



## Potentially Preventable Hospitalizations in Pennsylvania



Pennsylvania Health Care Cost Containment Council  
June 2012



## About PHC4

The Pennsylvania Health Care Cost Containment Council (PHC4) is an independent state agency charged with collecting, analyzing, and reporting information that can be used to improve the quality and restrain the cost of health care in the state. It was created in the mid-1980s when Pennsylvania businesses and labor unions, in collaboration with other key stakeholders, joined forces to enact market-oriented health care reforms. As a result of their years of effort, the General Assembly passed legislation (Act 89 of 1986) creating PHC4.

The primary goal is to empower purchasers of health care benefits, such as businesses or labor union health/welfare funds, as well as other stakeholders, with information they can use to improve quality and restrain costs. More than 600,000 public reports on patient treatment results are downloaded from the PHC4 website each year. Nearly 100 organizations and individuals annually utilize PHC4's special requests process to access and use data. Today, PHC4 is a recognized national leader in public health care reporting.

It is governed by a 25-member board of directors representing business, labor, consumers, health care providers, insurers, and state government.

## In This Report

This report presents information on potentially preventable hospitalizations in PA:

- Number and percent of hospital stays considered potentially preventable
- Medicare fee-for-service and Medicaid fee-for-service payment
- Comparisons with US rates
- Trends in PA rates over time
- Geographic breakdowns
- Rates by patient gender, age, and race/ethnicity



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## Potentially Preventable Hospitalizations in PA, 2010

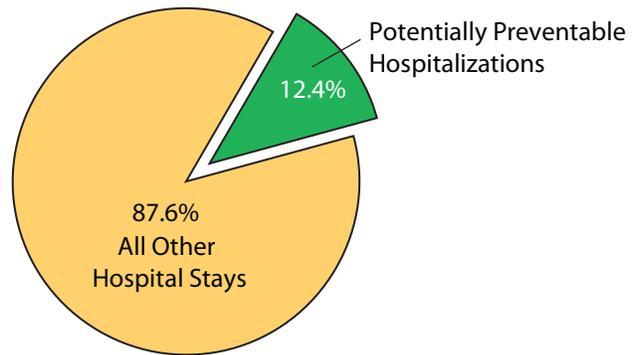
Potentially preventable hospitalizations are inpatient stays that might have been avoided with timely and effective outpatient care and disease management. This report looks at potentially preventable hospitalizations for PA adult residents 18 years and older.

### Key Findings

#### 1 in 8 Hospitalizations

Approximately 1 in 8 adult hospitalizations (12.4 percent) in PA general acute care hospitals were considered potentially preventable in 2010. Potentially preventable hospitalizations are inpatient stays, as defined by a select set of acute and chronic conditions, that might have been avoided with timely and effective outpatient care and disease management.

Potentially Preventable Hospitalizations, 2010

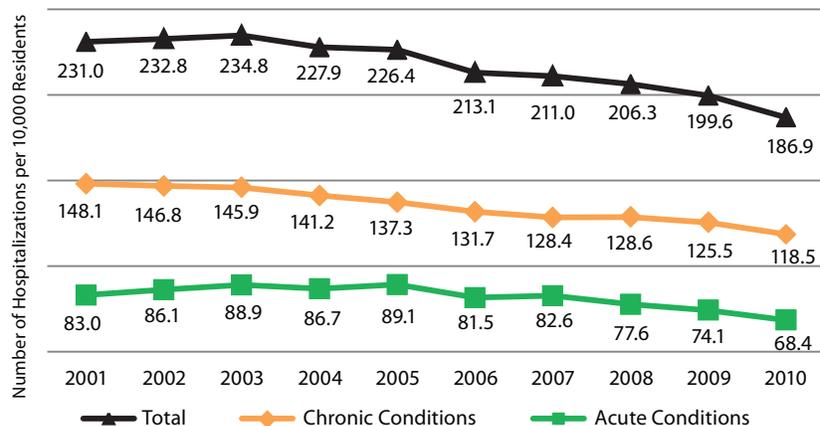


#### Change in Rates of Potentially Preventable Hospitalizations

Between 2001 and 2010, the rate of potentially preventable hospitalizations decreased:

- 19.1 percent when the 12 conditions studied in this report were examined together, from 231.0 to 186.9 per 10,000 residents.
- 20.0 percent for chronic conditions, from 148.1 to 118.5 per 10,000 residents.
- 17.6 percent for acute conditions, from 83.0 to 68.4 per 10,000 residents.

Potentially Preventable Hospitalization Rates, 2001 - 2010 per 10,000 PA Residents



#### Payments for Potentially Preventable Hospitalizations

##### \$480 million

Medicare fee-for-service paid for 41.8 percent of the potentially preventable hospitalizations in 2010, for a total of \$480 million.

##### \$41 million

Medicaid fee-for-service paid for 3.4 percent of the potentially preventable hospitalizations in 2010, for a total of \$41 million.

# Potentially Preventable Hospitalizations in PA, 2010

## Key Findings

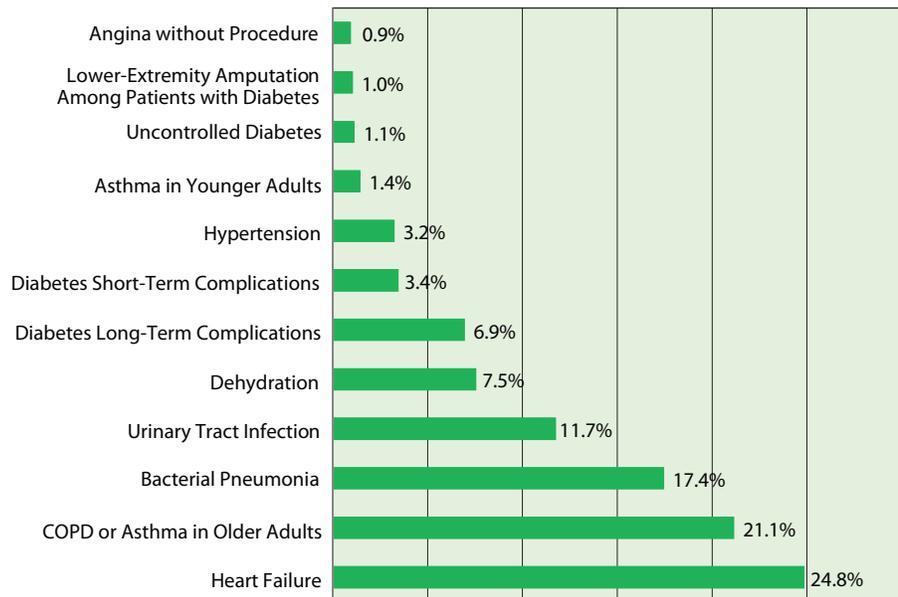
### 4.7 Days

The average length of stay for adults with potentially preventable hospitalizations was 4.7 days, for a total of 868,564 hospital days in 2010, when the 12 conditions examined in this report were considered together.

### Potentially Preventable Hospitalizations by Condition

Of the 185,190 potentially preventable hospitalizations, the three conditions with the highest percent of hospital stays were:

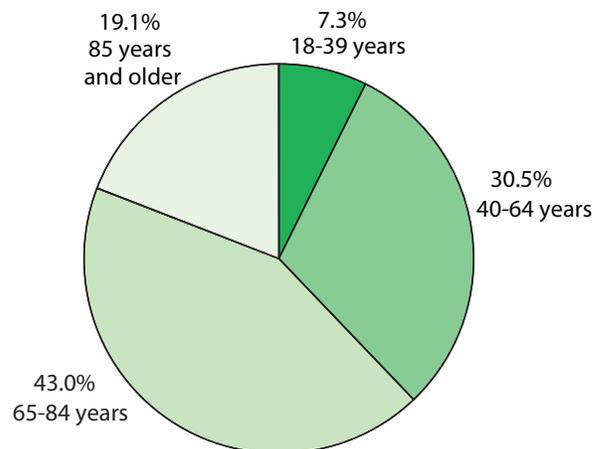
- Heart Failure at 24.8 percent.
- COPD or Asthma in Older Adults at 21.1 percent.
- Bacterial Pneumonia at 17.4 percent.



### Potentially Preventable Hospitalizations by Age Group

Of the PA adult residents with a potentially preventable hospitalization:

- 7.3 percent were 18 to 39 years.
- 30.5 percent were 40 to 64 years.
- 43.0 percent were 65 to 84 years.
- 19.1 percent were 85 years and older.



## Potentially Preventable Hospitalizations



### Introduction

Potentially preventable hospitalizations are inpatient stays that might have been avoided with timely and effective outpatient care and disease management. Rates of potentially preventable hospitalizations for certain conditions can provide insight into communities that might have limited access to care, as well as the conditions for which access to care is most needed.

To examine potentially preventable hospitalizations, the Agency for Healthcare Research and Quality (AHRQ) developed a set of Prevention Quality Indicators (PQIs), which are used to identify hospital admissions for a select set of acute and chronic conditions where timely access to primary or outpatient care might avoid the need for a hospital stay. The PQIs identify potentially preventable hospitalizations using the reason the patient was admitted to the hospital. Reason for admission was based on the principal diagnosis for all conditions except Lower-Extremity Amputation Among Patients with Diabetes, which was based on

the combination of procedure and diagnosis codes. This report uses these quality indicators to provide information on the rate of potentially preventable hospitalizations for PA residents 18 years and older.

In some cases, effective outpatient care and early intervention can prevent complications or more severe disease. Although PQIs are calculated using hospital admission data, they are not indicators of the quality of hospital care. Rather, PQIs are measures of the access to and the quality of care provided in outpatient settings. For example, because diabetes is often managed through physician visits and medication, a high rate of potentially preventable hospitalizations might indicate an opportunity for improving the quality and availability of primary, preventive care. PQIs can be used as a

### Potentially Preventable Hospitalizations

When examining potentially preventable hospitalizations, it is important to emphasize the word “potentially.” It is not presumed that all of the hospitalizations identified in this analysis were preventable. For example, hospital stays that might be avoidable for younger patients might not be so for older patients in a weakened state. Yet, identifying conditions with higher rates of potentially preventable hospitalizations provides actionable information by highlighting areas where early detection, timely care, and patient education might lead to improved patient outcomes and decreased costs.

screening tool to help flag potential health care quality problem areas, provide a quick check on primary care access or outpatient services in a community, and provide other valuable information to public health agencies, state data organizations, health care systems, and others interested in improving health care quality in their communities.

## Potentially Preventable Hospitalizations

Although other factors outside the direct control of the health care system, such as poor environmental conditions or lack of patient adherence to treatment recommendations, can result in hospitalization, the PQIs provide a good starting point for assessing the quality of health services in the community.

### Data

The hospital discharge data used in this analysis was submitted to the Pennsylvania Health Care Cost Containment Council (PHC4) by PA general acute care hospitals. Information on discharges from January 1, 2001 to December 31, 2010 was subjected to PHC4's validation and correction processes. The Medicare fee-for-service payment data was provided by the Centers for Medicare and Medicaid Services, and the Medicaid fee-for-service payment data was provided by the PA Department of Public Welfare.

Potentially preventable hospitalizations were identified and rates calculated using the Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators Software, Version 4.4. The population data provided by AHRQ for use with the PQI syntax was constructed from public use Census data files. The rates reported were not adjusted, unless otherwise noted. Region and county rates were age and sex-adjusted to account for differences among region and county populations based on the PA population rate. The PQI software was modified to perform these calculations. Details of AHRQ's Prevention Quality Indicator methodology are available at [www.qualityindicators.ahrq.gov/modules/pqi\\_resources.aspx](http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx). The measures for individual conditions have been endorsed by the National Quality Forum (NQF).

The 12 conditions examined in this report are at times categorized into acute or chronic groups as defined below.

#### Acute conditions:

- Bacterial Pneumonia
- Dehydration
- Urinary Tract Infections

#### Chronic conditions:

- Angina without Procedure
- Heart Failure
- Hypertension
- Asthma in Younger Adults (ages 18 to 39)
- Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults (ages 40 and older)
- Diabetes Long-Term Complications
- Diabetes Short-Term Complications
- Uncontrolled Diabetes
- Lower-Extremity Amputation Among Patients with Diabetes

Note: Condition definitions are available at [www.qualityindicators.ahrq.gov/Modules/PQI\\_TechSpec.aspx](http://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx).



## Potentially Preventable Hospitalizations

### Number of Potentially Preventable Hospitalizations

In 2010, 12.4 percent, or 185,190 of the approximately 1.5 million stays in PA general acute care hospitals, were considered potentially preventable.

As shown in Table 1, the three conditions with the highest number of potentially preventable hospitalizations were Heart Failure (45,866 hospitalizations), COPD or Asthma in Older Adults (39,061 hospitalizations) and Bacterial Pneumonia (32,181 hospitalizations). These three conditions represent 63.2 percent of all potentially preventable hospitalizations.

### Number of Hospital Days

One way to evaluate the impact of potentially preventable hospitalizations on health care resources is to examine the number of hospital days associated with these hospital stays (Table 1).

Overall, patients spent a total of 868,564 days in the hospital for stays that might have been preventable—12.2 percent of total hospital days for all general acute care hospitalizations.

**Table 1.**  
**Number of Potentially Preventable Hospitalizations and Length of Stay, 2010**

|  | Hospitalizations |               | Average Length of Stay (in Days) | Total Days     |
|--|------------------|---------------|----------------------------------|----------------|
|  | Number           | Percent       |                                  |                |
| <b>Total</b>   | <b>185,190</b>   | <b>100.0%</b> | <b>4.7</b>                       | <b>868,564</b> |
| <b>Acute Conditions</b>  |                  |               |                                  |                |
| Bacterial Pneumonia  | 32,181           | 17.4%         | 5.1                              | 165,520        |
| Dehydration  | 13,980           | 7.5%          | 3.9                              | 53,946         |
| Urinary Tract Infection  | 21,578           | 11.7%         | 4.3                              | 91,935         |
| <b>Chronic Conditions</b>  |                  |               |                                  |                |
| Angina without Procedure   | 1,698            | 0.9%          | 2.0                              | 3,466          |
| Heart Failure  | 45,866           | 24.8%         | 5.1                              | 235,810        |
| Hypertension   | 5,908            | 3.2%          | 2.9                              | 17,376         |
| Asthma in Younger Adults   | 2,648            | 1.4%          | 2.8                              | 7,355          |
| COPD or Asthma in Older Adults                                       | 39,061           | 21.1%         | 4.5                              | 176,408        |
| Diabetes Long-Term Complications                                     | 12,866           | 6.9%          | 5.7                              | 73,775         |
| Diabetes Short-Term Complications                                    | 6,379            | 3.4%          | 3.9                              | 24,615         |
| Uncontrolled Diabetes  | 2,016            | 1.1%          | 3.2                              | 6,484          |
| Lower-Extremity Amputation Among Patients with Diabetes <sup>1</sup> | 1,838            | 1.0%          | 11.5                             | 21,072         |

<sup>1</sup> The number of hospitalizations for this condition includes 829 hospitalizations that also met the criteria to be counted in one of the other conditions. Note that hospitalizations meeting criteria for more than one condition were counted only once in the total number (185,190) of potentially preventable hospitalizations.

# Potentially Preventable Hospitalizations

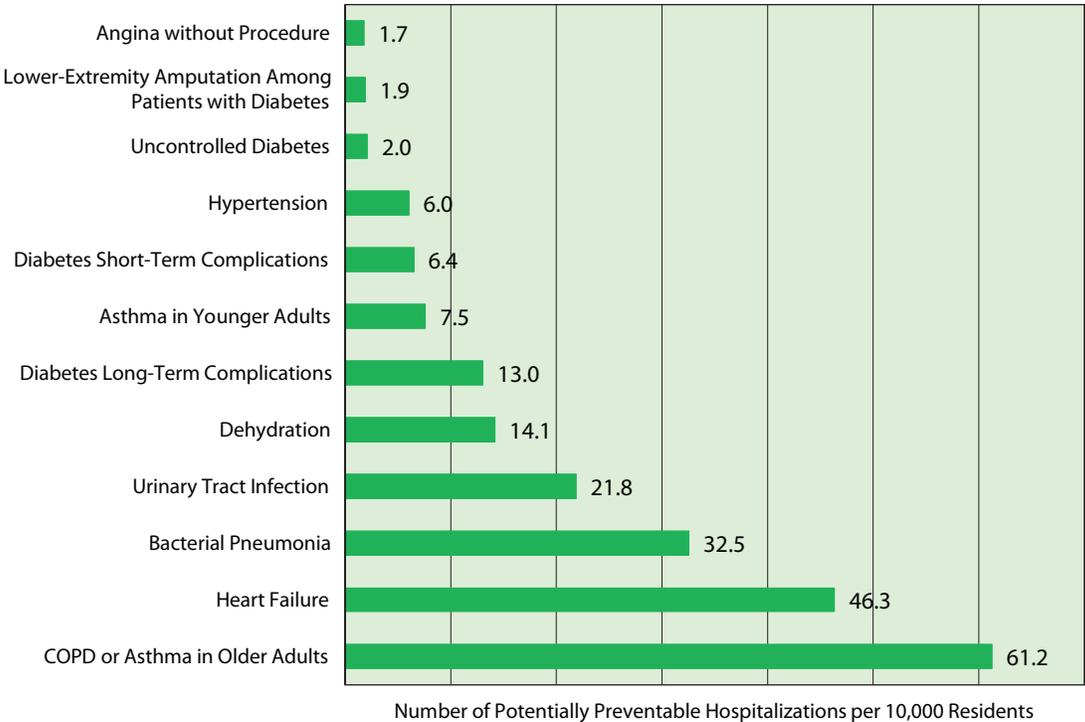
## Rates of Potentially Preventable Hospitalizations

Another way to understand the frequency of potentially preventable hospitalizations is to examine how often they occur among PA residents. When examining population-based rates for all 12 conditions together, there were 186.9 potentially preventable hospitalizations per 10,000 PA adult residents 18 years and older.

Figure 1 displays the rate of potentially preventable hospitalizations per 10,000 PA residents for each of the 12 conditions examined in this report.

- In 2010, rates among the 12 conditions ranged from 1.7 to 61.2 potentially preventable hospitalizations per 10,000.
- COPD or Asthma in Older Adults had the highest rate at 61.2 per 10,000.

**Figure 1.**  
**Rate of Potentially Preventable Hospitalizations, 2010**  
**per 10,000 PA Residents**



Note: Condition definitions are available at [www.qualityindicators.ahrq.gov/Modules/PQI\\_TechSpec.aspx](http://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx).

**Other Potentially Preventable Hospitalizations**

**Perforated Appendix.** Hospitalizations for patients with appendicitis who have a ruptured appendix at the time of admission are also considered potentially preventable. In 2010, the rate of potentially preventable hospitalizations for perforated appendix was 28.9 per 100 hospitalizations for appendicitis. This indicator is not included in the 12 indicators examined in this report because the rate is based on the number of hospitalizations for appendicitis, rather than the number of PA residents.

## Potentially Preventable Hospitalizations

### Medicare Fee-for-Service and Medicaid Fee-for-Service Payment

Table 2 presents the average and total 2010 Medicare fee-for-service (FFS) and Medicaid FFS payment for the 12 potentially preventable hospitalization indicators examined. Payment amounts do not include payments made by other Medicare/Medicaid plan types (e.g., does not include payments from Medicare or Medicaid HMO plans).

Of the 185,190 potentially preventable hospitalizations:

- 41.8 percent (77,386 hospitalizations) were paid for by the Medicare FFS system.
- 3.4 percent (6,320 hospitalizations) were paid for by the Medicaid FFS system.

**Table 2.**  
**Potentially Preventable Hospitalizations, 2010**  
**Medicare Fee-for-Service and Medicaid Fee-for-Service Payment**

|  | Number of Potentially Preventable Hospitalizations | Paid for by Medicare Fee-for-Service <sup>1</sup> |         |                 |               | Paid for by Medicaid Fee-for-Service <sup>2</sup> |         |                 |               |
|--|--|---|---------|-----------------|---------------|---|---------|-----------------|---------------|
|  |  | Number  | Percent | Average Payment | Total Payment | Number  | Percent | Average Payment | Total Payment |
| <b>Total</b>   | 185,190  | 77,386  | 41.8%   | \$6,209         | \$480,451,744 | 6,320   | 3.4%    | \$6,527         | \$41,249,425  |
| <b>Acute Conditions</b>  |  |   |         |                 |               |   |         |                 |               |
| Bacterial Pneumonia  | 32,181   | 13,886  | 43.1%   | \$6,496         | \$90,210,016  | 1,069   | 3.3%    | \$6,826         | \$7,296,579   |
| Dehydration  | 13,980   | 5,790   | 41.4%   | \$5,074         | \$29,378,974  | 361   | 2.6%    | \$5,777         | \$2,085,541   |
| Urinary Tract Infection  | 21,578   | 10,346  | 47.9%   | \$4,976         | \$51,484,669  | 599   | 2.8%    | \$4,945         | \$2,961,830   |
| <b>Chronic Conditions</b>  |  |   |         |                 |               |   |         |                 |               |
| Angina without Procedure   | 1,698  | 578   | 34.0%   | \$2,924         | \$1,690,137   | 67  | 3.9%    | \$3,320         | \$222,441     |
| Heart Failure  | 45,866   | 23,208  | 50.6%   | \$6,538         | \$151,735,218 | 868   | 1.9%    | \$8,074         | \$7,007,885   |
| Hypertension   | 5,908  | 1,822   | 30.8%   | \$4,360         | \$7,943,597   | 283   | 4.8%    | \$4,933         | \$1,396,138   |
| Asthma in Younger Adults   | 2,648  | 155   | 5.9%    | \$4,906         | \$760,472     | 316   | 11.9%   | \$4,385         | \$1,385,560   |
| COPD or Asthma in Older Adults                                       | 39,061   | 14,778  | 37.8%   | \$5,750         | \$84,967,647  | 1,279   | 3.3%    | \$5,963         | \$7,626,468   |
| Diabetes Long-Term Complications                                     | 12,866   | 4,778   | 37.1%   | \$9,003         | \$43,016,772  | 543   | 4.2%    | \$10,150        | \$5,511,617   |
| Diabetes Short-Term Complications                                    | 6,379  | 1,058   | 16.6%   | \$6,719         | \$7,108,437   | 751   | 11.8%   | \$5,285         | \$3,968,758   |
| Uncontrolled Diabetes  | 2,016  | 552   | 27.4%   | \$4,943         | \$2,728,455   | 132   | 6.5%    | \$4,292         | \$566,532     |
| Lower-Extremity Amputation Among Patients with Diabetes <sup>3</sup> | 1,838  | 768   | 41.8%   | \$20,392        | \$15,661,307  | 109   | 5.9%    | \$22,002        | \$2,398,269   |

<sup>1</sup> Medicare FFS was assigned as the primary payer when the primary payer listed in the discharge record was Medicare FFS, the Medicare payment was greater than zero, and the payment value was greater than the Medicaid FFS payment (if present).

<sup>2</sup> Medicaid FFS was assigned as the primary payer when the payer (Medicaid) indicated the primary payer was Medicaid FFS, the payment was greater than zero, and the payment value was greater than the Medicare FFS payment (if present).

<sup>3</sup> The number of hospitalizations for this condition includes 333 hospitalizations paid for by Medicare FFS and 57 hospitalizations paid for by Medicaid FFS that also met the criteria to be counted in one of the other conditions. Note that hospitalizations meeting criteria for more than one condition were counted only once in the total number of potentially preventable hospitalizations—77,386 for Medicare FFS and 6,320 for Medicaid FFS.

Note: Differences in the approaches used by Medicare FFS and Medicaid FFS payers for determining payments (that is, the DRG grouper classification systems used by each) might account for some of the variation seen between these payers for a given condition.

## Multiple Hospital Stays

Some patients had multiple hospital stays for the same condition within one year. Potentially preventable hospitalizations for PA residents that occurred in 2009 were used to determine the number of times patients were admitted for the same condition within 365 days of discharge from the first hospital stay.

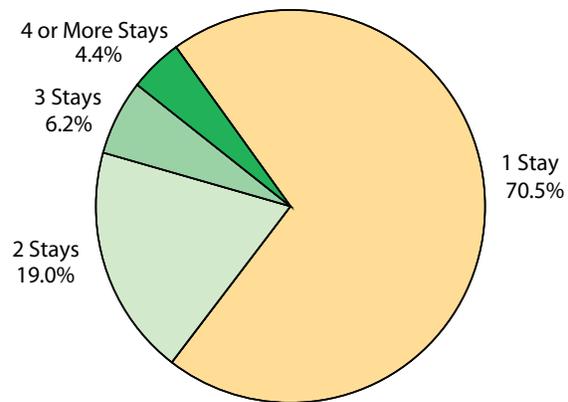
Of the potentially preventable hospitalizations included in this report, the conditions with the highest percent of patients having more than one stay within 365 days for the same condition were:

- Heart Failure with 29.5 percent of patients admitted multiple times for this condition—encompassing 27,840 hospital stays and 145,588 hospital days.
- COPD or Asthma in Older Adults with 27.0 percent of patients admitted multiple times for this condition—encompassing 23,674 hospital stays and 112,563 hospital days.

Of the patients with hospital stays for Heart Failure (Figure 2):

- 19.0 percent had two hospital stays.
- 6.2 percent had three hospital stays.
- 4.4 percent had four or more hospital stays.

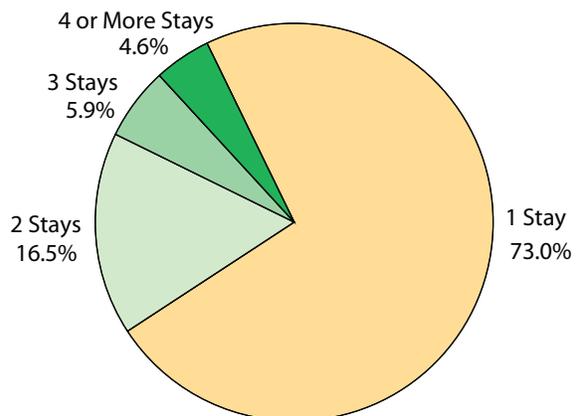
**Figure 2.**  
**Heart Failure, 2009**  
**Percent of Patients with Multiple Stays**  
**(within 365 days)**



Of the patients with hospital stays for COPD or Asthma for Older Adults (Figure 3):

- 16.5 percent had two hospital stays.
- 5.9 percent had three hospital stays.
- 4.6 percent had four or more hospital stays.

**Figure 3.**  
**COPD or Asthma in Older Adults, 2009**  
**Percent of Patients with Multiple Stays**  
**(within 365 days)**



## Potentially Preventable Hospitalizations

### PA and US Rates

Potentially preventable hospitalization rates for PA and US are presented in Table 3; 2008 rates are shown since they are the most recent US rates available for use in this report. PA rates were adjusted to account for age and sex differences between PA and US populations.

- When all 12 conditions were examined together, PA had a higher rate of potentially preventable hospitalizations at 195.6 per 10,000 residents, compared to the US at 182.5 per 10,000 residents.
- Conditions with the largest difference in rates included:
  - COPD or Asthma in Older Adults with a PA rate of 66.5 per 10,000, compared to the US rate of 57.8 per 10,000.
  - Heart Failure with a PA rate of 47.3 per 10,000, compared to the US rate of 40.0 per 10,000.
  - Asthma in Younger Adults with a PA rate of 9.2 per 10,000, compared to the US rate of 6.0 per 10,000.
- PA had lower rates than the US for several conditions including:
  - Bacterial Pneumonia with a PA rate of 34.8 per 10,000, compared to the US rate of 36.2 per 10,000.
  - Angina without Procedure with a PA rate of 2.1 per 10,000, compared to the US rate of 2.5 per 10,000.
  - Hypertension with a PA rate of 5.8 per 10,000, compared to the US rate of 6.2 per 10,000.

**Table 3.**  
**PA and US Potentially Preventable Hospitalization Rates, 2008**  
**per 10,000 Residents**

|   | PA <sup>1</sup> | US <sup>2</sup> |
|---|-----------------|-----------------|
| <b>Total</b>  | <b>195.6</b>    | <b>182.5</b>    |
| <b>Acute Conditions</b>                                 |                 |                 |
| Bacterial Pneumonia                                     | 34.8            | 36.2            |
| Dehydration   | 18.0            | 17.6            |
| Urinary Tract Infection                                 | 20.5            | 20.6            |
| <b>Chronic Conditions</b>                               |                 |                 |
| Angina without Procedure                                | 2.1             | 2.5             |
| Heart Failure   | 47.3            | 40.0            |
| Hypertension  | 5.8             | 6.2             |
| Asthma in Younger Adults                                | 9.2             | 6.0             |
| COPD or Asthma in Older Adults                          | 66.5            | 57.8            |
| Diabetes Long-Term Complications                        | 13.5            | 12.9            |
| Diabetes Short-Term Complications                       | 6.1             | 6.2             |
| Uncontrolled Diabetes                                   | 2.1             | 2.3             |
| Lower-Extremity Amputation Among Patients with Diabetes | 1.8             | 1.8             |

<sup>1</sup> PA rates were adjusted to account for age and sex differences between PA and US populations.

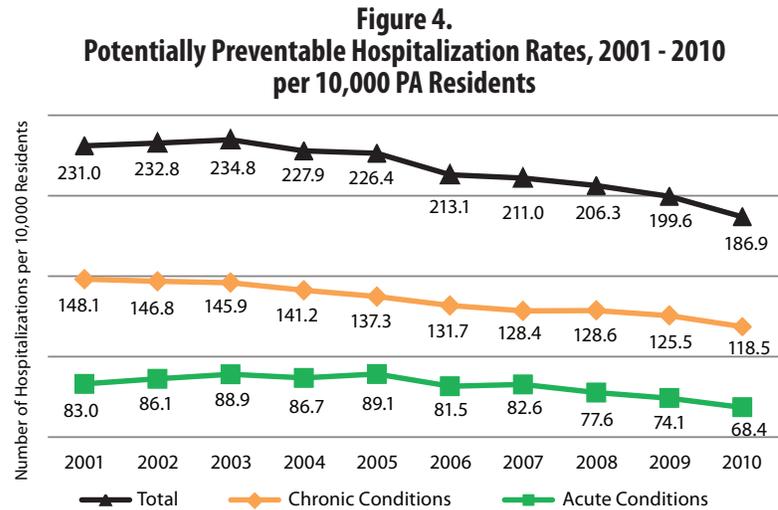
<sup>2</sup> Source: AHRQ Prevention Quality Indicator Comparative Data: Based on the Nationwide Inpatient Sample (NIS) observed (unadjusted) rate per 10,000 US residents.

## Potentially Preventable Hospitalizations

### Change in Rates, 2001-2010

Rates of potentially preventable hospitalizations have decreased over the last decade (Figure 4). Between 2001 and 2010, the rate of potentially preventable hospitalizations decreased:

- 19.1 percent when the 12 conditions studied in this report were examined together, from 231.0 to 186.9 per 10,000 residents.
- 20.0 percent for chronic conditions, from 148.1 to 118.5 per 10,000 residents.
- 17.6 percent for acute conditions, from 83.0 to 68.4 per 10,000 residents.



Over time, decreases in potentially preventable hospitalization rates might signal improvements in the quality of primary or preventive care, in access to timely and effective treatment for certain conditions, or in patient adoption of healthy behaviors.

Table 4 displays potentially preventable hospitalization rates for 2001 and 2010. Rates shown are per 10,000 residents for each of the 12 conditions examined in this report.

- While Heart Failure and COPD or Asthma in Older Adults had the two highest rates in both 2001 and 2010, rates for these conditions decreased:
  - 33.0 percent for Heart Failure, from 69.1 to 46.3 per 10,000 residents.
  - 9.9 percent for COPD or Asthma in Older Adults, from 67.9 to 61.2 per 10,000 residents.
- The largest decrease was for Angina without Procedure, from 6.2 to 1.7 per 10,000 residents, a 72.6 percent decrease.
- Rates increased for three conditions: Urinary Tract Infection, Hypertension, and Diabetes Short-Term Complications.

**Table 4.**  
**Potentially Preventable Hospitalization Rates, 2001 and 2010 per 10,000 PA Residents by Condition**

|   | 2001 | 2010 |
|---|------|------|
| <b>Acute Conditions</b>                                 |      |      |
| Bacterial Pneumonia                                     | 42.5 | 32.5 |
| Dehydration   | 22.5 | 14.1 |
| Urinary Tract Infection                                 | 18.0 | 21.8 |
| <b>Chronic Conditions</b>                               |      |      |
| Angina without Procedure                                | 6.2  | 1.7  |
| Heart Failure   | 69.1 | 46.3 |
| Hypertension  | 4.4  | 6.0  |
| Asthma in Younger Adults                                | 9.9  | 7.5  |
| COPD or Asthma in Older Adults                          | 67.9 | 61.2 |
| Diabetes Long-Term Complications                        | 13.2 | 13.0 |
| Diabetes Short-Term Complications                       | 5.2  | 6.4  |
| Uncontrolled Diabetes                                   | 2.5  | 2.0  |
| Lower-Extremity Amputation Among Patients with Diabetes | 2.7  | 1.9  |

Note: All changes in rates between 2001 and 2010 were statistically significant, except Diabetes Long-Term Complications.

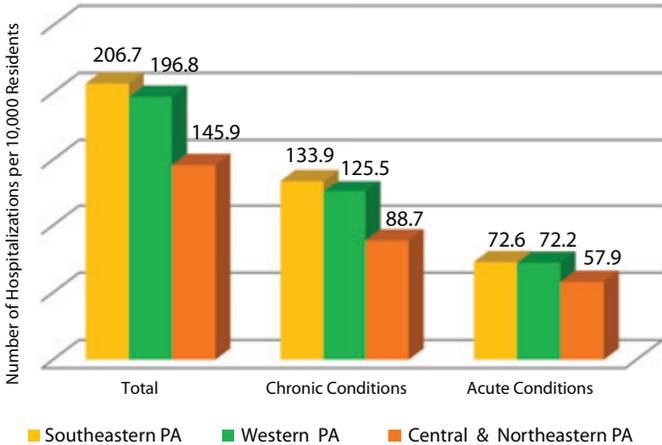
# Potentially Preventable Hospitalizations

## Region and County Rates

Figure 5 displays the rate of potentially preventable hospitalizations for 2010 by three PA regions (as noted by bolder outlines in the maps below). These rates and the county rates below are age and sex-adjusted to account for differences in region and county populations.

Central & Northeastern PA had the lowest rates of potentially preventable hospitalizations for the 12 conditions together at 145.9 per 10,000, for chronic conditions at 88.7 per 10,000, and for acute conditions at 57.9 per 10,000.

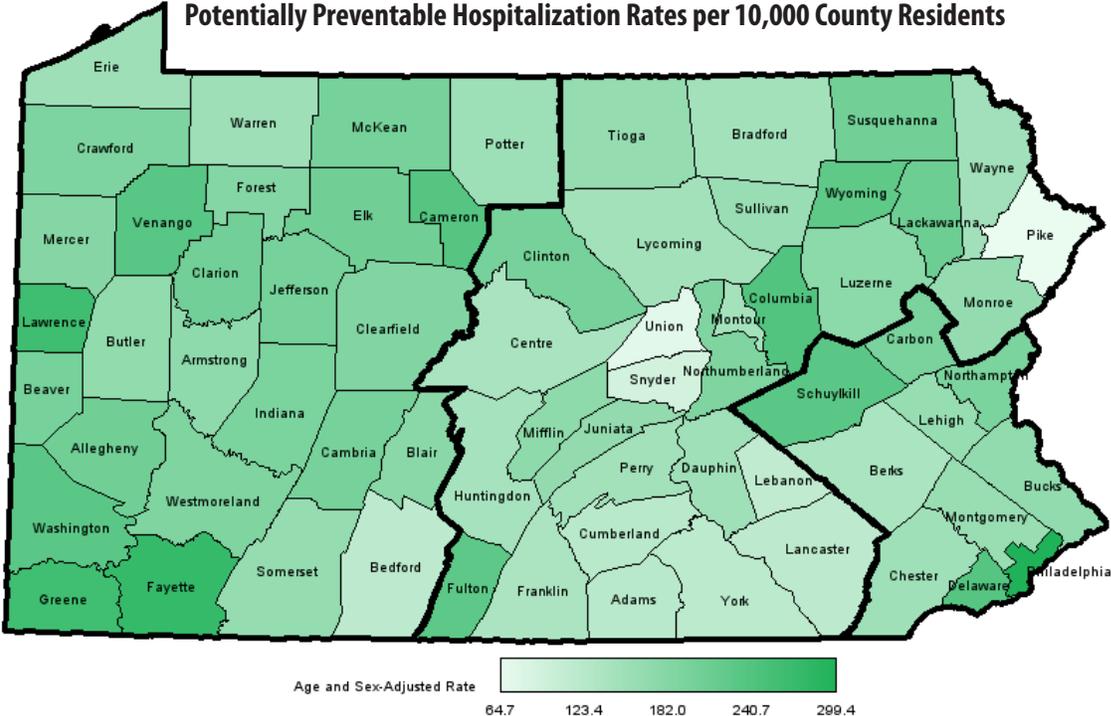
**Figure 5.**  
Potentially Preventable Hospitalization Rates, 2010  
per 10,000 Residents (Age and Sex-Adjusted)  
by PA Region



Maps 1, 2, 3 and 4 display rates for PA's 67 counties. Map 1 displays the county rates when the 12 conditions were considered together. Maps 2, 3, and 4 display county rates for the three conditions with the highest statewide rates in 2010, COPD or Asthma in Older Adults, Heart Failure, and Bacterial Pneumonia. (See appendix on pages 16 and 17 for specific county rates.)

The potentially preventable hospitalization rates among PA counties for all conditions together ranged from 64.7 to 299.4 per 10,000 county residents (Map 1). The statewide rate was 186.9.

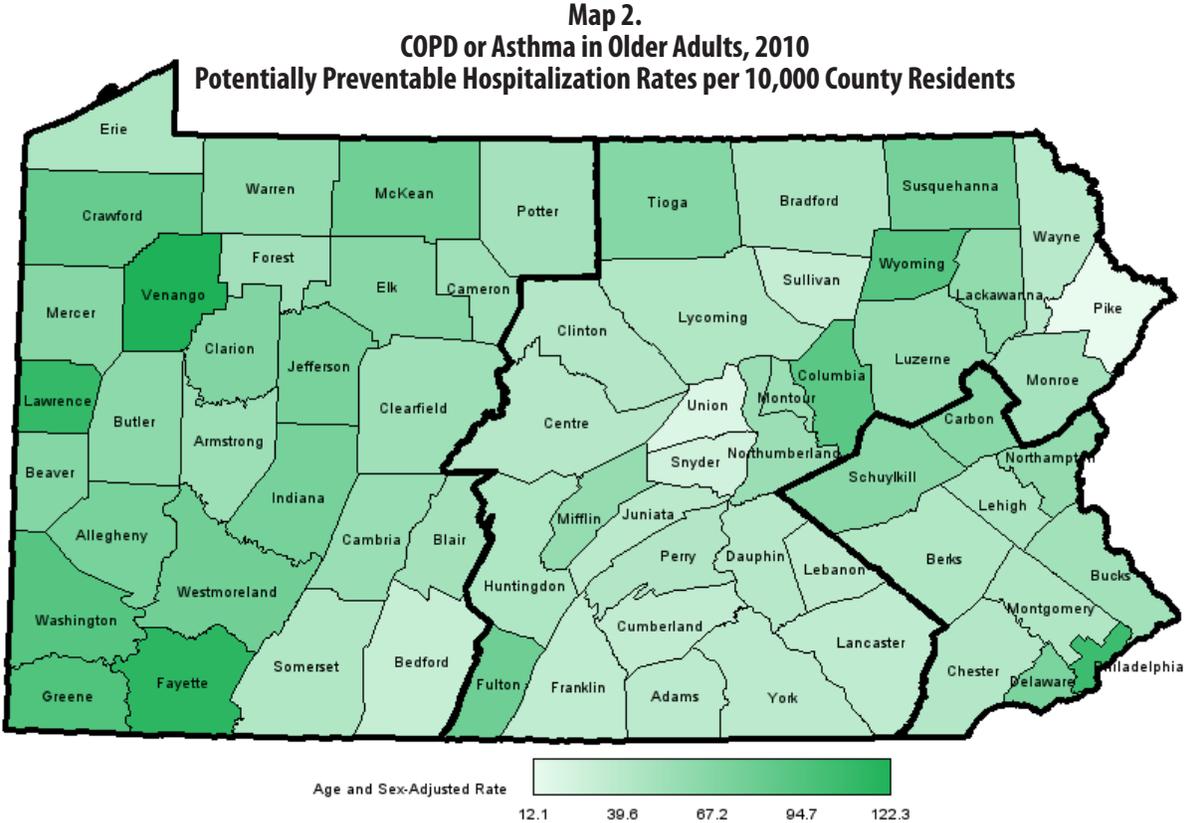
**Map 1.**  
Total Conditions, 2010  
Potentially Preventable Hospitalization Rates per 10,000 County Residents



Note: Rates for counties with small volumes of hospitalizations are sensitive to small changes in the number of admissions, so rates might be reflective of minor fluctuations in the number of admissions.

## Potentially Preventable Hospitalizations

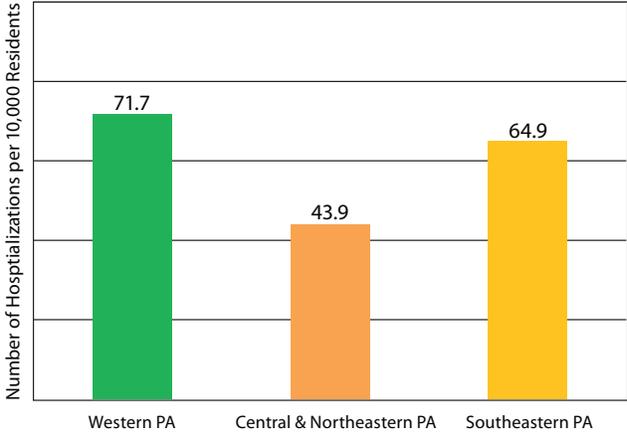
The potentially preventable hospitalization rates among PA counties for COPD or Asthma in Older Adults ranged from 12.1 to 122.3 per 10,000 county residents (Map 2). The statewide rate was 61.2.



Note: Rates for counties with small volumes of hospitalizations are sensitive to small changes in the number of admissions, so rates might be reflective of minor fluctuations in the number of admissions.

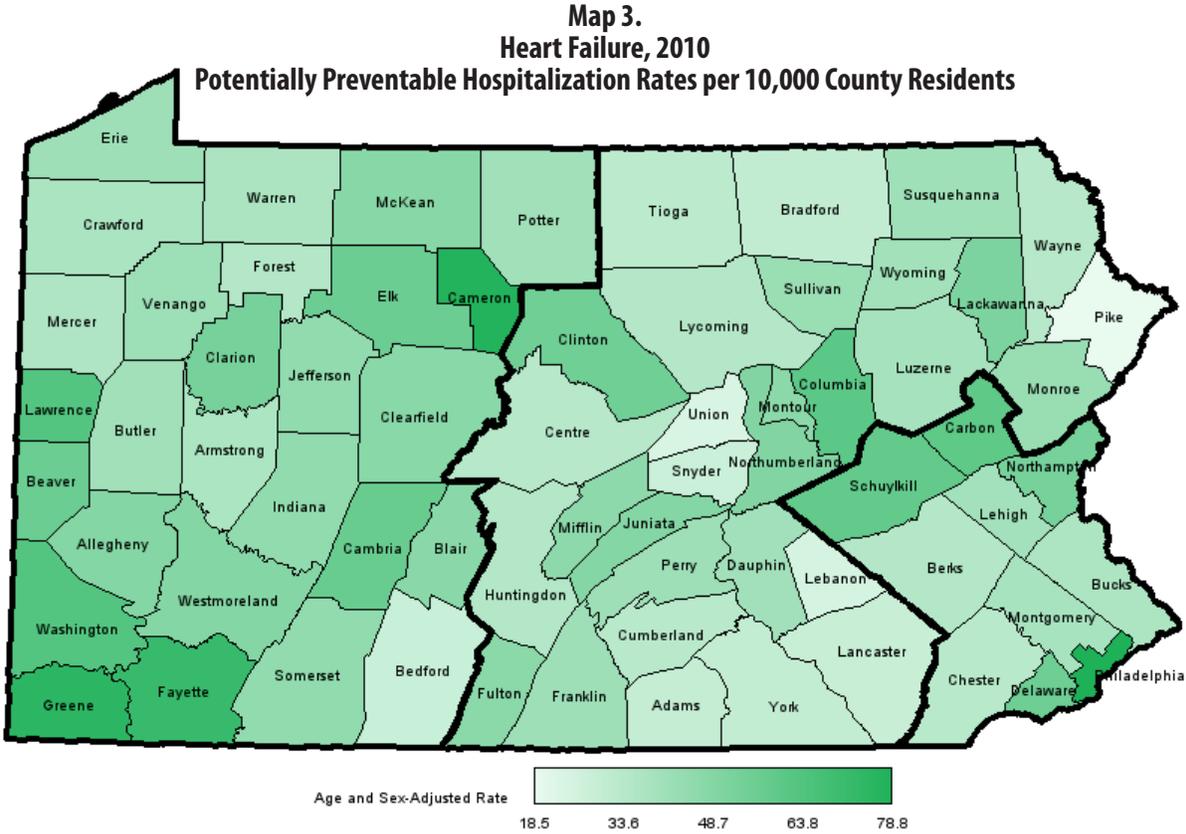
**Figure 6.**  
**COPD or Asthma in Older Adults**  
**Potentially Preventable Hospitalization Rates, 2010**  
**per 10,000 Residents (Age and Sex-Adjusted)**  
**by PA Region**

In 2010, Western PA had the highest rate of potentially preventable hospitalizations for COPD and Asthma in Older Adults at 71.7 per 10,000 residents.



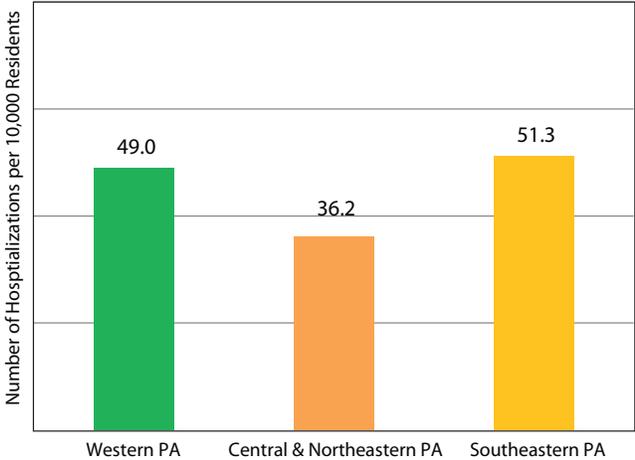
## Potentially Preventable Hospitalizations

The potentially preventable hospitalization rates among PA counties for Heart Failure ranged from 18.5 to 78.8 per 10,000 county residents (Map 3). The statewide rate was 46.3.



Note: Rates for counties with small volumes of hospitalizations are sensitive to small changes in the number of admissions, so rates might be reflective of minor fluctuations in the number of admissions.

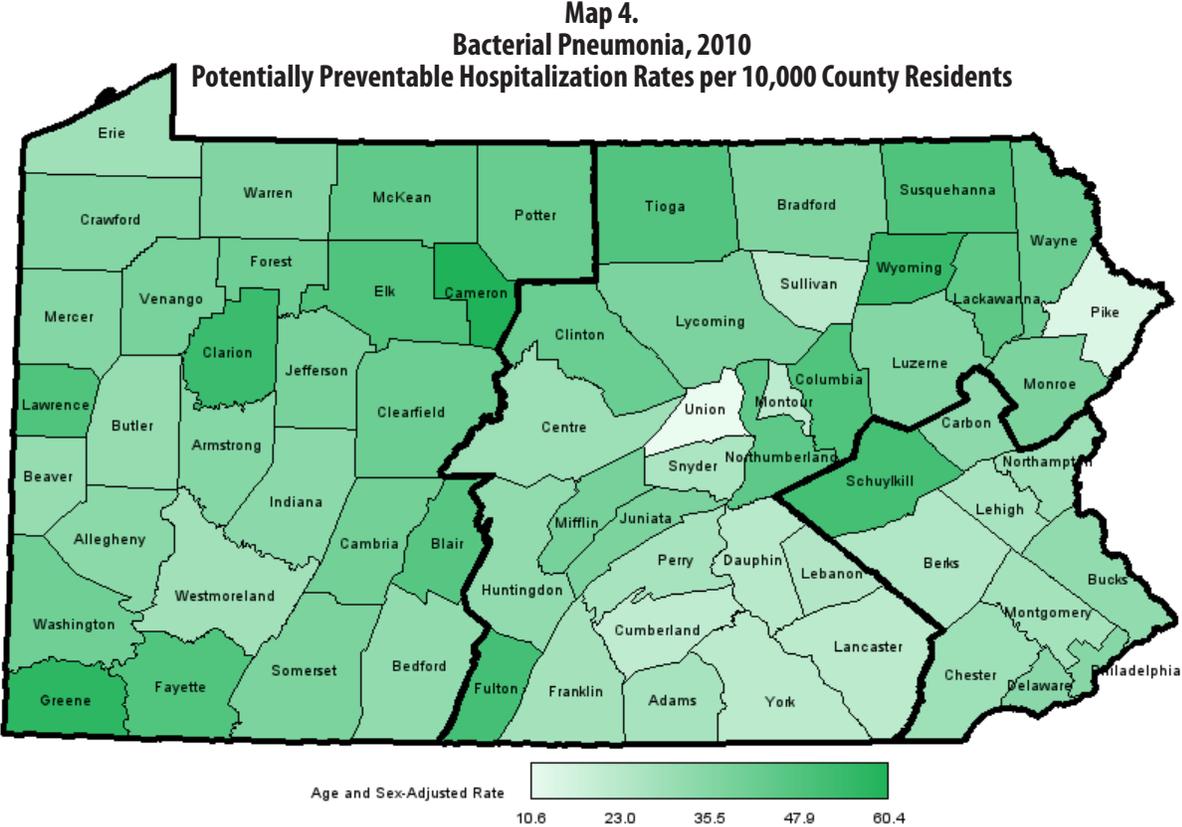
**Figure 7.**  
**Heart Failure**  
**Potentially Preventable Hospitalization Rates, 2010**  
**per 10,000 Residents (Age and Sex-Adjusted)**  
**by PA Region**



In 2010, Southeastern PA had the highest rate of potentially preventable hospitalizations for Heart Failure at 51.3 per 10,000 residents.

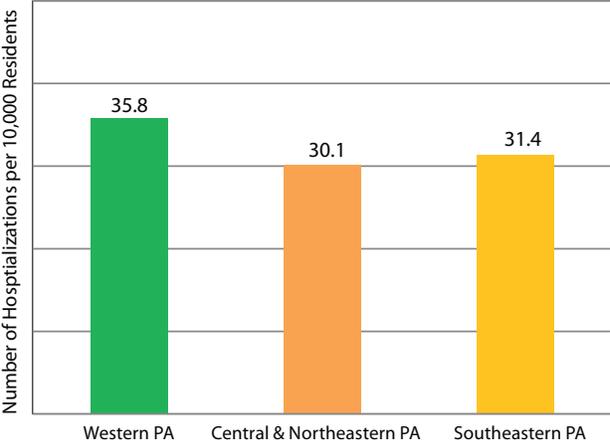
## Potentially Preventable Hospitalizations

The potentially preventable hospitalization rates among PA counties for Bacterial Pneumonia ranged from 10.6 to 60.4 per 10,000 county residents (Map 4). The statewide rate was 32.5 per 10,000.



Note: Rates for counties with small volumes of hospitalizations are sensitive to small changes in the number of admissions, so rates might be reflective of minor fluctuations in the number of admissions.

**Figure 8.**  
**Bacterial Pneumonia**  
**Potentially Preventable Hospitalization Rates, 2010**  
**per 10,000 Residents (Age and Sex-Adjusted)**  
**by PA Region**



In 2010, Western PA had the highest rate of potentially preventable hospitalizations for Bacterial Pneumonia at 35.8 per 10,000 residents.

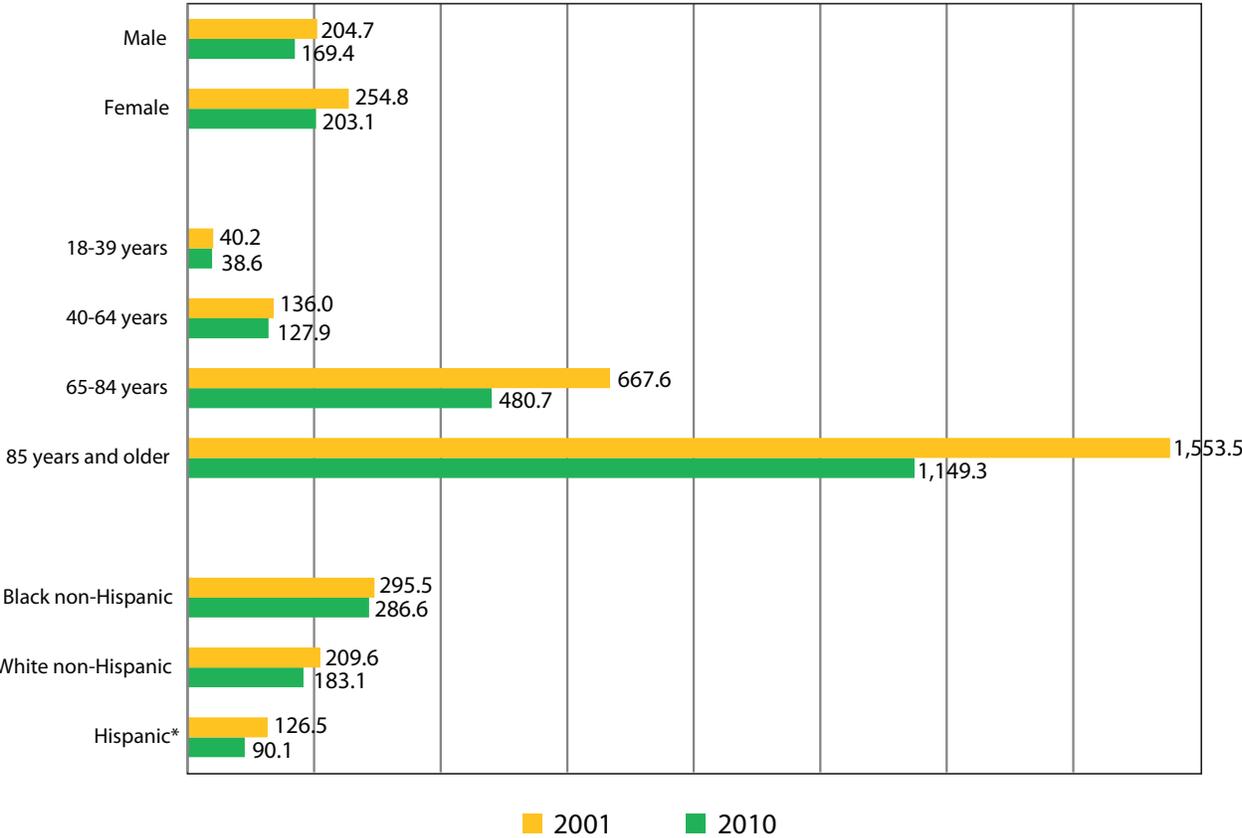
# Potentially Preventable Hospitalizations

## Rates by Patient Characteristics

Figure 9 displays, by patient characteristics, the 2001 and 2010 potentially preventable hospitalization rates when all conditions were considered together.

Between 2001 and 2010 the rate of potentially preventable hospitalizations decreased for each gender, age group, and race/ethnicity group displayed in Figure 9.

**Figure 9.**  
**Total Potentially Preventable Hospitalization Rates, 2001 and 2010**  
**per 10,000 PA Residents**  
**by Patient Characteristics**



\* Internal PHC4 analysis suggests that Hispanic ethnicity may be slightly underreported.

Note: Hospitalization rates for a specific segment of the population take into account the proportional differences among demographics, such as gender, age, and race/ethnicity. The rates for a specific demographic only include residents for that demographic.

## Potentially Preventable Hospitalizations Appendix

This appendix provides detail for the county potentially preventable hospitalization rates depicted in Maps 1, 2, 3, and 4 (pages 11-14).

### Potentially Preventable Hospitalization Rates per 10,000 County Residents, 2010

| County     | Total<br>Conditions<br>(Map 1) | COPD or Asthma<br>in Older Adults<br>(Map 2) | Heart<br>Failure<br>(Map 3) | Bacterial<br>Pneumonia<br>(Map 4) |
|------------|--------------------------------|--|-----------------------------|-----------------------------------|
| Adams      | 120.6                          | 36.8   | 29.6                        | 26.8                              |
| Allegheny  | 204.0                          | 73.7   | 48.5                        | 33.7                              |
| Armstrong  | 170.1                          | 54.0   | 36.7                        | 35.0                              |
| Beaver     | 197.7                          | 66.5   | 56.0                        | 31.3                              |
| Bedford    | 116.4                          | 31.1   | 28.4                        | 32.0                              |
| Berks      | 137.3                          | 42.0   | 34.4                        | 24.3                              |
| Blair      | 175.3                          | 49.5   | 46.9                        | 46.3                              |
| Bradford   | 146.7                          | 45.6   | 30.5                        | 36.7                              |
| Bucks      | 166.7                          | 50.9   | 36.6                        | 32.0                              |
| Butler     | 167.4                          | 62.0   | 40.2                        | 31.4                              |
| Cambria    | 197.6                          | 55.8   | 57.1                        | 39.7                              |
| Cameron    | 236.8                          | 52.5   | 77.3                        | 60.4                              |
| Carbon     | 193.4                          | 64.4   | 59.7                        | 33.3                              |
| Centre     | 139.1                          | 40.8   | 33.5                        | 29.2                              |
| Chester    | 149.6                          | 41.5   | 33.1                        | 29.0                              |
| Clarion    | 203.0                          | 68.1   | 52.6                        | 53.7                              |
| Clearfield | 184.3                          | 52.3   | 47.1                        | 41.3                              |
| Clinton    | 197.8                          | 40.9   | 54.7                        | 41.7                              |
| Columbia   | 240.1                          | 89.6   | 60.5                        | 48.2                              |
| Crawford   | 188.6                          | 83.2   | 37.0                        | 35.5                              |
| Cumberland | 121.1                          | 33.4   | 33.0                        | 21.0                              |
| Dauphin    | 150.1                          | 39.4   | 40.0                        | 22.6                              |
| Delaware   | 235.6                          | 72.2   | 55.2                        | 34.0                              |
| Elk        | 204.2                          | 64.7   | 55.7                        | 48.3                              |
| Erie       | 152.2                          | 44.5   | 41.1                        | 28.6                              |
| Fayette    | 272.9                          | 115.2  | 71.6                        | 47.9                              |
| Forest     | 181.2                          | 51.5   | 34.7                        | 40.9                              |
| Franklin   | 136.3                          | 34.4   | 40.9                        | 27.4                              |
| Fulton     | 226.7                          | 78.9   | 46.7                        | 51.0                              |
| Greene     | 260.6                          | 95.5   | 74.8                        | 56.9                              |
| Huntingdon | 143.0                          | 43.7   | 34.7                        | 32.0                              |
| Indiana    | 192.1                          | 74.8   | 44.8                        | 33.6                              |
| Jefferson  | 197.7                          | 73.2   | 44.8                        | 38.3                              |
| Juniata    | 165.1                          | 38.0   | 48.4                        | 37.5                              |

## Potentially Preventable Hospitalizations Appendix

### Potentially Preventable Hospitalization Rates per 10,000 County Residents, 2010

| County         | Total Conditions<br>(Map 1) | COPD or Asthma<br>in Older Adults<br>(Map 2) | Heart Failure<br>(Map 3) | Bacterial<br>Pneumonia<br>(Map 4) |
|----------------|-----------------------------|--|--------------------------|-----------------------------------|
| Lackawanna     | 208.4                       | 60.2   | 50.9                     | 44.9                              |
| Lancaster      | 116.4                       | 34.9   | 28.5                     | 22.1                              |
| Lawrence       | 262.0                       | 110.8  | 62.8                     | 48.3                              |
| Lebanon        | 113.1                       | 36.5   | 24.8                     | 24.3                              |
| Lehigh         | 160.1                       | 46.1   | 39.7                     | 26.5                              |
| Luzerne        | 172.6                       | 57.5   | 38.7                     | 35.5                              |
| Lycoming       | 146.7                       | 42.1   | 34.4                     | 37.2                              |
| McKean         | 198.2                       | 78.3   | 47.4                     | 44.0                              |
| Mercer         | 181.3                       | 65.6   | 35.9                     | 35.3                              |
| Mifflin        | 170.7                       | 57.4   | 45.8                     | 38.7                              |
| Monroe         | 163.5                       | 49.2   | 42.5                     | 37.3                              |
| Montgomery     | 158.0                       | 42.8   | 38.1                     | 27.6                              |
| Montour        | 144.6                       | 55.3   | 46.6                     | 21.4                              |
| Northampton    | 192.4                       | 58.3   | 52.4                     | 29.4                              |
| Northumberland | 187.6                       | 54.6   | 49.2                     | 45.1                              |
| Perry          | 147.4                       | 42.3   | 41.1                     | 26.9                              |
| Philadelphia   | 299.4                       | 105.7  | 78.8                     | 34.7                              |
| Pike           | 64.7                        | 12.1   | 18.5                     | 13.9                              |
| Potter         | 152.8                       | 49.9   | 40.2                     | 42.6                              |
| Schuylkill     | 229.2                       | 63.9   | 58.5                     | 51.3                              |
| Snyder         | 92.2                        | 26.1   | 27.6                     | 25.6                              |
| Somerset       | 161.2                       | 42.0   | 44.7                     | 37.3                              |
| Sullivan       | 158.4                       | 32.3   | 42.3                     | 22.4                              |
| Susquehanna    | 203.1                       | 75.4   | 40.7                     | 48.6                              |
| Tioga          | 161.7                       | 65.9   | 32.2                     | 47.6                              |
| Union          | 73.2                        | 19.4   | 23.8                     | 10.6                              |
| Venango        | 232.6                       | 122.3  | 41.2                     | 38.5                              |
| Warren         | 151.7                       | 59.8   | 36.8                     | 35.9                              |
| Washington     | 229.1                       | 92.3   | 63.1                     | 40.3                              |
| Wayne          | 148.4                       | 38.7   | 33.9                     | 41.6                              |
| Westmoreland   | 188.2                       | 77.5   | 48.3                     | 28.5                              |
| Wyoming        | 225.3                       | 92.6   | 39.7                     | 54.7                              |
| York           | 118.9                       | 36.7   | 30.0                     | 21.9                              |



## **Pennsylvania Health Care Cost Containment Council**

Joe Martin, Executive Director

225 Market Street, Suite 400, Harrisburg, PA 17101

Phone: 717-232-6787 • Fax: 717-232-3821

**[www.phc4.org](http://www.phc4.org)**

### **For More Information**

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