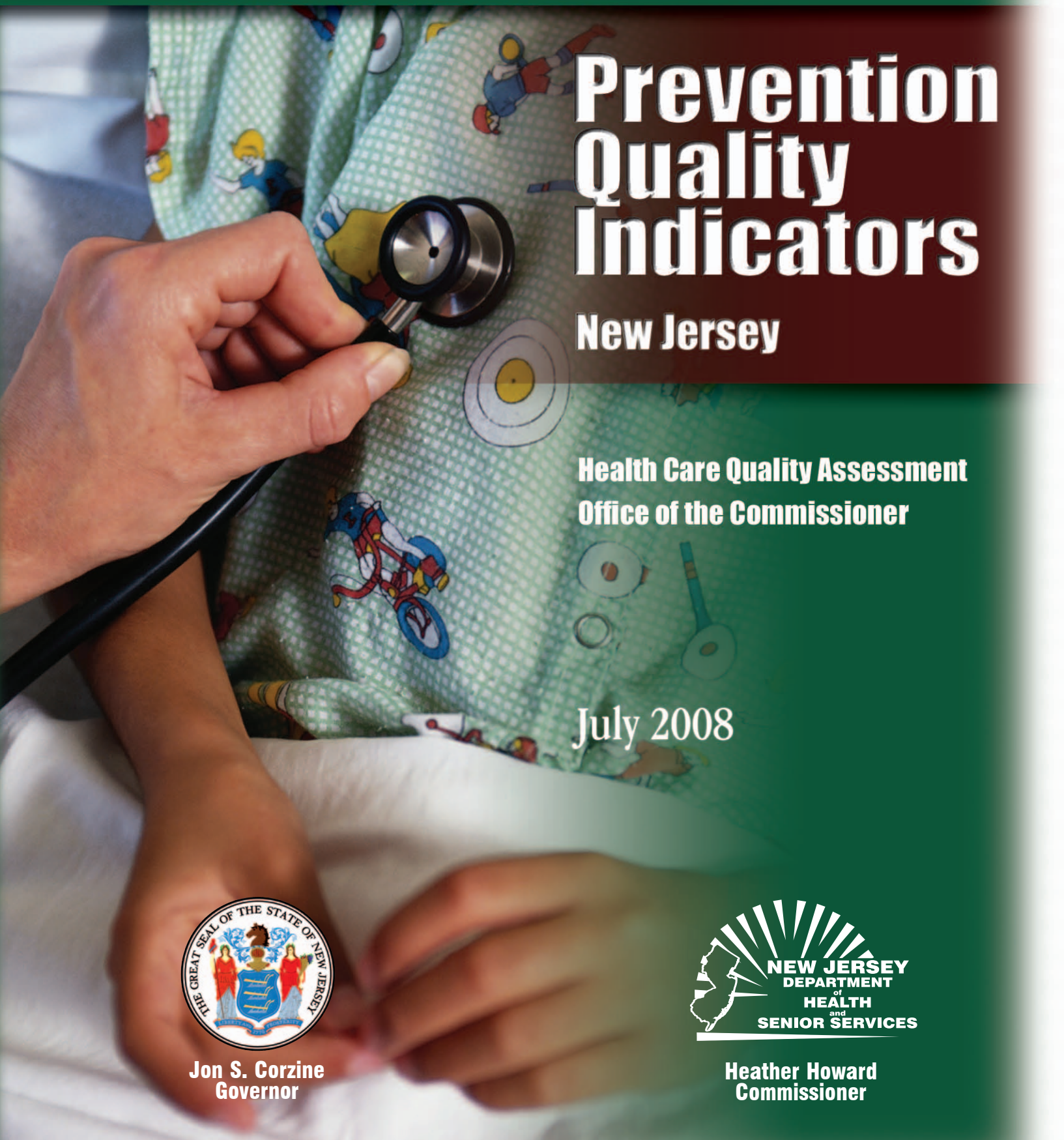
HCQA Health Care Quality Assessment



Prevention Quality Indicators

New Jersey

Health Care Quality Assessment
Office of the Commissioner

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NEW JERSEY DEPARTMENT of HEALTH and SENIOR SERVICES

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Prevention Quality Indicators

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Executive Summary

The Office of Health Care Quality Assessment (HCQA) of the New Jersey Department of Health and Senior Services (Department) assesses health care quality using qualitative and quantitative data reported mainly by hospitals to support performance monitoring. Specifically, HCQA produces consumer reports on cardiac surgery, bariatric surgery, hospital performance, hospital quality indicators; collects and reviews confidential reports and root-cause analyses of serious medical errors; and maintains specialized databases to support licensure requirements. In an effort to enhance the information the Department provides to the public on hospital care, HCQA staff applied statistical tools developed by the Federal Agency for Healthcare Research and Quality (AHRQ) to the New Jersey hospital inpatient discharge data commonly known as UB-92 data. This report, presents findings resulting from the application of the Prevention Quality Indicator (PQI) module to the 2005 New Jersey hospital discharge data.

PQIs are a set of measures derived from UB-92 data to identify "ambulatory care sensitive conditions" (ACSCs) or conditions for which hospitalization could be prevented with good outpatient care or for which early intervention could prevent complications or more severe diseases. PQIs measure the outcomes of preventive care for both acute illnesses and chronic conditions, reflecting two important components of the quality of preventive care - effectiveness and timeliness. PQIs are valuable tools that help flag potential health care quality problem areas that need further investigation.

The purpose of this report is to provide hospitals, community leaders, and policy makers with information derived from readily available data such as the UB-92 to help them identify community-level health care needs in order to target resources and track the impact of programmatic and policy interventions. The Prevention Quality Indicators (PQIs) module facilitates such an effort, and has already been applied at the national level, in the National Healthcare Quality Report and the National Healthcare Disparities Report. No single source of information should be used to determine the quality of care in a hospital or community.

This report presents patient volumes for the 14 prevention quality indicators derived from the 2005 UB-92 data in each of the 21 counties. In addition to the volumes, the tables also show observed, expected and risk-adjusted rates of the 14 PQIs to help assess the quality of health care in each county. Statewide and national estimates are also provided for comparison purposes. The report serves as a supplement to the Department’s Inpatient Quality Indicators Report released in July 2007, which utilized 2005 UB data to focus on acute care hospital outcome measures.

- According to the 2005 New Jersey data, there are substantial variations in preventable hospital admissions by county. Not surprisingly, the variations appear to reflect the socio-economic disparities of the county populations,

with more affluent counties having significantly lower rates than the statewide average, and the less affluent counties having significantly higher admission rates than the statewide rate (Figure 1).

- In 2005, there were 3,544 hospital admissions for diabetes with short-term complications in New Jersey. Rates of hospital admissions for diabetes with short-term complications in Hunterdon, Morris and Bergen were 13.8, 19.2 and 21.5 per 100,000, respectively. By comparison, the rates for Atlantic, Essex, and Cumberland counties were 88.1, 81.7 and 76.1 per 100, 000, respectively.

- Statewide, there were 4,243 preventable hypertension hospital admissions in 2005. Rates of admission for hypertension ranged from 18.1 per 100,000 in Hunterdon county to 29.9 per 100,000 in Ocean county and to 30.8 per 100,000 in Morris county. By comparison, the highest rates of admission for hypertension were reported in Hudson county (111.1 per 100,000) followed by Essex county (94.1 per 100,000) and Camden county (85.5 per 100,000).

- Statewide, there were 37,505 preventable congestive heart failure (CHF) hospital admissions. Seven counties (Atlantic, Camden Cumberland, Essex, Gloucester, Hudson and Mercer) had significantly higher CHF admission rates than the statewide average. By comparison, nine counties (Bergen, Burlington, Hunterdon, Middlesex, Monmouth Morris, Ocean, Somerset, and Sussex) had rates that were significantly lower than the statewide CHF admission rate.

- Similar variations are observed on the other PQI measures among the 21 counties, suggesting that the indicators may be important as baseline measures in a closer examination of the determinants of the huge variations in preventable hospital admissions.

- Compared to the national benchmark, New Jersey appears to have lower hospitalization rates for 8 of the 14 PQIs. New Jersey has higher hospitalization rates than the national average only for *diabetes with long-term complications, hypertention, angina without procedure, uncontrolled diabetes* and *adult asthma*.

- Regionally, hospitalization rates in New Jersey were higher than New York's for 10 of the 14 PQIs. New Jersey has lower hospitalization rates than New York only for *angina without procedure, uncontrolled diabetes*, and *adult asthma*. The risk-adjusted *low birth weight* rates are about the same in both states.

Introduction

The Office of Health Care Quality Assessment (HCQA) of the New Jersey Department of Health and Senior Services (Department) assesses health care quality using qualitative and quantitative data reported mainly by hospitals to support performance monitoring. Specifically, HCQA staff produces consumer reports on cardiac surgery, bariatric surgery and hospital performance; collects and reviews confidential reports and root-cause analyses of serious medical errors; and maintains specialized databases to support licensure requirements. In an effort to enhance the information the Department provides to the public on hospital care, HCQA staff applied statistical tools developed by the Federal Agency for Healthcare Research and Quality (AHRQ) to the New Jersey hospital inpatient discharge data also known as Uniform Billing (UB) 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 (PQI); Inpatient Quality Indicators (IQI); Patient Safety Indicators; and Pediatric Quality Indicators. Background information on the development of these modules and the primary purpose they are designed to serve can be found at: www.nj.gove//health/healthcareqaulity/qi.shtml.

This report presents findings resulting from the application of the Prevention Quality Indicator (PQI) module (Version 3.1, Revision 1a) to the 2005 New Jersey hospital discharge data. The report is organized into the following sections: *Introduction; The Prevention Quality Indicators (PQIs) Module; Interpretation of PQI Measures; Strengths and Limitations of PQIs; PQI Estimates for New Jersey; Statewide PQI Measures Compared to National Estimates; and Summary of Findings.* Description of the Prevention Quality Indicators Module, Interpretation of the PQI 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 Prevention Quality Indicators. These sources are listed in the reference section of this report. The PQI report serves as a supplement to the Department's Inpatient Quality Indicators Report released in July 2007, which utilized 2005 UB data to focus on acute care hospital outcome measures. Reports on Patient Safety Indicators and Pediatric Quality Indicators will be presented separately in the future.

The Prevention Quality Indicators (PQIs) Module

The Prevention Quality Indicators (PQIs) are a set of measures that can be used with hospital inpatient discharge data to identify "ambulatory care sensitive conditions" (ACSCs). ACSCs are conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe diseases. These indicators measure the outcomes of preventive care for both acute illnesses and chronic conditions, reflecting two important components of the

quality of preventive care - effectiveness and timeliness. For example, with effective drug therapy in the outpatient setting, hospital admissions for hypertension can be prevented. Likewise, accurate diagnosis and timely access to surgical treatment will help reduce the incidence of a perforated appendix. Thus, the PQI module, which focuses on preventive care services, represents the current state of the art in assessing quality of health services in local communities using inpatient discharge data. It is a valuable tool for identifying potential health care quality problems in outpatient care so that they get timely attention for a more in-depth investigation.

PQIs are used to assess the quality of a health care system as a whole, and especially the quality of ambulatory care, in preventing medical complications. That is why these measures are of greater value when reported at the population level. Such information is valuable for public health groups, state data organizations, and others concerned with community-wide health problems. In particular, policy makers and health care providers can use PQIs to answer questions such as: *Does the admission rate for diabetes complications in my community suggest a problem in the provision of appropriate outpatient care to this population?; How does the admission rate for congestive heart failure vary over time and from one county to another?, etc.*

Both researchers and policy makers agree that UB data offer useful information on the quality of preventive care in the community. The goal is for hospitals, community leaders, and policy makers to use such readily available data to identify community-level health care needs, target resources, and track the impact of programmatic and policy interventions. The PQI module is intended to facilitate such an effort, and has already been applied, at the national level, in the National Healthcare Quality Report and National Healthcare Disparities Report. At the State level, however, New York is the only state so far to release a report on PQI measures to the public.

The PQI module contains 14 indicators that measure hospital admissions for ambulatory care sensitive conditions (ACSC) across geographic areas. The 14 indicators included in the PQI module are:

- Diabetes Short-term Complication Admission Rate
- Perforated Appendix Admission Rate
- Diabetes Long-term Complication Admission Rate
- Chronic Obstructive Pulmonary Disease (COPD) Admission Rate
- Hypertension Admission Rate
- Congestive Heart Failure Admission Rate
- Low Birth Weight Rate
- Dehydration Admission Rate
- Bacterial Pneumonia Admission Rate
- Urinary Tract Infection Admission Rate
- Angina without Procedure Admission Rate
- Uncontrolled Diabetes Admission Rate
- Adult Asthma Admission Rate
- Rate of Lower-extremity Amputation Among Patients with Diabetes

The software program for the PQI module produces county-level *volume of admissions*, *observed rates, expected rates, risk-adjusted rates*, and *smoothed rates* for each of the 14 indicators. This report presents the volume of hospital admissions in a county along with the observed, expected, and risk-adjusted rates generated by the software. Smoothed rates are not discussed in this report. Interpretations and guidelines on when to use the observed, expected, and risk adjusted rates are discussed below. At the outset, however, it should be clear that there are no "right admission rates" for these conditions. 'Very low' rates could signal inappropriate underutilization of health care resources while 'very high' rates could indicate potential overuse of inpatient care. Therefore, hospital admission for ACSCs is not a measure of hospital quality but a potential indicator of outpatient and community health care need at the county level. For example, if an area has a relatively high hospital admission rate for diabetes complications, local health care providers should work with the community to identify reasons and strategies to address the problem.

Observed and expected rates

The *observed rate* is the raw rate generated directly from the data the hospitals provided. The *observed rate* is primarily used to help identify cases for further follow-up and quality improvement. Counties or communities needing improvement can be identified by the magnitude of the observed rate by comparing the rate to available benchmarks and/or by the number of patients impacted. In this case, the national and statewide observed rates would be benchmarks for comparison. The population at risk (the denominators for calculating the PQI rates) is derived from census population figures defined by county.

Another approach to identify areas that need more attention for focus is to compare the *observed and expected rates*. The *expected rate* is the rate the county would have if it had the same patient case-mix (i.e. by age, gender, DRG, and comorbidity categories) as the reference population. If the observed rate is higher than the expected rate (i.e., the ratio of observed/expected is greater than 1.0), then the implication is that the county 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 county performed better than the reference population.

Risk-adjusted rates

Risk-adjusted rates are derived from applying to the observed rates, the average case-mix of a baseline HCUP State Inpatient Data (SID) that represents national average patient mix for that year. County-level risk-adjusted admission rates reflect the age and sex distribution as well as the 'All Patient Refined - Diagnosis Related Groups' (APR-DRG)[1] distribution of the data in the baseline file. The risk-adjusted rate is the rate the

[1] APR-DRG is a proprietary tool of the 3M Health Information Systems Corporation designed to use UB data to adjust for these patient differences. The AHRQ quality indicators methodology requires use of APR-DRGs in the analysis of UB data. APR-DRG scores take advantage of available UB data on patient co-morbidities and non-operating room procedures and allow the interaction of the patient's secondary diagnoses, principal diagnosis, and age to influence the assignment of that patient to one of four classes

county would have if it had the same patient case-mix as the reference population. Alternatively, a risk-adjusted rate is defined as the estimated performance of a county on the PQI assuming that the county has the case-mix of the reference population[2]. Readers may use the statewide risk-adjusted rate as a benchmark to compare county-level risk-adjusted admission rates. If the statewide risk-adjusted rate is completely above the county's confidence interval, then the county's patient case-mix is less severe than the statewide average. On the other hand, if the statewide risk-adjusted rate is completely below the county's confidence interval, then the county's patient case-mix is more severe than that of the statewide average. If the statewide risk-adjusted rate falls within the county's confidence interval, then the county's patient case-mix is the same as the statewide average.

Interpretation of PQI Measures

- Prevention Quality Indicators are not intended to be used as definitive quality measures. But they are useful, low-cost measures that can potentially illuminate differences across areas in hospital admission rates for ambulatory care sensitive conditions (ACSC).

- Performance on a single PQI often cannot reliably indicate actual quality differences. For this reason, some indicators have been developed as measure sets. For instance, four indicators are related to diabetes – *uncontrolled diabetes, diabetes short-term complications, diabetes long-term complications, and lower-extremity amputation among patients with diabetes*. Examining these indicators together is likely to produce a more complete picture of overall quality of care for this condition.

- Since there are no "*right admission rates"* established for most indicators, it is often better to compare county-level rates with other similar areas. These "peer groups" would ideally be as similar as possible in potentially important factors, such as socioeconomic status of the population, and urban or rural location. However, the most commonly applied approach is to compare a county's risk-adjusted rate with the statewide risk-adjusted rate.

- A county's performance is measured by comparing its confidence interval to the statewide risk-adjusted rate to see if the 95% confidence interval for its risk-adjusted estimate contains the statewide risk-adjusted estimate for a particular indicator.

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of severity and risk of mortality classes: low, moderate, high and very high. This risk adjustment enables comparisons among hospitals, counties, and/or states with different mixes of patients.

[2] Overall means and regression coefficients from the baseline HCUP file are applied to the observed rates to risk-adjust them. These baseline file means and regression coefficients are provided as part of the PQI module.

- If a county's confidence interval contains the statewide risk-adjusted rate, then the county's risk-adjusted rate is not statistically significantly different from the statewide rate.

- If a county's confidence interval falls entirely below the statewide risk-adjusted rate, then the county's risk-adjusted rate is significantly lower than the statewide rate. In the tables, these rates are marked by single asterisk (*).

- If a county's confidence interval falls entirely above the statewide risk-adjusted rate, then the county's risk-adjusted rate is significantly higher than the statewide rate. In the tables, these rates are marked by two asterisks (**).

- This report is only a guide for consumers and should not be used by itself to draw a conclusion about a particular county's overall performance.

- Readers can also compare a county's *risk-adjusted rate* with its own *observed and expected rates*. The difference will indicate the impact of risk-adjustment or the impact of differences in case-mix on the indicator.

- PQI rates based on only a few cases should be interpreted with caution.

Strengths and Limitations of PQIs

- Even though these indicators are based on hospital inpatient data, they provide insight into the quality of the health care system *outside* the hospital setting. Patients with diabetes may be hospitalized for diabetic complications if their conditions are not adequately monitored or if they do not receive the patient education needed for appropriate self-management. Patients may be hospitalized for asthma if primary care providers fail to adhere to practice guidelines or to prescribe appropriate treatments. Patients with appendicitis who do not have ready access to surgical evaluation may experience delays in receiving needed care, which can result in a life-threatening condition of perforated appendix. Thus, the PQIs are measures of the impact of preventive care for both acute illnesses and chronic conditions, reflecting two important components of the quality of preventive care - effectiveness and timeliness. In short, the PQI module is a valuable tool to help flag potential health care quality problem areas that need further investigation. Moreover, the indicators can provide a quick check on access to health care or outpatient services in a community by using patient data found in a typical hospital discharge abstract.

- Despite the strengths, however, there are several issues that should be considered when using these indicators. For some PQIs, differences in

socioeconomic status have been shown to explain a substantial part of the variation in rates across counties. The complexity of the relationship between socioeconomic status and PQI rates makes it difficult to delineate how much of the observed relationships are due to true access to care in potentially underserved populations, or due to other patient characteristics, unrelated to quality of care. In addition, environmental conditions that are not under the direct control of the health care system can substantially influence some of the PQIs. For example, COPD and asthma admission rates are likely to be higher in areas with poorer air quality.

- The other issue is that not many studies have directly addressed the question of whether effective treatments in outpatient settings would reduce the overall incidence of hospitalizations. Moreover, the extent to which the reporting of admission rates for ambulatory care sensitive conditions (ACSC) may lead to changes in ambulatory care practices and admission rates is still unknown. Providers may admit patients who do not clinically require inpatient care or they may do the opposite - fail to hospitalize patients who would benefit from inpatient care

PQI Measures for New Jersey

This section presents county-level PQI estimates for New Jersey in 2005. First, the definition of the indicator is provided. Then a summary table showing the number of hospital admissions among residents of the county, the corresponding observed and expected admission rates, and the risk-adjusted rates with their respective 95% confidence intervals is presented. In this section, county-level performance assessments will be made using risk-adjusted rates.

The national rates for all 14 PQIs presented here as benchmarks for comparison purposes, are based on the 2004 HCUP - State Inpatient Data (SID) reported in the AHRQ PQI documentation. Comparison of a specific county-level PQI rate to the statewide average for the same indicator is one appropriate way to see how well a county does among its peers. Following the recommendation of AHRQ, we have compared county rates against statewide rates. However, one may equally compare the county rates against the national rates since the risk-adjustment was based on national parameters.

1. Diabetes with Short-term Complications

Short-term complications of diabetes mellitus include diabetic ketoacidosis, hyperosmolarity, and coma. These life-threatening emergencies arise when a patient experiences an excess of glucose (hyperglycemia) or insulin (hypoglycemia). Hospital admission for diabetes short-term complications is a PQI that would be of most interest to comprehensive health care delivery systems. The assumption is that proper outpatient treatment and adherence to care may reduce the incidence of diabetic short-

term complications resulting in lower admission rates, which implies better quality of care. *The rate is defined as admissions for diabetic short-term complications per 100,000 adult (18 years and older) county population. The indicator includes all non-maternal/non-neonatal discharges of age 18 years and older with International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) principal diagnosis codes for diabetes short-term complications (ketoacidosis, hyperosmolarity, coma), excluding transfers from another institution, Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium), and MDC 15 (newborn and other neonates).*

Table 1 shows the number of hospital admissions for *diabetes short-term complications* by county along with *observed, expected* and *risk-adjusted rates*.

- Statewide, there were 3,544 hospital admissions for *diabetes with short-term complications* in 2005*.* The statewide risk-adjusted hospital admission rate for *diabetes with short-term complications* is 48.5 per 100,000 adult population.

- The national-average *rate* for *diabetes with short-term complications* was 54.7 per 100,000.

- With its 48.5 per 100,000 risk-adjusted rate, New Jersey performed better compared to the national average of 54.7 per 100,000.

- County-level risk-adjusted rates can be conveniently compared to the statewide risk-adjusted rate to see if there is statistical significance in the difference. For example, the risk-adjusted hospital admission rate for *diabetes with short-term complications* among the adult population of Atlantic County is 88.1 per 100,000 with a 95% confidence interval of 79.2 to 97.0. The statewide risk-adjusted rate of 48.5 is far below the confidence interval - implying that the hospital admission rate for *diabetes with short-term complications* in Atlantic County is statistically significantly higher than that of the statewide average. This can be used as a signal for policy makers to do further investigation into the health care provisions for diabetic patients in the county. In another example, the risk-adjusted rate of 21.5 per 100,000 in Bergen County is statistically significantly lower than the statewide average – suggesting that Bergen County performed better on this indicator compared to the statewide average.

Table 1. Hospital Admissions for Diabetes with Short-term Complications (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***54.7***	***54.7***	***54.7***	
Statewide	**3,544**	**53.2**	**50.6**	**48.5**	**47.0 - 50.1**
Atlantic	199	96.7	50.7	88.1 **	79.2 - 97.0
Bergen	165	23.3	49.9	21.5 *	16.7 - 26.3
Burlington	155	44.7	50.7	40.8 *	33.9 - 47.6
Camden	299	77.0	50.8	70.0 **	63.6 - 76.5
Cape May	47	58.2	49.2	54.6	40.3 - 69.0
Cumberland	97	84.3	51.1	76.1 **	64.4 - 87.9
Essex	535	90.0	50.9	81.7 **	76.5 - 86.9
Gloucester	111	53.2	51.1	48.1	39.4 - 56.9
Hudson	268	56.8	51.2	51.2	45.4 - 57.0
Hunterdon	15	15.0	50.2	13.8 *	01.0 - 26.6
Mercer	187	66.2	51.2	59.6 **	52.1 - 67.2
Middlesex	265	43.7	51.1	39.5 *	34.4 - 44.7
Monmouth	213	44.0	50.4	40.3 *	34.5 - 46.1
Morris	78	20.9	50.2	19.2 *	12.6 - 25.8
Ocean	191	44.1	49.5	41.2 *	35.0 - 47.3
Passaic	220	59.1	51.0	53.5	47.0 - 60.1
Salem	37	73.2	50.4	67.1 **	49.2 - 85.0
Somerset	99	41.5	50.5	38.0 *	29.7 - 46.3
Sussex	34	29.6	50.8	26.9 *	15.1 - 38.7
Union	189	46.9	50.6	42.8	36.5 - 49.2
Warren	47	56.1	50.6	51.3	37.3 - 65.2
Other	93	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

2. Perforated Appendix

Perforated appendix may occur when appropriate treatment for acute appendicitis is delayed for a number of reasons, including problems with access to ambulatory care, failure by the patient to consider symptoms as important, or misdiagnosis and other delays in obtaining surgery. Hospital admission for perforated appendix is a PQI that would be of most interest to comprehensive health care delivery systems. Areas with high rates of perforated appendix may want to target points of intervention by using chart reviews and other supplemental data to investigate the reasons for delay in receiving surgery. With prompt and appropriate care, acute appendicitis should not progress to perforation or rupture. The assumption is that timely diagnosis and treatment may reduce the incidence of perforated appendix and this represents better quality of care. *The rate is defined as admissions for perforated appendix per 100 appendicitis patients within the county. The indicator includes all discharges with the ICD-9-CM diagnosis code for perforation or abscess of appendix in any field among cases meeting the inclusion criteria for the denominator (population at risk), which is all non-maternal discharges age 18 and older within a county with diagnosis code for appendicitis. Transfers from another institution, MDC 14 (pregnancy, childbirth, and puerperium), and MDC 15 (newborn and other neonates) are excluded from the denominator.*

Table 2 shows the number of hospital admissions for *perforated appendix* by county along with the corresponding *rates*.

- The 2004 national admission *rate* for *perforated appendix* was 30.2 percent.

- Statewide, there were 2,193 hospital admissions for *perforated appendix* in 2005. The statewide *observed and expected rates* are 27.4 and 30.5 percent, respectively while the risk-adjusted rate is 27.4 percent.

- The *risk-adjusted perforated appendix rate* for New Jersey, 27.4 percent, suggests that the state performed better compared to the national benchmark of 30.2 percent.

- In comparing county-level risk-adjusted perforated appendix rates to the statewide risk-adjusted rate, we see that 17 counties have rates that are similar to the statewide average. Only Gloucester, with a risk-adjusted rate of 21.0 percent, has a statistically significantly lower rate than the statewide average of 27.4 percent. Mercer, Salem and Sussex have rates that are statistically significantly higher than the statewide average, suggesting that these three counties performed worse compared to the benchmark.

Table 2. Perforated Appendix Admission Rate (per 100 admissions, age 18+ with appendicitis)

County	Perforated appendix admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		*30.2*	*30.2*	*30.2*	
Statewide	**2,193**	**27.4**	**30.5**	**27.4**	**26.4 - 28.4**
Atlantic	66	28.7	29.9	29.3	23.2 - 35.3
Bergen	203	24.9	30.9	24.6	21.6 - 27.7
Burlington	100	29.4	30.3	29.6	24.8 - 34.5
Camden	118	28.0	30.1	28.4	24.0 - 32.8
Cape May	29	30.2	33.1	27.9	19.4 - 36.3
Cumberland	37	31.1	29.7	32.0	23.8 - 40.2
Essex	183	26.8	30.3	26.9	23.5 - 30.3
Gloucester	51	21.0	30.5	21.0 *	15.3 - 26.7
Hudson	142	25.2	29.5	26.1	22.2 - 29.9
Hunterdon	30	26.1	30.4	26.2	17.9 - 34.5
Mercer	115	38.7	31.1	38.1 **	33.0 - 43.1
Middlesex	165	26.6	30.8	26.4	22.9 - 29.9
Monmouth	158	25.9	30.1	26.2	22.6 - 29.9
Morris	134	28.8	29.9	29.3	25.2 - 33.5
Ocean	177	32.5	32.7	30.3	26.8 - 33.9
Passaic	130	24.6	30.4	24.7	20.8 - 28.6
Salem	20	40.8	29.6	42.1 **	29.1 - 55.2
Somerset	73	22.8	30.4	22.9	17.9 - 27.9
Sussex	53	37.6	28.9	39.6 **	31.8 - 47.4
Union	99	23.0	29.6	23.7	19.4 - 28.1
Warren	35	35.7	30.1	36.2	27.2 - 45.3
Unknown	75	26.6	30.5	26.6	21.3 - 31.9

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

3. Diabetes with Long-term Complications

Long-term complications of diabetes mellitus include renal, eye, neurological, and circulatory disorders. Hospital admission for diabetes long-term complications is a PQI that would be of most interest to comprehensive health care delivery systems. Long-term diabetes complications are thought to arise from sustained long-term poor control of diabetes. Intensive treatment programs have been shown to decrease the incidence of long-term complications in both Type 1 and Type 2 diabetes. The indicator relates to quality because research shows that proper outpatient treatment and adherence to care reduces the incidence of diabetic long-term complications, and that lower rates suggest better quality of care. *The rate is defined as admissions for diabetic long-term complications per 100,000 adult county population (i.e., all persons age 18 years and older). The indicator includes all discharges age 18 years and older with ICD-9-CM principal diagnosis codes for long-term complications of diabetes (renal, eye, neurological, circulatory, or complications not otherwise specified), but excludes cases transferred from another institution, MDC 14 (pregnancy, childbirth, and puerperium), and MDC 15 (newborn and other neonates).*

Table 3 shows the number of hospital admissions in New Jersey hospitals in 2005 for *diabetes with long-term complications* by county along with *observed, expected and risk-adjusted rates*.

- Statewide, there were 11,581 hospital admissions in 2005 for *diabetes with long-term complications.* The *observed and expected rates* estimated on the basis of these admissions are 173.8 and 121.0 per 100,000, respectively, while the risk-adjusted rate is 148.6 per 100,000.

- The 2004 national *diabetes with long-term complications* rate was 126.8 per 100,000.

- New Jersey's risk-adjusted admission rate for *diabetes with long-term complications* (148.6 per 100,000) is higher than the national average.

- Readers can compare their counties against the statewide and national averages to assess the extent of the problem among their populations.

Table 3. Hospital Admissions for Diabetes with Long-term Complications (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***126.8***	***126.8***	***126.8***	
Statewide	**11,581**	**173.8**	**121.0**	**148.6**	**146.3 - 150.8**
Atlantic	506	247.1	121.3	210.6 **	197.8 - 223.5
Bergen	892	125.6	130.0	100.0 *	93.3 - 106.6
Burlington	540	155.7	119.9	134.4 *	124.5 - 144.4
Camden	721	185.8	118.5	162.2 **	152.7 - 171.6
Cape May	192	238.8	149.1	165.7	147.2 - 184.1
Cumberland	261	226.0	116.8	200.2 **	182.7 - 217.7
Essex	1,529	257.2	114.8	231.8 **	224.2 - 239.6
Gloucester	261	125.6	114.9	113.1 *	100.0 - 126.2
Hudson	1,150	243.7	107.2	235.1 **	226.1 - 244.1
Hunterdon	81	82.0	122.0	69.5 *	51.2 - 87.9
Mercer	577	204.5	115.2	183.6 **	172.4 - 194.8
Middlesex	945	155.8	114.1	141.2	133.6 - 148.9
Monmouth	728	150.5	123.2	126.3 *	118.0 - 134.6
Morris	358	96.0	123.2	80.6 *	71.2 - 90.0
Ocean	625	144.4	147.7	101.1 *	93.1 - 109.1
Passaic	704	189.3	115.6	169.4 **	159.6 - 179.2
Salem	78	156.2	127.3	127.0	101.7 - 152.2
Somerset	316	132.1	117.6	116.2 *	104.1 - 128.3
Sussex	119	103.5	114.8	93.3 *	75.7 - 110.9
Union	672	166.8	121.5	142.0	132.8 - 151.2
Warren	100	119.4	121.7	105.5 *	81.5 - 121.6
Unknown	226	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

4. Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) comprises three primary diseases that cause respiratory dysfunction - asthma, emphysema, and chronic bronchitis - each with distinct etiologies, treatments, and outcomes. This indicator examines emphysema and bronchitis; asthma is discussed separately for children and adults. COPD can often be controlled in an outpatient setting. Admissions for COPD include exacerbations of COPD, respiratory failure, and (rarely) lung volume reduction surgery or lung transplantation. With appropriate outpatient treatment and compliance, hospitalizations for exacerbations of COPD and decline in lung function should be minimized. Counties may wish to use chart reviews to understand more clearly whether admissions are a result of poor quality care or other problems. Counties may also wish to identify hospitals that contribute the most to the overall area rate for this indicator. Proper outpatient treatment may reduce admissions for COPD, and lower rates suggest better quality of care. *The rate is defined as admissions for COPD per 100,000 county population (i.e., all persons age 18 and older in a county). The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis codes for COPD, excluding transfers from another institution, MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborn and other neonates).*

Table 4 shows the number of hospital admissions for c*hronic obstructive pulmonary disease (COPD)* by county along with their *observed, expected* and *risk-adjusted rates*.

- In New Jersey, there were 13,657 hospital admissions for *COPD* in 2005. The statewide *observed and expected* hospital admission rates are 205.0 and 262.5 per 100,000, respectively, while the risk-adjusted rate is 173.5 per 100,000 with a 95% confidence interval of 170.2 to 176.8.

- The national *COPD* admission rate in 2004 was 230.4 per 100,000.

- New Jersey, with a risk-adjusted rate of 173.5 per 100,000 performed better compared to the national benchmark of 230.4.

- Readers may assess county performance on COPD admissions by comparing the county rate against the statewide rate.

Table 4. Hospital Admissions for Chronic Obstructive Pulmonary Disease (COPD) (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***230.4***	***230.4***	***230.4***	
Statewide	**13,657**	**205.0**	**262.5**	**173.5**	**170.2 - 176.8**
Atlantic	393	191.9	265.1	160.8	142.2 - 179.4
Bergen	1,206	170.2	289.0	130.8 *	121.2 - 140.4
Burlington	664	191.5	257.4	165.2	150.7 - 179.7
Camden	963	248.1	254.6	216.5 **	202.9 - 230.5
Cape May	195	241.3	359.4	149.1	123.7 - 174.5
Cumberland	220	191.2	252.6	168.2	142.7 - 193.6
Essex	1,315	221.2	244.9	200.7 **	189.3 - 212.0
Gloucester	497	238.3	241.5	219.2 **	199.5 - 238.1
Hudson	1,277	270.6	223.1	269.4 **	256.0 - 282.8
Hunterdon	129	129.0	249.4	114.9 *	87.4 - 142.4
Mercer	515	182.2	246.4	164.2	147.8 - 180.6
Middlesex	922	152.0	241.8	139.6 *	128.3 - 150.9
Monmouth	987	204.0	263.2	172.1	160.0 - 184.3
Morris	572	152.9	259.9	130.7 *	116.8 - 144.6
Ocean	1,359	313.9	364.4	191.3 **	180.8 - 202.7
Passaic	781	210.0	247.3	188.6 **	174.3 - 202.9
Salem	104	205.7	282.3	161.8	125.5 - 198.1
Somerset	268	112.4	241.3	103.4 *	85.8 - 121.9
Sussex	176	153.2	226.9	149.9	123.1 - 176.8
Union	660	163.8	264.4	137.6 *	124.4 - 150.9
Warren	233	278.2	259.2	238.4 **	209.0 - 267.8
Unknown	221	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

5. Hypertension

Hypertension is a chronic condition that is often controllable in an outpatient setting with appropriate use of drug therapy. Hospital admission for hypertension is a PQI that would be of most interest to comprehensive health care delivery systems. Counties may wish to identify hospitals that contribute the most to the overall county rate for this indicator. As a PQI, hypertension is not a measure of hospital quality per se, but rather one measure of outpatient health care. Providers may reduce admission rates without actually improving quality by shifting care to an outpatient setting. Proper outpatient treatment may reduce admissions for hypertension, and lower admission rates represent better quality of care. *The rate is defined as admissions for hypertension per 100,000 adult county population (i.e., all persons in the county age 18 and older). The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis codes for hypertension, but excludes transfers from another institution, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates) and cases with cardiac procedure codes in any field.*

Table 5 shows the number of hospital admissions for *hypertension* by county along with their *observed, expected and risk-adjusted rates*.

- In New Jersey, there were 4,243 hospital admissions for *hypertension* in 2005. With a risk-adjusted rate of 54.1 per 100,000, New Jersey's *hypertension* rate is higher than the national average of 49.7 per 100,000.

- Five counties (Camden, Essex, Hudson, Passaic and Warren) have statistically significantly higher admission rates for *hypertension* compared to the statewide average.

Table 5. Hospital Admissions for Hypertension (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***49.7***	***49.7***	***49.7***	
Statewide	**4,243**	**63.7**	**47.7**	**54.1**	**52.7 - 55.5**
Atlantic	150	73.2	47.7	62.2	54.1 - 70.2
Bergen	353	49.8	51.1	39.5 *	35.3 - 43.6
Burlington	138	39.8	46.8	34.5 *	28.2 - 40.7
Camden	384	98.9	46.8	85.5 **	79.6 - 91.4
Cape May	57	70.5	58.1	49.1	37.6 - 60.7
Cumberland	53	46.1	45.9	40.6 *	29.7 - 51.5
Essex	630	106.0	45.6	94.1 **	89.3 - 99.0
Gloucester	105	50.4	44.9	45.4	37.2 - 54.6
Hudson	552	117.0	42.6	111.1 **	105.5 - 116.7
Hunterdon	21	21.0	47.0	18.1 *	6.5 - 29.7
Mercer	193	68.3	45.5	60.8	53.8 - 67.7
Middlesex	278	45.8	44.9	41.4 *	36.5 - 46.2
Monmouth	184	38.0	48.5	31.7 *	26.6 - 36.9
Morris	136	36.4	47.8	30.8 *	24.9 - 36.7
Ocean	189	43.7	59.0	29.9 *	25.0 - 34.9
Passaic	311	83.6	45.6	74.2 **	68.1 - 80.3
Salem	25	49.4	49.6	40.4	24.5 - 56.2
Somerset	99	41.5	46.3	36.3 *	28.8 - 43.9
Sussex	44	38.3	44.5	34.8 *	23.8 - 45.9
Union	181	44.9	48.3	37.6 *	31.9 - 43.3
Warren	70	83.6	48.1	70.3 **	57.8 - 82.8
Unknown	90	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

6. Congestive Heart Failure

Usually congestive heart failure (CHF) can be controlled in an outpatient setting. However, the disease is a chronic progressive disorder for which some hospitalizations are appropriate. Congestive heart failure relates to quality because research shows that proper outpatient treatment reduces admissions for CHF, which in turn lowers admission rates, suggesting a better quality of care. Congestive heart failure is a PQI that would be of most interest to comprehensive health care delivery systems. As the causes for CHF admissions may include poor quality of care, lack of patient compliance, or problems of access to care, counties may wish to review CHF patient records to identify precipitating causes and potential targets for intervention. As a PQI, CHF is not a measure of hospital quality, but rather a measure of outpatient and other health care. *The rate is defined as admissions for CHF per 100,000 county population age 18 and older with ICD-9-CM principal diagnosis codes for CHF. It excludes transfers from another institution, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates), and those with cardiac procedure codes.*

Table 6 shows the number of hospital admissions for c*ongestive heart failure* by county along with their *observed, expected and risk-adjusted rates*.

- Statewide, there were 37,505 hospital admissions for *congestive heart failure* in 2005. The *observed and expected rates* estimated on the basis of these admissions are 563.0 and 504.8 per 100,000, respectively, while the risk-adjusted rate is 466.1 per 100,000.

- The risk-adjusted *congestive heart failure* hospital admission rate for New Jersey in 2005 (466.1 per 100,000) is significantly lower than the national average in 2004 (488.6 per 100,000). It should be noted, however, that some counties have CHF rates higher than the statewide average suggesting a significant variation by county.

Table 6. Hospital Admissions for Congestive Heart Failure (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***488.6***	***488.6***	***488.6***	
Statewide	**37,505**	**563.0**	**504.8**	**466.1**	**461.7 - 470.5**
Atlantic	1,446	706.0	506.5	582.6 **	557.4 - 607.7
Bergen	3,262	460.4	560.8	343.1 *	330.2 - 355.9
Burlington	1,452	418.8	479.1	365.3 *	345.4 - 385.2
Camden	2,256	581.3	485.9	500.0 **	481.3 - 518.6
Cape May	599	741.2	716.3	432.5	398.9 - 466.1
Cumberland	773	672.0	485.3	578.6 **	544.4 - 612.9
Essex	4,772	802.8	466.5	719.3 **	703.9 - 734.7
Gloucester	1,151	552.0	446.0	517.3 **	490.7 - 543.9
Hudson	2,803	593.9	426.2	582.4 **	564.4 - 600.5
Hunterdon	201	201.0	449.4	187.0 *	148.7 - 225.2
Mercer	1,652	584.4	475.2	514.0 **	491.9 - 536.0
Middlesex	2,780	458.3	460.6	415.9 *	400.5 - 431.2
Monmouth	2,319	479.3	499.3	401.1 *	384.7 - 417.6
Morris	1,297	346.7	476.4	304.2 *	285.0 - 323.4
Ocean	3,460	799.2	770.0	433.8 *	419.8 - 447.8
Passaic	2,017	542.3	473.3	478.9	459.6 - 498.2
Salem	335	662.4	547.0	506.1	457.4 - 554.8
Somerset	1,027	430.7	447.6	402.2 *	377.4 - 427.0
Sussex	389	338.6	410.7	344.6 *	307.2 - 381.9
Union	2,356	584.7	519.2	470.6	452.9 - 488.3
Warren	492	587.4	502.1	488.9	449.4 - 528.4
Other	684	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

7. Low Birth Weight

Low birth weight (LBW) is the single most important factor affecting death among newborns and is a significant determining factor in infant deaths (1 to 12 months of age). Infants may be low birth weight because of inadequate interuterine growth or premature birth. Risk factors include nutritional status and behavioral risk factors such as tobacco use during pregnancy. Proper preventive care may reduce incidence of low birth weight, and this represents better quality of care. Low birth weight is a PQI that would be of most interest to comprehensive health care delivery systems. As a PQI, low birth weight is not a measure of hospital quality, but rather a measure of outpatient health care. This indicator could have substantial bias that would require additional risk adjustment from birth records or clinical data. Risk factors for low birth weight may be addressed with adequate prenatal care and education. Prenatal education and care programs have been established to help reduce low birth weight and other complications in high-risk populations. *The rate is defined as the number of low birth weight infants per 100 live births. Low birth weight refers to births with ICD-9-CM diagnosis codes for birth weight less than 2500 grams (5½ pounds*) *in any field (analysis excludes transfer cases)*[3]*.*

Table 7 shows the number of newborn babies (0 - 28 days old) *with birth weight of less than 2500 grams* by county along with corresponding *observed, expected and risk-adjusted rates*. LBW rates are per 100 newborns excluding premature deliveries and sick babies.

- In 2005, there were 6,875 newborns in New Jersey classified as *low birth weight.* The *observed and expected rates* estimated on the basis of these births are 6.3 and 5.8 percent, respectively, while the risk-adjusted rate is 6.3 percent. The rates suggest that New Jersey's performance is at par with the national average of 6.3 percent in 2004.

- Readers are advised to assess individual county performance by comparing them against the statewide and/or national *LBW* rates.

[3] The denominator includes any neonate (a neonate is defined as any discharge with age in days at admission between zero and 28 days) with either 1) an ICD-9-CM diagnosis code for an in-hospital live birth or 2) an admission type of newborn (ATYPE=4), age in days at admission equal to zero, and not an ICD-9-CM diagnosis code for an out-of-hospital birth. If age in days is missing, then a neonate is defined as any DRG in MDC 15, an admission type of newborn (ATYPE=4), an ICD-9-CM diagnosis code for neonate observation and evaluation, or an ICD-9-CM diagnosis code for an in-hospital live birth.

Table 7. Low Birth Weight Infants Per 100 Admissions of Newborn Babies (i.e. 0 - 28 days old)**

County	Newborns (<2500 Grams)	Observed rate	Expected rate	Risk-adjusted rate	95% Confidence interval
National		***6.3***	***6.3***	***6.3***	
Statewide	**6,875**	**6.3**	**5.8**	**6.3**	**6.2 - 6.5**
Atlantic	191	5.5	5.8	5.5	4.7 - 6.3
Bergen	486	5.4	5.8	5.4 *	4.9 - 5.9
Burlington	297	6.0	5.8	6.0	5.4 - 6.7
Camden	492	7.2	5.8	7.2 **	6.7 - 7.8
Cape May	52	5.6	5.8	5.6	4.1 - 7.2
Cumberland	167	7.8	5.8	7.8 **	6.8 - 8.8
Essex	919	8.3	5.8	8.3 **	7.9 - 8.8
Gloucester	179	6.2	5.8	6.2	5.4 - 7.1
Hudson	514	6.4	5.8	6.4	5.9 - 6.9
Hunterdon	70	5.7	5.8	5.7	4.4 - 7.0
Mercer	315	6.9	5.8	7.0	6.3 - 7.6
Middlesex	590	5.9	5.8	5.9	5.4 - 6.4
Monmouth	416	5.7	5.8	5.7 *	5.1 - 6.2
Morris	296	5.5	5.8	5.5 *	4.9 - 6.1
Ocean	345	4.6	5.8	4.6 *	4.1 - 5.2
Passaic	485	6.5	5.8	6.5	6.0 - 7.0
Salem	23	4.0	5.8	4.1 *	2.1 - 6.0
Somerset	222	5.5	5.8	5.5 *	4.8 - 6.2
Sussex	89	5.7	5.8	5.7	4.6 - 6.9
Union	475	7.0	5.8	7.0 **	6.4 - 7.7
Warren	66	5.6	5.8	5.6	4.3 - 6.9
Unknown	186	8.4	5.8	8.5 **	7.5 - 9.4

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

** Premature deliveries and sick babies are excluded from the denominator.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

8. Dehydration

Dehydration is a serious acute condition that occurs in frail patients and patients with other underlying illnesses following insufficient attention and support for fluid intake. Dehydration can for the most part be treated in an outpatient setting, but it is potentially fatal for the elderly, very young children, frail patients, or patients with serious comorbidity conditions. Proper outpatient treatment may result in lower admission rates, suggesting a better quality of care. When high rates of dehydration are identified for a particular hospital, additional study may uncover problems in primary or emergency care in the community. The risk adjustment process appears to modestly affect counties with the highest and lowest rates. Since age may be a particularly important risk factor, the indicator should be risk-adjusted for age. *The rate is defined as admissions for dehydration per 100,000 adult county population. The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis code for hypovolemia (276.5). It excludes transfers from another institution, MDC 14 (pregnancy, childbirth, and puerperium), and MDC 15 (newborn and other neonates).*

Table 8 shows the number of hospital admissions for *dehydration* by county along with their *observed, expected and risk-adjusted rates.*

- Statewide, there were 9,439 hospital admissions for *dehydration* in 2005*.* The *observed and expected rates* estimated on the basis of these admissions are 141.7 and 147.0 per 100,000, respectively, while the risk-adjusted rate is 117.7.

- The national *dehydration* admission rate in 2004 was 127.4 per 100,000. New Jersey, with a risk-adjusted rate of 117.7 performed significantly better compared to the national benchmark of 127.4, which is completely above the statewide confidence interval of 115.2 -120.0.

- Hospital admission rates for *dehydration* are statistically significantly higher than the statewide average in Cumberland, Essex, Hudson, Salem and Somerset counties.

Table 8. Hospital Admissions for Dehydration (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate	Risk-adjusted rate	95% Confidence interval
		127.4	127.4	127.4	
Statewide	**9,439**	**141.7**	**147.0**	**117.7**	**115.2 - 120.0**
Atlantic	280	136.7	147.1	113.5	99.8 - 127.3
Bergen	971	137.0	161.4	103.7 *	96.5 - 110.6
Burlington	378	109.0	138.8	95.9 *	85.0 - 106.8
Camden	578	148.9	142.3	127.9	117.7 - 138.0
Cape May	107	132.4	201.2	80.4 *	61.7 - 99.1
Cumberland	289	251.2	141.6	216.8 **	198.0 - 235.5
Essex	999	168.1	138.0	148.8 **	140.5 - 157.1
Gloucester	271	130.0	130.7	121.5	107.0 - 135.9
Hudson	654	138.6	127.6	132.6 **	122.7 - 142.2
Hunterdon	78	78.0	129.8	73.4 *	52.4 - 94.3
Mercer	364	128.8	139.8	112.5	100.2 - 124.2
Middlesex	784	129.2	135.4	116.6	108.5 - 125.1
Monmouth	727	150.2	145.1	126.5	117.6 - 135.6
Morris	420	112.3	137.7	99.6 *	89.6 - 110.6
Ocean	515	119.0	218.7	66.4 *	58.7 - 74.2
Passaic	515	138.5	139.2	121.5	111.0 - 132.0
Salem	154	304.5	157.3	236.4 **	209.7 - 263.2
Somerset	382	160.2	131.3	149.1 **	135.2 - 162.2
Sussex	108	94.0	120.8	95.1 *	74.8 - 115.3
Union	593	147.2	151.9	118.4	108.7 - 128.0
Warren	102	121.8	146.6	101.5	79.9 - 123.0
Unknown	171	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

9. Bacterial Pneumonia

Bacterial pneumonia is a relatively common acute condition, treatable for the most part with antibiotics. If left untreated in susceptible individuals - such as the elderly - pneumonia can lead to death. Proper outpatient treatment may reduce admissions for bacterial pneumonia in non-susceptible individuals, and lower admission rates represent better quality of care. High admission rates may reflect a large number of inappropriate admissions or low-quality treatment with antibiotics. As a PQI, admission for bacterial pneumonia is not a measure of hospital quality, but rather a measure of outpatient care and other health care issues. *The rate is defined as admissions for bacterial pneumonia per 100,000 county population. The indicator includes all non-maternal discharges age 18 and older with the ICD-9-CM principal diagnosis code for bacterial pneumonia. It excludes transfer cases, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates), and those with diagnosis code for sickle cell anemia or HB-S disease.*

Table 9 shows the number of hospital admissions for *bacterial pneumonia* by county along with the *observed, expected and risk-adjusted rates*.

- The national average admission *rate* for *bacterial pneumonia* in 2004 was 418.2 per 100,000.

- In New Jersey, there were 28,575 hospital admissions for *bacterial pneumonia* in 2005. With a risk-adjusted rate of 358.0 per 100,000, New Jersey performed significantly better compared to the national benchmark of 418.2, which is completely above the statewide confidence interval of 353.8 - 362.3.

- Readers are advised to assess individual county performance by comparing against the statewide rate and the national average *bacterial pneumonia* admission rate.

Table 9. Hospital Admissions for Bacterial Pneumonia (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***418.2***	***418.2***	***418.2***	
Statewide	**28,575**	**428.9**	**449.6**	**358.0**	**353.8 - 362.3**
Atlantic	1,082	528.3	450.5	440.1 **	416.1 - 464.1
Bergen	2,693	380.1	494.4	288.5 *	276.2 - 300.8
Burlington	1,250	360.5	428.7	315.6 *	296.7 - 334.5
Camden	1,835	472.8	434.2	408.7 **	390.9 - 426.5
Cape May	566	700.4	615.1	427.3 **	394.6 - 460.0
Cumberland	401	348.6	431.8	303.0 *	270.2 - 335.7
Essex	2,919	491.1	419.7	439.1 **	424.5 - 453.7
Gloucester	785	376.5	402.5	351.0	325.8 - 376.2
Hudson	1,883	399.0	387.2	386.7 **	369.7 - 403.8
Hunterdon	287	287.0	406.6	264.9 *	228.7 - 301.1
Mercer	1,245	440.4	426.0	388.0 **	367.0 - 409.0
Middlesex	2,188	360.7	414.7	326.4 *	311.9 - 340.9
Monmouth	1,944	401.8	445.1	338.7 *	323.0 - 354.5
Morris	1,398	373.7	426.9	328.5 *	310.2 - 346.8
Ocean	2,226	514.2	659.4	292.7 *	279.0 - 306.3
Passaic	1,476	396.8	424.5	350.8	332.5 - 369.2
Salem	320	632.8	483.2	491.5 **	444.9 - 538.1
Somerset	1,039	435.8	405.6	403.2 **	379.7 - 426.7
Sussex	502	436.9	376.4	435.6 **	400.5 - 470.8
Union	1,553	385.4	461.5	313.4 *	296.5 - 330.3
Warren	332	396.4	447.9	332.1	294.5 - 369.8
Unknown	651	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

10. Urinary Tract Infection

Urinary tract infection is a common acute condition that can, for the most part, be treated with antibiotics in an outpatient setting. However, this condition can progress to more clinically significant infections, such as pyelonephritis, in vulnerable individuals with inadequate treatment. Proper outpatient treatment is believed to reduce admissions for urinary tract infection, and lower rates represent better quality of care. Hospital admission for urinary tract infection is a PQI that would be of most interest to comprehensive health care delivery systems. As a PQI, admission for urinary tract infection is not a measure of hospital quality, but rather one measure of outpatient care and other health care issues. *The rate is defined as admissions for urinary tract infection per 100,000 adult county population. The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis code for urinary tract infection. It excludes transfer cases, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates), patients with diagnosis code of kidney/urinary tract disorder, patients with diagnosis code of immunocompromised state, and those with immunocompromised state procedure code.*

Table 10 shows the number of hospital admissions for *urinary tract infection* by county along with the *observed, expected* and *risk-adjusted rates*.

- In New Jersey, there were 13,845 hospital admissions for *urinary tract infection* in 2005. The *observed and expected rates* are 207.8 and 177.5 per 100,000, respectively, while the risk-adjusted rate is 174.1 per 100,000. With a risk-adjusted rate of 174.1 per 100,000, New Jersey performed better compared to the national *urinary tract infection rate* of 177.3 per 100,000 in 2004.

- County-level *urinary tract infection* rates can be compared to the statewide average as well as the national average to see where specific counties stand on this particular indicator.

Table 10. Hospital Admissions for Urinary Tract Infection (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***177.3***	***177.3***	***177.3***	
Statewide	**13,845**	**207.8**	**177.5**	**174.1**	**171.4 - 176.8**
Atlantic	474	231.4	177.9	193.6 **	178.3 - 208.8
Bergen	1,198	169.1	192.8	130.4 *	122.6 - 138.3
Burlington	685	197.6	166.8	176.2	164.1 - 188.3
Camden	966	248.9	172.8	214.3 **	203.1 - 225.5
Cape May	287	355.1	238.4	221.6 **	200.7 - 242.5
Cumberland	276	239.9	171.0	208.7 **	188.0 - 229.4
Essex	1,458	245.3	168.5	216.6 **	207.4 - 225.8
Gloucester	405	194.2	159.1	181.6	165.7 - 197.6
Hudson	967	204.9	157.1	194.0 **	183.3 - 204.7
Hunterdon	126	126.0	154.1	121.6 *	98.2 - 145.0
Mercer	580	205.2	170.3	179.2	166.0 - 192.4
Middlesex	1,107	182.5	164.8	164.7	155.5 - 174.9
Monmouth	757	156.4	174.2	133.6 *	123.6 - 143.6
Morris	710	189.8	164.5	171.6	159.9 - 183.3
Ocean	1,165	269.1	261.5	153.1 *	144.4 - 161.7
Passaic	850	228.5	169.6	200.4 **	188.9 - 212.0
Salem	161	318.4	188.8	250.9 **	221.2 - 280.6
Somerset	399	167.4	157.8	157.8 *	142.8 - 172.7
Sussex	140	121.8	145.0	125.0 *	102.4 - 147.5
Union	758	188.1	183.8	152.3 *	141.6 - 162.9
Warren	132	157.6	176.8	132.6 *	108.7 - 156.5
Unknown	244	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

11. Angina without Procedure

Both stable and unstable *anginas* are symptoms of potential coronary artery diseases. Effective management of coronary disease reduces the occurrence of major cardiac events such as heart attacks, and may also reduce admission rates for *angina*. Admission for *angina* is relatively common, suggesting that the indicator will be measured with good precision. As a PQI, *angina* without procedure is not a measure of hospital quality, but rather one measure of outpatient and other health care issues. *The rate is defined as admissions for angina (without procedure) per 100,000 adult county population. The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis codes for angina and excludes transfers, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates), and those with a code for cardiac procedure.*

Table 11 shows the number of hospital admissions for *angina (without procedure)* by county along with the *observed, expected* and *risk-adjusted rates*.

- The 2004 national *rate* for *angina (without procedure)* was 45.9 per 100,000.

- In New Jersey, there were 3,737 hospital admissions for *angina (without procedure)* in 2005. The statewide *observed and expected rates* are 56.1 and 53.9 per 100,000, respectively, while the risk-adjusted rate is 47.4 per 100,000. New Jersey's rate of hospital admissions for *angina (without procedure)* is similar to the national average.

- Cape May, Essex, Hudson, Ocean, Passaic and Sussex have statistically significantly higher *angina* admission rates than the statewide average while Bergen, Burlington, Camden, Hunterdon, Mercer, Monmouth, Morris and Somerset have statistically significantly lower rates.

Table 11. Hospital Admissions for Angina without Procedure (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***45.9***	***45.9***	***45.9***	
Statewide	**3,737**	**56.1**	**53.9**	**47.4**	**45.9 - 48.9**
Atlantic	98	47.8	53.9	40.5	32.0 - 48.9
Bergen	250	35.3	58.2	27.6 *	23.2 - 32.0
Burlington	128	36.9	53.1	31.6 *	25.1 - 38.2
Camden	159	41.0	52.8	35.3 *	29.1 - 41.5
Cape May	78	96.5	66.6	65.9 **	53.8 - 78.1
Cumberland	55	47.8	51.7	42.1	30.5 - 53.7
Essex	463	77.9	51.1	69.4 **	64.3 - 74.5
Gloucester	119	57.1	51.0	51.0	42.3 - 59.6
Hudson	336	71.2	47.1	68.9 **	62.9 - 74.9
Hunterdon	20	20.0	54.7	16.6 *	4.6 - 28.7
Mercer	93	32.9	51.3	29.2 *	21.8 - 36.6
Middlesex	362	59.7	50.4	53.9	48.8 - 59.0
Monmouth	195	40.3	55.3	33.2 *	27.7 - 38.6
Morris	83	22.2	55.0	18.4 *	12.2 - 24.6
Ocean	336	77.6	66.1	53.5 **	48.2 - 58.7
Passaic	396	106.5	51.3	94.5 **	88.0 - 100.9
Salem	37	73.2	56.8	58.7	42.0 - 75.3
Somerset	54	22.6	52.6	19.6 *	11.6 - 27.6
Sussex	83	72.2	51.5	63.9 **	52.3 - 75.5
Union	205	50.9	54.3	42.6	36.6 - 48.6
Warren	58	69.2	54.5	57.9	44.7 - 71.1
Unknown	129	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

12. Uncontrolled Diabetes

Uncontrolled diabetes should be used in conjunction with short-term complications of diabetes, which include diabetic ketoacidosis, hyperosmolarity, and coma. Hospital admission for uncontrolled diabetes is a PQI that would be of most interest to comprehensive health care delivery systems. Proper outpatient treatment and adherence to care may reduce the incidence of uncontrolled diabetes, and lower admission rates represent better quality of care. *The rate is defined as admissions for uncontrolled diabetes per 100,000 adult county population. The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis codes for uncontrolled diabetes, without mention of a short-term or long-term complication. It excludes transfer cases, MDC 14 (pregnancy, childbirth, and puerperium), and MDC 15 (newborn and other neonates).*

Table 12 shows the number of hospital admissions for *uncontrolled diabetes* by county along with the *observed, expected and risk-adjusted rates*.

- The national admission *rate* for *uncontrolled diabetes* in 2004 was 22.2 per 100,000.

- In New Jersey, there were 2,054 hospital admissions for *uncontrolled diabetes* in 2005. The *observed and expected rates* estimated on the basis of these admissions are 30.8 and 23.0 per 100,000, respectively, while the risk-adjusted rate is 26.6 per 100,000. New Jersey's rate of hospitalizations due to *uncontrolled diabetes* is significantly higher than the national benchmark of 22.2 per 100,000.

- Hospital admission rates for *uncontrolled diabetes* in Essex, Hudson and Passaic counties are statistically significantly higher compared to the statewide average.

Table 12. Hospital Admissions for Uncontrolled Diabetes (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***22.2***	***22.2***	***22.2***	
Statewide	**2,054**	**30.8**	**23.0**	**26.6**	**25.6 - 27.6**
Atlantic	58	28.3	23.0	24.5	18.8 - 30.1
Bergen	122	17.2	24.2	14.1 *	11.2 - 17.1
Burlington	44	12.7	22.8	11.0 *	6.7 - 15.4
Camden	112	28.9	22.7	25.3	21.1 - 29.4
Cape May	24	29.7	26.4	22.3	13.9 - 30.8
Cumberland	37	32.2	22.4	28.6	20.9 - 36.3
Essex	346	58.2	22.2	52.1 **	48.7 - 55.5
Gloucester	58	27.8	22.2	24.9	19.2 - 30.6
Hudson	345	73.1	21.1	68.7 **	64.8 - 72.6
Hunterdon	2	2.0	23.3	1.7 *	0.0 - 9.8
Mercer	62	21.9	22.2	19.6 *	14.7 - 24.7
Middlesex	190	31.3	22.0	28.2	24.9 - 31.6
Monmouth	119	24.6	23.4	20.9 *	17.2 - 24.5
Morris	32	8.6	23.4	7.3 *	3.1 - 11.4
Ocean	95	21.9	26.3	16.6 *	12.9 - 20.3
Passaic	194	52.2	22.2	46.6 **	42.3 - 50.9
Salem	15	29.7	23.7	24.9	13.6 - 36.1
Somerset	46	19.3	22.8	16.8 *	11.5 - 22.1
Sussex	16	13.9	22.3	12.4 *	4.7 - 20.1
Union	89	22.1	23.1	19.0 *	15.0 - 23.0
Warren	17	20.3	23.2	17.4	8.6 - 26.7
Unknown	31	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

13. Adult Asthma

Asthma is one of the most common reasons for hospital admission and emergency room care. Most cases of asthma can be managed with proper ongoing therapy on an outpatient basis. The assumption is that proper outpatient treatment may reduce the incidence or exacerbation of asthma requiring hospitalization, and that lower admission rates suggest better quality of care. Environmental factors such as air pollution, occupational exposure to irritants, or other exposure to allergens have been shown to increase hospitalization rates or exacerbate asthma symptoms. Counties may wish to identify hospitals that contribute the most to the overall county rate for this indicator. As a PQI, adult asthma is not a measure of hospital quality, but rather one measure of overall outpatient care in a community. *The rate is defined as admissions for adult asthma per 100,000 adult county population, which includes all non-maternal discharges age 18 and older with ICD-9-CM principal diagnosis codes for asthma, but excludes transfer cases, MDC 14 (pregnancy, childbirth, and puerperium)***,** *MDC 15 (newborn and other neonates), and those with any diagnosis code of cystic fibrosis and anomalies of the respiratory system.*

Table 13 shows the number of hospital admissions for *adult asthma* by county along with their *observed, expected* and *risk-adjusted rates*.

- The 2004 national admission *rate* for *adult asthma* was 120.6 per 100,000.

- In New Jersey, there were 11,149 hospital admissions for *adult asthma* in 2005. The *observed and expected rates* estimated on the basis of these admissions are 167.4 and 122.4 per 100,000, respectively, while the risk-adjusted rate is 145.7 per 100,000. *Adult asthma* asserts itself as a significant problem in New Jersey as evidenced by the significantly higher statewide admission rate compared to the national benchmark of 120.6.

- Camden, Cumberland, Essex, Hudson, Mercer, Passaic and Salem counties have *adult asthma* admission rates that are statistically significantly higher than the statewide average.

Table 13. Hospital Admissions for Adult Asthma (per 100,000 county population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***120.6***	***120.6***	***120.6***	
Statewide	**11,149**	**167.4**	**122.4**	**145.7**	**143.4 - 148.0**
Atlantic	345	168.4	122.3	146.7	133.5 - 159.9
Bergen	739	104.3	126.9	87.6 *	80.6 - 94.5
Burlington	521	150.3	121.1	132.2 *	122.0 - 142.4
Camden	930	239.6	121.8	209.6 **	200.0 - 219.2
Cape May	114	141.1	133.7	112.4 *	92.4 - 132.5
Cumberland	208	180.8	117.3	164.2 **	146.2 - 182.2
Essex	1,681	282.8	120.9	249.3 **	241.5 - 257.0
Gloucester	299	143.4	119.6	127.8 *	114.5 - 141.0
Hudson	1,269	268.9	115.5	248.0 **	239.1 - 257.0
Hunterdon	43	43.0	122.9	37.3 *	18.5 - 56.1
Mercer	552	195.3	119.1	174.7 **	163.3 - 186.0
Middlesex	792	130.6	118.4	117.5 *	109.7 - 125.3
Monmouth	585	120.9	123.9	103.9 *	95.4 - 112.1
Morris	225	60.1	123.5	51.9 *	42.2 - 61.6
Ocean	643	148.5	133.7	118.4 *	109.7 - 127.0
Passaic	881	236.9	119.7	210.7 **	200.8 - 220.6
Salem	104	205.7	124.3	176.3 **	150.0 - 202.6
Somerset	222	93.1	122.0	81.3 *	69.1 - 93.5
Sussex	109	94.9	119.4	84.7 *	66.8 - 102.5
Union	537	133.3	123.3	115.1 *	105.8 - 124.5
Warren	148	176.7	123.1	152.9	132.3 - 173.4
Unknown	202	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

14. Lower-extremity Amputation among Patients with Diabetes

Diabetes is a major risk factor for *lower-extremity amputation*, which can be caused by infection, neuropathy, and microvascular disease. Proper long-term glucose control, diabetes education, and foot care are some of the interventions that can reduce the incidence of infection, neuropathy, and microvascular diseases. As a PQI, *lower-extremity amputations* among patients with diabetes, is not a measure of hospital quality but rather one measure of outpatient care and other health care problems. Proper and continued treatment and glucose control may reduce the incidence of *lower-extremity amputation*, and lower rates represent better quality of care. *The rate is defined as admissions for lower-extremity amputation in patients with diabetes per 100,000 county population age 18 years and older. The indicator includes all non-maternal discharges age 18 and older with ICD-9-CM procedure codes for lower-extremity amputation and diagnosis code for diabetes and excludes transfer cases, MDC 14 (pregnancy, childbirth, and puerperium), MDC 15 (newborn and other neonates), and those with trauma diagnosis code.*

Table 14 shows the number of hospital admissions for *lower-extremity amputation* by county along with their *observed, expected* and *risk-adjusted rates*.

- The national average *rate* for *lower-extremity amputation* in 2004 was 39.1 per 100,000.

- In New Jersey, there were 2,792 hospital admissions for *lower-extremity amputation* in 2005*.* The *observed and expected rates* based of these admissions are 41.9 and 38.9 per 100,000, respectively, while the risk-adjusted rate is 35.6 per 100,000, suggesting that the rate at which incidence of *lower-extremity amputation occurs in* New Jersey is significantly lower than the national average.

- Atlantic, Cumberland, Essex, Hudson, Mercer, and Passaic counties have rates that are statistically significantly higher than the statewide average, while eight counties (Bergen, Cape May, Hunterdon, Morris, Ocean, Salem, Somerset, and Sussex) have rates that are statistically significantly lower than the statewide average.

Table 14. Hospital Admissions for Lower-extremity Amputation among Patients with Diabetes (per 100,000 population, age 18+)

County	Hospital admissions	Observed rate	Expected rate^	Risk-adjusted rate	95% Confidence interval
National		***39.1***	***39.1***	***39.1***	
Statewide	**2,792**	**41.9**	**38.9**	**35.6**	**34.4 - 36.9**
Atlantic	130	63.5	39.1	53.7 **	46.5 - 61.0
Bergen	209	29.5	42.3	23.1 *	19.3 - 26.8
Burlington	127	36.6	38.6	31.4	25.8 - 37.0
Camden	155	39.9	37.9	34.8	29.5 - 40.2
Cape May	29	35.9	50.0	23.7 *	13.5 - 33.9
Cumberland	77	66.9	37.5	59.2 **	49.3 - 69.1
Essex	359	60.4	36.4	55.0 **	50.6 - 59.4
Gloucester	86	41.2	36.8	37.1	29.7 - 44.5
Hudson	210	44.5	33.5	44.0 **	38.9 - 49.2
Hunterdon	26	26.0	39.8	21.6 *	11.4 - 31.9
Mercer	139	49.2	36.8	44.2 **	37.9 - 50.6
Middlesex	227	37.4	36.3	34.1	29.8 - 38.5
Monmouth	187	38.6	39.9	32.1	27.4 - 36.8
Morris	99	26.5	40.0	21.9 *	16.6 - 27.2
Ocean	181	41.8	48.9	28.3 *	23.8 - 32.8
Passaic	186	50.0	36.9	44.9 **	39.4 - 50.4
Salem	9	17.8	41.7	14.1 *	0.0 - 28.3
Somerset	72	30.2	37.6	26.6 *	19.8 - 33.5
Sussex	29	25.2	37.0	22.6 *	12.7 - 32.6
Union	174	43.2	39.0	36.7	31.5 - 41.9
Warren	38	45.4	39.2	38.3	27.0 - 49.7
Unknown	43	NA	NA	NA	NA

* = Statistically significantly below the state average, ** = Statistically significantly above the state average.

^ Expected rate is the rate the county would have if it had the same case-mix (e.g., age, gender, DRG, and comorbidity categories) as the national 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 county performed worse than the reference population on that indicator.

Prevention Quality Indicator Patterns by County

Prevention quality indicators are best understood by grouping indicators that potentially describe similar health problems. As an example, all risk-adjusted diabetes related admission rates by county are presented on a map side-by-side to assess their patterns (Figure 1). In some instances (e.g. Figures 3 and 4) our maps may not necessarily suggest similarities of health indicators. In Figures 3 and 4, the maps include indicators that we found easier to show on the same page for presentation purposes only.

We observe a remarkable consistency in levels of admission rates by county for diabetes with short term complications, diabetes with long term complications, uncontrolled diabetes, and lower-extremity amputation among patients with diabetes.

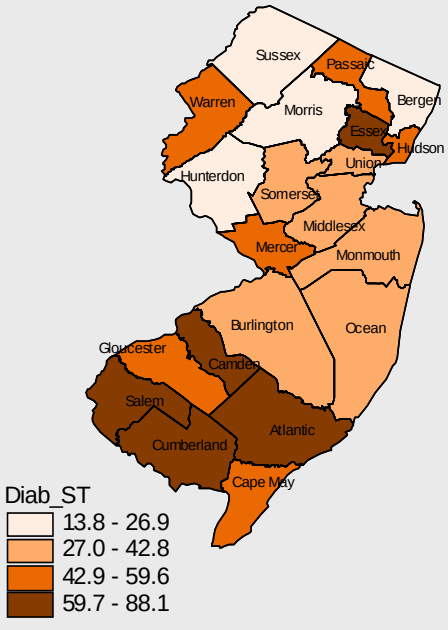
Figure 2 presents hypertension, angina and congestive heart failure (CHF) hospital admission rates by county. These indicators point to potentially similar health problems. We observe that counties have similar patterns in admission rates, with Warren, Morris, Hunterdon and Burlington showing stronger similarities in patterns of admission for hypertension, angina and CHF.

The top panel of Figure 3 presents asthma and chronic obstructive pulmonary disease (COPD) admission rates by county. For the most part, asthma and COPD admission rates show similar patterns by county.

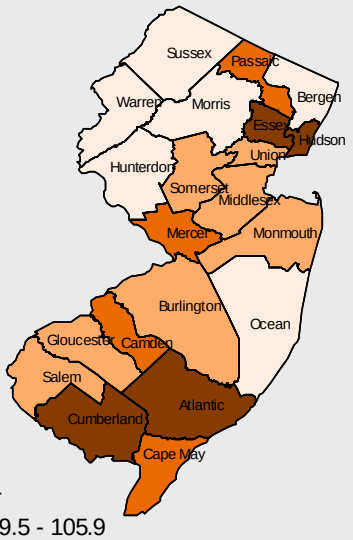
Figure 3 also presents dehydration and low birth weight admission rates by county and shows that the patterns are remarkably consistent.

Figure 4 presents admission rates for bacterial pneumonia and urinary tract infection admission rates. Perforated appendix admission rates are also presented in Figure 4. Perforated appendix admission rates appear to be highest in rural counties.

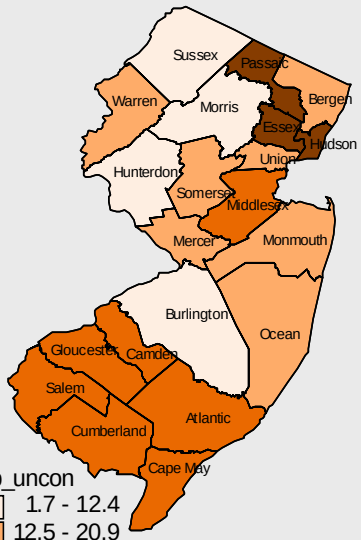
Figure 1. Diabetes-Related Hospital Admission Rates by County New Jersey, 2005



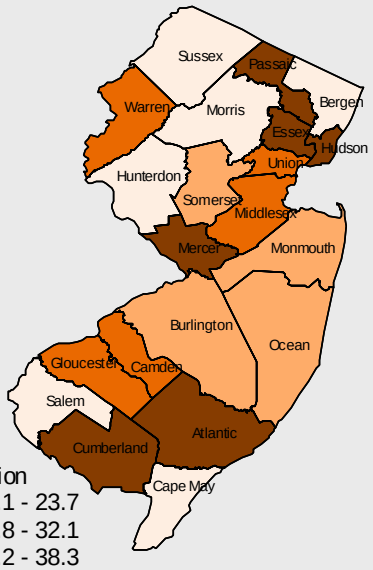
Diab_ST
- 13.8 - 26.9
- 27.0 - 42.8
- 42.9 - 59.6
- 59.7 - 88.1



Diab_LT
- 69.5 - 105.9
- 106.0 - 142.0
- 142.1 - 183.9
- 184.0 - 235.1



Diab_uncon
- 1.7 - 12.4
- 12.5 - 20.9
- 21.0 - 28.6
- 28.7 - 68.7



Amputation
- 14.1 - 23.7
- 23.8 - 32.1
- 32.2 - 38.3
- 38.4 - 59.2

Figure 2 Hypertention, Angina, and Congestive Heart Disease Hospital Admission Rates by County, New Jersey 2005

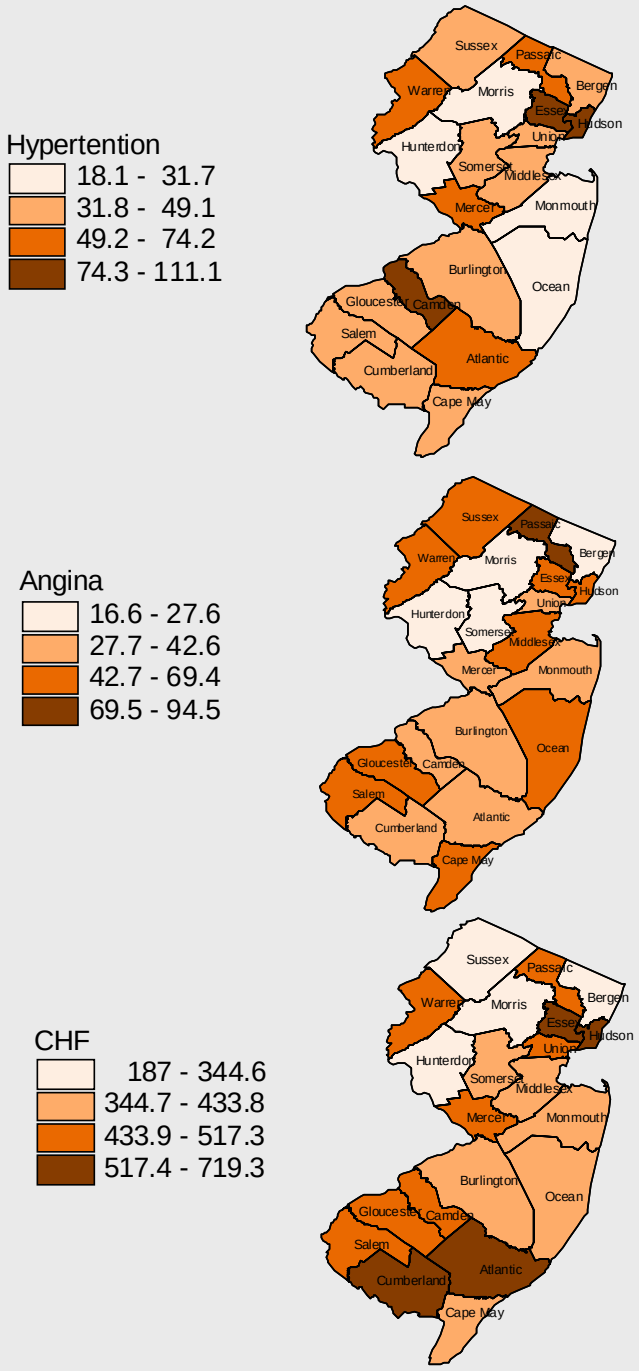


Figure 3. Asthma, Chronic Obstructive Pulmonary Disease, Dehydration, and Low Birth Weight Hospital Admission Rates by County, New Jeresey 2005

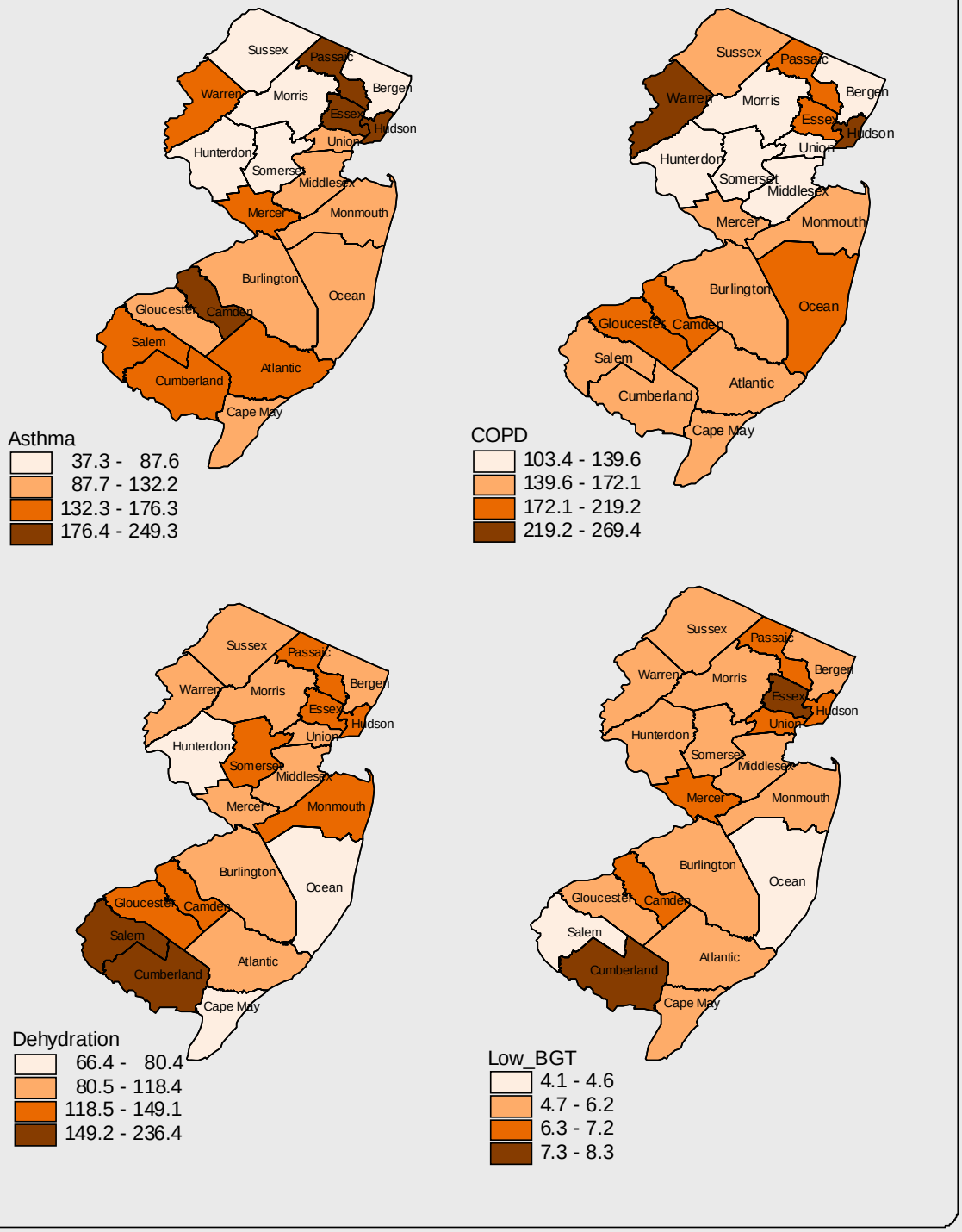
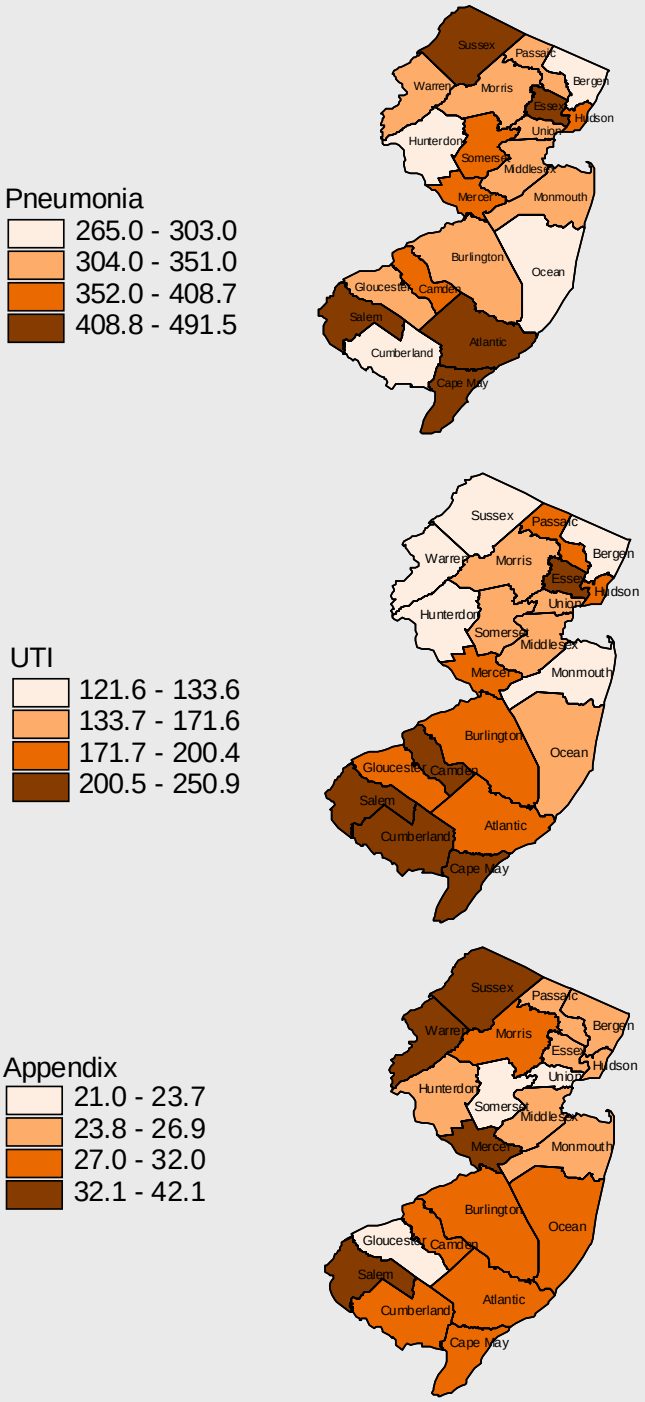


Figure 4. Other Prevention Quality Indicators by County New Jersey, 2005



Statewide PQI Measures Compared to National Estimates

Table 15 presents statewide risk-adjusted PQI measures for all 14 indicators. For purposes of comparison, the report also includes the 2004 national PQI measures as well as 2005 estimates from New York.

- Compared to the national benchmark, New Jersey appears to have lower hospitalization rates for 8 of the 14 PQIs. Conversely, for *diabetes with long term complication, hypertention, angina without procedure, uncontrolled diabetes*, and *adult asthma,* New Jersey's hospitalization rates were higher than the national average. The risk-adjusted *low birth weight* rate in New Jersey in 2005 was the same as the national rate in 2004.

- Compared to New York, hospitalization rates in New Jersey were higher for 10 of the 14 PQIs. New Jersey has lower hospitalization rates than New York in *angina without procedure, uncontrolled diabetes*, and *adult asthma*. The risk-adjusted *low birth weight* rates are about the same in both states.

Table 15. Comparing New Jersey's Statewide PQI Rates with National Rates

PQIs	National 2004	New Jersey 2005	New York 2005
Diabetes with Short Term Complications	54.7	48.5	45.4
Perforated Appendix	30.2	27.4	26.2
Diabetes with Long Term Complication	126.8	148.6	112.5
Chronic Obstructive Pulmonary Disease	230.4	173.5	159.5
Hypertention	49.7	54.1	49.0
Congestive Heart Failure	488.6	466.1	372.7
Low Birth Weight	6.3	6.3	6.2
Dehydration	127.4	117.7	95.0
Bacterial Pneumonia	418.2	358.0	330.7
Urinary Tract Infection	177.3	174.1	137.1
Angina Without Procedure	45.9	47.4	51.8
Uncontrolled Diabetes	22.2	26.6	30.9
Adult Asthma	120.6	145.7	147.0
Lower Extremity Amputation	39.1	35.6	24.2

Rates per 100,000 except for Perforated Appendix and Low Birth Weight (per 100).

Summary of Findings

This report presents the number of preventable hospital admissions in each of the 21 counties. In addition, observed, expected and risk-adjusted rates for 14 prevention quality indicators are provided to help assess the quality of health care in each county. Statewide and national estimates are also provided to facilitate county/state and county/national comparisons.

According to the 2005 New Jersey data, there are substantial variations in preventable hospital admissions by county. Some counties exhibit significantly higher admission rates than the state while others have significantly lower rates. Not surprisingly, the variations appear to reflect the socio-economic disparities of the county populations, with more affluent counties having significantly lower rates than the state and the less affluent counties having significantly higher admission rates than the state. For example, hospital admissions for diabetes with short-term complications in Hunterdon, Morris and Bergen counties are 13.8, 19.2 and 21.5 per 100,000, respectively. By comparison, the rates for Atlantic, Essex, and Cumberland counties are 88.1, 81.7 and 76.1 per 100, 000, respectively.

In another example, the lowest rate of admission for hypertension is recorded in Hunterdon county (18.1 per 100,000) followed by Ocean county (29.9 per 100,000) and Morris county (30.8 per 100,000). By comparison, the highest rate of admission for hypertension is reported in Hudson county (111.1 per 100,000) followed by Essex county (94.1 per 100,000) and Camden county (85.5 per 100,000).

Other indicators also show similar variations by county, suggesting that PQIs are useful as baseline measures for the study of health disparities in geographic areas. A closer examination of PQI measures may help planners identify the socio-economic determinants of such huge variation in costly and potentially preventable hospitalizations. More importantly, this report can be used in promoting the expansion of primary health care facilities to provide better health care access to those in need. This will lower preventable and costly hospital admissions.

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Prevention Quality Indicators

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