 ^ | 0.0 - 10.9 |
| Jefferson Stratford Hospital | 0 | 23 | 0.0 | 2.5 | 0.0 ^ | 0.0 - 12.4 |
| Jefferson Washington Township Hospital | 7 | 69 | 10.1 | 7.4 | 6.7 | 3.4 - 10.1 |
| Jersey City Medical Center | 18 | 285 | 6.3 | 3.3 | 9.4 ** | 6.6 - 12.2 |
| Jersey Shore University Medical Center | 41 | 812 | 5.0 | 6.4 | 3.9 * | 2.8 - 4.9 |
| JFK University Medical Center | 16 | 260 | 6.2 | 4.7 | 6.5 | 4.2 - 8.7 |
| Monmouth Medical Center | 3 | 66 | 4.5 | 4.4 | 5.1 ** | 0.7 - 9.6 |
| Monmouth Medical Center-Southern Campus | 4 | 18 | 22.2 | 7.9 | 13.9 **^ | 6.6 - 21.1 |
| Morristown Medical Center | 31 | 718 | 4.3 | 6.2 | 3.4 * | 2.3 - 4.6 |
| Newark Beth Israel Medical Center | 23 | 268 | 8.6 | 4.2 | 10.1 ** | 7.5 - 12.6 |
| Newton Medical Center | 3 | 77 | 3.9 | 6.2 | 3.1 | 0.0 - 6.5 |
| Ocean University Medical Center | 13 | 231 | 5.6 | 6.2 | 4.5 | 2.4 - 6.5 |
| Old Bridge Medical Center | 0 | 88 | 0.0 | 4.5 | 0.0 * | 0.0 - 4.1 |
| Overlook Medical Center-Summit | 13 | 218 | 6.0 | 6.0 | 4.9 | 2.7 - 7.0 |
| Palisades Medical Center | 5 | 58 | 8.6 | 5.3 | 8.0 | 3.3 - 12.7 |

**Table 1: IN-HOSPITAL MORTALITY RATES FOR ACUTE MYOCARDIAL INFARCTION - AMI (Deaths per 100 conditions)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **27,395** | **555,579** | **4.9** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **758** | **12,386** | **6.1** | **5.7** | **5.3** | **5.0 - 5.6** |
| Penn Medicine Princeton Medical Center | 6 | 123 | 4.9 | 7.1 | 3.4 | 1.0 - 5.9 |
| Raritan Bay Medical Center | 3 | 91 | 3.3 | 5.8 | 2.8 | 0.0 - 6.0 |
| Riverview Medical Center | 11 | 133 | 8.3 | 6.4 | 6.4 | 3.7 - 9.1 |
| Robert Wood Johnson University Hospital | 58 | 783 | 7.4 | 5.6 | 6.6 ** | 5.4 - 7.8 |
| Robert Wood Johnson University Hospital at Rahway | 8 | 82 | 9.8 | 8.9 | 5.4 | 3.0 - 7.8 |
| Robert Wood Johnson University Hospital Hamilton | 5 | 75 | 6.7 | 6.3 | 5.2 | 2.0 - 8.4 |
| Robert Wood Johnson University Hospital Somerset | 9 | 164 | 5.5 | 5.0 | 5.4 | 2.6 - 8.2 |
| Saint Clare's Hospital-Denville | 16 | 139 | 11.5 | 6.3 | 9.0 ** | 6.3 - 11.7 |
| Saint Clare's Hospital-Dover | 1 | 37 | 2.7 | 5.3 | 2.5 | 0.0 - 8.6 |
| Saint Michael's Medical Center | 5 | 66 | 7.6 | 4.1 | 9.0 | 3.7 - 14.4 |
| Saint Peter's University Hospital | 3 | 102 | 2.9 | 3.5 | 4.1 | 0.0 - 9.0 |
| Salem Medical Center | 0 | 4 | 0.0 | 3.3 | 0.0 ^ | 0.0 - 26.1 |
| Shore Medical Center | 2 | 14 | 14.3 | 8.9 | 7.9 ^ | 0.2 - 15.6 |
| Southern Ocean Medical Center | 5 | 55 | 9.1 | 7.4 | 6.1 | 2.5 - 9.7 |
| St. Francis Medical Center | 10 | 147 | 6.8 | 4.4 | 7.7 | 4.7 - 10.7 |
| St. Joseph's University Medical Center | 20 | 371 | 5.4 | 6.2 | 4.3 | 2.6 - 5.9 |
| St. Joseph's Wayne Medical Center | 2 | 34 | 5.9 | 8.9 | 3.3 | 0.0 - 7.8 |
| St. Luke's Warren Hospital | 0 | 2 | 0.0 | . | . Ω | . - . |
| St. Mary's General Hospital | 6 | 105 | 5.7 | 4.9 | 5.8 | 2.3 - 9.2 |
| Trinitas Regional Medical Center | 13 | 73 | 17.8 | 8.6 | 10.2 ** | 7.4 - 13.0 |
| University Hospital | 9 | 151 | 6.0 | 6.9 | 4.2 | 1.9 - 6.6 |
| Valley Hospital | 27 | 344 | 7.8 | 6.1 | 6.4 | 4.6 - 8.1 |
| Virtua Mount Holly Hospital | 8 | 188 | 4.3 | 4.5 | 4.7 | 1.7 - 7.7 |
| Virtua Our Lady of Lourdes Hospital | 57 | 585 | 9.7 | 5.6 | 8.6 ** | 7.3 - 10.0 |
| Virtua West Jersey Hospital | 3 | 80 | 3.8 | 4.6 | 4.1 | 0.1 - 8.1 |
| Virtua West Jersey Hospital Marlton | 12 | 258 | 4.7 | 5.9 | 3.9 | 2.0 - 5.8 |
| Virtua Willingboro Hospital | 0 | 51 | 0.0 | 3.5 | 0.0 | 0.0 - 6.8 |

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 are calculated from the **2022 NJ UB Data** using the same software version.

^ = Rate is based on a denominator less than 30 and should be taken with caution. Ω = 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 an inflammation of the lungs 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 typically is treated with antibiotics, sometimes in an outpatient setting. However, death may occur even when the patient is in the hospital, especially in patients with weakened respiratory systems or other chronic health problems. There is a significant impact on outcomes from patient co-morbid factors as well as physician admitting practices (since there is variation in the criteria physicians use to admit patients for inpatient treatment).

**This indicator** measures the chance or likelihood that a pneumonia patient admitted in a given 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). For inclusion and exclusion criteria in calculating this rate,

visit: http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx

**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)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **53,730** | **1,257,551** | **4.3** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **1,716** | **26,716** | **6.4** | **5.9** | **4.6** | **4.4 - 4.8** |
| AtlantiCare Regional MC-City Campus | 14 | 202 | 6.9 | 4.8 | 6.2 | 3.7 - 8.6 |
| AtlantiCare Regional MC-Mainland Campus | 15 | 430 | 3.5 | 5.0 | 3.0 | 1.3 - 4.6 |
| Bayshore Medical Center | 24 | 490 | 4.9 | 6.5 | 3.2 * | 1.9 - 4.5 |
| Bergen New Bridge Medical Center | 5 | 61 | 8.2 | 6.7 | 5.3 | 1.4 - 9.1 |
| Cape Regional Medical Center | 9 | 339 | 2.7 | 3.6 | 3.2 | 0.9 - 5.5 |
| Capital Health Medical Center-Hopewell | 40 | 379 | 10.6 | 4.9 | 9.2 ** | 7.4 - 11.0 |
| Capital Health Regional Medical Center | 24 | 267 | 9.0 | 6.3 | 6.1 | 4.3 - 7.9 |
| CarePoint Health-Bayonne Medical Center | 6 | 185 | 3.2 | 5.7 | 2.4 | 0.1 - 4.7 |
| CarePoint Health-Christ Hospital | 10 | 124 | 8.1 | 4.7 | 7.3 | 4.2 - 10.5 |
| CarePoint Health-Hoboken University MC | 8 | 135 | 5.9 | 4.3 | 6.0 | 2.7 - 9.2 |
| Carewell Health Medical Center-East Orange | 16 | 180 | 8.9 | 5.9 | 6.5 | 4.3 - 8.6 |
| CentraState Medical Center | 52 | 523 | 9.9 | 5.2 | 8.1 ** | 6.7 - 9.6 |
| Chilton Memorial Hospital | 34 | 419 | 8.1 | 7.6 | 4.5 | 3.2 - 5.8 |
| Clara Maass Medical Center | 51 | 364 | 14.0 | 4.6 | 13.1 ** | 11.2 - 14.9 |
| Community Medical Center | 111 | 1,235 | 9.0 | 5.2 | 7.4 ** | 6.5 - 8.4 |
| Cooper University Hospital | 32 | 521 | 6.1 | 5.3 | 4.9 | 3.5 - 6.3 |
| Cooperman Barnabas Medical Center | 86 | 827 | 10.4 | 4.7 | 9.5 ** | 8.3 - 10.7 |
| Deborah Heart and Lung Center | 3 | 104 | 2.9 | 5.0 | 2.5 | 0.0 - 6.0 |
| Englewood Hospital and Medical Center | 40 | 497 | 8.0 | 5.8 | 5.9 | 4.5 - 7.3 |
| Hackensack Meridian Health, Mountainside MC | 23 | 363 | 6.3 | 8.5 | 3.2 * | 2.0 - 4.4 |
| Hackensack Meridian Health-Pascack Valley MC | 18 | 204 | 8.8 | 10.7 | 3.5 | 2.1 - 4.9 |
| Hackensack University Medical Center | 58 | 1,027 | 5.6 | 7.8 | 3.1 * | 2.3 - 3.9 |
| Hackettstown Medical Center | 24 | 293 | 8.2 | 9.3 | 3.8 | 2.4 - 5.1 |
| Holy Name Medical Center | 19 | 478 | 4.0 | 5.9 | 2.9 * | 1.5 - 4.2 |
| Hudson Regional Hospital | 10 | 66 | 15.2 | 2.8 | 23.4 ** | 17.4 - 29.5 |
| Hunterdon Medical Center | 16 | 372 | 4.3 | 5.8 | 3.2 | 1.5 - 4.8 |
| Inspira Medical Center Elmer | 5 | 104 | 4.8 | 4.6 | 4.4 | 0.9 - 8.0 |
| Inspira Medical Center Mullica Hill | 15 | 487 | 3.1 | 5.2 | 2.5 * | 1.0 - 4.1 |
| Inspira Medical Center Vineland | 29 | 597 | 4.9 | 6.5 | 3.2 * | 2.0 - 4.4 |
| Jefferson Cherry Hill Hospital | 11 | 126 | 8.7 | 4.8 | 7.8 ** | 4.7 - 10.8 |
| Jefferson Stratford Hospital | 8 | 94 | 8.5 | 4.1 | 8.8 ** | 4.9 - 12.7 |
| Jefferson Washington Township Hospital | 9 | 204 | 4.4 | 4.2 | 4.5 | 1.9 - 7.1 |
| Jersey City Medical Center | 22 | 339 | 6.5 | 3.4 | 8.1 ** | 5.9 - 10.2 |
| Jersey Shore University Medical Center | 29 | 696 | 4.2 | 6.2 | 2.9 * | 1.7 - 4.0 |
| JFK University Medical Center | 52 | 954 | 5.5 | 6.9 | 3.4 * | 2.5 - 4.3 |
| Monmouth Medical Center | 23 | 203 | 11.3 | 5.1 | 9.5 ** | 7.1 - 12.0 |
| Monmouth Medical Center-Southern Campus | 29 | 391 | 7.4 | 4.9 | 6.5 ** | 4.7 - 8.2 |
| Morristown Medical Center | 48 | 901 | 5.3 | 7.4 | 3.1 * | 2.2 - 4.0 |

**Table 2: IN-HOSPITAL MORTALITY RATES FOR PNEUMONIA (Deaths per 100 conditions)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| Newark Beth Israel Medical Center | 42 | 352 | 11.9 | 4.3 | 11.7 ** | 9.8 - 13.6 |
| Newton Medical Center | 34 | 478 | 7.1 | 8.6 | 3.6 | 2.5 - 4.6 |
| Ocean University Medical Center | 14 | 690 | 2.0 | 5.3 | 1.6 * | 0.4 - 2.9 |
| Old Bridge Medical Center | 20 | 383 | 5.2 | 6.4 | 3.5 | 2.0 - 5.0 |
| Overlook Medical Center-Summit | 47 | 658 | 7.1 | 8.7 | 3.5 * | 2.6 - 4.5 |
| Palisades Medical Center | 19 | 390 | 4.9 | 6.7 | 3.1 | 1.7 - 4.6 |
| Penn Medicine Princeton Medical Center | 7 | 212 | 3.3 | 5.1 | 2.8 | 0.5 - 5.1 |
| Raritan Bay Medical Center | 5 | 166 | 3.0 | 3.7 | 3.5 | 0.3 - 6.7 |
| Riverview Medical Center | 9 | 313 | 2.9 | 6.1 | 2.0 * | 0.3 - 3.7 |
| Robert Wood Johnson University Hospital | 36 | 714 | 5.0 | 5.0 | 4.3 | 3.0 - 5.5 |
| Robert Wood Johnson University Hospital at Rahway | 27 | 330 | 8.2 | 7.2 | 4.8 | 3.4 - 6.3 |
| Robert Wood Johnson University Hospital Hamilton | 14 | 357 | 3.9 | 5.6 | 3.0 | 1.3 - 4.7 |
| Robert Wood Johnson University Hospital Somerset | 58 | 528 | 11.0 | 6.8 | 6.9 ** | 5.7 - 8.2 |
| Saint Clare's Hospital-Denville | 19 | 208 | 9.1 | 8.4 | 4.7 | 3.0 - 6.3 |
| Saint Clare's Hospital-Dover | 8 | 148 | 5.4 | 7.7 | 3.0 | 0.8 - 5.2 |
| Saint Michael's Medical Center | 6 | 211 | 2.8 | 4.5 | 2.7 | 0.3 - 5.1 |
| Saint Peter's University Hospital | 12 | 325 | 3.7 | 5.1 | 3.1 | 1.2 - 4.9 |
| Salem Medical Center | 2 | 121 | 1.7 | 3.6 | 2.0 | 0.0 - 5.7 |
| Shore Medical Center | 26 | 432 | 6.0 | 4.4 | 5.8 | 4.0 - 7.6 |
| Southern Ocean Medical Center | 12 | 435 | 2.8 | 5.0 | 2.4 * | 0.7 - 4.0 |
| St. Francis Medical Center | 7 | 49 | 14.3 | 8.0 | 7.6 | 4.6 - 10.6 |
| St. Joseph's University Medical Center | 34 | 532 | 6.4 | 6.7 | 4.1 | 2.8 - 5.3 |
| St. Joseph's Wayne Medical Center | 22 | 310 | 7.1 | 8.3 | 3.6 | 2.2 - 5.1 |
| St. Luke's Warren Hospital | 4 | 192 | 2.1 | 5.0 | 1.8 * | 0.0 - 4.3 |
| St. Mary's General Hospital | 23 | 200 | 11.5 | 8.1 | 6.1 | 4.3 - 7.8 |
| Trinitas Regional Medical Center | 22 | 229 | 9.6 | 4.1 | 10.0 ** | 7.6 - 12.4 |
| University Hospital | 14 | 293 | 4.8 | 5.3 | 3.9 | 1.9 - 5.8 |
| Valley Hospital | 50 | 431 | 11.6 | 7.4 | 6.7 ** | 5.4 - 8.0 |
| Virtua Mount Holly Hospital | 17 | 388 | 4.4 | 4.7 | 4.0 | 2.2 - 5.7 |
| Virtua Our Lady of Lourdes Hospital | 21 | 251 | 8.4 | 4.3 | 8.3 ** | 6.1 - 10.6 |
| Virtua West Jersey Hospital | 33 | 662 | 5.0 | 3.9 | 5.5 | 3.9 - 7.0 |
| Virtua West Jersey Hospital Marlton | 20 | 357 | 5.6 | 4.4 | 5.4 | 3.5 - 7.3 |
| Virtua Willingboro Hospital | 4 | 190 | 2.1 | 3.9 | 2.3 | 0.0 - 5.2 |

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 are calculated from the **2022 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.

# Heart Failure (HF)

**HF** is a weakening of the heart's muscle which reduces its pumping power. Your body doesn't get the oxygen and nutrients it needs when the heart muscles are weak to pump blood in a normal flow. Your heart tries to pump more blood, but over time the heart muscle walls weaken thereby causing 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 bit 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 (Centers for Disease Control and Prevention. Underlying Cause of Death, 1999–2020. CDC WONDER Online Database. Atlanta, GA: Centers for Disease Control and Prevention; 2018. Accessed March 12, 2020). 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). For information about the inclusion and exclusion criteria in calculating this rate, visit: http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx

**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)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **29,800** | **1,193,490** | **2.5** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **923** | **29,698** | **3.1** | **2.8** | **2.8** | **2.7 - 3.0** |
| AtlantiCare Regional MC-City Campus | 7 | 303 | 2.3 | 2.6 | 2.2 | 0.5 - 3.8 |
| AtlantiCare Regional MC-Mainland Campus | 23 | 594 | 3.9 | 2.7 | 3.5 | 2.4 - 4.7 |
| Bayshore Medical Center | 7 | 305 | 2.3 | 2.5 | 2.3 | 0.6 - 4.1 |
| Bergen New Bridge Medical Center | 0 | 13 | 0.0 | 1.6 | 0.0 ^ | 0.0 - 10.4 |
| Cape Regional Medical Center | 11 | 371 | 3.0 | 2.3 | 3.2 | 1.6 - 4.9 |
| Capital Health Medical Center-Hopewell | 21 | 424 | 5.0 | 2.5 | 5.0 ** | 3.6 - 6.5 |
| Capital Health Regional Medical Center | 7 | 295 | 2.4 | 1.8 | 3.3 | 1.3 - 5.4 |
| CarePoint Health-Bayonne Medical Center | 9 | 212 | 4.2 | 2.5 | 4.3 | 2.3 - 6.3 |
| CarePoint Health-Christ Hospital | 12 | 282 | 4.3 | 2.1 | 5.1 ** | 3.2 - 7.0 |
| CarePoint Health-Hoboken University MC | 1 | 105 | 1.0 | 1.7 | 1.4 | 0.0 - 5.0 |
| Carewell Health Medical Center-East Orange | 2 | 146 | 1.4 | 1.4 | 2.4 | 0.0 - 5.7 |
| CentraState Medical Center | 26 | 464 | 5.6 | 3.0 | 4.6 ** | 3.4 - 5.9 |
| Chilton Memorial Hospital | 6 | 296 | 2.0 | 2.9 | 1.7 | 0.2 - 3.3 |
| Clara Maass Medical Center | 19 | 575 | 3.3 | 1.5 | 5.4 ** | 3.8 - 7.0 |
| Community Medical Center | 33 | 924 | 3.6 | 2.1 | 4.2 ** | 3.1 - 5.2 |
| Cooper University Hospital | 28 | 868 | 3.2 | 2.2 | 3.7 | 2.6 - 4.7 |
| Cooperman Barnabas Medical Center | 32 | 738 | 4.3 | 2.5 | 4.4 ** | 3.3 - 5.5 |
| Deborah Heart and Lung Center | 15 | 590 | 2.5 | 2.5 | 2.5 | 1.3 - 3.7 |
| Englewood Hospital and Medical Center | 10 | 472 | 2.1 | 2.4 | 2.2 | 0.8 - 3.6 |
| Hackensack Meridian Health, Mountainside MC | 8 | 384 | 2.1 | 3.2 | 1.6 | 0.3 - 2.9 |
| Hackensack Meridian Health-Pascack Valley MC | 4 | 120 | 3.3 | 4.1 | 2.0 | 0.0 - 4.0 |
| Hackensack University Medical Center | 31 | 1,029 | 3.0 | 4.2 | 1.8 * | 1.1 - 2.5 |
| Hackettstown Medical Center | 0 | 171 | 0.0 | 3.6 | 0.0 * | 0.0 - 1.9 |
| Holy Name Medical Center | 12 | 470 | 2.6 | 3.1 | 2.1 | 0.9 - 3.3 |
| Hudson Regional Hospital | 3 | 56 | 5.4 | 1.4 | 9.5 ** | 4.1 - 15.0 |
| Hunterdon Medical Center | 12 | 270 | 4.4 | 3.5 | 3.2 | 1.7 - 4.7 |
| Inspira Medical Center Elmer | 0 | 102 | 0.0 | 2.9 | 0.0 * | 0.0 - 2.6 |
| Inspira Medical Center Mullica Hill | 9 | 448 | 2.0 | 3.4 | 1.5 * | 0.3 - 2.6 |
| Inspira Medical Center Vineland | 21 | 623 | 3.4 | 2.9 | 2.9 | 1.8 - 3.9 |
| Jefferson Cherry Hill Hospital | 2 | 157 | 1.3 | 3.1 | 1.0 | 0.0 - 3.0 |
| Jefferson Stratford Hospital | 2 | 142 | 1.4 | 1.5 | 2.3 | 0.0 - 5.5 |
| Jefferson Washington Township Hospital | 14 | 469 | 3.0 | 2.2 | 3.4 | 1.9 - 4.8 |
| Jersey City Medical Center | 11 | 481 | 2.3 | 1.4 | 4.2 | 2.3 - 6.0 |
| Jersey Shore University Medical Center | 27 | 1,210 | 2.2 | 3.3 | 1.7 * | 1.0 - 2.4 |
| JFK University Medical Center | 23 | 726 | 3.2 | 2.4 | 3.3 | 2.2 - 4.5 |
| Monmouth Medical Center | 4 | 206 | 1.9 | 2.1 | 2.3 | 0.0 - 4.6 |
| Monmouth Medical Center-Southern Campus | 8 | 178 | 4.5 | 2.1 | 5.4 ** | 2.9 - 7.8 |
| Morristown Medical Center | 73 | 1,377 | 5.3 | 4.7 | 2.8 | 2.3 - 3.4 |
| Newark Beth Israel Medical Center | 32 | 806 | 4.0 | 1.9 | 5.3 ** | 4.1 - 6.4 |
| Newton Medical Center | 8 | 382 | 2.1 | 4.1 | 1.3 * | 0.1 - 2.4 |

**Table 3: IN-HOSPITAL MORTALITY RATES FOR HEART FAILURE (Deaths per 100 conditions)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **29,800** | **1,193,490** | **2.5** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **923** | **29,698** | **3.1** | **2.8** | **2.8** | **2.7 - 3.0** |
| Ocean University Medical Center | 11 | 638 | 1.7 | 3.0 | 1.4 * | 0.4 - 2.5 |
| Old Bridge Medical Center | 8 | 250 | 3.2 | 3.3 | 2.4 | 0.8 - 4.0 |
| Overlook Medical Center-Summit | 16 | 569 | 2.8 | 4.0 | 1.8 * | 0.8 - 2.7 |
| Palisades Medical Center | 7 | 262 | 2.7 | 3.1 | 2.2 | 0.5 - 3.8 |
| Penn Medicine Princeton Medical Center | 20 | 496 | 4.0 | 3.4 | 3.0 | 1.9 - 4.1 |
| Raritan Bay Medical Center | 2 | 204 | 1.0 | 2.2 | 1.1 | 0.0 - 3.3 |
| Riverview Medical Center | 5 | 290 | 1.7 | 3.9 | 1.1 * | 0.0 - 2.5 |
| Robert Wood Johnson University Hospital | 41 | 1,119 | 3.7 | 2.3 | 3.9 ** | 3.0 - 4.8 |
| Robert Wood Johnson University Hospital at Rahway | 13 | 344 | 3.8 | 2.3 | 4.1 | 2.6 - 5.6 |
| Robert Wood Johnson University Hospital Hamilton | 8 | 343 | 2.3 | 2.7 | 2.1 | 0.6 - 3.6 |
| Robert Wood Johnson University Hospital Somerset | 21 | 620 | 3.4 | 2.8 | 3.0 | 1.9 - 4.1 |
| Saint Clare's Hospital-Denville | 4 | 173 | 2.3 | 2.9 | 2.0 | 0.0 - 4.1 |
| Saint Clare's Hospital-Dover | 1 | 141 | 0.7 | 2.9 | 0.6 | 0.0 - 2.8 |
| Saint Michael's Medical Center | 3 | 296 | 1.0 | 2.1 | 1.2 | 0.0 - 3.1 |
| Saint Peter's University Hospital | 7 | 294 | 2.4 | 2.2 | 2.8 | 0.9 - 4.6 |
| Salem Medical Center | 3 | 95 | 3.2 | 2.6 | 3.1 | 0.3 - 5.8 |
| Shore Medical Center | 11 | 268 | 4.1 | 2.0 | 5.2 ** | 3.1 - 7.2 |
| Southern Ocean Medical Center | 8 | 417 | 1.9 | 3.2 | 1.5 * | 0.3 - 2.7 |
| St. Francis Medical Center | 2 | 116 | 1.7 | 2.2 | 1.9 | 0.0 - 4.9 |
| St. Joseph's University Medical Center | 12 | 545 | 2.2 | 2.6 | 2.1 | 0.9 - 3.3 |
| St. Joseph's Wayne Medical Center | 6 | 182 | 3.3 | 3.7 | 2.2 | 0.5 - 3.9 |
| St. Luke's Warren Hospital | 3 | 293 | 1.0 | 2.7 | 0.9 * | 0.0 - 2.6 |
| St. Mary's General Hospital | 6 | 268 | 2.2 | 2.7 | 2.0 | 0.3 - 3.8 |
| Trinitas Regional Medical Center | 14 | 335 | 4.2 | 1.6 | 6.4 ** | 4.4 - 8.4 |
| University Hospital | 10 | 374 | 2.7 | 2.3 | 2.9 | 1.4 - 4.4 |
| Valley Hospital | 49 | 816 | 6.0 | 3.5 | 4.3 ** | 3.4 - 5.2 |
| Virtua Mount Holly Hospital | 9 | 474 | 1.9 | 1.6 | 2.9 | 1.2 - 4.7 |
| Virtua Our Lady of Lourdes Hospital | 19 | 585 | 3.2 | 2.0 | 4.0 | 2.6 - 5.4 |
| Virtua West Jersey Hospital | 7 | 496 | 1.4 | 2.1 | 1.7 | 0.2 - 3.2 |
| Virtua West Jersey Hospital Marlton | 20 | 389 | 5.1 | 2.8 | 4.7 ** | 3.3 - 6.1 |
| Virtua Willingboro Hospital | 4 | 222 | 1.8 | 1.9 | 2.3 | 0.0 - 4.6 |

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 are calculated from the **2022 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** 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 some other particle. 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 (ischemic, subarachnoid, and hemorrhagic). 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 are appropriate for strokes caused by clots but could be fatal in the case of a burst blood vessel. **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 an acute stroke patient admitted in a hospital 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). For information about the inclusion and exclusion criteria in calculating this rate, visit: http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx

**This information is important** because it tells you 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)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National, 2019** | **41,966** | **630,496** | **6.7** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **1,059** | **15,963** | **6.6** | **6.5** | **6.8** | **6.4 - 7.1** |
| AtlantiCare Regional MC-City Campus | 44 | 458 | 9.6 | 6.4 | 10.0 ** | 7.9 - 12.1 |
| AtlantiCare Regional MC-Mainland Campus | 6 | 166 | 3.6 | 5.1 | 4.7 | 1.1 - 8.3 |
| Bayshore Medical Center | 7 | 135 | 5.2 | 5.1 | 6.8 | 2.8 - 10.9 |
| Bergen New Bridge Medical Center | 2 | 5 | 40.0 | 6.8 | 39.3 **^ | 18.1 - 60.6 |
| Cape Regional Medical Center | 5 | 133 | 3.8 | 3.0 | 8.4 | 2.2 - 14.6 |
| Capital Health Medical Center-Hopewell | 7 | 103 | 6.8 | 2.4 | 19.0 ** | 11.0 - 27.1 |
| Capital Health Regional Medical Center | 72 | 539 | 13.4 | 8.7 | 10.3 ** | 8.7 - 11.8 |
| CarePoint Health-Bayonne Medical Center | 2 | 66 | 3.0 | 5.9 | 3.4 | 0.0 - 8.1 |
| CarePoint Health-Christ Hospital | 21 | 130 | 16.2 | 11.8 | 9.1 | 6.6 - 11.6 |
| CarePoint Health-Hoboken University MC | 6 | 41 | 14.6 | 6.4 | 15.2 ** | 8.4 - 22.0 |
| Carewell Health Medical Center-East Orange | 1 | 28 | 3.6 | 2.7 | 8.7 | 0.0 - 23.1 |
| CentraState Medical Center | 22 | 220 | 10.0 | 6.3 | 10.6 ** | 7.8 - 13.5 |
| Chilton Memorial Hospital | 5 | 168 | 3.0 | 4.4 | 4.5 | 0.1 - 9.0 |
| Clara Maass Medical Center | 9 | 226 | 4.0 | 3.6 | 7.3 | 3.5 - 11.1 |
| Community Medical Center | 25 | 493 | 5.1 | 4.3 | 7.9 | 5.3 - 10.4 |
| Cooper University Hospital | 72 | 632 | 11.4 | 8.2 | 9.3 ** | 7.8 - 10.8 |
| Cooperman Barnabas Medical Center | 58 | 575 | 10.1 | 5.0 | 13.3 ** | 11.2 - 15.5 |
| Deborah Heart and Lung Center | 0 | 4 | 0.0 | 2.7 | 0.0 | 0.0 - 38.8 |
| Englewood Hospital and Medical Center | 22 | 266 | 8.3 | 6.4 | 8.6 | 6.0 - 11.3 |
| Hackensack Meridian Health, Mountainside MC | 9 | 152 | 5.9 | 10.9 | 3.6 * | 1.4 - 5.8 |
| Hackensack Meridian Health-Pascack Valley MC | 3 | 52 | 5.8 | 7.3 | 5.2 | 0.0 - 10.6 |
| Hackensack University Medical Center | 45 | 699 | 6.4 | 9.2 | 4.7 * | 3.4 - 5.9 |
| Hackettstown Medical Center | 9 | 96 | 9.4 | 5.6 | 11.1 | 6.4 - 15.7 |
| Holy Name Medical Center | 7 | 224 | 3.1 | 4.7 | 4.4 | 1.0 - 7.9 |
| Hudson Regional Hospital | 2 | 25 | 8.0 | 5.3 | 10.0 ^ | 0.5 - 19.5 |
| Hunterdon Medical Center | 6 | 147 | 4.1 | 5.6 | 4.8 | 1.1 - 8.6 |
| Inspira Medical Center Elmer | 0 | 12 | 0.0 | 3.8 | 0.0 | 0.0 - 17.7 |
| Inspira Medical Center Mullica Hill | 6 | 193 | 3.1 | 5.5 | 3.8 | 0.2 - 7.4 |
| Inspira Medical Center Vineland | 8 | 224 | 3.6 | 5.5 | 4.3 | 1.3 - 7.4 |
| Jefferson Cherry Hill Hospital | 2 | 72 | 2.8 | 4.5 | 4.1 | 0.0 - 10.6 |
| Jefferson Stratford Hospital | 2 | 56 | 3.6 | 4.6 | 5.2 | 0.0 - 12.7 |
| Jefferson Washington Township Hospital | 20 | 305 | 6.6 | 4.7 | 9.2 | 6.3 - 12.1 |
| Jersey City Medical Center | 19 | 271 | 7.0 | 4.6 | 10.0 ** | 7.0 - 13.1 |
| Jersey Shore University Medical Center | 41 | 839 | 4.9 | 8.4 | 3.9 * | 2.7 - 5.1 |
| JFK University Medical Center | 23 | 751 | 3.1 | 6.0 | 3.4 * | 1.8 - 5.0 |
| Monmouth Medical Center | 12 | 123 | 9.8 | 6.2 | 10.5 | 6.8 - 14.2 |
| Monmouth Medical Center-Southern Campus | 5 | 65 | 7.7 | 3.9 | 13.2 | 5.7 - 20.6 |
| Morristown Medical Center | 26 | 511 | 5.1 | 5.8 | 5.8 | 3.8 - 7.8 |
| Newark Beth Israel Medical Center | 8 | 200 | 4.0 | 2.9 | 9.3 | 4.2 - 14.3 |
| Newton Medical Center | 8 | 130 | 6.2 | 5.0 | 8.3 | 4.1 - 12.4 |
| Ocean University Medical Center | 3 | 270 | 1.1 | 3.3 | 2.3 * | 0.0 - 6.2 |
| Old Bridge Medical Center | 3 | 105 | 2.9 | 2.7 | 7.1 | 0.0 - 14.3 |
| Overlook Medical Center-Summit | 47 | 692 | 6.8 | 10.8 | 4.2 * | 3.1 - 5.3 |
| Palisades Medical Center | 1 | 120 | 0.8 | 3.7 | 1.5 | 0.0 - 6.9 |

**Table 4: IN-HOSPITAL MORTALITY RATES FOR ACUTE STROKE (Deaths per 100 conditions)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National, 2019** | **41,966** | **630,496** | **6.7** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **1,059** | **15,963** | **6.6** | **6.5** | **6.8** | **6.4 - 7.1** |
| Penn Medicine Princeton Medical Center | 12 | 224 | 5.4 | 6.5 | 5.5 | 2.7 - 8.3 |
| Raritan Bay Medical Center | 0 | 58 | 0.0 | 2.4 | 0.0 | 0.0 - 10.4 |
| Riverview Medical Center | 2 | 162 | 1.2 | 5.3 | 1.5 * | 0.0 - 5.2 |
| Robert Wood Johnson University Hospital | 81 | 845 | 9.6 | 8.8 | 7.3 | 6.1 - 8.5 |
| Robert Wood Johnson University Hospital at Rahway | 2 | 87 | 2.3 | 5.2 | 2.9 | 0.0 - 7.9 |
| Robert Wood Johnson University Hospital Hamilton | 1 | 102 | 1.0 | 2.7 | 2.4 | 0.0 - 9.8 |
| Robert Wood Johnson University Hospital Somerset | 15 | 231 | 6.5 | 5.2 | 8.3 | 5.1 - 11.5 |
| Saint Clare's Hospital-Denville | 6 | 96 | 6.3 | 5.3 | 7.8 | 2.7 - 12.9 |
| Saint Clare's Hospital-Dover | 3 | 75 | 4.0 | 6.4 | 4.2 | 0.0 - 9.0 |
| Saint Michael's Medical Center | 0 | 49 | 0.0 | 4.7 | 0.0 | 0.0 - 7.7 |
| Saint Peter's University Hospital | 1 | 122 | 0.8 | 3.5 | 1.5 | 0.0 - 7.4 |
| Salem Medical Center | 0 | 10 | 0.0 | 7.1 | 0.0 ^ | 0.0 - 11.7 |
| Shore Medical Center | 2 | 117 | 1.7 | 3.4 | 3.3 | 0.0 - 9.5 |
| Southern Ocean Medical Center | 3 | 162 | 1.9 | 3.3 | 3.7 | 0.0 - 8.6 |
| St. Francis Medical Center | 0 | 7 | 0.0 | 2.6 | 0.0 ^ | 0.0 - 29.6 |
| St. Joseph's University Medical Center | 45 | 427 | 10.5 | 9.5 | 7.3 | 5.8 - 8.9 |
| St. Joseph's Wayne Medical Center | 2 | 75 | 2.7 | 5.2 | 3.4 | 0.0 - 8.6 |
| St. Luke's Warren Hospital | 5 | 71 | 7.0 | 7.3 | 6.4 | 1.8 - 11.1 |
| St. Mary's General Hospital | 8 | 82 | 9.8 | 6.0 | 10.9 | 6.0 - 15.8 |
| Trinitas Regional Medical Center | 18 | 139 | 12.9 | 7.8 | 11.0 ** | 8.1 - 13.9 |
| University Hospital | 37 | 506 | 7.3 | 8.9 | 5.5 | 4.0 - 6.9 |
| Valley Hospital | 38 | 468 | 8.1 | 8.6 | 6.3 | 4.7 - 7.8 |
| Virtua Mount Holly Hospital | 7 | 211 | 3.3 | 2.7 | 8.2 | 3.3 - 13.2 |
| Virtua Our Lady of Lourdes Hospital | 67 | 554 | 12.1 | 6.5 | 12.4 ** | 10.5 - 14.2 |
| Virtua West Jersey Hospital | 1 | 167 | 0.6 | 2.4 | 1.6 | 0.0 - 7.4 |
| Virtua West Jersey Hospital Marlton | 1 | 111 | 0.9 | 3.0 | 2.0 | 0.0 - 8.3 |
| Virtua Willingboro Hospital | 1 | 83 | 1.2 | 3.5 | 2.3 | 0.0 - 8.4 |

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 are calculated from the **2022 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 2022 by the three strata stated above.

**Table 4.1 IN-HOSPITAL MORTALITY RATES FOR INTRACEREBRAL HEMORRHAGIC STROKE (Deaths per 100)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **17,976** | **96,860** | **18.6** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **477** | **2,550** | **0.2** | **0.2** | **0.2** | **0.2 - 0.2** |
| AtlantiCare Regional MC-City Campus | 20 | 99 | 0.2 | 0.1 | 0.3 | 0.2 - 0.4 |
| AtlantiCare Regional MC-Mainland Campus | 0 | 1 | 0.0 | . | . Ω | . - . |
| Bayshore Medical Center | 1 | 5 | 0.2 | 0.3 | 0.1 ^ | 0.0 - 0.3 |
| Bergen New Bridge Medical Center | 1 | 1 | 1.0 | . | . Ω | . - . |
| Cape Regional Medical Center | 0 | 2 | 0.0 | . | . Ω | . - . |
| Capital Health Medical Center-Hopewell | 0 | 2 | 0.0 | . | . Ω | . - . |
| Capital Health Regional Medical Center | 35 | 108 | 0.3 | 0.2 | 0.3 | 0.2 - 0.3 |
| CarePoint Health-Bayonne Medical Center | 1 | 4 | 0.3 | 0.3 | 0.2 ^ | 0.0 - 0.4 |
| CarePoint Health-Christ Hospital | 9 | 34 | 0.3 | 0.2 | 0.2 | 0.1 - 0.3 |
| CarePoint Health-Hoboken University MC | 4 | 7 | 0.6 | 0.2 | 0.5 **^ | 0.3 - 0.7 |
| Carewell Health Medical Center-East Orange | . | . | . | . | . | . - . |
| CentraState Medical Center | 12 | 32 | 0.4 | 0.2 | 0.4 ** | 0.3 - 0.5 |
| Chilton Memorial Hospital | 2 | 21 | 0.1 | 0.1 | 0.1 ^ | 0.0 - 0.3 |
| Clara Maass Medical Center | 1 | 29 | 0.0 | 0.1 | 0.1 ^ | 0.0 - 0.3 |
| Community Medical Center | 8 | 45 | 0.2 | 0.2 | 0.2 | 0.1 - 0.3 |
| Cooper University Hospital | 27 | 119 | 0.2 | 0.2 | 0.2 | 0.2 - 0.3 |
| Cooperman Barnabas Medical Center | 23 | 105 | 0.2 | 0.1 | 0.4 ** | 0.3 - 0.5 |
| Deborah Heart and Lung Center | . | . | . | . | . | . - . |
| Englewood Hospital and Medical Center | 11 | 44 | 0.3 | 0.2 | 0.2 | 0.1 - 0.3 |
| Hackensack Meridian Health, Mountainside MC | 5 | 28 | 0.2 | 0.3 | 0.1 ^ | 0.0 - 0.2 |
| Hackensack Meridian Health-Pascack Valley MC | 2 | 8 | 0.3 | 0.1 | 0.3 ^ | 0.0 - 0.6 |
| Hackensack University Medical Center | 19 | 145 | 0.1 | 0.2 | 0.1 | 0.1 - 0.2 |
| Hackettstown Medical Center | 4 | 7 | 0.6 | 0.3 | 0.3 | 0.2 - 0.5 |
| Holy Name Medical Center | 3 | 31 | 0.1 | 0.1 | 0.1 | 0.0 - 0.3 |
| Hudson Regional Hospital | 1 | 3 | 0.3 | 0.2 | 0.4 ^ | 0.0 - 0.8 |
| Hunterdon Medical Center | 3 | 16 | 0.2 | 0.2 | 0.2 ^ | 0.0 - 0.4 |
| Inspira Medical Center Elmer | 0 | 1 | 0.0 | . | . Ω | . - . |
| Inspira Medical Center Mullica Hill | 3 | 34 | 0.1 | 0.2 | 0.1 | 0.0 - 0.2 |
| Inspira Medical Center Vineland | 5 | 13 | 0.4 | 0.2 | 0.3 ^ | 0.2 - 0.4 |
| Jefferson Cherry Hill Hospital | 0 | 12 | 0.0 | 0.1 | 0.0 ^ | 0.0 - 0.3 |
| Jefferson Stratford Hospital | 1 | 5 | 0.2 | 0.1 | 0.4 ^ | 0.0 - 1.0 |
| Jefferson Washington Township Hospital | 7 | 37 | 0.2 | 0.2 | 0.2 | 0.1 - 0.3 |
| Jersey City Medical Center | 13 | 45 | 0.3 | 0.2 | 0.3 | 0.2 - 0.5 |
| Jersey Shore University Medical Center | 26 | 204 | 0.1 | 0.2 | 0.1 | 0.1 - 0.2 |
| JFK University Medical Center | 9 | 129 | 0.1 | 0.2 | 0.1 * | 0.0 - 0.1 |
| Monmouth Medical Center | 3 | 18 | 0.2 | 0.2 | 0.1 ^ | 0.0 - 0.2 |
| Monmouth Medical Center-Southern Campus | 3 | 5 | 0.6 | 0.2 | 0.5 ^ | 0.3 - 0.8 |
| Morristown Medical Center | 8 | 74 | 0.1 | 0.1 | 0.1 | 0.1 - 0.2 |
| Newark Beth Israel Medical Center | 3 | 20 | 0.2 | 0.1 | 0.3 ^ | 0.1 - 0.5 |
| Newton Medical Center | 5 | 7 | 0.7 | 0.3 | 0.4 ^ | 0.2 - 0.6 |
| Ocean University Medical Center | 1 | 12 | 0.1 | 0.2 | 0.1 ^ | 0.0 - 0.3 |
| Old Bridge Medical Center | 2 | 2 | 1.0 | . | . Ω | . - . |
| Overlook Medical Center-Summit | 20 | 141 | 0.1 | 0.2 | 0.1 | 0.1 - 0.2 |
| Palisades Medical Center | 0 | 12 | 0.0 | 0.2 | 0.0 ^ | 0.0 - 0.2 |

**Table 4.1 IN-HOSPITAL MORTALITY RATES FOR INTRACEREBRAL HEMORRHAGIC STROKE (Deaths per 100)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **17,976** | **96,860** | **18.6** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **477** | **2,550** | **0.2** | **0.2** | **0.2** | **0.2 - 0.2** |
| Penn Medicine Princeton Medical Center | 7 | 38 | 0.2 | 0.2 | 0.2 | 0.1 - 0.3 |
| Raritan Bay Medical Center | 0 | 2 | 0.0 | . | . Ω | . - . |
| Riverview Medical Center | 2 | 19 | 0.1 | 0.2 | 0.1 ^ | 0.0 - 0.2 |
| Robert Wood Johnson University Hospital | 33 | 165 | 0.2 | 0.2 | 0.2 | 0.1 - 0.2 |
| Robert Wood Johnson University Hospital at Rahway | 1 | 8 | 0.1 | 0.1 | 0.2 ^ | 0.0 - 0.4 |
| Robert Wood Johnson University Hospital Hamilton | 1 | 13 | 0.1 | 0.1 | 0.1 ^ | 0.0 - 0.4 |
| Robert Wood Johnson University Hospital Somerset | 6 | 37 | 0.2 | 0.1 | 0.2 | 0.1 - 0.4 |
| Saint Clare's Hospital-Denville | 3 | 21 | 0.1 | 0.1 | 0.2 ^ | 0.0 - 0.4 |
| Saint Clare's Hospital-Dover | 1 | 6 | 0.2 | 0.4 | 0.1 ^ | 0.0 - 0.2 |
| Saint Michael's Medical Center | 0 | 8 | 0.0 | 0.1 | 0.0 ^ | 0.0 - 0.5 |
| Saint Peter's University Hospital | 1 | 27 | 0.0 | 0.1 | 0.1 ^ | 0.0 - 0.3 |
| Salem Medical Center | . | . | . | . | . | . - . |
| Shore Medical Center | 2 | 5 | 0.4 | 0.2 | 0.4 ^ | 0.1 - 0.7 |
| Southern Ocean Medical Center | 1 | 5 | 0.2 | 0.1 | 0.4 ^ | 0.0 - 0.9 |
| St. Francis Medical Center | . | . | . | . | . | . - . |
| St. Joseph's University Medical Center | 19 | 73 | 0.3 | 0.3 | 0.2 | 0.1 - 0.2 |
| St. Joseph's Wayne Medical Center | 2 | 5 | 0.4 | 0.3 | 0.3 ^ | 0.1 - 0.4 |
| St. Luke's Warren Hospital | 2 | 3 | 0.7 | 0.5 | 0.3 ^ | 0.1 - 0.4 |
| St. Mary's General Hospital | 5 | 13 | 0.4 | 0.2 | 0.3 ^ | 0.2 - 0.5 |
| Trinitas Regional Medical Center | 14 | 39 | 0.4 | 0.2 | 0.3 | 0.2 - 0.4 |
| University Hospital | 18 | 120 | 0.2 | 0.2 | 0.1 | 0.1 - 0.2 |
| Valley Hospital | 14 | 81 | 0.2 | 0.3 | 0.1 | 0.1 - 0.2 |
| Virtua Mount Holly Hospital | 1 | 5 | 0.2 | 0.1 | 0.3 ^ | 0.0 - 0.7 |
| Virtua Our Lady of Lourdes Hospital | 42 | 177 | 0.2 | 0.1 | 0.4 ** | 0.3 - 0.4 |
| Virtua West Jersey Hospital | 0 | 5 | 0.0 | 0.2 | 0.0 ^ | 0.0 0.2 |
| Virtua West Jersey Hospital Marlton | 0 | 4 | 0.0 | 0.1 | 0.0 ^ | 0.0 0.5 |
| Virtua Willingboro Hospital | 1 | 4 | 0.3 | 0.4 | 0.1 ^ | 0.0 - 0.3 |

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 are calculated from the **2022 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.

## Table 4.2 IN-HOSPITAL MORTALITY RATES FOR SUBARACHNOID HEMORRHAGIC STROKE (Deaths per 100)

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **4,520** | **23,095** | **19.6** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **106** | **560** | **18.9** | **20.0** | **18.5** | **16.1 - 21.0** |
| AtlantiCare Regional MC-City Campus | 1 | 21 | 4.8 | 12.7 | 7.3 ^ | 0.0 - 24.6 |
| AtlantiCare Regional MC-Mainland Campus | 0 | 2 | 0.0 | . | . Ω | . - . |
| Bayshore Medical Center | 1 | 1 | 100.0 | . | . Ω | . - . |
| Bergen New Bridge Medical Center | . | . | . | . | . | . - . |
| Cape Regional Medical Center | 1 | 1 | 100.0 | . | . Ω | . - . |
| Capital Health Medical Center-Hopewell | . | . | . | . | . | . - . |
| Capital Health Regional Medical Center | 9 | 32 | 28.1 | 16.8 | 32.8 ** | 20.1 - 45.6 |
| CarePoint Health-Bayonne Medical Center | . | . | . | . | . | . - . |
| CarePoint Health-Christ Hospital | 3 | 11 | 27.3 | 14.4 | 37.0 ^ | 18.1 - 55.9 |
| CarePoint Health-Hoboken University MC | . | . | . | . | . | . - . |
| Carewell Health Medical Center-East Orange | . | . | . | . | . | . - . |
| CentraState Medical Center | 1 | 4 | 25.0 | 15.9 | 30.7 ^ | 0.0 - 69.7 |
| Chilton Memorial Hospital | . | . | . | . | . | . - . |
| Clara Maass Medical Center | 2 | 4 | 50.0 | 46.5 | 21.1 ^ | 9.3 - 32.8 |
| Community Medical Center | 1 | 2 | 50.0 | . | . Ω | . - . |
| Cooper University Hospital | 10 | 32 | 31.3 | 28.7 | 21.3 | 13.0 - 29.7 |
| Cooperman Barnabas Medical Center | 7 | 35 | 20.0 | 11.3 | 34.7 | 18.4 - 50.9 |
| Deborah Heart and Lung Center | . | . | . | . | . | . - . |
| Englewood Hospital and Medical Center | 2 | 3 | 66.7 | 21.5 | 60.7 ^ | 23.9 - 97.4 |
| Hackensack Meridian Health, Mountainside MC | 0 | 5 | 0.0 | 14.0 | 0.0 ^ | 0.0 - 39.7 |
| Hackensack Meridian Health-Pascack Valley MC | 1 | 2 | 50.0 | . | . Ω | . - . |
| Hackensack University Medical Center | 7 | 60 | 11.7 | 19.9 | 11.5 | 3.6 - 19.4 |
| Hackettstown Medical Center | . | . | . | . | . | . - . |
| Holy Name Medical Center | 1 | 6 | 16.7 | 16.5 | 19.8 ^ | 0.0 - 48.2 |
| Hudson Regional Hospital | 1 | 2 | 50.0 | . | . Ω | . - . |
| Hunterdon Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| Inspira Medical Center Elmer | . | . | . | . | . | . - . |
| Inspira Medical Center Mullica Hill | 0 | 1 | 0.0 | . | . Ω | . - . |
| Inspira Medical Center Vineland | 0 | 1 | 0.0 | . | . Ω | . - . |
| Jefferson Cherry Hill Hospital | 0 | 4 | 0.0 | 5.3 | 0.0 ^ | 0.0 - 80.3 |
| Jefferson Stratford Hospital | 1 | 2 | 50.0 | . | . Ω | . - . |
| Jefferson Washington Township Hospital | 2 | 8 | 25.0 | 16.2 | 30.1 ^ | 3.3 - 57.0 |
| Jersey City Medical Center | 2 | 3 | 66.7 | 41.2 | 31.6 ^ | 10.9 - 52.4 |
| Jersey Shore University Medical Center | 5 | 54 | 9.3 | 20.6 | 8.8 * | 1.6 - 16.0 |
| JFK University Medical Center | 4 | 31 | 12.9 | 19.1 | 13.2 | 2.8 - 23.7 |
| Monmouth Medical Center | 1 | 2 | 50.0 | . | . Ω | . - . |
| Monmouth Medical Center-Southern Campus | . | . | . | . | . | . - . |
| Morristown Medical Center | 2 | 7 | 28.6 | 36.3 | 15.4 ^ | 2.0 - 28.8 |
| Newark Beth Israel Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| Newton Medical Center | 1 | 2 | 50.0 | . | . Ω | . - . |
| Ocean University Medical Center | . | . | . | . | . | . - . |
| Old Bridge Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| Overlook Medical Center-Summit | 11 | 64 | 17.2 | 25.5 | 13.2 | 7.5 - 19.0 |
| Palisades Medical Center | . | . | . | . | . | . - . |

**Table 4.2 IN-HOSPITAL MORTALITY RATES FOR SUBARACHNOID HEMORRHAGIC STROKE (Deaths per 100)**

**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **4,520** | **23,095** | **19.6** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **106** | **560** | **18.9** | **20.0** | **18.5** | **16.1 - 21.0** |
| Penn Medicine Princeton Medical Center | 1 | 1 | 100.0 | . | . Ω | . - . |
| Raritan Bay Medical Center | . | . | . | . | . | . - . |
| Riverview Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| Robert Wood Johnson University Hospital | 12 | 67 | 17.9 | 19.4 | 18.1 | 11.0 - 25.1 |
| Robert Wood Johnson University Hospital at Rahway | . | . | . | . | . | . - . |
| Robert Wood Johnson University Hospital Hamilton | . | . | . | . | . | . - . |
| Robert Wood Johnson University Hospital Somerset | 0 | 3 | 0.0 | 4.1 | 0.0 ^ | 0.0 - 100.0 |
| Saint Clare's Hospital-Denville | 0 | 1 | 0.0 | . | . Ω | . - . |
| Saint Clare's Hospital-Dover | . | . | . | . | . | . - . |
| Saint Michael's Medical Center | 0 | 2 | 0.0 | . | . Ω | . - . |
| Saint Peter's University Hospital | . | . | . | . | . | . - . |
| Salem Medical Center | . | . | . | . | . | . - . |
| Shore Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| Southern Ocean Medical Center | 0 | 1 | 0.0 | . | . Ω | . - . |
| St. Francis Medical Center | . | . | . | . | . | . - . |
| St. Joseph's University Medical Center | 3 | 12 | 25.0 | 17.8 | 27.4 ^ | 7.1 - 47.8 |
| St. Joseph's Wayne Medical Center | . | . | . | . | . . | . - . |
| St. Luke's Warren Hospital | . | . | . | . | . | . - . |
| St. Mary's General Hospital | 0 | 2 | 0.0 | . | . Ω | . - . |
| Trinitas Regional Medical Center | 1 | 1 | 100.0 | . | . Ω | . - . |
| University Hospital | 3 | 26 | 11.5 | 17.8 | 12.7 ^ | 0.6 - 24.8 |
| Valley Hospital | 3 | 13 | 23.1 | 23.6 | 19.1 ^ | 4.9 - 33.4 |
| Virtua Mount Holly Hospital | . | . | . | . | . | . - . |
| Virtua Our Lady of Lourdes Hospital | 6 | 22 | 27.3 | 17.6 | 30.2 ^ | 15.6 - 44.9 |
| Virtua West Jersey Hospital | 0 | 1 | 0.0 | . | . Ω | . - . |
| Virtua West Jersey Hospital Marlton | 0 | 1 | 0.0 | . | . Ω | . - . |
| 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 are calculated from the **2022 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.

**Table 4.3 IN-HOSPITAL MORTALITY RATES FOR ISCHEMIC STROKE (Deaths per 100)**
**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **19,470** | **510,541** | **3.8** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **476** | **12,853** | **3.7** | **3.7** | **3.9** | **3.5 - 4.2** |
| AtlantiCare Regional MC-City Campus | 23 | 338 | 6.8 | 4.5 | 5.7 ** | 4.0 - 7.5 |
| AtlantiCare Regional MC-Mainland Campus | 6 | 163 | 3.7 | 4.9 | 2.9 | 0.8 - 5.0 |
| Bayshore Medical Center | 5 | 129 | 3.9 | 3.7 | 4.0 | 1.0 - 7.0 |
| Bergen New Bridge Medical Center | 1 | 4 | 25.0 | 5.1 | 18.6 ^ | 2.8 - 34.4 |
| Cape Regional Medical Center | 4 | 130 | 3.1 | 2.7 | 4.4 | 0.6 - 8.2 |
| Capital Health Medical Center-Hopewell | 7 | 101 | 6.9 | 2.3 | 11.4 ** | 6.7 - 16.2 |
| Capital Health Regional Medical Center | 28 | 399 | 7.0 | 4.4 | 6.1 ** | 4.5 - 7.7 |
| CarePoint Health-Bayonne Medical Center | 1 | 62 | 1.6 | 4.5 | 1.4 | 0.0 - 4.7 |
| CarePoint Health-Christ Hospital | 9 | 85 | 10.6 | 7.0 | 5.7 | 3.3 - 8.2 |
| CarePoint Health-Hoboken University MC | 2 | 34 | 5.9 | 3.2 | 7.1 | 0.3 - 13.8 |
| Carewell Health Medical Center-East Orange | 1 | 28 | 3.6 | 2.7 | 5.0 ^ | 0.0 - 13.2 |
| CentraState Medical Center | 9 | 184 | 4.9 | 4.2 | 4.4 | 2.2 - 6.7 |
| Chilton Memorial Hospital | 3 | 147 | 2.0 | 3.1 | 2.5 | 0.0 - 5.8 |
| Clara Maass Medical Center | 6 | 193 | 3.1 | 2.1 | 5.7 | 2.1 - 9.3 |
| Community Medical Center | 16 | 446 | 3.6 | 3.2 | 4.3 | 2.5 - 6.1 |
| Cooper University Hospital | 35 | 481 | 7.3 | 4.5 | 6.1 ** | 4.7 - 7.5 |
| Cooperman Barnabas Medical Center | 28 | 435 | 6.4 | 3.0 | 8.1 ** | 6.2 - 10.0 |
| Deborah Heart and Lung Center | 0 | 4 | 0.0 | 2.7 | 0.0 ^ | 0.0 - 22.2 |
| Englewood Hospital and Medical Center | 9 | 219 | 4.1 | 3.6 | 4.4 | 1.9 - 6.9 |
| Hackensack Meridian Health, Mountainside MC | 4 | 119 | 3.4 | 7.1 | 1.8 * | 0.0 - 3.6 |
| Hackensack Meridian Health-Pascack Valley MC | 0 | 42 | 0.0 | 3.8 | 0.0 | 0.0 - 5.5 |
| Hackensack University Medical Center | 19 | 494 | 3.8 | 4.2 | 3.5 | 2.0 - 4.9 |
| Hackettstown Medical Center | 5 | 89 | 5.6 | 3.5 | 6.2 | 2.2 - 10.1 |
| Holy Name Medical Center | 3 | 187 | 1.6 | 2.6 | 2.3 | 0.0 - 5.5 |
| Hudson Regional Hospital | 0 | 20 | 0.0 | 1.6 | 0.0 ^ | 0.0 - 13.1 |
| Hunterdon Medical Center | 3 | 130 | 2.3 | 4.2 | 2.1 | 0.0 - 4.9 |
| Inspira Medical Center Elmer | 0 | 11 | 0.0 | 1.9 | 0.0 ^ | 0.0 - 15.9 |
| Inspira Medical Center Mullica Hill | 3 | 158 | 1.9 | 3.0 | 2.4 | 0.0 - 5.7 |
| Inspira Medical Center Vineland | 3 | 210 | 1.4 | 4.2 | 1.3 * | 0.0 - 3.6 |
| Jefferson Cherry Hill Hospital | 2 | 56 | 3.6 | 3.3 | 4.1 | 0.0 - 8.9 |
| Jefferson Stratford Hospital | 0 | 49 | 0.0 | 3.9 | 0.0 | 0.0 - 4.9 |
| Jefferson Washington Township Hospital | 11 | 260 | 4.2 | 2.7 | 6.0 | 3.3 - 8.6 |
| Jersey City Medical Center | 4 | 223 | 1.8 | 2.0 | 3.4 | 0.0 - 6.9 |
| Jersey Shore University Medical Center | 10 | 581 | 1.7 | 3.9 | 1.7 * | 0.3 - 3.1 |
| JFK University Medical Center | 10 | 591 | 1.7 | 3.3 | 2.0 * | 0.4 - 3.5 |
| Monmouth Medical Center | 8 | 103 | 7.8 | 2.6 | 11.2 ** | 6.9 - 15.5 |
| Monmouth Medical Center-Southern Campus | 2 | 60 | 3.3 | 2.5 | 5.0 | 0.0 - 10.9 |
| Morristown Medical Center | 16 | 430 | 3.7 | 3.9 | 3.7 | 2.0 - 5.3 |
| Newark Beth Israel Medical Center | 5 | 179 | 2.8 | 2.0 | 5.3 | 1.4 - 9.1 |
| Newton Medical Center | 2 | 121 | 1.7 | 2.7 | 2.4 | 0.0 - 6.3 |
| Ocean University Medical Center | 2 | 258 | 0.8 | 2.6 | 1.1 | 0.0 - 3.9 |

**Table 4.3 IN-HOSPITAL MORTALITY RATES FOR ISCHEMIC STROKE (Deaths per 100)**
**(Indicator Recommended for Hospital Performance Dashboard)**

| Hospital | # of Deaths | # of Patients | Observed Rate | Expected Rate | Risk-Adjusted Rate | 95% Confidence Interval LL - UL |
|---|---|---|---|---|---|---|
| **National** | **19,470** | **510,541** | **3.8** | **NA** | **NA** | **NA - NA** |
| **Statewide** | **476** | **12,853** | **3.7** | **3.7** | **3.9** | **3.5 - 4.2** |
| Old Bridge Medical Center | 1 | 102 | 1.0 | 2.0 | 1.9 | 0.0 - 6.9 |
| Overlook Medical Center-Summit | 16 | 487 | 3.3 | 5.4 | 2.3 | 1.1 - 3.5 |
| Palisades Medical Center | 1 | 108 | 0.9 | 2.0 | 1.7 | 0.0 - 6.7 |
| Penn Medicine Princeton Medical Center | 4 | 185 | 2.2 | 3.6 | 2.3 | 0.0 - 4.9 |
| Raritan Bay Medical Center | 0 | 56 | 0.0 | 1.8 | 0.0 | 0.0 - 7.0 |
| Riverview Medical Center | 0 | 142 | 0.0 | 3.3 | 0.0 * | 0.0 - 3.2 |
| Robert Wood Johnson University Hospital | 36 | 613 | 5.9 | 4.7 | 4.8 | 3.5 - 6.0 |
| Robert Wood Johnson University Hospital at Rahway | 1 | 79 | 1.3 | 4.4 | 1.1 | 0.0 - 4.5 |
| Robert Wood Johnson University Hospital Hamilton | 0 | 89 | 0.0 | 1.5 | 0.0 | 0.0 - 6.3 |
| Robert Wood Johnson University Hospital Somerset | 9 | 191 | 4.7 | 3.7 | 4.8 | 2.3 - 7.3 |
| Saint Clare's Hospital-Denville | 3 | 74 | 4.1 | 3.4 | 4.6 | 0.2 - 9.0 |
| Saint Clare's Hospital-Dover | 2 | 69 | 2.9 | 3.8 | 2.9 | 0.0 - 7.2 |
| Saint Michael's Medical Center | 0 | 39 | 0.0 | 4.4 | 0.0 | 0.0 - 4.9 |
| Saint Peter's University Hospital | 0 | 95 | 0.0 | 1.7 | 0.0 | 0.0 - 5.9 |
| Salem Medical Center | 0 | 10 | 0.0 | 7.1 | 0.0 ^ | 0.0 - 6.7 |
| Shore Medical Center | 0 | 111 | 0.0 | 2.6 | 0.0 | 0.0 - 4.2 |
| Southern Ocean Medical Center | 2 | 156 | 1.3 | 2.9 | 1.7 | 0.0 - 4.7 |
| St. Francis Medical Center | 0 | 7 | 0.0 | 2.6 | 0.0 ^ | 0.0 - 17.0 |
| St. Joseph's University Medical Center | 23 | 342 | 6.7 | 5.9 | 4.3 | 2.9 - 5.8 |
| St. Joseph's Wayne Medical Center | 0 | 70 | 0.0 | 3.5 | 0.0 | 0.0 - 4.2 |
| St. Luke's Warren Hospital | 3 | 68 | 4.4 | 5.6 | 3.0 | 0.0 - 6.5 |
| St. Mary's General Hospital | 3 | 67 | 4.5 | 2.6 | 6.5 | 1.1 - 11.9 |
| Trinitas Regional Medical Center | 3 | 99 | 3.0 | 1.6 | 7.3 | 1.4 - 13.1 |
| University Hospital | 16 | 360 | 4.4 | 3.9 | 4.3 | 2.6 - 6.0 |
| Valley Hospital | 21 | 374 | 5.6 | 4.5 | 4.8 | 3.2 - 6.4 |
| Virtua Mount Holly Hospital | 6 | 206 | 2.9 | 2.4 | 4.6 | 1.5 - 7.6 |
| Virtua Our Lady of Lourdes Hospital | 19 | 355 | 5.4 | 3.1 | 6.5 ** | 4.5 - 8.6 |
| Virtua West Jersey Hospital | 1 | 161 | 0.6 | 1.9 | 1.3 | 0.0 5.5 |
| Virtua West Jersey Hospital Marlton | 1 | 106 | 0.9 | 2.7 | 1.3 | 0.0 5.2 |
| Virtua Willingboro Hospital | 0 | 79 | 0.0 | 1.8 | 0.0 | 0.0 - 6.1 |

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 are calculated from the **2022 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.

## References:

Updated Technical Specifications for each of the 4 IQIs presented in this report can be accessed on the AHRQ site below:
https://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec_ICD10_v2020.aspx