Introduction

The Pennsylvania Health Care Quality Alliance (PHCQA) has published hospital performance data on its website, www.PAHealthCareQuality.org, since 2007. Website visitors can compare the quality of care at all hospitals in Pennsylvania using indicators such as infection rates, readmission rates, mortality rates, process measures, patient experience measures, and emergency department data. Each year, PHCQA publishes its annual *State of the State* report to showcase quality improvement in Pennsylvania and how quality of care in Pennsylvania compares to national benchmarks.

This year's *State of the State* analyzes multi-year performance trends for HCAHPS patient experience measures, cancer care process measures, mortality rates, and readmission rates. The *State of the State* is just a small snapshot, not a complete picture, of health care quality in Pennsylvania. All measures included in this report have been debated and recommended for publication on the PHCQA website by the Measures & Methods Committee, a multi-stakeholder workgroup comprised of experts in quality measurement. Ultimately, this report aims to identify opportunities for improvement and specific measures indicating that performance has progressed over time.

HCAHPS Patient Experience Measures

The HCAHPS Hospital Survey, which comprises of 32 questions, is completed by a random sample of discharged patients that were admitted in the medical, surgical, and maternity care service lines. The Center for Medicare & Medicaid Services (CMS) utilizes patient responses to the 32 questions to evaluate hospital performance on 11 measures as perceived by the patient receiving care. The 11 measures are:

H-COMP-1: Nurse Communication
H-COMP-2: Doctor Communication
H-COMP-3: Responsiveness of Hospital Staff
H-COMP-4: Pain Well Controlled
H-COMP-5: Medicine Explained by Staff
H-COMP-6: Discharge Information

H-COMP-7: Understanding Discharge Instructions
H-CLEAN-HSP: Room and Bathroom Kept Clean
H-QUIET-HSP: Room Quiet at Night
H-HSP-RATING: Hospital Rating
H-RECMND: Hospital Recommendation

PHCQA compared Pennsylvania's performance on each of the above measures to the national benchmark in order to determine aspects of patient experience in which Pennsylvania hospitals are excelling or lagging behind. Patient experience measures are evaluated by CMS on a rolling four quarter period.

Q3 2015 - Q2 2016 Pennsylvania & US HCAHPS Benchmarks
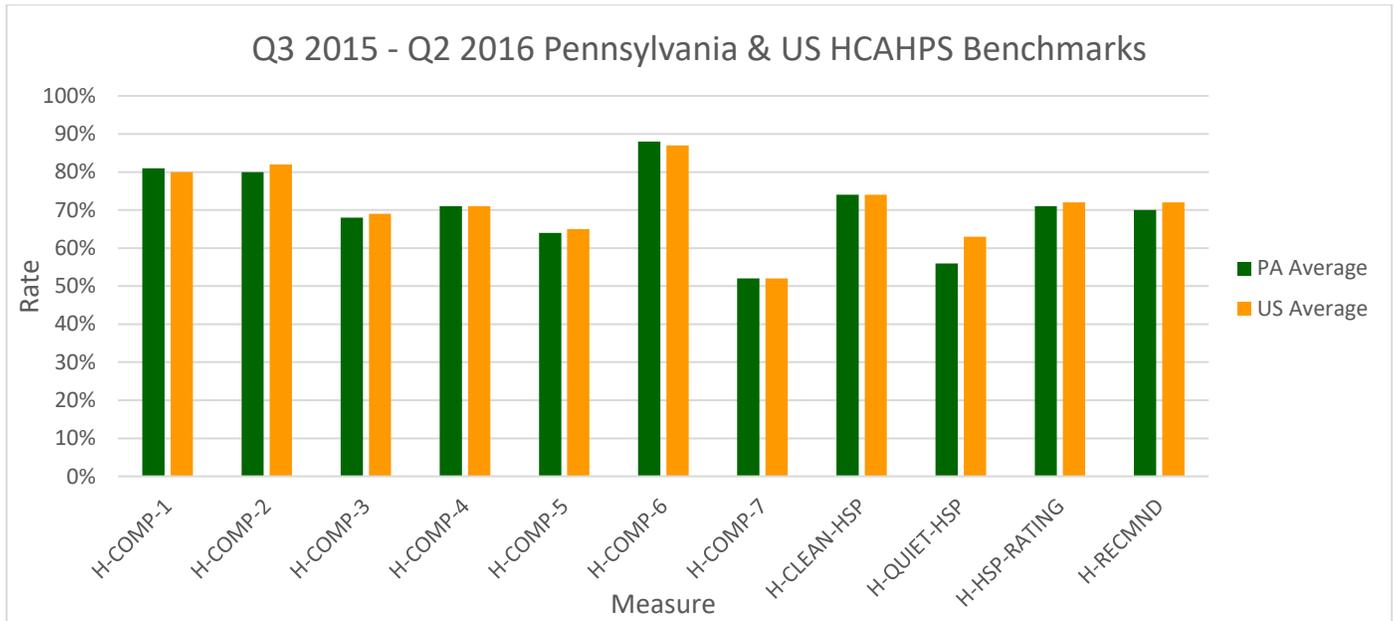
While the Pennsylvania average exceeds the national average for only two measures, the state benchmark is within 2% of the national average for 10 of 11 patient experience measures. Of particular note, the percentage of people in Pennsylvania responding that their room is always quiet at night (H-QUIET-HSP) is only 56%, which is much less than the 63% national average. H-COMP-7, which evaluates the percentage of people who strongly agree that they understood their care when discharged, has historically had low response rates because the second tier response option is nearly identical to the top response category, except that the patients "agree" instead of "strongly agree" that they understand their care. As a result, response rates for these two categories are often within a few percentage points.

In order to evaluate improvements in patient experience over time, PHCQA examined measure rates for each patient experience measure since the Q3 2009 – Q2 2010 reporting period.

7-Year Pennsylvania HCAHPS Patient Experience Performance Improvement

Measure	Q3 2009 – Q2 2010	Q3 2010 – Q2 2011	Q3 2011 – Q2 2012	Q3 2012 – Q2 2013	Q3 2013 – Q2 2014	Q3 2014 – Q2 2015	Q3 3015 – Q2 2016	Improvement
H-COMP-1	76%	76%	78%	79%	80%	80%	81%	6.6%
H-COMP-2	79%	78%	79%	80%	80%	80%	80%	1.3%
H-COMP-3	63%	63%	66%	67%	68%	67%	68%	7.9%
H-COMP-4	69%	69%	70%	70%	70%	71%	71%	2.9%
H-COMP-5	59%	59%	62%	62%	63%	63%	64%	8.5%
H-COMP-6	82%	83%	84%	86%	86%	87%	88%	7.3%
H-COMP-7	N/A	N/A	N/A	N/A	51%	51%	52%	2.0%
H-CLEAN-HSP	70%	70%	71%	73%	74%	73%	74%	5.7%
H-QUIET-HSP	50%	51%	53%	54%	55%	55%	56%	12%
H-HSP-RATING	65%	65%	67%	69%	69%	70%	71%	9.2%
H-RECMND	67%	67%	68%	69%	70%	69%	70%	4.5%

Over the last seven years, Pennsylvania hospital performance across all patient experience measures has improved. In general, patient experience scores have increased steadily, but modestly, each reporting period. During the past several years, patient experience measures have become more prominently featured in pay-for-performance programs, such as Value-Based Purchasing, and incorporated in the methodologies of consumer facing hospital ratings, including CMS 5-Star Quality Rating System, Consumer Reports Hospital Ratings, Leapfrog Hospital Safety Grade, and US News & World Report hospital rankings. In an effort to maximize payment reimbursement and hospital rating scores, many hospitals have redesigned the way in which they care for patients, varying from improving communication to offering amenities often found in exclusive hotels. Although these efforts do not appear to have significantly increased patient experience scores, they provide one potential explanation of the steadily improving results depicted in the above table.

Patient Experience Correlation Analyses

In an effort to determine which experiences have the greatest impact on patient ratings, PHCQA performed correlation analyses across each HCAHPS patient experience measure. The results of the analyses are presented in the table below.

Data Timeframe: Q3 2015 – Q2 2016

	H-COMP-1	H-COMP-2	H-COMP-3	H-COMP-4	H-COMP-5	H-COMP-6	H-COMP-7	H-CLEAN-HSP	H-QUIET-HSP	H-HSP-RATING	H-RECMND
H-COMP-1	1								Correlation Key		
H-COMP-2	0.693	1							= Perfect Correlation (1.0)		
H-COMP-3	0.874	0.634	1						= Very Strong Correlation (0.7 - 0.999)		
H-COMP-4	0.833	0.710	0.753	1					= Strong Correlation (0.5 - 0.699)		
H-COMP-5	0.878	0.654	0.794	0.792	1				= Medium Correlation (0.3 - 0.499)		
H-COMP-6	0.509	0.417	0.455	0.460	0.534	1					
H-COMP-7	0.830	0.644	0.747	0.735	0.798	0.590	1				
H-CLEAN-HSP	0.723	0.542	0.719	0.682	0.682	0.458	0.612	1			
H-QUIET-HSP	0.670	0.487	0.630	0.631	0.649	0.411	0.629	0.625	1		
H-HSP-RATING	0.825	0.626	0.706	0.763	0.754	0.573	0.879	0.572	0.674	1	
H-RECMND	0.724	0.520	0.584	0.649	0.644	0.486	0.828	0.371	0.563	0.932	1

Hospital rating is very strongly correlated with nurse communication (H-COMP-1), hospital staff responsiveness (H-COMP-3), pain management (H-COMP-4), explanation of medicines (H-COMP-5), and understanding discharge instructions (H-COMP-7). Among these, nurse communication and ensuring that patients understand their discharge instructions are particularly important to ensure a high hospital rating. Comfort factors, such as cleanliness (H-CLEAN-HSP) and noise (H-QUIET-HSP), are not as much of a priority to patients as factors related to direct care when evaluating their experience. Interestingly, nurse communication has a stronger impact on patient evaluations of hospital experience than doctor communication. Hospitals interested in improving their nurse communication scores could focus on
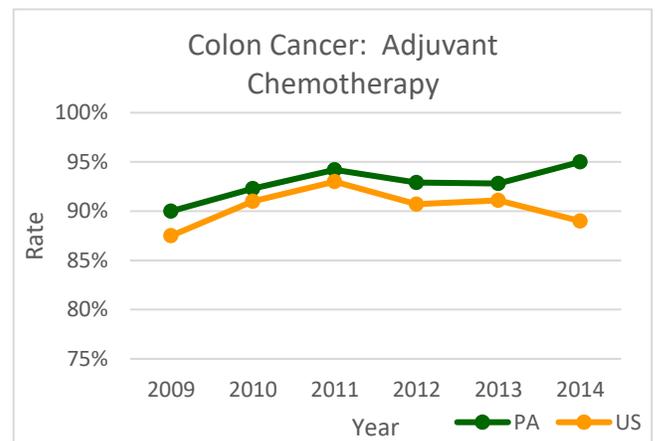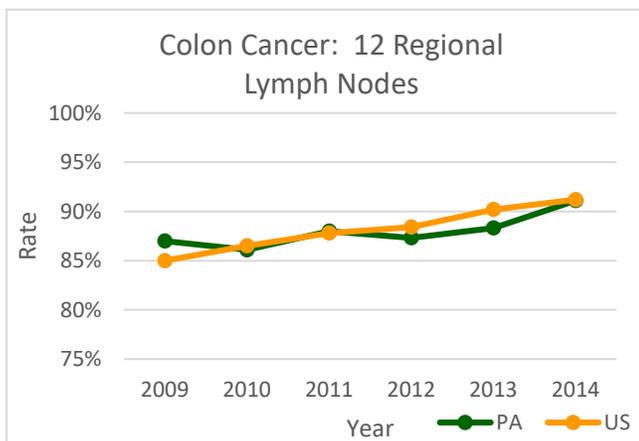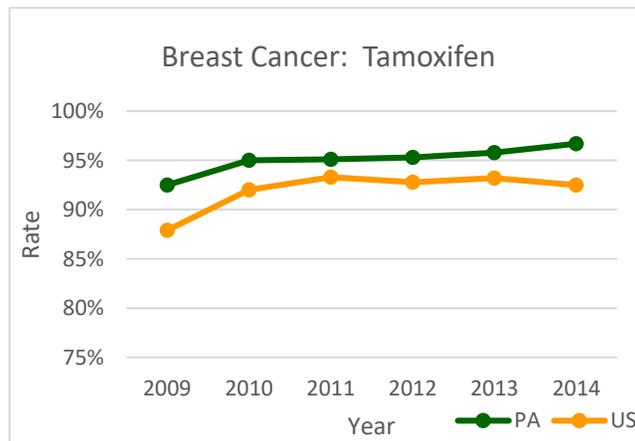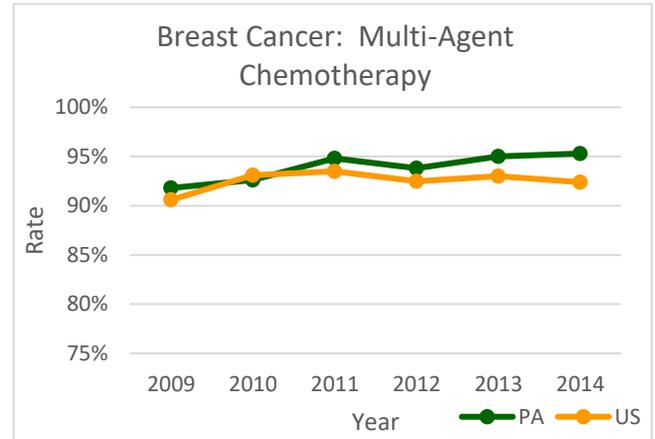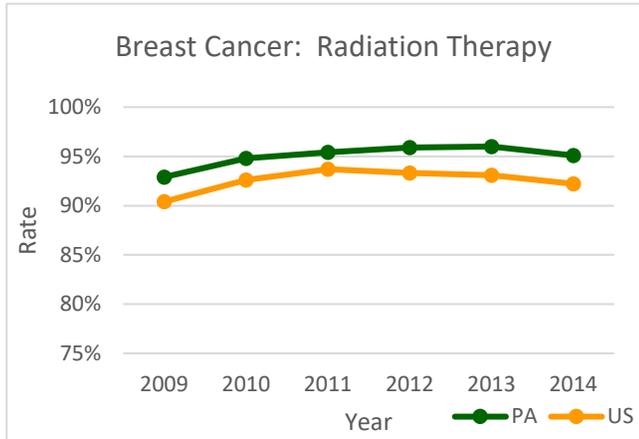
responsiveness, pain management, and the way in which nurses explain prescriptions and discharge instructions.

Cancer Care

PHCQA has partnered with the American College of Surgeon's Commission on Cancer® (CoC) since 2013 to publicly report data from the national cancer database on the compliance with nationally-accepted guidelines for the treatment of breast and colon cancers. PHCQA reports data from 64 of 73 CoC accredited facilities on three breast cancer and two colon cancer process measures. PHCQA publishes the following measures:

1. **Breast Cancer: Radiation Therapy -** Percentage of female patients, age 18 - 69, who have their first diagnosis of breast cancer (epithelial malignancy) at AJCC state I, II, or III, receiving breast conserving surgery who receive radiation therapy within 1 year (365 days) of diagnosis
2. **Breast Cancer: Multi-Agent Chemotherapy** - Percentage of female patients, over the age of 18 at diagnosis, who have their first diagnosis of breast cancer (epithelial malignancy) at AJCC state T1c, or Stage II or III, whose primary tumor is progesterone and estrogen receptor negative recommended for multi-agent chemotherapy (considered or administered) within 4 months (120 days) of diagnosis
3. **Breast Cancer: Tamoxifen** - Percentage of female patients, over the age of 18 at diagnosis, who have their first diagnosis of breast cancer (epithelial malignancy) at AJCC stage I, II, or III, whose primary tumor is progesterone or estrogen receptor positive recommended for tamoxifen or third generation aromatase inhibitor (considered or administered) within 1 year (365 days) of diagnosis
4. **Colon Cancer: 12 Regional Lymph Nodes** - Percentage of patients, over the age of 18, who have primary colon tumors (epithelial malignancies only), experiencing their first diagnosis at AJCC stage I, II, or III who have at least 12 regional lymph nodes removed and pathologically examined for resected colon cancer
5. **Colon Cancer: Adjuvant Chemotherapy** - Percentage of patients age 18-79, experiencing their first diagnosis at AJCC III (lymph node positive) colon cancer for whom adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis

PHCQA compared the Pennsylvania results to national averages for each measure from 2009 to 2014 to determine whether compliance has improved overall and examine Pennsylvania's performance relative to national benchmarks.

PENNSYLVANIA Health Care Quality Alliance

THE HEALTH CARE IMPROVEMENT FOUNDATION
Building Partnerships For Better Health Care

Breast Cancer: Radiation Therapy

Breast Cancer: Multi-Agent Chemotherapy

Breast Cancer: Tamoxifen

Colon Cancer: 12 Regional Lymph Nodes

Colon Cancer: Adjuvant Chemotherapy

Since 2009, Pennsylvania's performance on all five cancer measures has steadily improved. Pennsylvania cancer facility performance on all measures, except Colon Cancer: 12 Regional Lymph Nodes, exceeded the national average. Of note is the recent performance of the Colon Cancer: Adjuvant Chemotherapy measure where Pennsylvania has continued to improve its performance while the rest of the country has remained relatively flat over time.

Readmission and Mortality

PHCQA analyzed readmission and mortality rate trends over the last five reporting periods. PHCQA sources its outcomes data primarily from CMS, which reports readmissions and mortalities that occur within 30 days of discharge during a three-year rolling period. In contrast to the previously mentioned measures in this report, lower readmission and mortality rates indicate better performance.
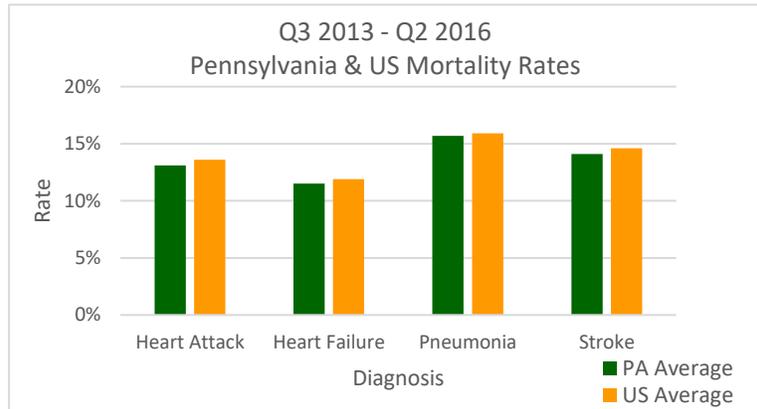

Q3 2013 - Q2 2016
Pennsylvania & US Readmission Rates
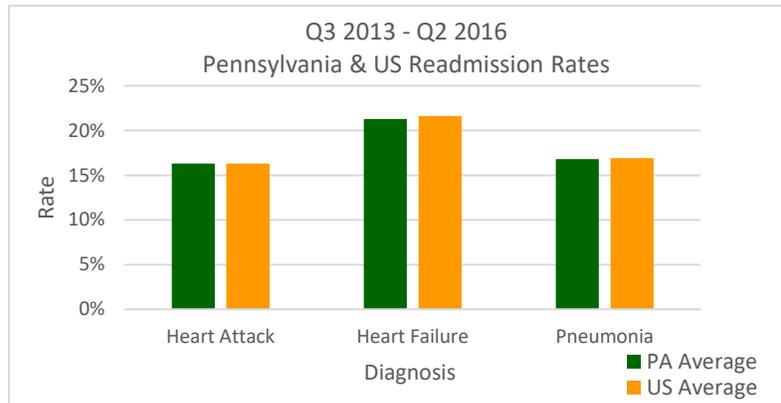
5-Year Pennsylvania Readmission Rate Trends

Measure	Q3 2009 – Q2 2012	Q3 2010 – Q2 2013	Q3 2011 – Q2 2014	Q3 2012 – Q2 2015	Q3 2013 – Q2 2016	Improvement
Heart Attack Readmission	18.3%	17.8%	17.2%	17.0%	16.3%	10.9%
Heart Failure Readmission	23.1%	22.6%	21.9%	21.8%	21.3%	7.8%
Pneumonia Readmission	17.7%	17.3%	16.9%	17.0%	16.8%	5.1%

For the most recent reporting period, Q3 2013 – Q2 2016, Pennsylvania readmission rates are nearly identical to the national readmission rates for heart attack, heart failure, and pneumonia patients. During the last five reporting periods, the Pennsylvania readmission rates for each of these three diagnoses have all steadily decreased, resulting in all-time low readmission rates for Q3 2013 – Q2 2016.

Several factors may explain the decrease in Pennsylvania readmission rates. In 2010, the Health Care Improvement Foundation launched PAVE, an 18-month project focused on reducing readmissions in health care facilities located in southeastern Pennsylvania. By the end of PAVE, participants adopted and implemented several strategies, including utilizing a screening tool to target patients considered high-risk for readmission, devoting special attention to patient and caregiver education, scheduling follow-up appointments prior to discharge, and calling patients after discharge in order to answer questions and inquire about patient health status. Then, from 2012 to 2016, The Hospital & Healthsystem Association of Pennsylvania managed the HEN and HEN 2.0 projects focused on reducing all-cause readmissions in Pennsylvania hospitals. Additionally, in October 2012, CMS implemented the Hospital Readmission Reduction Program (HRRP), which has included all three of the above readmission measures since implementation. HRRP ties reimbursement to readmission rates, penalizing hospitals for higher

readmission rates than expected. This pay-for-performance model incentivizes hospitals to create innovative strategies to prevent readmissions.

5-Year Pennsylvania Mortality Rate Trends

Measure	Q3 2009 – Q2 2012	Q3 2010 – Q2 2013	Q3 2011 – Q2 2014	Q3 2012 – Q2 2015	Q3 2013 – Q2 2016	Improvement
Heart Attack Mortality	14.3%	14.3%	13.7%	13.7%	13.1%	8.4%
Heart Failure Mortality	11.2%	11.4%	11.3%	11.7%	11.5%	-2.7%
Pneumonia Mortality	11.5%	11.5%	11.1%	16.1%	15.7%	-36.5%
Stroke Mortality	N/A	14.8%	14.3%	14.4%	14.1%	4.7%

Pennsylvania mortality rates for heart failure, heart attack, pneumonia, and stroke diagnoses trail the national average, but by no more than one half of a percent. Over the last five reporting periods, mortality rates have slowly, but steadily, decreased for heart attack and stroke patients. In contrast, mortality rates have slightly increased for heart failure patients and significantly increased for pneumonia patients. The 5% increase in pneumonia mortality for Q3 2012 – Q2 2015 can be explained by an expansion of the measure cohort to include patients with a primary diagnosis of aspiration pneumonia and patients with either sepsis or respiratory failure as a primary diagnosis accompanying a secondary diagnosis of pneumonia present on admission.   All the mortality measures analyzed in this report, except stroke, are included in Value-Based Purchasing, a pay-for-performance program that financially rewards hospitals for providing high quality care to Medicare beneficiaries.

Summary

In summary, PHCQA reached the following conclusions:
1. In general, Pennsylvania performance for patient experience, readmission, and mortality measures are comparable to the national average.
2. Effective communication, pain management, and staff responsiveness are very strongly correlated with a high hospital rating. In particular, nurse communication and ensuring patients

understand their discharge instructions have the greatest impact on hospital ratings and recommendations.

3. Commission on Cancer accredited facilities in Pennsylvania have improved their compliance with all five cancer process measures reported on PHCQA since 2009. Pennsylvania's average has exceeded the national average on four of the five cancer measures since 2011. Statewide, cancer centers have noticeably improved performance on the administration of adjuvant chemotherapy for colon cancer patients.

4. Heart attack, heart failure, and pneumonia readmission rates have all decreased over the last five years. While heart attack and stroke mortality rates have also decreased during the same time period, heart failure mortality rates have slightly increased. Additionally, pneumonia mortality rates have substantially increased, which can be attributed to the expansion of the measure's inclusion criteria. Since this modification to the measure's definition occurred, the pneumonia mortality rate has slightly decreased.