Patient Safety Indicators

Technical Report

A Supplement to the

Hospital Performance Report - 2015

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Health Care Quality Assessment

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Executive Summary

The Office of Health Care Quality Assessment (HCQA) of the New Jersey Department of Health and Senior Services 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, the Department provides to the public on hospital care, HCQA staff apply statistical tools developed by the Federal 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 Patient Safety Indicator (PSI) module to the 2015 New Jersey hospital discharge data. The PSI module currently in use contains 18 hospital-level and seven area-level indicators that reflect the quality of care by hospitals. These indicators serve as flags for potential quality problems (adverse events) rather than provide definitive measures of quality of care. According to the AHRQ, the 18 indicators are selected based on their ability to screen out conditions present on admission from conditions that develop after admission, the potential preventability of the complication, and the ability of the indicator to identify medical error.

This report is a supplement to the Hospital Performance Report and covers only the 12 PSIs mandated for public reporting by law. **In 2009, legislation (S2471) was signed into law requiring that hospital-specific data on patient-safety performance and serious medical errors be included in the annual New Jersey Hospital Performance Report**. The data in this report present adverse events during hospitalization in each of the 72 licensed hospitals currently operating in the state. For the seven PSIs, risk-adjusted rates are provided along with confidence intervals to help make a statistical assessment of patient safety 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 PSI tables (Tables 1-11) 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.). It is suggested that a hospital's performance be assessed by looking at its performance across the several PSI estimates presented in the PSI tables.

The 2015 New Jersey data show that there are substantial variations in risk-adjusted rates of adverse events by hospital. Some hospitals exhibit significantly higher risk-adjusted rates (risk-adjusted adverse event rates) than the corresponding statewide rates while others have significantly lower rates than the statewide rates.

Some Highlights

- Statewide, in 2015, there were a total of 23 cases of '*Retained surgical item or unretrieved device fragment*' -formerly called '*foreign body left during procedure*'. These 23 events were reported by 17 hospitals. Table 1 shows the distribution of these adverse events by hospital.

- Overall, there were 160 cases of '*Iatrogenic pneumothorax*' in 2015, for a risk-adjusted rate of 0.23 per 1,000 medical and surgical discharges. Hospital-specific rates for this indicator ranged from a low of 0.0 to a high of 0.71 per 1,000 medical and surgical discharges.

- Statewide, there were 791 '*Perioperative hemorrhage or hematoma*' cases in 2015, for a risk-adjusted rate of 4.41 per 1,000 surgical discharges. Hospital-specific rates for this indicator ranged from a low of 0.0 to a high of 8.27 per 1,000 surgical discharges.

- Statewide, there were 1,090 cases of '*Perioperative deep vein thrombosis (DVT) or pulmonary embolism (PE)*' in 2015, for a risk-adjusted rate of 5.48 per 1,000 surgical discharges. Hospital-specific rates for this indicator ranged from a low of 0.0 to a high of 17.58 per 1,000 surgical discharges (see Table 5).

- Statewide, there were 117 '*Postoperative sepsis*' cases reported in 2015 for a risk-adjusted rate of 8.09 per 1,000 elective surgery discharges. Nine hospitals had risk-adjusted rates that were statistically significantly higher than the statewide rate (see Table 6). Note that higher rate implies worse performance.

- Statewide, there were 37 '*Postoperative wound dehiscence*' cases reported in 2015 for a risk-adjusted rate of 1.24 per 1,000 abdominopelvic surgical discharges.

- There were 611 cases of '*Accidental punctures or lacerations*' reported by all 72 hospitals in 2015. The statewide risk-adjusted rate for occurrence of accidental puncture or laceration during procedure for the year was 1.05 per 1,000 discharges. Hospital-specific rates for this indicator ranged from a low of 0.0 to a high of 3.77 per 1,000 discharges.

- There were 192 cases of '*Birth trauma - injury to neonate*' reported statewide in 2015 for a rate of 1.98 per 1,000 live births. Similarly, there were 328 cases of obstetric trauma among instrument-assisted vaginal deliveries (for a rate of 96.0 per 1,000 deliveries) and 747 cases of obstetric trauma among vaginal deliveries without instrument (for a rate of 13.33 per 1,000).

- Compared to the national PSIs estimates (see Table 12), New Jersey appeared to have rates that were better than the national average for 8 of the 10 indicators that are measured using rates. New Jersey rates were higher than the national rates only for 'Perioperative pulmonary embolism or deep vein thrombosis' and 'Postoperative sepsis'.

Introduction

The Office of Health Care Quality Assessment (HCQA) of the New Jersey Department of Health and Senior Services (NJDHSS) 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 an effort to enhance the information the Department provides to the public on hospital care, HCQA staff apply statistical tools developed by the Federal Agency for Healthcare Research and Quality (AHRQ) to the New Jersey hospital discharge data commonly known as UB (Uniform Billing) data.

The AHRQ Quality Indicators (QIs) are a set of quality indicators organized into four modules, each of which measures quality associated, by and large, with patient care in an outpatient or inpatient setting. These four modules are: Prevention Quality Indicators (PQIs); Inpatient Quality Indicators (IQIs); Patient Safety Indicators (PSIs); and Pediatric Quality Indicators (PDIs). Background information on the development of these modules and the primary purposes they are designed to serve can be found at: www.nj.gov//health/healthcarequality/qi.shtml.

This report, presents findings resulting from the application of the Patient Safety Indicator (PSI) module to the 2015 New Jersey hospital discharge (UB) data. The PSI module contains 18 hospital-level indicators that reflect the quality of care provided by hospitals. These indicators serve as flags for potential quality problems (adverse events) rather than provide definitive measures of quality of care. According to the AHRQ, these indicators are selected based on their ability to screen out conditions present on admission from conditions that develop after admission, the potential preventability of the complication, and the ability of the indicator to identify medical error.

This report is a supplement to the Hospital Performance Report and covers only the 12 PSIs mandated for public reporting by law. **In 2009, legislation (S2471) was signed into law requiring that hospital-specific data on patient-safety performance, and serious medical errors be included in the annual New Jersey Hospital Performance Report.** Description of the Patient Safety Indicators module, Interpretation of the PSI measures as well as definitions of individual indicators presented in subsequent sections are, for the most part, excerpted from AHRQ's Guide and Software Documentation to Patient Safety Indicators. These sources are listed in the reference section of this report.

The tables present adverse events during hospitalization in each of the hospitals in the state. Risk-adjusted rates are provided along with confidence intervals for seven PSIs to help make a statistical assessment of patient safety in the hospital. Only observed rates are reported for the birth delivery related PSIs because the module does not risk-adjust these indicators. Two indicators – 'retained surgical item or unretrieved device fragment' and 'transfusion reaction' - are reported in volume only because they are very rare events, commonly referred to as 'never-events'. Statewide and national estimates are also provided to help compare hospital performance to the statewide or to the national average rates.

Comparison of a hospital's rate to the statewide rate (presented in the top row of each of the PSI tables [Table 1-Table 11]) 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.). It is suggested that a hospital's performance be assessed by looking at its performance across the several PSI estimates presented in the PSI tables.

The Patient Safety Indicators (PSIs) Module

Patient safety has been an issue of major national interest. Policy makers, providers, and consumers have made the safety of patients and the overall quality of care in U.S. hospitals a top priority. AHRQ states that the need to assess, monitor, track, and improve the safety of inpatient care became apparent with the publication of the Institute of Medicine's series of reports describing the problems of medical errors.

One way of detecting and reporting potentially preventable adverse events is to develop screening measures based on routinely collected UB data. UB data provide adequate information (data elements) about health care services delivered in hospitals on patients' diagnoses, procedures, age, gender, admission source, and discharge status. From these data elements, it is possible to construct a picture of the quality and safety of health care. Although quality assessments based on UB data cannot be definitive, they can be used to flag potential safety problems and success stories, which can then be further investigated. UB data can be used to identify indicators of potential problems that result from exposure to the health care system and are likely to be prevented as a result of system-level changes.

With this background, AHRQ developed the Patient Safety Indicators (PSIs) module in an effort to assess the quality of care inside hospitals with a focus on potentially preventable and other iatrogenic events, resulting from exposure to the health care system. The Patient Safety Indicators (PSIs) module is a tool specifically designed to help health care system leaders identify potential adverse events occurring during hospitalization for surgeries, procedures and childbirth. The PSIs (listed below) were developed after a comprehensive literature review, analysis of the International Classification of Diseases, 9th Revision, Clinical Modification, (ICD-9-CM) codes,

review by a clinician panel, implementation of risk adjustment, and empirical analyses.

- Death in low mortality DRGs (PSI.02)
- Pressure ulcer (PSI.03)
- Death among surgical inpatients (PSI.04)
- Retained surgical item or unretrieved device fragment - formerly called foreign body left in during procedure (PSI.05)*
- Iatrogenic pneumothorax (PSI.06)*
- Central venous catheter-related bloodstream infections (PSI.07)
- Postoperative hip fracture (PSI.08)*
- Perioperative hemorrhage or hematoma (PSI.09)*
- Postoperative physiologic and metabolic derangements (PSI.10)
- Postoperative respiratory failure (PSI.11)
- Perioperative pulmonary embolism or deep vein thrombosis (PSI.12)*
- Postoperative sepsis (PSI.13)*
- Postoperative wound dehiscence (PSI.14)*
- Accidental puncture and laceration (PSI.15)*
- Transfusion reaction (PSI.16)*
- Birth trauma - injury to neonate (PSI.17)*
- Obstetric trauma - vaginal delivery with instrument (PSI.18)*
- Obstetric trauma - vaginal delivery without instrument (PSI.19)*

The indicators have been shown to have complication/adverse event rates that vary substantially across institutions and for which evidence suggests that high complication/adverse event rates may be associated with deficiencies in the quality of care.

It is important to note that PSIs are intended to measure the occurrence rate of adverse events from: i) complications of medical conditions after admission, ii) complications from surgical procedures, and iii) complications from obstetric procedures. Fifteen of the 18 PSIs are related to surgical or medical discharges while the remaining three are for obstetric discharges. Six indicators (PSIs 03, 09, 10, 11, 12, 14), incorporate information about when procedures were performed (relative to the admission date), which is important in the risk-adjustment process. Admission type is used by four PSIs (PSIs 10, 11, 13, and 17) to identify elective surgeries and newborn admissions.

As stated earlier, this report focuses on the 12 PSIs (denoted by an asterisk in the list above) mandated for public reporting by the New Jersey legislature and provides comprehensive definitions for each along with their specific qualifications for their inclusion in the module.

How are PSI rates calculated?

The PSIs software module generates observed, expected, and risk-adjusted rates, as well as lower and upper 95% confidence limits for risk-adjusted rates, when applicable, for each indicator at a hospital level. Observed rates are the raw rates, while the expected and risk-adjusted rates are rates derived from applying the average case-mix of a baseline file that reflects a large proportion of the U.S. hospitalized population.

Observed rates: Observed rates are raw rates generated by the software from the data under analysis. An observed rate is defined as the number of events of interest (numerator) divided by the population at risk (denominator). For hospital-level observed rates, the populations at risk are derived from hospital discharge records. The AHRQ software program calculates observed PSI rates regardless of the number of cases available. It is recommended that performance measurement assessment based on fewer than 30 cases in the denominator should be interpreted with caution.

Expected rates: Unlike observed rates, expected rates are derived from applying the average case-mix of a reference population that reflects a large proportion of the U.S. hospitalized population. The expected rate is the rate a hospital would have if it performed the same as the reference population, given the hospital's actual case-mix (e.g., age, gender, modified DRG and comorbidities).

Risk-adjusted rates: A hospital's risk-adjusted rate is obtained after its observed rate is adjusted to account for the difference between the patient case-mix of the reference population and that of the hospital. Regression coefficients from a baseline database reflecting a large proportion of the U.S. population (based on State Inpatient Databases (SID) compiled from about 45 states) are applied to observed rates for the purpose of making risk-adjustments. The baseline file of regression coefficients representing the average case-mix of the U.S. population is provided as part of the PSI software. The risk-adjusted rates reflect the age, sex, DRG, and comorbidity distribution of the data in the baseline file rather than the distributions of patients in the users' data. Thus, the observed rate (raw indicator) is adjusted using a logistic regression to account for differences among hospitals and areas in demographics. This will allow risk-adjusted rates produced by various states to be compared directly to one another. The interpretation of risk-adjusted rates becomes clear when we compare risk-adjusted rates with the observed rates. Hospitals that exhibit large differences between their observed and risk-adjusted rates tend to have a more complex case-mix.

Risk-adjustment in the latter version of the PSI module includes an adjustment for the Present on Admission (POA) indicator. The POA indicator identifies instances in which a condition was present on admission (i.e. pre-existing condition) and those that occur during the hospital stay. The POA indicator enables conditions present on admission to be identified and excluded from the quality measures, when appropriate.

Interpretation of PSI rates

The purpose of the analysis determines which rates one should use in evaluating the performance of a hospital. If the reader's primary interest is to focus on a particular hospital, to identify cases for further follow-up and quality improvement without comparisons made to other hospitals, then he/she ought to simply examine the observed rate. But, if the purpose of the analysis is to compare the performance of a particular hospital with national, state, or regional averages or performances of other selected hospitals, then all rates (observed, expected and risk-adjusted) should be examined.

Hospitals can compare their expected rates to the population rate to see how their patient case-mix compares to the reference population. The population rate refers to the overall rate for the reference population. If the population rate is higher than the expected rate, then the hospital's case-mix is less severe than the reference population. If the population rate is lower than the expected rate, then the hospital's case-mix is more severe than the reference population.

Comparing the observed rate to the expected rate allows hospitals to see how far or how close they are from what is expected of them, based on the reference population. If the observed rate is higher than the expected rate for any given indicator (i.e., the ratio of observed/expected is greater than 1.0), then the implication is that the hospital performed worse than expected for that particular indicator. If the observed rate is lower than the expected rate (i.e., the ratio of observed/expected is less than 1.0), then the implication is that the hospital performed better than expected.

Comparing a hospital's risk-adjusted rate to its expected rate shows the effect of risk-adjustment on the patient safety indicator measurement. The risk-adjusted rate accounts for the difference between the case-mix of the reference population and the hospital's case-mix. For that reason, risk-adjusted rates should be used for better hospital-to-hospital comparisons. Risk-adjusted rates are given along with their respective 95% confidence intervals.

- Even in the best hospital, some patients will experience complications either after an operation or as a result of other care. The rates in this report are calculated by comparing the number of complications (adverse events) expected in a particular hospital (based on the number of operations they do or patients they see, usually after adjusting for how old and how sick their patients are) and how many patients actually experienced the adverse events (complications).

- Confidence Intervals are used to identify which hospitals had statistically significantly more or fewer complications than expected given the risk factors of their patients. Hospitals with significantly higher rates than expected, after adjusting for risk factors, are those where the confidence interval range falls

entirely above the statewide risk-adjusted complication rate. Hospitals with statistically significantly lower rates than expected have their confidence interval range entirely below the statewide risk-adjusted complication rate.

- Comparison of a hospital's rate to the statewide rate (presented in the top row of each PSI Table), 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.). It is suggested that a hospital's performance be assessed by looking at its performance across the 12 PSI estimates presented in the Tables.

A hospital's rate is statistically significantly above (denoted by double asterisks) the statewide rate if the statewide rate falls completely below the hospital's 95% confidence interval. By comparison, a hospital's rate is significantly below (denoted by a single asterisk) the statewide rate if the statewide rate falls completely above the hospital's 95% confidence interval for that indicator. Some rates that appear large are not marked as statistically significantly higher than the statewide rate while others that appear small are not marked as statistically lower than the statewide rate. The reason may be that 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 those hospitals compared to hospitals with rates based on large numbers of events. For example, the risk-adjusted rate for Perioperative Hemorrhage or Hematoma (Table 4) for Hackensack University Medical Center is 6.6 per 1,000 surgical discharges. This rate of 6.6 per 1,000 which is derived from 61cases out of 9,508 surgical discharges has a 95% confidence interval of 5.2 – 8.1 and is considered statistically significantly higher than the statewide rate of 4.4 per 1,000 because the confidence interval range is completely above the statewide average. By comparison, Hackettstown Regional Medical Center's rate of 8.3 per 1,000, which is derived from 4 cases out of 630 surgeries has a 95% confidence interval of 1.9 – 14.6 and is not statistically significantly different from the statewide rate of 4.4 per 1,000 because the statewide average falls within the confidence interval range of the hospital's rate.

In general, PSIs are not intended as definitive quality measures because quality of performance may be influenced by several other factors. However, there is strong evidence that PSI measures indicate differences in hospital performance, which are potentially clinically important. They do measure differences in the hospitals' ability to reduce severe and potentially preventable complications and adverse events. Performance on a single PSI often cannot reliably indicate actual quality differences. AHRQ recommends that examining all the indicators together is likely to produce a more complete picture of overall quality of care.

Limitations of PSI measures

These PSI rates should only be seen as a starting point for examining the quality of care at a particular hospital. They should not be used to make strong conclusions. There are a few issues to keep in mind when looking at these measures.

- The PSIs do not address all aspects of quality. For example, they do not include information on what patients say about their care in the hospital, or information on whether hospitals consistently follow steps known to lead to better results.

- In some cases, the PSIs track serious failures in a hospital's performance which happen only once in a while. One has to be careful when comparing hospitals on these very rare events. The numbers are so small that it is difficult to know when a difference is meaningful or occurs due to chance alone. For example, a major reaction to a blood transfusion occurs in only a few cases out of a million people each year.

- One obvious limitation is that many important quality concerns including adverse drug events cannot be monitored using UB data because these data are unlikely to capture all cases of patient complications. The indicators in the PSIs module contain a large proportion of surgical indicators rather than medical or psychiatric indicators because medical complications are often difficult to distinguish from comorbidities that are present on admission. In addition, patients with medical conditions tend to be more heterogeneous than surgical patients, especially elective surgical patients, making it more difficult to account for case-mix.

- Incomplete reporting is an issue in the accuracy of any data source used for identifying patient safety problems, as medical providers might fear adverse consequences as a result of "full disclosure" in potentially public records such as discharge abstracts.

- The ability of administrative data to distinguish between adverse events in which no error occurred from true medical errors is limited. A number of factors such as heterogeneity of clinical conditions included in some codes, lack of information about event timing available in these data sets, and limited clinical detail for risk adjustment, contribute to the difficulty in identifying complications that represent medical error or may at least be in some part preventable.

- Questions about the clinical accuracy of discharge-based diagnosis coding lead to concerns about the interpretation of reported diagnoses that may represent safety problems. Specifically, UB data are unlikely to capture all cases of a complication, regardless of the preventability, without false positives and false negatives (sensitivity and specificity). Also, when the codes are accurate in defining an event, the clinical vagueness inherent in the description of the code itself (e.g., "hypotension") may lead to a highly heterogeneous pool of clinical states represented by that code.

Patient Safety Indicator estimates for New Jersey

As indicated earlier, this report is based on an application of the AHRQ PSIs module to the New Jersey hospital discharge data. In this section, we provide an abbreviated description or definition for each of the 12 indicators used, followed by a table showing the numbers of adverse events, total hospital discharges, and the corresponding observed, expected and risk-adjusted rates, along with 95% confidence intervals, when applicable. Where the cell entry is missing, it is designated by "." to indicate that the hospital did not perform that particular procedure or it did less than 3 procedures (risk-adjusted rate is not computed when the denominator is less than 3).

Comparison of a specific hospital-level PSI rate to the statewide average for the same indicator is one appropriate way to see how well a hospital performs among its peers. Following AHRQ's recommendation, we have compared hospital rates against statewide rates to assess performance.

PSI.05 - Retained surgical item or unretrieved device fragment

- This indicator is measured using volume – not a rate**.** It tells you the number of patients who had a 'retained surgical item or unretrieved device fragment' during surgical or medical procedures. It is considered a never-event and happens very rarely. All cases with pre-existing conditions are excluded from the measure.

- The measure refers to discharges 18 years and older or obstetric patients (MDC 14 - pregnancy, childbirth, and puerperium), with ICD-9-CM codes for a 'retained surgical item or unretrieved device fragment' in any secondary diagnosis field of medical and surgical discharges defined by specific DRGs or MS-DRGs.

- Patients with ICD-9-CM codes for a 'retained surgical item or unretrieved device fragment' in the principal diagnosis field or secondary diagnosis present on admission are excluded from the measure.

- Table 1 shows that in 2015, there were 23 cases of 'retained surgical item or unretrieved device fragment' in New Jersey.

Table 1. Retained Surgical Item or Unretrieved Device Fragment (formerly Foreign body left during procedure)

Hospital	# of cases
Statewide	**23**
Atlanticare Regional Medical Center-Mainland Campus	1
Capital Health Medical Center - Hopewell	1
HackensackUMC - Mountainside	1
HackensackUMC - Pascack Valley	1
Hackettstown Regional Medical Center	1
Jersey City Medical Center	1
Newark Beth Israel Medical Center	3
Our Lady of Lourdes Medical Center	1
Riverview Medical Center	1
RWJ University Hospital	2
RWJ University Hospital-Somerset	1
South Jersey Healthcare Regional MC	2
Southern Ocean Medical Center	1
St. Barnabas Medical Center	2
St. Peter's University Hospital	1
University Hospital - UMDNJ	2
Virtua-West Jersey Hospital Voorhees	1

Source: New Jersey 2015 UB Data.

PSI.06 - Iatrogenic pneumothorax

- This indicator flags cases of iatrogenic pneumothorax (i.e. patients who had air leaking out of their lungs due to an accidental puncture during a medical or surgical procedure) occurring in a facility. The rate, which is risk-adjusted by age, sex, DRG, and comorbidity categories, is defined as the number of iatrogenic pneumothorax cases per 1,000 discharges surgical and medical discharges.

- The numerator refers to the number of discharges with ICD-9-CM code of 512.1 in any secondary diagnosis field among cases meeting the inclusion and exclusion rules for the denominator.

- The denominator refers to all medical and surgical discharges age 18 years and older defined by specific DRGs.

- The following cases are excluded from the denominator or from the rate calculation:

    o cases with ICD-9-CM code of 512.1 as the principal diagnosis or secondary diagnosis present on admission, if known;

    o cases with ICD-9-CM diagnosis code of chest trauma or pleural effusion;

    o cases with ICD-9-CM procedure code of diaphragmatic surgery repair;

    o cases with any code indicating thoracic surgery or lung or pleural biopsy or assigned to cardiac surgery DRGs; and

    o obstetric cases (MDC 14 - pregnancy, childbirth, and puerperium).

- Table 2 shows the number of iatrogenic pneumothorax cases by hospital, as well as the observed, expected and risk-adjusted rates with their corresponding 95% confidence intervals. Statewide, there were 160 cases of iatrogenic pneumothorax out of 654,922 eligible discharges reported in 2015 for a risk-adjusted rate of 0.23 per 1,000 discharges.

Table 2. Iatrogenic Pneumothorax (per 1,000 medical and surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**160**	**654,922**	**0.2**	**0.4**	**0.2**	**0.2 - 0.3**
Atlanticare Regional Medical Center-City	1	9,124	0.1	0.4	0.1	0.0 - 0.5
Atlanticare Regional Medical Center-Mainland	2	13,823	0.1	0.4	0.1	0.0 - 0.4
Bayshore Community Hospital	1	6,502	0.2	0.3	0.2	0.0 - 0.6
Bergen Regional Medical Center	0	5,961	0.0	0.4	0.0	0.0 - 0.5
Cape Regional Medical Center Inc.	0	5,971	0.0	0.2	0.0	0.0 - 0.6
Capital Health Medical Center - Hopewell	1	7,064	0.1	0.3	0.2	0.0 - 0.6
Capital Health Regional Medical Center - Fuld Campus	3	7,418	0.4	0.3	0.5	0.0 - 0.9
Carepoint Health - Bayonne Medical Center	2	5,575	0.4	0.3	0.4	0.0 - 0.9
Carepoint Health - Christ Hospital	2	6,978	0.3	0.3	0.3	0.0 - 0.8
Carepoint Health - Hoboken University Medical Center	1	4,615	0.2	0.3	0.3	0.0 - 0.9
CentraState Medical Center	1	10,215	0.1	0.3	0.1	0.0 - 0.5
Chilton Medical Center	1	7,853	0.1	0.3	0.2	0.0 - 0.6
Clara Maass Medical Center	3	10,963	0.3	0.3	0.3	0.0 - 0.6
Community Medical Center	3	17,678	0.2	0.4	0.1	0.0 - 0.4
Cooper University Hospital	5	19,621	0.3	0.4	0.2	0.0 - 0.4
Deborah Heart and Lung Center	1	3,035	0.3	1.1	0.1	0.0 - 0.5
East Orange General Hospital	0	4,865	0.0	0.4	0.0	0.0 - 0.5
Englewood Hospital and Medical Center	1	11,096	0.1	0.3	0.1	0.0 - 0.4
Hackensack University Medical Center	9	24,820	0.4	0.5	0.3	0.1 - 0.5
HackensackUMC - Mountainside	0	7,303	0.0	0.3	0.0	0.0 - 0.4
HackensackUMC - Pascack Valley	0	2,954	0.0	0.3	0.0	0.0 - 0.7
Hackettstown Regional Medical Center	2	3,019	0.7	0.3	0.7	0.0 - 1.4
Holy Name Medical Center	4	11,858	0.3	0.4	0.3	0.0 - 0.6
Hunterdon Medical Center	3	6,312	0.5	0.3	0.5	0.0 - 1.0
Inspira Medical Center - Elmer	1	2,747	0.4	0.2	0.5	0.0 - 1.4
Inspira Medical Center - Woodbury	0	6,807	0.0	0.3	0.0	0.0 - 0.5
Jersey City Medical Center	3	9,769	0.3	0.4	0.2	0.0 - 0.6
Jersey Shore University Medical Center	6	17,903	0.3	0.4	0.3	0.0 - 0.5
JFK Medical CTR - Anthony M. Yelensics Community	3	13,277	0.2	0.4	0.2	0.0 - 0.4
Kennedy University Hospital - Cherry Hill	0	6,082	0.0	0.2	0.0	0.0 - 0.6
Kennedy University Hospital - Stratford	1	5,688	0.2	0.3	0.2	0.0 - 0.8
Kennedy University Hospital - Wash. Twp.	4	10,904	0.4	0.3	0.4	0.0 - 0.8
Lourdes Medical Center of Burlington Cty.	1	4,648	0.2	0.2	0.3	0.0 - 1.0
Meadowlands Hospital Medical Center	0	1,776	0.0	0.3	0.0	0.0 - 1.0
Memorial Hospital of Salem County	1	2,996	0.3	0.2	0.5	0.0 - 1.3
Monmouth Medical Center	1	7,461	0.1	0.3	0.1	0.0 - 0.6
Monmouth Medical Center - Southern Campus	0	5,616	0.0	0.2	0.0	0.0 - 0.6
Morristown Medical Center	3	24,277	0.1	0.4	0.1	0.0 - 0.3
Newark Beth Israel Medical Center	3	10,227	0.3	0.5	0.2	0.0 - 0.5
Newton Medical Center	1	6,326	0.2	0.3	0.2	0.0 - 0.7
Ocean Medical Center	2	11,913	0.2	0.3	0.2	0.0 - 0.5
Our Lady of Lourdes Medical Center	7	9,125	0.8	0.6	0.4	0.1 - 0.7
Overlook Medical Center	8	17,031	0.5	0.3	0.5	0.2 - 0.7

Table 2. Iatrogenic Pneumothorax (per 1,000 medical and surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**160**	**654,922**	**0.2**	**0.4**	**0.2**	**0.2 - 0.3**
Palisades Medical Center	4	7,012	0.6	0.3	0.6	0.2 - 1.1
Raritan Bay Medical Center-Old Bridge Div	2	4,177	0.5	0.3	0.5	0.0 - 1.0
Raritan Bay Medical Center-Perth Amboy Div	2	6,300	0.3	0.3	0.3	0.0 - 0.8
Riverview Medical Center	1	9,822	0.1	0.3	0.1	0.0 - 0.5
RWJ University Hospital	4	23,566	0.2	0.5	0.1	0.0 - 0.3
RWJ University Hospital at Hamilton	3	8,445	0.4	0.3	0.4	0.0 - 0.8
RWJ University Hospital at Rahway	0	5,197	0.0	0.6	0.0	0.0 - 0.4
RWJ University Hospital-Somerset	1	11,079	0.1	0.4	0.1	0.0 - 0.4
Saint Clare's Hospital-Denville	0	8,080	0.0	0.3	0.0	0.0 - 0.4
Saint Clare's Hospital-Dover	1	3,236	0.3	0.2	0.5	0.0 - 1.3
Shore Medical Center	2	7,495	0.3	0.3	0.3	0.0 - 0.7
South Jersey Healthcare Regional MC	6	12,144	0.5	0.3	0.5	0.2 - 0.9
Southern Ocean Medical Center	2	5,683	0.4	0.3	0.4	0.0 - 0.8
St. Barnabas Medical Center	9	17,691	0.5	0.4	0.5	0.2 - 0.7
St. Francis Medical Center-Trenton	1	4,383	0.2	0.3	0.2	0.0 - 0.8
St. Joseph's Regional Medical Center	5	17,867	0.3	0.4	0.3	0.0 0.5
St. Joseph's Wayne Hospital	1	4,559	0.2	0.3	0.2	0.0 - 0.8
St. Luke Warren Hospital	0	3,800	0.0	0.3	0.0	0.0 - 0.6
St. Mary's General Hospital	1	5,845	0.2	0.4	0.1	0.0 - 0.5
St. Michael's Medical Center	2	6,913	0.3	0.5	0.2	0.0 - 0.6
St. Peter's University Hospital	3	8,599	0.3	0.4	0.3	0.0 - 0.7
Trinitas Regional Medical Center	2	9,158	0.2	0.3	0.2	0.0 - 0.6
University Hospital - UMDNJ	4	10,602	0.4	0.4	0.3	0.0 - 0.6
University Medical Center of Princeton at Plainsboro	1	9,896	0.1	0.4	0.1	0.0 - 0.5
Valley Hospital	2	15,897	0.1	0.4	0.1	0.0 - 0.4
Virtua-Memorial Hospital Burlington Cty.	4	13,154	0.3	0.4	0.3	0.0 - 0.6
Virtua-West Jersey Hospital Marlton	3	9,046	0.3	0.4	0.3	0.0 - 0.6
Virtua-West Jersey Hospital Voorhees	3	16,080	0.2	0.3	0.2	0.0 - 0.5

Source: New Jersey 2015 UB Data.

**： Statistically significantly above statewide average (i.e., worse than statewide average).

∆: 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.

PSI.08 – Postoperative hip fracture

- This indicator intends to capture cases of in-hospital hip fractures and includes only secondary diagnosis codes to eliminate fractures that were present on admission. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity categories, is defined as the number of cases of in-hospital hip fracture per 1,000 surgical discharges with an operating room procedure.

- The numerator refers to discharges with ICD-9-CM code for hip fracture in any secondary diagnosis field among cases meeting the inclusion and exclusion rules for the denominator.

- The denominator refers to all surgical discharges 18 years and older defined by specific DRGs and an ICD-9-CM code for an operating room procedure.

- The following cases are excluded from the denominator or from rate calculation:

    o cases with ICD-9-CM code for hip fracture in the principal diagnosis field or secondary diagnosis present on admission, if known;

    o cases where the only operating room procedure is hip fracture repair; and where a procedure for hip fracture repair occurs before or on the same day as the first operating room procedure (i*f day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available);*

    o cases with diseases and disorders of the musculoskeletal system and connective tissue (MDC 8);

    o cases with principal diagnosis or secondary diagnosis (present on admission, if known) of seizure, syncope, stroke, coma, cardiac arrest, poisoning, trauma, delirium and other psychoses, or anoxic brain injury;

    o cases with any diagnosis of metastatic cancer, lymphoid malignancy or bone malignancy, or self-inflicted injury; and

    o MDC 14 (pregnancy, childbirth and the puerperium).

- Table 3 shows the number, by hospital, of discharges with postoperative hip fracture among all surgical discharges age 18 and older, the observed rates, expected rates and risk-adjusted rates with their corresponding 95% confidence intervals. Statewide, there were only 3 postoperative hip fracture cases reported out of 118,992 eligible discharges in 2015.

Table 3. Postoperative Hip Fracture (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate△	Risk-adjusted rate	95% Confidence interval
Statewide	3	118,992	0.0	0.0	0.0	0.0 - 0.1
Atlanticare Regional Medical Center-City Campus	0	1,288	0.0	0.0	0.0	0.0 - 0.4
Atlanticare Regional Medical Center-Mainland Campus	0	2,236	0.0	0.0	0.0	0.0 - 0.3
Bayshore Community Hospital	0	1,025	0.0	0.0	0.0	0.0 - 0.4
Bergen Regional Medical Center	0	76	0.0	0.0	0.0	0.0 - 1.5
Cape Regional Medical Center Inc.	0	648	0.0	0.0	0.0	0.0 - 0.5
Capital Health Medical Center - Hopewell	0	1,231	0.0	0.0	0.0	0.0 - 0.4
Capital Health Regional Medical Center - Fuld Campus	0	648	0.0	0.0	0.0	0.0 - 0.5
Carepoint Health - Bayonne Medical Center	0	648	0.0	0.0	0.0	0.0 - 0.5
Carepoint Health - Christ Hospital	0	1,101	0.0	0.0	0.0	0.0 - 0.4
Carepoint Health - Hoboken University Medical Center	0	654	0.0	0.0	0.0	0.0 - 0.5
CentraState Medical Center	0	1,773	0.0	0.0	0.0	0.0 - 0.3
Chilton Medical Center	0	942	0.0	0.0	0.0	0.0 - 0.4
Clara Maass Medical Center	1	2,297	0.4	0.0	0.4 **	0.2 - 0.7
Community Medical Center	0	2,463	0.0	0.0	0.0	0.0 - 0.3
Cooper University Hospital	0	5,186	0.0	0.0	0.0	0.0 - 0.2
Deborah Heart and Lung Center	1	1,885	0.5	0.0	0.5 **	0.2 - 0.8
East Orange General Hospital	0	315	0.0	0.0	0.0	0.0 - 0.8
Englewood Hospital and Medical Center	0	2,665	0.0	0.0	0.0	0.0 - 0.3
Hackensack University Medical Center	0	5,682	0.0	0.0	0.0	0.0 - 0.2
HackensackUMC - Mountainside	0	1,454	0.0	0.0	0.0	0.0 - 0.4
HackensackUMC - Pascack Valley	0	483	0.0	0.0	0.0	0.0 - 0.6
Hackettstown Regional Medical Center	0	347	0.0	0.0	0.0	0.0 - 0.7
Holy Name Medical Center	0	2,045	0.0	0.0	0.0	0.0 - 0.3
Hunterdon Medical Center	0	748	0.0	0.0	0.0	0.0 - 0.5
Inspira Medical Center - Elmer	0	213	0.0	0.0	0.0	0.0 - 0.9
Inspira Medical Center - Woodbury	0	810	0.0	0.0	0.0	0.0 - 0.5
Jersey City Medical Center	0	1,453	0.0	0.0	0.0	0.0 - 0.3
Jersey Shore University Medical Center	0	4,616	0.0	0.0	0.0	0.0 - 0.2
JFK Medical CTR - Anthony M. Yelensics Community	0	2,504	0.0	0.0	0.0	0.0 - 0.3
Kennedy University Hospital - Cherry Hill	0	312	0.0	0.0	0.0	0.0 - 0.8
Kennedy University Hospital - Stratford	0	927	0.0	0.0	0.0	0.0 - 0.4
Kennedy University Hospital - Wash. Twp.	0	1,245	0.0	0.0	0.0	0.0 - 0.4
Lourdes Medical Center of Burlington Cty.	0	508	0.0	0.0	0.0	0.0 - 0.6
Meadowlands Hospital Medical Center	0	221	0.0	0.0	0.0	0.0 - 0.9
Memorial Hospital of Salem County	0	355	0.0	0.0	0.0	0.0 - 0.7
Monmouth Medical Center	0	1,328	0.0	0.0	0.0	0.0 - 0.4
Monmouth Medical Center - Southern Campus	1	231	4.3	0.0	4.5 **	3.6 - 5.4
Morristown Medical Center	0	7,172	0.0	0.0	0.0	0.0 - 0.2
Newark Beth Israel Medical Center	0	2,660	0.0	0.0	0.0	0.0 - 0.2

Table 3. Postoperative Hip Fracture (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. RateΔ	Risk-adjusted rate	95% Confidence interval
Statewide	3	118,992	0.0	0.0	0.0	0.0 - 0.1
Newton Medical Center	0	535	0.0	0.0	0.0	0.0 - 0.6
Ocean Medical Center	0	1,527	0.0	0.0	0.0	0.0 - 0.3
Our Lady of Lourdes Medical Center	0	3,465	0.0	0.0	0.0	0.0 - 0.2
Overlook Medical Center	0	3,529	0.0	0.0	0.0	0.0 - 0.2
Palisades Medical Center	0	887	0.0	0.0	0.0	0.0 - 0.4
Raritan Bay Medical Center-Old Bridge Div	0	545	0.0	0.0	0.0	0.0 - 0.6
Raritan Bay Medical Center-Perth Amboy Div	0	863	0.0	0.0	0.0	0.0 - 0.4
Riverview Medical Center	0	1,420	0.0	0.0	0.0	0.0 - 0.4
RWJ University Hospital	0	6,218	0.0	0.0	0.0	0.0 - 0.2
RWJ University Hospital at Hamilton	0	1,199	0.0	0.0	0.0	0.0 - 0.4
RWJ University Hospital at Rahway	0	620	0.0	0.0	0.0	0.0 - 0.5
RWJ University Hospital-Somerset	0	1,952	0.0	0.0	0.0	0.0 - 0.3
Saint Clare's Hospital-Denville	0	912	0.0	0.0	0.0	0.0 - 0.4
Saint Clare's Hospital-Dover	0	210	0.0	0.0	0.0	0.0 - 0.9
Shore Medical Center	0	891	0.0	0.0	0.0	0.0 - 0.4
South Jersey Healthcare Regional MC	0	2,032	0.0	0.0	0.0	0.0 - 0.3
Southern Ocean Medical Center	0	952	0.0	0.0	0.0	0.0 - 0.4
St. Barnabas Medical Center	0	4,628	0.0	0.0	0.0	0.0 - 0.2
St. Francis Medical Center-Trenton	0	1,013	0.0	0.0	0.0	0.0 - 0.4
St. Joseph's Regional Medical Center	0	3,395	0.0	0.0	0.0	0.0 - 0.2
St. Joseph's Wayne Hospital	0	518	0.0	0.0	0.0	0.0 - 0.6
St. Luke Warren Hospital	0	361	0.0	0.0	0.0	0.0 - 0.7
St. Mary's General Hospital	0	1,063	0.0	0.0	0.0	0.0 - 0.4
St. Michael's Medical Center	0	1,396	0.0	0.0	0.0	0.0 - 0.3
St. Peter's University Hospital	0	1,721	0.0	0.0	0.0	0.0 - 0.3
Trinitas Regional Medical Center	0	1,325	0.0	0.0	0.0	0.0 - 0.4
University Hospital - UMDNJ	0	2,021	0.0	0.0	0.0	0.0 - 0.3
University Medical Center of Princeton at Plainsboro	0	1,405	0.0	0.0	0.0	0.0 - 0.4
Valley Hospital	0	3,542	0.0	0.0	0.0	0.0 - 0.2
Virtua-Memorial Hospital Burlington Cty.	0	2,530	0.0	0.0	0.0	0.0 - 0.3
Virtua-West Jersey Hospital Marlton	0	1,701	0.0	0.0	0.0	0.0 - 0.3
Virtua-West Jersey Hospital Voorhees	0	2,221	0.0	0.0	0.0	0.0 - 0.3

Source: New Jersey 2015 UB Data.

Δ: 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.

PSI.09 – Perioperative hemorrhage or hematoma

- This indicator is designed to capture perioperative hemorrhage or hematoma cases with control of perioperative hemorrhage, drainage of hematoma, or a miscellaneous hemorrhage- or hematoma-related procedure following surgery. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity categories, is defined as the number of patients with perioperative hemorrhage (too much bleeding) or hematoma (drainage of hematoma) per 1,000 surgical discharges ages 18 years and older.

- The numerator refers to the number of discharges with ICD-9-CM codes for perioperative hemorrhage or hematoma in any secondary diagnosis field or discharges with ICD-9-CM codes for perioperative control of hemorrhage or drainage of hematoma in any secondary procedure, while the denominator refers to all surgical discharges age 18 years and older defined by specific DRGs and an ICD-9-CM code for an operating room procedure.

- The following cases are excluded from the denominator or from rate calculation:

  - cases with a secondary diagnosis of perioperative hemorrhage or hematoma present on admission, if known;

  - cases with a diagnosis of coagulation disorder;

  - cases with a principal diagnosis of perioperative hemorrhage or hematoma;

  - cases where the only operating room procedure is control of perioperative hemorrhage, drainage of hematoma, or a miscellaneous hemorrhage- or hematoma-related procedure;

  - cases where a procedure for perioperative control of hemorrhage or drainage of hematoma occurs before the first operating room procedure (i*f day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available)*; and

  - obstetric cases (MDC 14 - pregnancy, childbirth and the puerperium).

- Table 4 shows the number of perioperative hemorrhage or hematoma cases by hospital, the number of eligible surgical discharges, observed rates, expected rates, and risk-adjusted rates along with their corresponding 95% confidence intervals. Statewide, there were 791 perioperative hemorrhage or hematoma cases out of 177,084 eligible surgical discharges reported in 2015 for a statewide risk-adjusted rate of 4.4 per 1,000.

Table 4. Perioperative Hemorrhage or Hematoma (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	791	177,084	4.5	5.2	4.4	4.1 - 4.7
Atlanticare Regional Medical Center-City Campus	16	1,850	8.6	5.4	8.3	5.1 - 11.4
Atlanticare Regional Medical Center-Mainland Campus	9	4,685	1.9	3.6	2.8	0.3 - 5.2
Bayshore Community Hospital	2	1,398	1.4	5.2	1.4	0.0 - 5.2
Bergen Regional Medical Center	0	87	0.0	5.6	0.0	0.0 - 14.4
Cape Regional Medical Center Inc.	3	1,016	3.0	4.3	3.6	0.0 - 8.4
Capital Health Medical Center - Hopewell	6	2,058	2.9	4.7	3.2	0.0 - 6.4
Capital Health Regional Medical Center - Fuld Campus	2	1,204	1.7	4.6	1.9	0.0 - 6.1
Carepoint Health - Bayonne Medical Center	3	790	3.8	5.1	3.8	0.0 - 8.8
Carepoint Health - Christ Hospital	3	1,255	2.4	5.6	2.2	0.0 - 6.0
Carepoint Health - Hoboken University Medical Center	1	1,049	1.0	3.9	1.3	0.0 - 6.2
CentraState Medical Center	6	2,664	2.3	4.8	2.4	0.0 - 5.2
Chilton Medical Center	10	1,610	6.2	4.5	7.1	3.3 - 10.8
Clara Maass Medical Center	7	2,852	2.5	5.1	2.5	0.0 - 5.1
Community Medical Center	6	3,676	1.6	4.7	1.8 *	0.0 - 4.2
Cooper University Hospital	31	7,144	4.3	6.6	3.4	1.9 - 4.9
Deborah Heart and Lung Center	13	1,751	7.4	9.3	4.1	1.6 - 6.6
East Orange General Hospital	3	372	8.1	5.3	7.9	0.7 - 15.1
Englewood Hospital and Medical Center	14	4,126	3.4	5.5	3.2	1.1 - 5.3
Hackensack University Medical Center	61	9,508	6.4	5.0	6.6 **	5.2 - 8.1
HackensackUMC - Mountainside	6	1,922	3.1	4.7	3.4	0.1 - 6.7
HackensackUMC - Pascack Valley	3	785	3.8	4.1	4.8	0.0 - 10.4
Hackettstown Regional Medical Center	4	630	6.3	3.9	8.3	1.9 - 14.6
Holy Name Medical Center	5	3,171	1.6	4.8	1.7 *	0.0 - 4.3
Hunterdon Medical Center	1	1,424	0.7	4.1	0.9	0.0 - 5.0
Inspira Medical Center - Elmer	0	483	0.0	2.8	0.0	0.0 - 8.6
Inspira Medical Center - Woodbury	9	1,277	7.0	4.7	7.8	3.7 - 11.9
Jersey City Medical Center	14	2,231	6.3	5.4	5.9	3.1 - 8.8
Jersey Shore University Medical Center	50	6,535	7.7	6.1	6.5 **	4.9 - 8.1
JFK Medical CTR - Anthony M. Yelensics Community	12	3,392	3.5	4.7	3.9	1.4 - 6.4
Kennedy University Hospital - Cherry Hill	3	472	6.4	4.1	7.9	0.7 - 15.1
Kennedy University Hospital - Stratford	3	1,026	2.9	5.3	2.9	0.0 - 7.2
Kennedy University Hospital - Wash. Twp.	2	2,279	0.9	3.9	1.2	0.0 - 4.5
Lourdes Medical Center of Burlington Cty.	3	773	3.9	4.3	4.7	0.0 - 10.2
Meadowlands Hospital Medical Center	1	496	2.0	3.2	3.2	0.0 - 11.2
Memorial Hospital of Salem County	1	431	2.3	4.4	2.7	0.0 - 10.0
Monmouth Medical Center	5	2,612	1.9	4.3	2.3	0.0 - 5.3
Monmouth Medical Center - Southern Campus	2	359	5.6	4.4	6.5	0.0 - 14.4
Morristown Medical Center	93	11,882	7.8	6.2	6.5 **	5.3 - 7.6
Newark Beth Israel Medical Center	28	2,761	10.1	7.5	7.0 **	4.8 - 9.2
Newton Medical Center	3	878	3.4	4.0	4.3	0.0 - 9.7
Ocean Medical Center	10	3,053	3.3	4.0	4.2	1.4 - 7.1
Our Lady of Lourdes Medical Center	35	3,336	10.5	7.6	7.1 **	5.1 - 9.1

Table 4. Perioperative Hemorrhage or Hematoma (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**791**	**177,084**	**4.5**	**5.2**	**4.4**	**4.1 - 4.7**
Overlook Medical Center	30	5,261	5.7	4.7	6.2	4.2 - 8.2
Palisades Medical Center	3	1,097	2.7	4.6	3.1	0.0 - 7.6
Raritan Bay Medical Center-Old Bridge Div	2	705	2.8	5.0	2.9	0.0 - 8.3
Raritan Bay Medical Center-Perth Amboy Div	5	988	5.1	4.9	5.3	0.8 - 9.9
Riverview Medical Center	7	2,593	2.7	4.5	3.1	0.1 - 6.0
RWJ University Hospital	55	8,398	6.5	6.5	5.2	3.8 - 6.6
RWJ University Hospital at Hamilton	6	2,055	2.9	4.3	3.5	0.1 - 6.9
RWJ University Hospital at Rahway	3	862	3.5	4.6	3.9	0.0 - 8.9
RWJ University Hospital-Somerset	8	2,705	3.0	4.7	3.2	0.4 - 6.1
Saint Clare's Hospital-Denville	4	1,531	2.6	4.3	3.1	0.0 - 7.0
Saint Clare's Hospital-Dover	0	321	0.0	3.8	0.0	0.0 - 9.1
Shore Medical Center	7	2,085	3.4	3.4	5.1	1.3 - 8.9
South Jersey Healthcare Regional MC	10	2,778	3.6	4.8	3.8	1.1 - 6.6
Southern Ocean Medical Center	2	1,305	1.5	4.6	1.7	0.0 - 5.8
St. Barnabas Medical Center	42	6,108	6.9	6.3	5.6	4.0 - 7.2
St. Francis Medical Center-Trenton	7	1,081	6.5	6.4	5.2	1.4 - 9.1
St. Joseph's Regional Medical Center	15	4,776	3.1	5.6	2.9	1.0 - 4.9
St. Joseph's Wayne Hospital	1	797	1.3	4.1	1.6	0.0 - 7.2
St. Luke Warren Hospital	3	611	4.9	4.3	5.8	0.0 - 12.0
St. Mary's General Hospital	1	1,232	0.8	5.7	0.7	0.0 - 4.5
St. Michael's Medical Center	4	1,437	2.8	6.2	2.3	0.0 - 5.7
St. Peter's University Hospital	7	2,273	3.1	5.1	3.1	0.2 - 6.1
Trinitas Regional Medical Center	2	1,755	1.1	5.1	1.2	0.0 - 4.5
University Hospital - UMDNJ	24	3,587	6.7	5.9	5.8	3.7 - 8.0
University Medical Center of Princeton at Plainsboro	7	3,027	2.3	3.6	3.3	0.3 - 6.4
Valley Hospital	13	5,343	2.4	5.3	2.3 *	0.5 - 4.2
Virtua-Memorial Hospital Burlington Cty.	18	3,635	5.0	5.0	5.1	2.7 - 7.4
Virtua-West Jersey Hospital Marlton	4	3,059	1.3	4.1	1.6	0.0 - 4.5
Virtua-West Jersey Hospital Voorhees	12	4,376	2.7	3.3	4.3	1.6 - 7.0

Source: New Jersey 2015 UB Data.

*:   Statistically significantly below statewide average (i.e., better than statewide average).

**:   Statistically significantly above statewide average (i.e., worse than statewide average).

∆:   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.

PSI.12- Perioperative pulmonary embolism (PE) or deep vein thrombosis (DVT)

- This indicator measures incidences of perioperative pulmonary embolism (blood clot in the lungs) or deep vein thrombosis (blood clot in a large vein) occurring during a surgical procedure. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity, is defined as the number of perioperative pulmonary embolism (PE) or deep vein thrombosis (DVT) cases per 1,000 surgical discharges.

- The numerator includes discharges, among cases meeting the inclusion and exclusion rules for the denominator, with a secondary ICD-9-CM diagnosis codes for deep vein thrombosis or pulmonary embolism.

- The denominator includes all surgical discharges age 18 and older with ICD-9-CM procedure codes for an operating room procedure, defined by specific DRG or MS-DRG codes.

- The following cases are excluded from the denominator or from rate calculation:

  - cases with secondary diagnosis for pulmonary embolism or deep vein thrombosis, present on admission (pre-existing conditions);
  - cases with principal diagnosis for pulmonary embolism or deep vein thrombosis;
  - cases in which interruption of vena cava is the only operating room procedure or in which interruption of vena cava occurs before or on the same day as the first operating room procedure (*if day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available);* and
  - obstetric discharges (MDC 14 - pregnancy, childbirth and the puerperium).

- Table 5 presents the number of perioperative pulmonary embolism or deep vein thrombosis cases among all surgical discharges age 18 and older by hospital, observed rates, expected rates, risk-adjusted rates, and the 95% confidence intervals computed for the risk-adjusted rates. Statewide, there were 1,090 cases of perioperative pulmonary embolism or deep vein thrombosis reported in 2015 for a statewide risk-adjusted rate of 5.5 per 1,000 surgical discharges.

Table 5. Perioperative Pulmonary Embolism or Deep Vein Thrombosis (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**1,090**	**189,416**	**5.8**	**5.3**	**5.5**	**5.2 - 5.8**
Atlanticare Regional Medical Center-City Campus	5	2,071	2.4	6.1	2.0 *	0.0 - 4.8
Atlanticare Regional Medical Center-Mainland Campus	17	5,073	3.4	5.5	3.1 *	1.2 - 4.9
Bayshore Community Hospital	6	1,475	4.1	4.6	4.5	0.7 - 8.3
Bergen Regional Medical Center	1	100	10.0	5.3	9.4	0.0 - 22.9
Cape Regional Medical Center Inc.	6	1,099	5.5	5.8	4.8	0.9 - 8.7
Capital Health Medical Center - Hopewell	17	2,157	7.9	4.9	8.1	5.1 - 11.2
Capital Health Regional Medical Center - Fuld Campus	53	1,444	36.7	10.5	17.6 **	15.1 - 20.1
Carepoint Health - Bayonne Medical Center	8	854	9.4	6.1	7.8	3.5 - 12.1
Carepoint Health - Christ Hospital	8	1,311	6.1	3.7	8.3	3.8 - 12.8
Carepoint Health - Hoboken University Medical Center	8	1,094	7.3	3.6	10.3	5.3 - 15.3
CentraState Medical Center	6	2,797	2.1	4.9	2.2 *	0.0 - 4.9
Chilton Medical Center	8	1,706	4.7	5.8	4.1	1.0 - 7.2
Clara Maass Medical Center	3	2,981	1.0	4.8	1.0 *	0.0 - 3.6
Community Medical Center	10	3,919	2.6	5.4	2.4 *	0.2 - 4.5
Cooper University Hospital	55	7,802	7.0	6.6	5.4	4.0 - 6.8
Deborah Heart and Lung Center	2	1,934	1.0	5.2	1.0 *	0.0 - 4.1
East Orange General Hospital	0	412	0.0	6.8	0.0	0.0 - 5.9
Englewood Hospital and Medical Center	21	4,344	4.8	4.8	5.1	3.0 - 7.3
Hackensack University Medical Center	76	10,119	7.5	5.9	6.4	5.2 - 7.7
HackensackUMC - Mountainside	8	2,022	4.0	4.3	4.7	1.3 - 8.0
HackensackUMC - Pascack Valley	4	806	5.0	4.7	5.3	0.3 - 10.4
Hackettstown Regional Medical Center	8	688	11.6	4.7	12.4 **	6.9 - 17.9
Holy Name Medical Center	14	3,313	4.2	4.9	4.4	1.9 - 6.8
Hunterdon Medical Center	3	1,529	2.0	5.2	1.9 *	0.0 - 5.4
Inspira Medical Center - Elmer	2	517	3.9	5.1	3.8	0.0 - 9.9
Inspira Medical Center - Woodbury	4	1,368	2.9	5.1	2.9	0.0 - 6.7
Jersey City Medical Center	3	2,359	1.3	4.9	1.3 *	0.0 - 4.2
Jersey Shore University Medical Center	13	7,108	1.8	5.6	1.7 *	0.1 - 3.2
JFK Medical CTR - Anthony M. Yelensics Community	24	3,573	6.7	4.8	7.0	4.7 - 9.4
Kennedy University Hospital - Cherry Hill	3	524	5.7	6.2	4.7	0.0 - 10.1
Kennedy University Hospital - Stratford	2	1,101	1.8	3.7	2.5	0.0 - 7.4
Kennedy University Hospital - Wash. Twp.	22	2,488	8.8	5.3	8.5 **	5.8 - 11.2
Lourdes Medical Center of Burlington Cty.	2	830	2.4	5.0	2.4	0.0 - 7.3
Meadowlands Hospital Medical Center	2	522	3.8	3.4	5.7	0.0 - 13.1
Memorial Hospital of Salem County	0	459	0.0	3.4	0.0	0.0 - 7.8
Monmouth Medical Center	7	2,729	2.6	4.7	2.8	0.0 - 5.5
Monmouth Medical Center - Southern Campus	1	385	2.6	6.7	1.9	0.0 - 8.0
Morristown Medical Center	71	12,662	5.6	5.9	4.8	3.7 - 6.0
Newark Beth Israel Medical Center	25	3,040	8.2	5.9	7.0	4.7 - 9.3
Newton Medical Center	7	933	7.5	5.5	6.8	2.5 - 11.2
Ocean Medical Center	7	3,234	2.2	5.5	2.0 *	0.0 - 4.3
Our Lady of Lourdes Medical Center	15	3,787	4.0	5.2	3.8	1.6 - 6.0

Table 5. Perioperative Pulmonary Embolism or Deep Vein Thrombosis (per 1,000 surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. RateΔ	Risk-adjusted rate	95% Confidence interval
Statewide	1,090	189,416	5.8	5.3	5.5	5.2 - 5.8
Overlook Medical Center	18	5,662	3.2	5.8	2.8 *	1.1 - 4.5
Palisades Medical Center	3	1,155	2.6	4.0	3.3	0.0 - 7.9
Raritan Bay Medical Center-Old Bridge Div	3	768	3.9	4.3	4.6	0.0 - 10.0
Raritan Bay Medical Center-Perth Amboy Div	4	1,051	3.8	3.6	5.3	0.2 - 10.3
Riverview Medical Center	8	2,758	2.9	5.1	2.9	0.2 - 5.5
RWJ University Hospital	127	9,031	14.1	5.8	12.2 **	10.8 - 13.5
RWJ University Hospital at Hamilton	13	2,149	6.0	5.1	6.0	3.0 - 9.0
RWJ University Hospital at Rahway	6	929	6.5	5.5	5.9	1.6 - 10.2
RWJ University Hospital-Somerset	21	2,905	7.2	4.8	7.7	5.0 - 10.3
Saint Clare's Hospital-Denville	5	1,602	3.1	5.3	3.0	0.0 - 6.3
Saint Clare's Hospital-Dover	1	338	3.0	5.6	2.7	0.0 - 9.8
Shore Medical Center	7	2,214	3.2	4.6	3.5	0.4 - 6.5
South Jersey Healthcare Regional MC	13	2,929	4.4	4.2	5.3	2.5 - 8.1
Southern Ocean Medical Center	7	1,387	5.0	4.8	5.3	1.5 - 9.2
St. Barnabas Medical Center	70	6,455	10.8	5.1	10.8 **	9.1 - 12.6
St. Francis Medical Center-Trenton	3	1,162	2.6	4.0	3.3	0.0 - 7.9
St. Joseph's Regional Medical Center	23	5,133	4.5	4.7	4.8	2.8 - 6.8
St. Joseph's Wayne Hospital	2	835	2.4	5.3	2.3	0.0 - 7.0
St. Luke Warren Hospital	8	655	12.2	5.7	10.8 **	5.7 - 15.9
St. Mary's General Hospital	1	1,303	0.8	5.7	0.7 *	0.0 - 4.3
St. Michael's Medical Center	6	1,558	3.9	5.9	3.3	0.1 - 6.5
St. Peter's University Hospital	20	2,421	8.3	4.6	9.0 **	6.1 - 12.0
Trinitas Regional Medical Center	13	1,857	7.0	5.0	7.1	3.9 - 10.4
University Hospital - UMDNJ	35	4,014	8.7	6.7	6.6	4.7 - 8.5
University Medical Center of Princeton at Plainsboro	11	3,189	3.4	4.3	4.0	1.4 - 6.7
Valley Hospital	59	5,706	10.3	5.4	9.6 **	7.8 - 11.4
Virtua-Memorial Hospital Burlington Cty.	17	3,806	4.5	4.2	5.4	2.9 - 7.8
Virtua-West Jersey Hospital Marlton	16	3,227	5.0	4.6	5.4	2.9 - 8.0
Virtua-West Jersey Hospital Voorhees	13	4,548	2.9	4.7	3.1 *	0.9 - 5.2

Source: New Jersey 2015 UB Data.

*:   Statistically significantly below statewide average (i.e., better than statewide average).

**:   Statistically significantly above statewide average (i.e., worse than statewide average).

Δ: 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.

PSI.13 – Postoperative sepsis

- This indicator flags how often hospitalized patients get a serious bloodstream infection (nosocomial postoperative sepsis). A serious infection of the bloodstream caused by toxin-producing bacteria, known as sepsis, can occur after surgery. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity categories, is defined as the number of sepsis cases per 1,000 elective surgery patients with an operating room procedure and a length of stay of 4 days or more.

- The numerator includes discharges with secondary ICD-9-CM diagnosis codes for sepsis while the denominator includes all elective surgical discharges age 18 and older defined by specific DRG or MS-DRG codes with admission type recorded as elective.

- The following cases are excluded from the denominator or from rate calculation:

  - cases with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis;

  - cases with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for infection;

  - cases with any listed ICD-9-CM diagnosis codes or any listed ICD-9-CM procedure codes for immunocompromised state;

  - cases with any listed ICD-9-CM diagnosis codes for cancer;

  - MDC 14 (pregnancy, childbirth, and puerperium); and

  - cases with a length of stay of less than 4 days.

- Table 6 shows the number of postoperative sepsis cases among elective surgery patients by hospital, as well as the observed, expected and risk-adjusted rates along with their corresponding 95% confidence intervals. Statewide, there were 117 postoperative sepsis cases reported in 2015 for a statewide risk-adjusted rate of 8.1 per 1,000 elective discharges.

Table 6. Postoperative Sepsis (per 1,000 elective surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**117**	**12,790**	**9.1**	**10.8**	**8.1**	**6.5 - 9.7**
Atlanticare Regional Medical Center-City Campus	0	52	0.0	14.2	0.0	0.0 - 21.6
Atlanticare Regional Medical Center-Mainland Campus	2	295	6.8	14.6	4.4	0.0 - 13.3
Bayshore Community Hospital	0	44	0.0	8.3	0.0	0.0 - 30.9
Bergen Regional Medical Center	0	16	0.0	7.9	0.0 ^	0.0 - 52.6
Cape Regional Medical Center Inc.	3	32	93.8	14.0	64.2 **	36.4 - 92.0
Capital Health Medical Center - Hopewell	0	148	0.0	9.9	0.0	0.0 - 15.4
Capital Health Regional Medical Center - Fuld Campus	0	36	0.0	7.2	0.0	0.0 - 36.6
Carepoint Health - Bayonne Medical Center	1	17	58.8	14.5	38.9 ^	1.5 - 76.3
Carepoint Health - Christ Hospital	0	46	0.0	9.7	0.0	0.0 - 28.0
Carepoint Health - Hoboken University Medical Center	0	52	0.0	6.0	0.0	0.0 - 33.3
CentraState Medical Center	1	120	8.3	8.8	9.1	0.0 - 27.2
Chilton Medical Center	2	72	27.8	9.9	26.9	4.8 - 48.9
Clara Maass Medical Center	0	103	0.0	11.9	0.0	0.0 - 16.8
Community Medical Center	0	156	0.0	12.6	0.0	0.0 - 13.2
Cooper University Hospital	6	800	7.5	12.4	5.8	0.0 - 11.7
Deborah Heart and Lung Center	0	27	0.0	13.7	0.0 ^	0.0 - 30.7
East Orange General Hospital	0	14	0.0	6.2	0.0 ^	0.0 - 63.6
Englewood Hospital and Medical Center	4	497	8.0	8.8	8.7	0.0 - 17.6
Hackensack University Medical Center	4	676	5.9	10.9	5.2	0.0 - 12.1
HackensackUMC - Mountainside	4	81	49.4	9.8	48.2 **	27.3 - 69.1
HackensackUMC - Pascack Valley	0	50	0.0	9.9	0.0	0.0 - 26.4
Hackettstown Regional Medical Center	0	41	0.0	8.6	0.0	0.0 - 31.3
Holy Name Medical Center	6	210	28.6	9.2	29.9 **	16.6 - 43.1
Hunterdon Medical Center	0	56	0.0	12.8	0.0	0.0 - 21.9
Inspira Medical Center - Elmer	0	50	0.0	10.4	0.0	0.0 - 25.8
Inspira Medical Center - Woodbury	3	133	22.6	9.4	23.0	6.4 - 39.7
Jersey City Medical Center	7	176	39.8	9.3	41.0 **	26.4 - 55.5
Jersey Shore University Medical Center	6	820	7.3	12.6	5.6	0.0 - 11.3
JFK Medical CTR - Anthony M. Yelensics Community	2	236	8.5	12.0	6.7	0.0 - 17.7
Kennedy University Hospital - Cherry Hill	0	16	0.0	9.4	0.0 ^	0.0 - 48.0
Kennedy University Hospital - Stratford	0	26	0.0	16.2	0.0 ^	0.0 - 28.6
Kennedy University Hospital - Wash. Twp.	0	115	0.0	8.9	0.0	0.0 - 18.4
Lourdes Medical Center of Burlington Cty.	2	32	62.5	11.4	52.5 **	21.6 - 83.3
Meadowlands Hospital Medical Center	0	3	0.0	5.6	0.0 ^	0.0 - 144.7
Memorial Hospital of Salem County	1	15	66.7	10.8	58.9 ^	13.1 - 104.7
Monmouth Medical Center	0	240	0.0	7.1	0.0	0.0 - 14.3
Monmouth Medical Center - Southern Campus	0	9	0.0	7.1	0.0 ^	0.0 - 74.0
Morristown Medical Center	10	1,380	7.2	10.7	6.5	1.7 - 11.3
Newark Beth Israel Medical Center	0	226	0.0	12.8	0.0	0.0 - 10.8
Newton Medical Center	1	49	20.4	11.0	17.7	0.0 - 42.9
Ocean Medical Center	2	216	9.3	8.4	10.5	0.0 - 24.3
Our Lady of Lourdes Medical Center	2	391	5.1	12.5	3.9	0.0 - 12.3

Table 6. Postoperative Sepsis (per 1,000 elective surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	117	12,790	9.1	10.8	8.1	6.5 - 9.7
Overlook Medical Center	1	329	3.0	10.5	2.8	0.0 - 12.8
Palisades Medical Center	0	33	0.0	12.9	0.0	0.0 - 28.3
Raritan Bay Medical Center-Old Bridge Div	0	20	0.0	16.7	0.0 ^	0.0 - 31.6
Raritan Bay Medical Center-Perth Amboy Div	0	30	0.0	10.9	0.0	0.0 - 32.6
Riverview Medical Center	0	166	0.0	10.5	0.0	0.0 - 14.0
RWJ University Hospital	6	930	6.5	10.8	5.7	0.0 - 11.6
RWJ University Hospital at Hamilton	0	136	0.0	9.5	0.0	0.0 - 16.4
RWJ University Hospital at Rahway	0	29	0.0	10.8	0.0 ^	0.0 - 33.3
RWJ University Hospital-Somerset	0	99	0.0	12.9	0.0	0.0 - 16.4
Saint Clare's Hospital-Denville	0	69	0.0	10.3	0.0	0.0 - 22.0
Saint Clare's Hospital-Dover	0	6	0.0	18.4	0.0 ^	0.0 - 55.0
Shore Medical Center	2	61	32.8	7.9	39.8 **	12.9 - 66.8
South Jersey Healthcare Regional MC	0	142	0.0	11.6	0.0	0.0 - 14.4
Southern Ocean Medical Center	1	46	21.7	12.6	16.6	0.0 - 40.9
St. Barnabas Medical Center	10	486	20.6	11.2	17.6 **	9.6 - 25.6
St. Francis Medical Center-Trenton	0	147	0.0	10.3	0.0	0.0 - 15.1
St. Joseph's Regional Medical Center	4	355	11.3	8.3	13.0	2.2 - 23.9
St. Joseph's Wayne Hospital	0	33	0.0	8.6	0.0	0.0 - 34.9
St. Luke Warren Hospital	0	39	0.0	9.9	0.0	0.0 - 29.8
St. Mary's General Hospital	0	39	0.0	13.6	0.0	0.0 - 25.4
St. Michael's Medical Center	4	96	41.7	10.3	38.8 **	20.1 - 57.5
St. Peter's University Hospital	2	121	16.5	11.2	14.1	0.0 - 30.0
Trinitas Regional Medical Center	1	99	10.1	8.5	11.4	0.0 - 31.6
University Hospital - UMDNJ	8	327	24.5	9.0	25.9 **	15.1 - 36.7
University Medical Center of Princeton at Plainsboro	2	191	10.5	8.4	11.9	0.0 - 26.6
Valley Hospital	3	467	6.4	11.8	5.2	0.0 - 13.1
Virtua-Memorial Hospital Burlington Cty.	3	201	14.9	11.3	12.6	0.3 - 24.9
Virtua-West Jersey Hospital Marlton	1	196	5.1	9.5	5.2	0.0 - 18.8
Virtua-West Jersey Hospital Voorhees	0	123	0.0	12.8	0.0	0.0 - 14.8

Source: New Jersey 2015 UB Data.

*:   Statistically significantly below statewide average (i.e., better than statewide average).

**:   Statistically significantly above statewide average (i.e., worse than statewide average).

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

∆:   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.

PSI.14 – Postoperative wound dehiscence

- This indicator flags cases of wound dehiscence (i.e. when surgical wound in the stomach or pelvic area is split open after an operation) in patients who have undergone abdominal and pelvic surgery. Some or all of these complications may require treatment with another major operation to fix the wound. Wound dehiscence following surgery is a medical error that can be avoided. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity categories, is defined as the number of cases of re-closure of postoperative disruption of abdominal wall per 1,000 cases of abdominopelvic surgery.

- The numerator includes discharges with ICD-9-CM code (5461) for re-closure of postoperative disruption of abdominal wall in any procedure field, while the denominator includes all patients age 18 and older with any listed ICD-9-CM procedure codes for abdominopelvic surgery.

- The following cases are excluded from the denominator or from rate calculation:

  - cases where a procedure for re-closure of postoperative disruption of abdominal wall occurs before or on the same day as the first abdominopelvic surgery procedure (*if day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available);*

  - with any-listed ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for immunocompromised state;

  - cases where length of stay is less than 2 days; and

  - MDC 14 (pregnancy, childbirth, and puerperium).

- Table 7 shows the number of postoperative wound dehiscence cases among patients who have undergone abdominal and pelvic surgery by hospital, observed rates, expected rates, and risk-adjusted rates along with their corresponding 95% confidence intervals. Statewide, there were 37 postoperative wound dehiscence cases reported in 2015 for a statewide risk-adjusted rate of 1.2 per 1,000 abdominopelvic surgical discharges.

Table 7. Postoperative wound dehiscence (per 1,000 abdominopelvic surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate Δ	Risk-adjusted rate	95% Confidence interval
Statewide	**37**	**30,265**	**1.2**	**1.8**	**1.2**	**0.8 - 1.7**
Atlanticare Regional Medical Center-City Campus	3	340	8.8	1.9	8.4 **	4.0 - 12.9
Atlanticare Regional Medical Center-Mainland Campus	0	318	0.0	2.3	0.0	0.0 - 4.2
Bayshore Community Hospital	0	416	0.0	1.7	0.0	0.0 - 4.3
Bergen Regional Medical Center	0	15	0.0	2.6	0.0 ^	0.0 - 18.4
Cape Regional Medical Center Inc.	0	231	0.0	2.7	0.0	0.0 - 4.6
Capital Health Medical Center - Hopewell	2	463	4.3	1.8	4.5	0.5 - 8.5
Capital Health Regional Medical Center - Fuld Campus	0	133	0.0	2.4	0.0	0.0 - 6.5
Carepoint Health - Bayonne Medical Center	0	141	0.0	3.5	0.0	0.0 - 5.2
Carepoint Health - Christ Hospital	0	304	0.0	1.4	0.0	0.0 - 5.6
Carepoint Health - Hoboken University Medical Center	0	117	0.0	1.4	0.0	0.0 - 9.0
CentraState Medical Center	0	546	0.0	1.9	0.0	0.0 - 3.6
Chilton Medical Center	1	245	4.1	2.9	2.6	0.0 - 6.8
Clara Maass Medical Center	0	466	0.0	2.1	0.0	0.0 - 3.6
Community Medical Center	4	719	5.6	2.2	4.6 **	1.7 - 7.5
Cooper University Hospital	5	1,599	3.1	1.8	3.3	1.1 - 5.4
Deborah Heart and Lung Center	0	31	0.0	2.0	0.0	0.0 - 14.5
East Orange General Hospital	1	72	13.9	3.1	8.3	0.6 - 15.9
Englewood Hospital and Medical Center	2	682	2.9	1.5	3.5	0.0 - 7.1
Hackensack University Medical Center	1	1,527	0.7	1.7	0.7	0.0 - 3.0
HackensackUMC - Mountainside	0	649	0.0	1.4	0.0	0.0 - 3.8
HackensackUMC - Pascack Valley	0	247	0.0	1.7	0.0	0.0 - 5.5
Hackettstown Regional Medical Center	0	102	0.0	2.4	0.0	0.0 - 7.3
Holy Name Medical Center	0	669	0.0	1.5	0.0	0.0 - 3.7
Hunterdon Medical Center	0	223	0.0	2.2	0.0	0.0 - 5.2
Inspira Medical Center - Elmer	0	40	0.0	2.9	0.0	0.0 - 10.6
Inspira Medical Center - Woodbury	0	225	0.0	2.2	0.0	0.0 - 5.2
Jersey City Medical Center	0	300	0.0	1.9	0.0	0.0 - 4.8
Jersey Shore University Medical Center	2	764	2.6	1.9	2.5	0.0 - 5.5
JFK Medical CTR - Anthony M. Yelensics Community	0	569	0.0	1.6	0.0	0.0 - 3.8
Kennedy University Hospital - Cherry Hill	0	82	0.0	2.5	0.0	0.0 - 8.0
Kennedy University Hospital - Stratford	0	143	0.0	1.7	0.0	0.0 - 7.3
Kennedy University Hospital - Wash. Twp.	0	423	0.0	2.2	0.0	0.0 - 3.8
Lourdes Medical Center of Burlington Cty.	0	165	0.0	2.1	0.0	0.0 - 6.2
Meadowlands Hospital Medical Center	0	47	0.0	1.6	0.0	0.0 - 13.1
Memorial Hospital of Salem County	0	92	0.0	1.5	0.0	0.0 - 9.8
Monmouth Medical Center	1	510	2.0	1.6	2.3	0.0 - 6.3
Monmouth Medical Center - Southern Campus	0	49	0.0	2.0	0.0	0.0 - 11.7
Morristown Medical Center	0	1,308	0.0	1.8	0.0	0.0 - 2.3
Newark Beth Israel Medical Center	1	426	2.3	1.5	2.9	0.0 - 7.5
Newton Medical Center	0	192	0.0	1.9	0.0	0.0 - 6.0
Ocean Medical Center	2	545	3.7	2.3	3.0	0.0 - 6.2
Our Lady of Lourdes Medical Center	0	561	0.0	1.7	0.0	0.0 - 3.7

Table 7. Postoperative wound dehiscence (per 1,000 abdominopelvic surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate Δ	Risk-adjusted rate	95% Confidence interval
Statewide	**37**	**30,265**	**1.2**	**1.8**	**1.2**	**0.8 - 1.7**
Overlook Medical Center	0	1,072	0.0	1.7	0.0	0.0 - 2.7
Palisades Medical Center	0	160	0.0	1.8	0.0	0.0 - 6.8
Raritan Bay Medical Center-Old Bridge Div	2	105	19.0	2.5	14.1 **	7.1 - 21.2
Raritan Bay Medical Center-Perth Amboy Div	0	191	0.0	1.4	0.0	0.0 - 6.9
Riverview Medical Center	0	404	0.0	2.4	0.0	0.0 - 3.7
RWJ University Hospital	0	1,247	0.0	1.7	0.0	0.0 - 2.5
RWJ University Hospital at Hamilton	0	405	0.0	2.1	0.0	0.0 - 4.0
RWJ University Hospital at Rahway	0	116	0.0	2.5	0.0	0.0 - 6.7
RWJ University Hospital-Somerset	0	378	0.0	2.2	0.0	0.0 - 4.0
Saint Clare's Hospital-Denville	1	206	4.9	2.2	4.1	0.0 - 9.5
Saint Clare's Hospital-Dover	0	41	0.0	1.9	0.0	0.0 - 12.9
Shore Medical Center	0	291	0.0	2.0	0.0	0.0 - 4.7
South Jersey Healthcare Regional MC	0	526	0.0	1.8	0.0	0.0 - 3.7
Southern Ocean Medical Center	1	540	1.9	1.7	2.0	0.0 - 5.7
St. Barnabas Medical Center	0	1,447	0.0	1.3	0.0	0.0 - 2.6
St. Francis Medical Center-Trenton	0	126	0.0	2.1	0.0	0.0 - 7.1
St. Joseph's Regional Medical Center	1	761	1.3	1.6	1.5	0.0 - 4.8
St. Joseph's Wayne Hospital	0	161	0.0	2.3	0.0	0.0 - 5.9
St. Luke Warren Hospital	1	144	6.9	2.6	5.0	0.0 - 10.9
St. Mary's General Hospital	0	231	0.0	2.7	0.0	0.0 - 4.6
St. Michael's Medical Center	0	247	0.0	1.7	0.0	0.0 - 5.6
St. Peter's University Hospital	1	604	1.7	1.3	2.3	0.0 - 6.3
Trinitas Regional Medical Center	0	330	0.0	1.6	0.0	0.0 - 4.9
University Hospital - UMDNJ	2	545	3.7	1.9	3.7	0.1 - 7.3
University Medical Center of Princeton at Plainsboro	0	390	0.0	1.6	0.0	0.0 - 4.6
Valley Hospital	1	887	1.1	2.0	1.0	0.0 - 3.8
Virtua-Memorial Hospital Burlington Cty.	1	822	1.2	1.6	1.4	0.0 - 4.6
Virtua-West Jersey Hospital Marlton	0	321	0.0	2.4	0.0	0.0 - 4.1
Virtua-West Jersey Hospital Voorhees	1	871	1.1	1.9	1.1	0.0 - 4.0

Source: New Jersey 2015 UB Data.

**: Statistically significantly above statewide average (i.e., worse than statewide average).

^: Rates based on denominators less than 30 should be taken with caution.

Δ: 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.

PSI.15 - Accidental puncture or laceration

- This indicator measures the occurrence of complications that arise due to technical difficulties in medical care, specifically, those involving an accidental puncture or laceration. The rate, which is risk-adjusted for age, sex, DRG, and comorbidity categories, is defined as the number of patients who had an accidental cut or lacerations (secondary diagnosis) during a medical procedure per 1,000 discharges.

- The numerator refers to all discharges with any secondary ICD-9-CM code denoting technical difficulty (e.g., accidental cut, puncture, perforation, or laceration) during a procedure.

- The denominator refers to all medical and surgical discharges age 18 and older defined by specific DRG or MS-DRG codes, excluding cases:

  - with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure;

  - with any listed ICD-9-CM procedure codes for spine surgery; and

  - MDC 14 (pregnancy, childbirth, and puerperium).

- Table 8 shows the number of cases of accidental puncture or laceration among all discharges with ICD-9-CM code denoting technical difficulty (e.g., accidental cut, puncture, perforation, or laceration) in any secondary diagnosis field by hospital along with observed and expected rates as well as risk-adjusted rates with their corresponding 95% confidence intervals. Statewide, there were 611 cases of accidental punctures or lacerations reported in 2015 for a risk-adjusted rate of 1.0 per 1,000 discharges.

Table 8. Accidental puncture or laceration (per 1,000 medical and surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate△	Risk-adjusted rate	95% Confidence interval
Statewide	**611**	**688,633**	**0.9**	**1.8**	**1.0**	**0.9 - 1.2**
Atlanticare Regional Medical Center-City Campus	14	9,661	1.4	1.4	2.3 **	1.2 - 3.5
Atlanticare Regional Medical Center-Mainland Campus	12	14,634	0.8	1.4	1.3	0.3 - 2.2
Bayshore Community Hospital	1	6,881	0.1	1.2	0.3	0.0 - 1.7
Bergen Regional Medical Center	0	6,023	0.0	0.2	0.0	0.0 - 3.5
Cape Regional Medical Center Inc.	2	6,201	0.3	1.3	0.6	0.0 - 2.1
Capital Health Medical Center - Hopewell	9	7,196	1.3	2.2	1.3	0.2 - 2.3
Capital Health Regional Medical Center - Fuld Campus	1	7,877	0.1	0.8	0.3	0.0 - 2.1
Carepoint Health - Bayonne Medical Center	2	5,852	0.3	1.2	0.6	0.0 - 2.2
Carepoint Health - Christ Hospital	7	7,333	1.0	1.4	1.5	0.2 - 2.8
Carepoint Health - Hoboken University Medical Center	7	4,686	1.5	1.4	2.3	0.6 - 3.9
CentraState Medical Center	0	10,781	0.0	1.9	0.0 *	0.0 - 0.9
Chilton Medical Center	6	8,517	0.7	1.3	1.2	0.0 - 2.4
Clara Maass Medical Center	6	11,330	0.5	1.7	0.7	0.0 - 1.7
Community Medical Center	16	18,609	0.9	1.7	1.1	0.4 - 1.9
Cooper University Hospital	23	21,728	1.1	2.8	0.8	0.3 - 1.4
Deborah Heart and Lung Center	7	3,630	1.9	2.7	1.6	0.2 - 2.9
East Orange General Hospital	0	4,992	0.0	0.8	0.0	0.0 - 2.1
Englewood Hospital and Medical Center	12	11,341	1.1	2.4	1.0	0.2 - 1.8
Hackensack University Medical Center	23	26,614	0.9	2.2	0.8	0.3 - 1.4
HackensackUMC - Mountainside	13	7,726	1.7	1.9	1.9	0.8 - 3.0
HackensackUMC - Pascack Valley	9	3,114	2.9	1.7	3.8 **	1.9 - 5.6
Hackettstown Regional Medical Center	2	3,083	0.6	1.3	1.1	0.0 - 3.3
Holy Name Medical Center	11	12,400	0.9	2.1	0.9	0.1 - 1.8
Hunterdon Medical Center	5	6,574	0.8	1.4	1.2	0.0 - 2.5
Inspira Medical Center - Elmer	3	2,853	1.1	0.7	3.1	0.2 - 6.0
Inspira Medical Center - Woodbury	5	7,055	0.7	1.4	1.1	0.0 - 2.4
Jersey City Medical Center	1	10,397	0.1	1.5	0.1	0.0 - 1.2
Jersey Shore University Medical Center	20	19,400	1.0	2.2	1.0	0.4 - 1.7
JFK Medical CTR - Anthony M. Yelensics Community	8	13,599	0.6	1.9	0.7	0.0 - 1.5
Kennedy University Hospital - Cherry Hill	2	6,315	0.3	0.7	1.0	0.0 - 3.1
Kennedy University Hospital - Stratford	6	6,012	1.0	1.1	1.9	0.3 - 3.5
Kennedy University Hospital - Wash. Twp.	12	11,295	1.1	1.5	1.5	0.5 - 2.5
Lourdes Medical Center of Burlington Cty.	3	4,750	0.6	1.2	1.1	0.0 - 2.9
Meadowlands Hospital Medical Center	2	1,689	1.2	1.1	2.3	0.0 - 5.3
Memorial Hospital of Salem County	0	3,061	0.0	1.1	0.0	0.0 - 2.3
Monmouth Medical Center	4	7,355	0.5	2.6	0.5	0.0 - 1.4
Monmouth Medical Center - Southern Campus	2	5,741	0.3	0.5	1.6	0.0 - 4.2
Morristown Medical Center	28	26,462	1.1	2.8	0.8	0.3 - 1.3
Newark Beth Israel Medical Center	9	11,236	0.8	2.1	0.8	0.0 - 1.7
Newton Medical Center	1	6,557	0.2	1.2	0.3	0.0 - 1.7
Ocean Medical Center	9	12,271	0.7	1.8	0.9	0.0 - 1.8
Our Lady of Lourdes Medical Center	12	10,377	1.2	2.4	1.1	0.2 - 1.9

Table 8. Accidental puncture or laceration (per 1,000 medical and surgical discharges)

Hospital	# of cases	# of discharges	Obs. rate	Exp. Rate∆	Risk-adjusted rate	95% Confidence interval
Statewide	**611**	**688,633**	**0.9**	**1.8**	**1.0**	**0.9 - 1.2**
Overlook Medical Center	10	17,515	0.6	2.4	0.5	0.0 - 1.2
Palisades Medical Center	11	7,233	1.5	1.1	3.0 **	1.5 - 4.5
Raritan Bay Medical Center-Old Bridge Div	1	4,404	0.2	1.1	0.4	0.0 - 2.3
Raritan Bay Medical Center-Perth Amboy Div	3	6,455	0.5	1.3	0.8	0.0 - 2.3
Riverview Medical Center	3	10,168	0.3	1.7	0.4	0.0 - 1.4
RWJ University Hospital	46	25,926	1.8	2.5	1.5	1.0 - 2.1
RWJ University Hospital at Hamilton	11	8,904	1.2	1.7	1.6	0.5 - 2.6
RWJ University Hospital at Rahway	1	5,435	0.2	1.2	0.3	0.0 - 2.0
RWJ University Hospital-Somerset	4	11,613	0.3	1.7	0.4	0.0 - 1.4
Saint Clare's Hospital-Denville	1	8,229	0.1	1.5	0.2	0.0 - 1.4
Saint Clare's Hospital-Dover	0	3,299	0.0	0.7	0.0	0.0 - 2.7
Shore Medical Center	4	7,395	0.5	1.5	0.8	0.0 - 2.1
South Jersey Healthcare Regional MC	24	12,505	1.9	1.6	2.6 **	1.6 - 3.5
Southern Ocean Medical Center	3	6,019	0.5	1.8	0.6	0.0 - 1.9
St. Barnabas Medical Center	17	18,601	0.9	2.8	0.7	0.1 - 1.3
St. Francis Medical Center-Trenton	10	4,805	2.1	1.3	3.4 **	1.7 - 5.0
St. Joseph's Regional Medical Center	21	18,714	1.1	1.6	1.5	0.7 - 2.3
St. Joseph's Wayne Hospital	1	4,722	0.2	1.2	0.4	0.0 - 2.2
St. Luke Warren Hospital	0	3,934	0.0	1.4	0.0	0.0 - 1.8
St. Mary's General Hospital	2	6,190	0.3	1.7	0.4	0.0 - 1.7
St. Michael's Medical Center	3	7,280	0.4	1.6	0.6	0.0 - 1.8
St. Peter's University Hospital	16	8,950	1.8	2.6	1.5	0.6 - 2.3
Trinitas Regional Medical Center	5	9,418	0.5	1.5	0.8	0.0 - 1.9
University Hospital - UMDNJ	24	11,405	2.1	1.9	2.4 **	1.5 - 3.3
University Medical Center of Princeton at Plainsboro	12	10,071	1.2	1.8	1.4	0.5 - 2.4
Valley Hospital	11	16,868	0.7	2.4	0.6	0.0 - 1.2
Virtua-Memorial Hospital Burlington Cty.	25	13,325	1.9	1.9	2.2 **	1.3 - 3.0
Virtua-West Jersey Hospital Marlton	11	9,314	1.2	1.6	1.6	0.5 - 2.7
Virtua-West Jersey Hospital Voorhees	16	16,728	1.0	2.0	1.0	0.3 - 1.7

Source: New Jersey 2015 UB Data.

*:   Statistically significantly below statewide average (i.e., better than statewide average).

**:   Statistically significantly above statewide average (i.e., worse than statewide average).

∆:   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.

PSI.16 - Transfusion reaction

- This indicator flags cases of major reactions due to transfusions (ABO and Rh). It measures the occurrence of major reactions to blood transfusions. Using the wrong type of blood or blood substitute are examples of why this type of medical error may occur. The indicator is measured using volume – not a rate. It tells you the number of patients who had a transfusion reaction during hospital stay. It is considered a never-event and happens very rarely.

- The measure refers to discharges 18 years and older or in MDC 14 with ICD-9-CM codes for transfusion reaction in any secondary diagnosis field of all medical and surgical discharges defined by specific DRGs or MS-DRGs.

- Patients with principal diagnosis of transfusion reaction or secondary diagnosis present on admission are excluded from the measure.

- Transfusion reaction is considered a never-event and happens very rarely. No incidence of 'transfusion reaction' was reported in 2015.

PSI.17 - Birth trauma - injury to neonate

- This indicator flags cases of birth trauma among all newborns in a hospital. Birth trauma (injury to neonate) is caused by medical complications during labor and delivery. The rate is defined as the number of cases of birth trauma (injury to neonate) per 1,000 live births. No risk-adjustment is made to this indicator and no significance tests performed as a result.

- The numerator includes discharges with ICD-9-CM code for birth trauma in any diagnosis field excluding infants with a subdural or cerebral hemorrhage and any diagnosis code of pre-term infant (denoting birth weight of <2,500 grams and <37 gestation weeks or <=34 gestation weeks). It also excludes infants with injury to skeleton (CD-9-CM codes - 7673 and 7674) and infants with diagnosis code of osteogenesis imperfecta (CD-9-CM code - 75651).

- The denominator includes all livebirths (newborns).

- Table 9 shows the number of 'birth trauma - injury to neonate' cases among infants born alive and the observed rates by hospital. Statewide, there were 192 cases of 'birth trauma - injury to neonate' reported in 2015 for an observed rate of 2.0 per 1,000 live births.

Table 9. Birth Trauma - Injury to Neonate (per 1,000 livebirths)

(This indicator is calculated by the Pediatric Quality Indicators (PDIs) Module because it is based on pediatric discharges.)

Hospital	# of cases	# of livebirths	Observed rate
Statewide	**192**	**97,209**	**2.0**
Atlanticare Regional Medical Center-Mainland Campus	2	1,904	1.1
Cape Regional Medical Center Inc.	0	449	0.0
Capital Health Medical Center - Hopewell	4	3,229	1.2
Capital Health Regional Medical Center - Fuld Campus	0	10	0.0 ^
Carepoint Health - Christ Hospital	2	828	2.4
Carepoint Health - Hoboken University Medical Center	1	1,227	0.8
CentraState Medical Center	5	1,346	3.7
Chilton Medical Center	4	775	5.2
Clara Maass Medical Center	0	1,284	0.0
Community Medical Center	1	2,336	0.4
Cooper University Hospital	8	2,063	3.9
Englewood Hospital and Medical Center	7	2,512	2.8
Hackensack University Medical Center	21	6,131	3.4
HackensackUMC - Mountainside	7	1,319	5.3
HackensackUMC - Pascack Valley	0	567	0.0
Hackettstown Regional Medical Center	4	355	11.3
Holy Name Medical Center	2	1,279	1.6
Hunterdon Medical Center	1	887	1.1
Inspira Medical Center - Elmer	1	278	3.6
Inspira Medical Center - Woodbury	1	929	1.1
Jersey City Medical Center	8	2,147	3.7
Jersey Shore University Medical Center	3	1,884	1.6
JFK Medical CTR - Anthony M. Yelensics Community	4	2,184	1.8
Kennedy University Hospital - Wash. Twp.	6	1,015	5.9
Meadowlands Hospital Medical Center	3	207	14.5
Monmouth Medical Center	4	4,928	0.8
Morristown Medical Center	4	4,429	0.9
Newark Beth Israel Medical Center	6	2,865	2.1
Newton Medical Center	2	442	4.5
Ocean Medical Center	1	960	1.0
Our Lady of Lourdes Medical Center	2	1,004	2.0
Overlook Medical Center	3	2,480	1.2
Palisades Medical Center	1	1,226	0.8
Raritan Bay Medical Center-Perth Amboy Div	1	1,182	0.8
Riverview Medical Center	3	1,358	2.2
RWJ University Hospital	5	2,410	2.1
RWJ University Hospital at Hamilton	0	53	0.0
RWJ University Hospital-Somerset	2	769	2.6
Saint Clare's Hospital-Denville	1	1,201	0.8
Shore Medical Center	2	1,204	1.7

Table 9. Birth Trauma - Injury to Neonate (per 1,000 livebirths)

(This indicator is calculated by the Pediatric Quality Indicators (PDIs) Module because it is based on pediatric discharges.)

Hospital	# of cases	# of livebirths	Observed rate
Statewide	**192**	**97,209**	**2.0**
South Jersey Healthcare Regional MC	2	1,561	1.3
Southern Ocean Medical Center	0	348	0.0
St. Barnabas Medical Center	9	5,500	1.6
St. Joseph's Regional Medical Center	7	3,404	2.1
St. Mary's General Hospital	0	673	0.0
St. Peter's University Hospital	7	5190	1.3
Trinitas Regional Medical Center	2	2,043	1.0
University Hospital - UMDNJ	8	1,553	5.2
University Medical Center of Princeton at Plainsboro	7	2,370	3.0
Valley Hospital	11	3,317	3.3
Virtua-Memorial Hospital Burlington Cty.	1	2,271	0.4
Virtua-West Jersey Hospital Voorhees	6	5,323	1.1

Source: New Jersey 2015 UB Data.

Note that this indicator is measured using observed rate only. Risk-adjustment is no more made on this indicator.

Newborn or livebirth is defined as any neonate with either 1) an ICD-9-CM diagnosis code for an in-hospital live-born birth or 2) an admission type of newborn (ATYPE=4), age in days at admission equaling zero, and not an ICD-9-CM diagnosis code for an out-of-hospital birth. A neonate is defined as any discharge with age in days at admission between zero and 28 days (inclusive). If age in days is missing, then a neonate is defined as any DRG in MDC 15, an admission type of newborn (ATYPE=4), or an ICD-9-CM diagnosis code for an in-hospital live-born birth.)

PSI.18 - Obstetric trauma - vaginal delivery with instrument

- This indicator flags potentially preventable trauma cases during instrument-assisted vaginal delivery. The rate is defined as the number of obstetric trauma cases (3rd or 4th degree lacerations, other obstetric lacerations) per 1,000 instrument-assisted vaginal deliveries. No risk-adjustment is made to this indicator and no significance tests performed as a result.

- The numerator refers to the number of cases of obstetric trauma on births with instrument-assisted vaginal deliveries.

- The denominator includes all vaginal delivery discharges with any listed ICD-9-CM procedure code for instrument-assisted delivery.

- Table 10 shows the number of obstetric trauma cases (obstetric trauma – vaginal delivery with instrument) among instrument-assisted vaginal delivery discharges and their corresponding observed rates, by hospital. Statewide, there were 328 cases of obstetric trauma among instrument-assisted vaginal deliveries reported in 2015 yielding a rate of 96.0 per 1,000 instrument-assisted vaginal delivery discharges.

Table 10. Obstetric trauma - vaginal delivery with instrument (per 1,000 instrument-assisted vaginal deliveries)

Hospital	# of cases	# of discharges	Obs. rate
Statewide	**328**	**3,418**	**96.0**
Atlanticare Regional Medical Center-Mainland Campus	3	57	52.6
Cape Regional Medical Center Inc.	1	18	55.6 ^
Capital Health Medical Center - Hopewell	10	85	117.7
Carepoint Health - Christ Hospital	1	10	100.0
Carepoint Health - Hoboken University Medical Center	1	15	66.7 ^
CentraState Medical Center	4	27	148.2 ^
Chilton Medical Center	0	28	0.0 ^
Clara Maass Medical Center	0	41	0.0
Community Medical Center	10	99	101.0
Cooper University Hospital	5	90	55.6
Englewood Hospital and Medical Center	9	96	93.8
Hackensack University Medical Center	16	304	52.6
HackensackUMC - Mountainside	3	27	111.1 ^
HackensackUMC - Pascack Valley	3	21	142.9 ^
Hackettstown Regional Medical Center	2	31	64.5
Holy Name Medical Center	3	50	60.0
Hunterdon Medical Center	5	50	100.0
Inspira Medical Center - Elmer	0	8	0.0 ^
Inspira Medical Center - Woodbury	1	15	66.7 ^
Jersey City Medical Center	2	65	30.8
Jersey Shore University Medical Center	7	80	87.5
JFK Medical CTR - Anthony M. Yelensics Community	2	59	33.9
Kennedy University Hospital - Wash. Twp.	6	41	146.3
Meadowlands Hospital Medical Center	0	1	0.0 @
Monmouth Medical Center	20	215	93.0
Morristown Medical Center	29	185	156.8
Newark Beth Israel Medical Center	2	24	83.3 ^
Newton Medical Center	1	8	125.0 ^
Ocean Medical Center	0	27	0.0 ^
Our Lady of Lourdes Medical Center	3	36	83.3
Overlook Medical Center	14	105	133.3
Palisades Medical Center	3	34	88.2
Raritan Bay Medical Center-Perth Amboy Div	2	21	95.2 ^
Riverview Medical Center	7	62	112.9
RWJ University Hospital	5	63	79.4
RWJ University Hospital at Hamilton	0	1	0.0 @
RWJ University Hospital-Somerset	9	37	243.2
Saint Clare's Hospital-Denville	3	28	107.1 ^

Table 10. Obstetric trauma - vaginal delivery with instrument (per 1,000 instrument-assisted vaginal deliveries)

Hospital	# of cases	# of discharges	Obs. rate
Statewide	**328**	**3,418**	**96.0**
Shore Medical Center	0	21	0.0 ^
South Jersey Healthcare Regional MC	7	44	159.1
Southern Ocean Medical Center	0	7	0.0 ^
St. Barnabas Medical Center	29	219	132.4
St. Joseph's Regional Medical Center	2	50	40.0
St. Mary's General Hospital	2	6	333.3 ^
St. Peter's University Hospital	15	180	83.3
Trinitas Regional Medical Center	8	75	106.7
University Hospital - UMDNJ	3	79	38.0
University Medical Center of Princeton at Plainsboro	10	78	128.2
Valley Hospital	8	164	48.8
Virtua-Memorial Hospital Burlington Cty.	3	77	39.0
Virtua-West Jersey Hospital Voorhees	49	254	192.9

Source: New Jersey 2015 UB Data.

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

Note that this indicator is measured using observed rate only. Risk-adjustment is no more made on this indicator.

PSI.19 - Obstetric trauma - vaginal delivery without instrument

- This indicator flags cases of potentially preventable obstetric trauma during a vaginal delivery without assistance of medical instrument. The rate is defined as the number of obstetric trauma cases (3rd and 4th degree lacerations) per 1,000 vaginal deliveries that occurred without assistance of medical instrument. No risk-adjustment is made to this indicator and no significance tests performed as a result.

- The numerator includes all discharges with ICD-9-CM code for obstetric trauma in any diagnosis or procedure field (excluding instrument-assisted delivery).

- The denominator includes all vaginal delivery discharges identified by DRG or MS-DRG codes excluding cases with any listed ICD-9-CM procedure codes for instrument-assisted delivery.

- Table 11 shows the number of cases of obstetric trauma - vaginal delivery without instrument among all vaginal deliveries by hospital. Statewide, there were 747 cases reported for obstetric trauma - vaginal delivery without instrument in 2015. The statewide rate for this indicator was 13.3 per 1,000 vaginal deliveries.

Table 11. Obstetric trauma - vaginal deliveries without instrument (per 1,000 vaginal delivery discharges)

Hospital	# of cases	# of discharges	Observed rate
Statewide	**747**	**56,055**	**13.3**
Atlanticare Regional Medical Center-City Campus	0	6	0.0 ^
Atlanticare Regional Medical Center-Mainland Campus	6	1,102	5.4
Bayshore Community Hospital	0	1	0.0 @
Cape Regional Medical Center Inc.	7	253	27.7
Capital Health Medical Center - Hopewell	31	2,064	15.0
Capital Health Regional Medical Center - Fuld Campus	0	14	0.0 ^
Carepoint Health - Christ Hospital	7	471	14.9
Carepoint Health - Hoboken University Medical Center	19	734	25.9
CentraState Medical Center	7	699	10.0
Chilton Medical Center	12	430	27.9
Clara Maass Medical Center	1	707	1.4
Community Medical Center	12	1,416	8.5
Cooper University Hospital	20	1,490	13.4
Englewood Hospital and Medical Center	27	1,465	18.4
Hackensack University Medical Center	24	2,742	8.8
HackensackUMC - Mountainside	8	742	10.8
HackensackUMC - Pascack Valley	6	314	19.1
Hackettstown Regional Medical Center	5	208	24.0
Holy Name Medical Center	18	712	25.3
Hunterdon Medical Center	12	504	23.8
Inspira Medical Center - Elmer	9	207	43.5
Inspira Medical Center - Woodbury	20	679	29.5
Jersey City Medical Center	13	1,120	11.6
Jersey Shore University Medical Center	13	1,179	11.0
JFK Medical CTR - Anthony M. Yelensics Community	8	1,216	6.6
Kennedy University Hospital - Cherry Hill	0	3	0.0 ^
Kennedy University Hospital - Stratford	0	4	0.0 ^
Kennedy University Hospital - Wash. Twp.	8	621	12.9
Meadowlands Hospital Medical Center	0	79	0.0
Memorial Hospital of Salem County	0	2	0.0 @
Monmouth Medical Center	39	3,684	10.6
Monmouth Medical Center - Southern Campus	0	1	0.0 @
Morristown Medical Center	28	2,434	11.5
Newark Beth Israel Medical Center	19	1,713	11.1
Newton Medical Center	1	271	3.7
Ocean Medical Center	4	646	6.2
Our Lady of Lourdes Medical Center	16	634	25.2

Table 11. Obstetric trauma - vaginal deliveries without instrument (per 1,000 vaginal delivery discharges)

Hospital	# of cases	# of discharges	Observed rate
Statewide	747	56,055	13.3
Overlook Medical Center	17	1,323	12.9
Palisades Medical Center	6	670	9.0
Raritan Bay Medical Center-Old Bridge Div	0	1	0.0 @
Raritan Bay Medical Center-Perth Amboy Div	6	716	8.4
Riverview Medical Center	19	719	26.4
RWJ University Hospital	23	1,483	15.5
RWJ University Hospital at Hamilton	0	31	0.0
RWJ University Hospital-Somerset	11	400	27.5
Saint Clare's Hospital-Denville	9	647	13.9
Shore Medical Center	3	633	4.7
South Jersey Healthcare Regional MC	13	910	14.3
Southern Ocean Medical Center	2	218	9.2
St. Barnabas Medical Center	65	2,865	22.7
St. Joseph's Regional Medical Center	23	1,813	12.7
St. Mary's General Hospital	2	354	5.7
St. Peter's University Hospital	32	2,977	10.7
Trinitas Regional Medical Center	10	1,329	7.5
University Hospital - UMDNJ	5	1,070	4.7
University Medical Center of Princeton at Plainsboro	28	1,332	21.0
Valley Hospital	25	1,627	15.4
Virtua-Memorial Hospital Burlington Cty.	17	1,292	13.2
Virtua-West Jersey Hospital Voorhees	31	3,078	10.1

Source: New Jersey 2015 UB Data.

@: Could be data error.

Note that this indicator is measured using observed rate only. Risk-adjustment is no more made on this indicator.

Certain AHRQ QIs such as PSI #18 (i.e., Obstetric Trauma Rate – Vaginal Delivery With Instrument) and PSI #19 (i.e., Obstetric Trauma Rate – Vaginal Delivery Without Instrument) are not risk-adjusted because materially important risk factors (e.g., whether the mother is nulliparous or multiparous or the size of the infant) are not available in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID).

Statewide PSI Average Rates Compared to National Rates

The table below shows New Jersey's statewide estimates for the 12 Patient Safety Indicators (PSIs) for the years 2010 through 2015. As stated earlier, the New Jersey statewide estimates are derived from the NJ UB data using the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators (QIs) SAS Software for PSIs. Quality Indicators (QIs) are standardized, evidence-based measures of health care quality that can be used with readily available hospital inpatient administrative data to measure and track clinical performance and outcomes.

The national estimates come from AHRQ's National Comparative Data derived from the Nationwide Inpatient Sample (NIS) data, which in turn is extracted from the State Inpatient Data (SID) that comes from all participating States nationwide. A Federal agency called HCUP (Healthcare Cost & Utilization Project) compiles and manages UB datasets that come from participating States. As of 2017, 48 States are participating in the HCUP database programs.

HCUP is the Nation's most comprehensive source of hospital data, including information on inpatient care, ambulatory care, and emergency department visits. HCUP enables researchers, insurers, policymakers and others to study health care delivery and patient outcomes over time, and at the national, regional, State, and community levels.

Remember: Lower rates are better and mean the hospital has fewer adverse events than the statewide average.

Some Highlights:

- NJ hospitals have shown dramatic improvements since the Department started reporting on the 12 selected Patient Safety Indicators (PSIs) in its Hospital Performance Report. Some of the PSIs (i.e., State-level averages) that showed significant improvement over the last six years include:

    o Post-operative PE or DVT declined from 6.56 per 1,000 in 2010 to 5.48 in 2015.
    o Post-operative Sepsis fell from 14.45 per 1,000 in 2010 to 8.09 in 2015.
    o Post-operative Wound Dehiscence declined from 1.96 per 1,000 in 2010 to 1.24 in 2015.
    o Accidental Puncture or Laceration declined from 1.72 per 1,000 in 2010 to 1.05 in 2015

- o Obstetric Trauma - Vaginal Delivery with Instrument declined from 133.6 per 1,000 in 2010 to 96.0 in 2015.
- o Obstetric Trauma - Vaginal Delivery without Instrument declined from 22.55 per 1,000 in 2010 to 13.33 in 2015
- o Incidences of 'Retained Surgical Item or Unretrieved Device Fragment' and 'Transfusion Reaction' (both reported in volume instead of rate because they are rare events) are declining consistently over the last six years. Apparently, there were zero cases of 'Transfusion Reaction' in 2015.

- Overall, New Jersey performed better than or equal to the national averages for most of the 10 PSIs that are measured using rates. As shown in the table, the two indicators where New Jersey performed worse than the national averages were - Postoperative PE/DVT and Postoperative Sepsis. It is not surprising that the DOH has, as part of its Population Health Strategies, identified the problem surrounding sepsis in its population health awareness priorities launched recently.

Comparing New Jersey's Statewide PSI Rates with National Rates (per 1,000 medical and surgical discharges)

Patient Safety Indicators (PSIs)	National			New Jersey					
	2010	2012	2013	2010	2011	2012	2013	2014	2015
Retained Surgical Item or Unretrieved Device Fragment Ω	930	973	852	27	38	38	28	32	23
Iatrogenic Pneumothorax	0.43	0.34	0.32	0.34	0.32	0.32	0.27	0.28	0.23
Post-operative Hip Fracture	0.03	0.04	0.08	0.05	0.05	0.03	0.02	0.03	0.03
Post-operative Hemorrhage or Hematoma	5.86	5.11	4.52	3.69	2.12	14.72	5.31	4.85	4.41
Post-operative PE or DVT	4.51	4.99	3.72	6.56	6.29	5.51	6.74	6.11	5.48
Post-operative Sepsis	12.00	9.61	4.26	14.45	12.39	11.07	9.11	10.42	8.09
Post-operative Wound Dehiscence	1.85	1.86	1.71	1.96	0.84	1.67	1.49	1.45	1.24
Accidental Puncture or Laceration	2.45	1.89	0.73	1.72	1.61	1.22	1.63	1.37	1.05
Transfusion Reaction Ω	67	38	38	3	3	1	1	1	0
Birth Trauma - Injury to Neonate	2.10	1.89	1.97	2.56	1.99	1.73	1.54	1.55	1.98
Obstetric Trauma - Vaginal Delivery with Instrument	139.11	133.19	127.87	133.60	130.62	126.00	124.05	112.58	96.00
Obstetric Trauma - Vaginal Delivery without Instrument	22.46	20.97	19.97	22.55	20.57	19.07	17.30	16.44	13.33

New Jersey's rates are derived from the NJ UB database, while the national numbers come from AHRQ's Benchmark Data Tables derived from analysis of the HCUP - State Inpatient Database (SID).

Ω - Indicator reported in volume instead of rate, because it is a rare event.

National Rates for 2011, 2014 and 2015 - not available.

'Retained Surgical Item or Unretrieved Device Fragment' was formerly called 'Foreign Body Left in During Procedure'

Summary of findings

This report presents occurrences of adverse events (patient safety indicators) during hospitalization in each of New Jersey hospitals. For 10 of the 12 PSIs, observed and risk-adjusted occurrence rates are provided along with confidence intervals (where applicable) to help make a statistical assessment of patient safety in New Jersey hospitals. 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 a hospital-level PSI table) is one way to assess how well that hospital performed among its peers. A hospital's peers could be defined at many levels (e.g., teaching hospitals, urban hospitals, suburban hospitals, etc.). It is suggested that a hospital's performance be assessed by looking at its performance across the several PSI estimates presented in the 12 Tables.

According to the 2015 New Jersey data, there are substantial variations by hospital in rates of adverse events. Some hospitals exhibit significantly higher adverse event rates than the corresponding statewide rates while others have significantly lower rates.

The performances of hospitals suggested by the patient safety indicators in this report may reflect factors that do not relate to hospital performance, such as patient or physician preference, stage of illness, age, other accompanying illnesses or conditions, or the availability of specialized equipment or doctors. While the data analysis method tries to adjust for many of these factors, it is often not possible to account for all of them through statistical analysis.

Consumers should remember that doctors direct and oversee the medical care that is delivered in hospitals, prescribe tests, and prescribe medications and treatments. This report does not separate the effect of the doctor from the effect of the hospital. The quality of patient care provided in a hospital comes from how well its doctors, nurses, support staff and management work together as well as the technology and other resources available in the facility. This report is not designed to help consumers and their families choose treatment options but to help them discuss patient safety issues with their physicians.

References

AHRQ, Quality Indicators - Patient Safety Indicators: Technical Specifications, March 2015, Version 5.0:
> http://www.qualityindicators.ahrq.gov/Modules/PSI_TechSpec.aspx#

AHRQ Quality Indicator: Benchmark Data Tables for the PSI based on the Nationwide Inpatient Sample (NIS).
> http://www.qualityindicators.ahrq.gov/Modules/psi_resources.aspx

Health Care Quality Assessment, *Patient Safety Indicators: Technical Reports*:
> http://www.nj.gov/health/healthcarequality/qi.shtml.

> For inquiries, contact the New Jersey Department of Health and Senior Services, Office of Health Care Quality Assessment, by calling (800) 418-1397, by emailing at Markos.Ezra@doh.nj.gov by fax at (609) 984-7735.