

Flex Monitoring Team Briefing Paper No. 28

Critical Access Hospital Year 6 Hospital Compare Participation and Quality Measure Results

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With funding from the federal Office of Rural Health Policy (PHS Grant No. U27RH01080), the Rural Health Research Centers at the Universities of Minnesota, North Carolina, and Southern Maine are cooperatively conducting a performance monitoring project for the Medicare Rural Hospital Flexibility Program (Flex Program).

The monitoring project is assessing the impact of the Flex Program on rural hospitals and communities and the role of states in achieving overall program objectives, including improving access to and the quality of health care services; improving the financial performance of CAHs; and engaging rural communities in health care system development.

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The Medicare Rural Hospital Flexibility Program

The Medicare Rural Hospital Flexibility Program (Flex Program), created by Congress in 1997, allows small hospitals to be licensed as Critical Access Hospitals (CAHs) and offers grants to States to help implement initiatives to strengthen the rural health care infrastructure. To participate in the Flex Grant Program, States are required to develop a rural health care plan that provides for the creation of one or more rural health networks; promotes regionalization of rural health services in the State; and improves the quality of and access to hospital and other health services for rural residents of the State.

The core activity areas of the Flex Grant Program are: 1) support for quality improvement in CAHs; 2) support for financial and operational improvement in CAHs; 3) support health system development and community engagement, including the integration of EMS into local and regional systems of care; and 4) conversion of eligible rural hospitals into CAHs. States use Flex resources for performance management activities, training programs, needs assessments, and network building. The Flex Program is also beginning a new special project, the Medicare Beneficiary Quality Improvement Project (MBQIP) focused on Medicare Beneficiary Health Status improvement.

CAHs must be located in a rural area (or an area treated as rural); be more than 35 miles (or 15 miles in areas with mountainous terrain or only secondary roads available) from another hospital or be certified before January 1, 2006 by the State as being a necessary provider of health care services. CAHs are required to make available 24-hour emergency care services that a State determines are necessary. CAHs may have a maximum of 25 acute care and swing beds, and must maintain an annual average length of stay of 96 hours or less for their acute care patients. CAHs are reimbursed by Medicare on a cost basis (i.e., for the reasonable costs of providing inpatient, outpatient and swing bed services).

The legislative authority for the Flex Program and cost-based reimbursement for CAHs are described in the Social Security Act, Title XVIII, Sections 1814 and 1820, available at http://www.ssa.gov/OP_Home/ssact/title18/1800.htm

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EXECUTIVE SUMMARY

Introduction

This report examines 2009 participation and quality measure results for Critical Access Hospitals (CAHs) in the Centers for Medicare and Medicaid Services (CMS) Hospital Compare public reporting database for hospital quality measures.

The current Hospital Compare quality measures include inpatient process of care measures that reflect recommended treatments for acute myocardial infarction (AMI), heart failure, pneumonia, surgical care improvement, and children's asthma care; outpatient AMI/chest pain and surgical process of care measures; Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey results; and hospital 30 day risk-adjusted mortality and readmission rates for AMI, heart failure, and pneumonia calculated by CMS using Medicare claims data.

Methods

This study used data on hospital participation and quality measure results for January to December 2009 from the Hospital Compare website, linked with data on all CAHs maintained by the Flex Monitoring Team, and with data on hospital characteristics from the Fiscal Year 2009 American Hospital Association Annual Survey.

The 2009 inpatient process of care measure results for participating CAHs were compared by 1) accreditation status and ownership and 2) with those of rural and urban Prospective Payment System (PPS) hospitals. Results were also compared over time for 2007, 2008 and 2009. The percentages of patients that received recommended care for the inpatient process of care quality measures were calculated by dividing the total number of patients who received the recommended care by the total number of eligible patients in all CAHs, all rural PPS hospitals and all urban PPS hospitals nationally.

The percentages of patients reporting the highest response (e.g., always) on each HCAHPS measure were summed and averaged across all reporting CAHs nationally and for all reporting hospitals in the U.S.

CMS calculates hospital-level 30-day risk-standardized mortality and readmission rates for pneumonia, heart failure, and heart attack using Medicare fee-for-service claims and enrollment data and statistical modeling techniques. Rates are not calculated for hospitals that are not in the Hospital Compare database or for hospitals with less than 25 qualifying cases over the three-year period. For this report, the number and percent of CAHs whose rates for each condition were not different than, better than or worse than the national rates, was determined by assessing whether the confidence intervals for the CAH rate for that condition were above, below or included the national rate.

Results

For 2009 discharges, a total of 933 CAHs (71.1%) submitted data on at least one inpatient measure to Hospital Compare. The overall CAH participation rate of 71% on

inpatient process measures for 2009 discharges compares to previous rates of 41% (2004); 53% (2005), 63% (2006), 69% (2007), and 70% (2008). By state, the percent of participating CAHs ranged from 11% to 100%. Six states had 100% of their CAHs participating. CAHs remain more likely to report data on pneumonia and heart failure measures than on AMI and surgical infection prevention measures.

A total of 209 CAHs submitted data to Hospital Compare on at least one outpatient process of care measure. By state, the percent of CAHs reporting outpatient process of care measures ranged from 0% to 46%.

For 2009 discharges, CAHs did not perform as well as did rural and urban PPS hospitals on many measures. Although the percent of CAH patients receiving recommended care increased from 2006-2009 for all measures, the percent of rural and urban PPS hospital patients receiving recommended care also increased during this time period. Thus, while showing improvement, CAHs continued to have lower scores relative to rural and urban PPS hospitals on most measures.

In addition, 35% of CAHs publicly reported HCAHPS survey data to Hospital Compare in 2009. By state, the percent of CAHs publicly reporting HCAHPS data ranged from 0% to 100% of CAHs in 2009. On average, CAHs have significantly higher ratings on HCAHPS measures than all US hospitals.

The vast majority of CAHs did not have enough cases for CMS to reliably calculate 30-day risk adjusted mortality and readmission rates for pneumonia, heart failure and AMI, or did not have rates that were significantly different than the US rates for all hospitals.

Discussion and Conclusions

Overall, 11% of CAHs publicly reported inpatient, outpatient, and HCAHPS data; 24% of CAHs publicly reported inpatient and HCAHPS data; five percent of CAHs publicly reported inpatient and outpatient data; and less than one percent each publicly reported outpatient data only or HCAHPS data only. These results indicate that a subset of CAHs (40%) have expanded their public reporting efforts beyond inpatient measures to include additional types of quality measures.

At the same time, over one fourth of CAHs (27%) are not publicly reporting quality data of any kind to Hospital Compare. It is somewhat surprising that more CAHs are not reporting outpatient and HCAHPS measures, given the relevance of these measures for small rural hospitals and the fact that CAHs overall perform better than other hospitals on HCAHPS. Given that the outpatient measures are relatively new to Hospital Compare, it may just take more time for CAHs to become familiar with them. The 30 day risk-adjusted readmission and mortality rates are not useful quality measures for CAHs, since few CAHs have rates that are either better than or worse than the US rates for all hospitals.

Federal health care reform and state level reforms in a number of states are moving toward a health care system that rewards the provision of high-quality care. In addition

to using quality data for quality improvement activities, health care providers are increasingly being required to demonstrate the quality of the care they are providing to qualify for reimbursement incentives and avoid penalties for poor care. In the future, as reimbursement is linked to quality, it will be even more important for CAHs to be able to document the quality of care they provide.

INTRODUCTION

Since 2004, acute care hospitals paid under the Medicare Prospective Payment System (PPS) have had a financial incentive to publicly report quality measure data on the Centers for Medicare and Medicaid Services' (CMS) Hospital Compare website. Although Critical Access Hospitals (CAHs) do not face the same financial incentives as PPS hospitals to participate, the Hospital Compare initiative provides an important opportunity for CAHs to assess and improve their performance on national standards of care. The percentage of CAHs voluntarily reporting data on at least one inpatient measure to Hospital Compare increased from 41% for 2004 discharges to 70% for 2008 discharges.¹⁻⁵

The current Hospital Compare quality measures include inpatient process of care measures that reflect recommended treatments for acute myocardial infarction (AMI), heart failure, pneumonia, surgical care improvement, and children's asthma care; outpatient AMI/chest pain and surgical process of care measures; Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey results; and hospital 30 day risk-adjusted mortality and readmission rates for AMI, heart failure, and pneumonia calculated by CMS using Medicare claims data.

Previous Flex Monitoring Team reports analyzed CAH participation and Hospital Compare inpatient quality measure results nationally for 2004-2008 and at the state level for 2006-2009.

PURPOSE OF THIS PROJECT

The purpose of this project is to:

- Determine the percent of CAHs that are participating in Hospital Compare for 2009 discharges by reporting data on inpatient process of care measures, identify key characteristics related to CAH participation, examine reporting by condition, and compare the results for CAHs with rural and urban PPS hospitals;
- Determine the percent of CAHs that are reporting data on outpatient process of care measures;
- Determine the percent of CAHs reporting HCAHPS survey results and compare the results to those of PPS hospitals; and
- Analyze the risk-adjusted 30-day mortality and readmission rates for CAHs calculated by CMS.

METHODS

Data on the inpatient process of care measures and HCAHPS survey results for January through December 2009 were downloaded from the CMS Hospital Compare website when they became available in October 2010. These data were linked with previously downloaded process of care data for 2005-2008; data on the 3 year (July

2006 to June 2009) mortality and readmission rates calculated by CMS; data on all CAHs maintained by the Flex Monitoring Team; and data on hospital characteristics from the Fiscal Year 2009 American Hospital Association (AHA) Annual Survey. The Hospital Compare data were linked to these data sources using Medicare provider numbers, AHA identification numbers, hospital names and addresses, and county FIPs codes. PPS hospitals were classified as rural or urban based on their location in an Office of Management and Budget designated non-metropolitan (rural) or metropolitan (urban) county. Participation rates for CAHs were calculated by accreditation status, size, date of CAH conversion and ownership type.

For this report, the percentages of patients that received recommended care for the inpatient process of care quality measures were calculated by dividing the total number of patients in all CAHs in the state, all CAHs nationally, and all US hospitals who received the recommended care by the total number of eligible patients in all CAHs in the state, all CAHs nationally, and all US hospitals for each measure. (The results for all US hospitals differ slightly from those calculated by CMS. CMS calculates mean scores for each hospital individually, and then calculates an average for the group of hospitals. This “average of averages” method can give a less accurate picture of the performance of a group of hospitals when a large number of the facilities have very small numbers of patients for the measures, as is currently the case with CAHs.)

CMS considers 25 patients to be the minimum number of patients for reliably calculating the process of care measures. Therefore, the percent of CAH patients receiving recommended care was not calculated when the total number of CAH patients in a state, or nationally, with data on a measure was less than 25.

HCAHPS is a national, standardized survey of patients' perspectives of hospital care. It was developed by the Agency for Healthcare Research and Quality and CMS to complement other hospital tools designed to support quality improvement. The survey is administered to a random sample of adult patients following discharge from the hospital for inpatient medical, surgical, or maternity care.

Ten HCAHPS measures are publicly reported on the Hospital Compare website. Six composite measures address how well doctors and nurses communicate with patients, the responsiveness of hospital staff, pain management, and communication about medicines. These measures and two individual measures addressing the cleanliness and quietness of the hospital environment are reported in response categories of always, usually, and sometimes/never. Additional measures address the provision of discharge information (reported as yes/no), an overall rating of the hospital on a 1-10 scale (reported as high (9 or 10), medium (7 or 8), or low (6 or below), and a rating of the patient's willingness to recommend the hospital (reported as definitely would recommend, probably would recommend, and probably/definitely would not recommend.) CMS adjusts the publicly reported HCAHPS results for patient-mix, mode of data collection and non-response bias.⁶

For this report, the percentages of patients reporting the highest response (e.g., always) on each HCAHPS measure were summed and averaged across all reporting CAHs within a state and nationally, and for all reporting hospitals in the U.S.

CMS calculates hospital-level 30-day risk-standardized mortality and readmission rates for pneumonia, heart failure, heart attack using Medicare fee-for-service claims and enrollment data and statistical modeling techniques. Rates are not calculated for hospitals that are not in the Hospital Compare database or for hospitals with less than 25 qualifying cases over the three-year period.

Both the mortality and the readmission rates are “all-cause” rates (e.g., the mortality rates include deaths from any cause within 30 days and the readmission rates include patients who are readmitted for any cause to a hospital within 30 days after being discharged alive to a non-acute care setting). The CMS statistical models adjust for patient-level risk factors that affect the likelihood of dying or readmission, such as age, gender, past medical history, and having other diseases or conditions. For small hospitals, the models also rely on pooled data from all hospitals treated for the condition, which moves their estimated rates toward the overall U.S. rates for all hospitals. This reduces the chance that small hospitals will be wrongly classified as worse or better performers, but also makes it less likely that they will fall into either the “better than the national rate” or “worse than the national rate” categories.⁷

For this report, the number and percent of CAHs for which CMS did not calculate risk-adjusted mortality rates and readmission rates were determined. The number and percent of CAHs whose rates for each condition were not different than, better than or worse than the national rates, was determined by assessing whether the confidence intervals for the CAH rate for that condition were above, below or included the national rate.

RESULTS

CAH Reporting to Hospital Compare

Table 1 shows the number and percent of CAHs that reported data to Hospital Compare for 2009 discharges. Of the 1,312 CAHs that were certified in 2009, 952 (72.6%) submitted data on at least one measure, including inpatient, outpatient and/or HCAHPS data. Just under one third of CAHs (31.9 %) only submitted inpatient data. Slightly less than one fourth (24.1%) of CAHs submitted inpatient and HCAHPS data, while 4.5% submitted inpatient and outpatient data, and 10.7% of CAHs submitted all three types of data. (These totals do not include CAHs that submitted quality measure data to their Quality Improvement Organization and did not allow the data to be publicly reported to Hospital Compare).

Table 1. CAHs reporting Hospital Compare Inpatient, Outpatient and HCAHPS data for 2009 (n = 1,312 CAHs)¹	
	Number (percent) of CAHs
At least one Hospital Compare measure (inpatient process measure, outpatient process measure and/or HCAHPS)	952 (72.6%)
Inpatient, outpatient and HCAHPS	140 (10.7%)
Inpatient and outpatient only	59 (4.5%)
Inpatient and HCAHPS only	316 (24.1%)
Outpatient and HCAHPS only	0 (0.0%)
Inpatient only	418 (31.9%)
Outpatient only	10 (0.8%)
HCAHPS only	9 (0.7%)
No Hospital Compare data (inpatient, outpatient or HCAHPS)	360 (27.4%)

¹For inpatient and outpatient data, submitting data was defined as having at least one denominator greater than or equal to one for at least one measure.

Reporting on Inpatient Process of Care Measures

Table 2 shows the number of CAHs in each state as of December 2009 and the percent of CAHs that were participating in Hospital Compare by submitting data on inpatient measures for 2009 discharges. Overall, a total of 933 CAHs (71.1%) submitted data on at least one inpatient measure. This rate is slightly lower than the overall rate of 72.6% reporting for any Hospital Compare measure, since a small number of CAHs reported outpatient or HCAHPS data without reporting any inpatient data. Hereafter in this report, Hospital Compare participation rate refers to the 71.1% inpatient reporting rate, in order to be consistent with the definition used in previous reports.

By state, the percent of CAHs reporting inpatient process of care measures for 2009 ranged from 11% to 100%. Of the 45 states in the Flex Program, six states had 100% of their CAHs publicly reporting in 2009, while six states had less than half of their CAHs reporting.

The overall CAH participation rate of 71.1% for 2009 inpatient discharges compares to previous rates of 41% (2004); 53% (2005); 63% (2006); 69% (2007); and 70% (2008) (Figure 1).

Table 2. Critical Access Hospital (CAH) Participation in Hospital Compare by State for 2009 Discharges (Inpatient Measures)

State ¹	Number of CAHs ²	Percent of CAHs Participating in Hospital Compare ³	State	Number of CAHs	Percent of CAHs Participating in Hospital Compare
Alabama	3	100.0%	Nebraska	65	93.8%
Alaska	13	46.2%	Nevada	11	36.4%
Arizona	14	71.4%	New Hampshire	13	100.0%
Arkansas	29	82.8%	New Mexico	6	100.0%
California	30	70.0%	New York	13	61.5%
Colorado	29	58.6%	North Carolina	23	87.0%
Florida	11	54.5%	North Dakota	36	52.8%
Georgia	34	61.8%	Ohio	34	85.3%
Hawaii	9	11.1%	Oklahoma	33	90.9%
Idaho	26	11.5%	Oregon	25	80.0%
Illinois	51	82.4%	Pennsylvania	13	69.2%
Indiana	35	82.9%	South Carolina	5	80.0%
Iowa	82	86.6%	South Dakota	38	57.9%
Kansas	83	61.4%	Tennessee	17	64.7%
Kentucky	30	96.7%	Texas	77	35.1%
Louisiana	27	29.6%	Utah	10	60.0%
Maine	15	100.0%	Vermont	8	100.0%
Massachusetts	3	100.0%	Virginia	7	71.4%
Michigan	35	62.9%	Washington	38	50.0%
Minnesota	79	93.7%	West Virginia	18	83.3%
Mississippi	27	55.6%	Wisconsin	59	96.6%
Missouri	36	75.0%	Wyoming	15	93.3%
Montana	47	59.6%	All States	933	71.1%

¹Five states (Connecticut, Delaware, Maryland, New Jersey and Rhode Island) do not have any CAHs.

²Number of CAHs certified as of December 2009.

³Participation was defined as providing data on at least one patient for one inpatient measure.

Data sources: Hospital Compare data for 2009 discharges downloaded from CMS website October 2010 and Flex Monitoring Team CAH database.

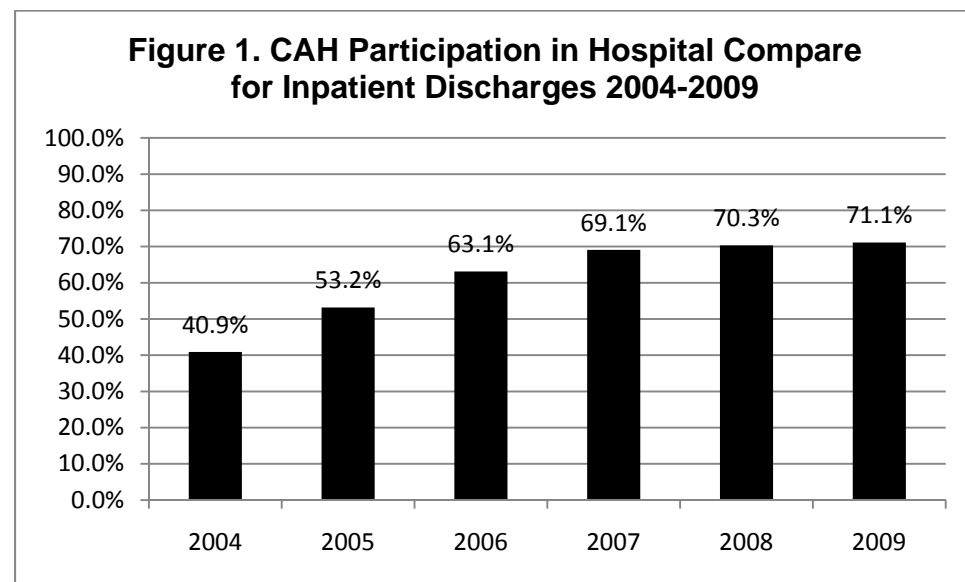
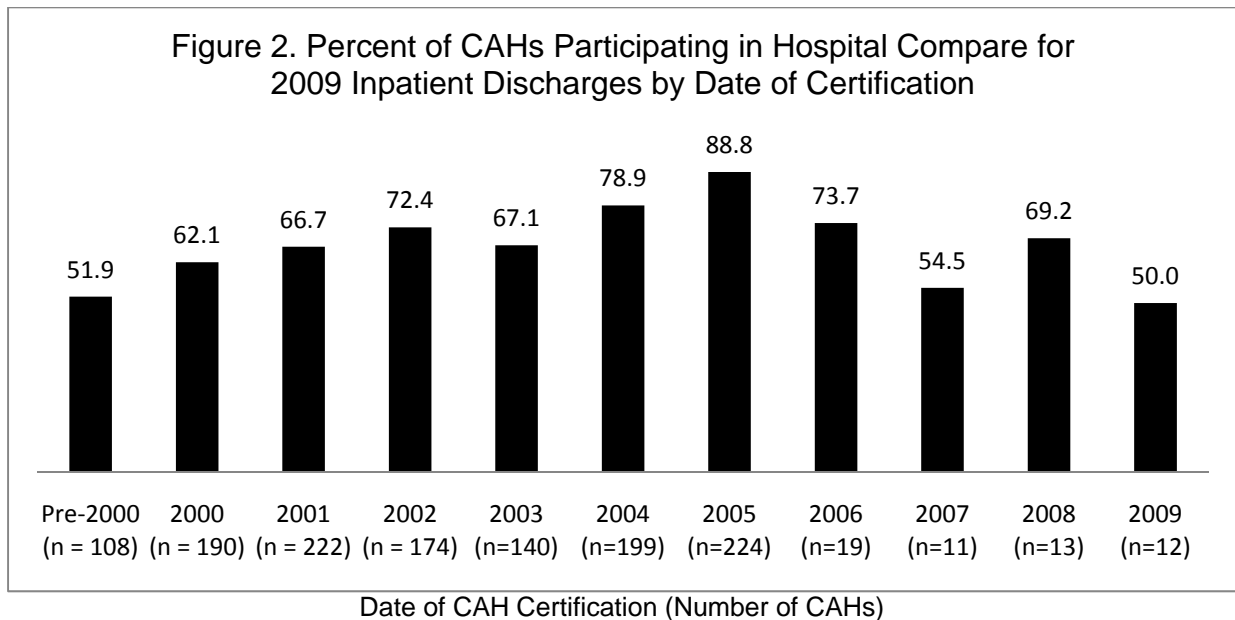


Figure 2 shows the percent of CAHs that participated in Hospital Compare for 2009 discharges by date of CAH certification. From 2000 through 2005, between 140 and 224 CAHs were certified each year; the number of CAHs certified annually decreased significantly in 2006-2009. CAHs certified prior to 2000 and after 2006 have lower Hospital Compare participation rates, while those certified in 2005 have the highest rate. The lower participation rate among recently certified hospitals is somewhat surprising, given that nearly all converted from PPS hospitals and presumably have the capacity to report.



CAHs that were accredited by the Joint Commission or the American Osteopathic Association were more likely (84%) than non-accredited CAHs (66%) to participate in Hospital Compare (Table 3). The higher rate of Hospital Compare participation among accredited CAHs, which has been a trend since 2004, is not surprising, since the Joint Commission has required accredited hospitals to report performance measurement data since 2002, and it initiated public reporting of core measure data in 2004.

While accredited CAHs are more likely to participate in Hospital Compare, the large number of non-accredited CAHs means that 63% of the CAHs that participated in Hospital Compare were not accredited. Eighty percent of private non-profit CAHs participated in Hospital Compare, compared to 63% of those with government/public ownership and 59% of for-profit CAHs.

On average, CAHs that participate in Hospital Compare have more beds (23.2 vs. 20.5) and a higher average daily census (22.8 vs. 17.3) than those that do not participate.

Table 3. CAH Hospital Compare Participation by Organizational Characteristics (N= 1312)

	Total number of CAHs	Percent that participate in Hospital Compare
Accreditation		
Accredited	415	84.1%
Not accredited	897	66.2%
Ownership		
Government/public	549	63.0%
Private non-profit	693	80.2%
For profit	70	58.6%
	CAHs that do not participate in Hospital Compare	CAHs that participate in Hospital Compare
Size		
Number of Beds (mean)	20.5	23.2
Average Daily Census (mean)	17.3	22.8

Reporting on Outpatient Process of Care Measures

A total of 209 CAHs (15.9%) publicly reported data on at least one outpatient process of care measure for 2009 discharges (Table 4). By state, the percent of CAHs reporting outpatient process of care measures ranged from 0% to 46%.

Table 4. Critical Access Hospital (CAH) Reporting of Outpatient Measures to Hospital Compare by State for 2009 Discharges

State ¹	Number of CAHs ²	Percent of CAHs reporting outpatient measures ³	State	Number of CAHs	Percent of CAHs reporting outpatient measures
Alabama	3	33.3%	Nebraska	65	9.2%
Alaska	13	7.7%	Nevada	11	9.1%
Arizona	14	21.4%	New Hampshire	13	46.2%
Arkansas	29	17.2%	New Mexico	6	0.0%
California	30	10.0%	New York	13	23.1%
Colorado	29	17.2%	North Carolina	23	21.7%
Florida	11	9.1%	North Dakota	36	5.6%
Georgia	34	20.6%	Ohio	34	23.5%
Hawaii	9	0.0%	Oklahoma	33	6.1%
Idaho	26	3.8%	Oregon	25	20.0%
Illinois	51	23.5%	Pennsylvania	13	15.4%
Indiana	35	34.3%	South Carolina	5	20.0%
Iowa	82	13.4%	South Dakota	38	10.5%
Kansas	83	9.6%	Tennessee	17	41.2%
Kentucky	30	6.7%	Texas	77	7.8%
Louisiana	27	7.4%	Utah	10	40.0%
Maine	15	13.3%	Vermont	8	0.0%
Massachusetts	3	0.0%	Virginia	7	28.6%
Michigan	35	22.9%	Washington	38	13.2%
Minnesota	79	19.0%	West Virginia	18	16.7%
Mississippi	27	22.2%	Wisconsin	59	32.2%
Missouri	36	8.3%	Wyoming	15	33.3%
Montana	47	10.6%	All States	1,312	15.9%

HCAHPS Reporting

Nationally, 35% of CAHs publicly reported HCAHPS survey data to Hospital Compare in 2009 (Table 5). By state, the percent of CAHs publicly reporting HCAHPS data ranged from 0% to 100% of CAHs. Four states had 100% of their CAHs reporting HCAHPS data.

Table 5. Critical Access Hospital (CAH) Reporting of HCAHPS Survey Results to Hospital Compare by State for 2009 Discharges

State ¹	Number of CAHs ²	Percent of CAHs Reporting HCAHPS Results	State	Number of CAHs	Percent of CAHs Reporting HCAHPS Results
Alabama	3	100.0%	Nebraska	65	26.2%
Alaska	13	15.4%	Nevada	11	9.1%
Arizona	14	28.6%	New Hampshire	13	53.8%
Arkansas	29	13.8%	New Mexico	6	66.7%
California	30	36.7%	New York	13	38.5%
Colorado	29	27.6%	North Carolina	23	43.5%
Florida	11	18.2%	North Dakota	36	11.1%
Georgia	34	20.6%	Ohio	34	61.8%
Hawaii	9	0.0%	Oklahoma	33	24.2%
Idaho	26	15.4%	Oregon	25	44.0%
Illinois	51	41.2%	Pennsylvania	13	23.1%
Indiana	35	60.0%	South Carolina	5	0.0%
Iowa	82	39.0%	South Dakota	38	42.1%
Kansas	83	8.4%	Tennessee	17	23.5%
Kentucky	30	36.7%	Texas	77	15.6%
Louisiana	27	25.9%	Utah	10	50.0%
Maine	15	100.0%	Vermont	8	100.0%
Massachusetts	3	100.0%	Virginia	7	57.1%
Michigan	35	45.7%	Washington	38	28.9%
Minnesota	79	54.4%	West Virginia	18	72.2%
Mississippi	27	7.4%	Wisconsin	59	84.7%
Missouri	36	22.2%	Wyoming	15	53.3%
Montana	47	25.5%	All states	1,312	35.4%

¹Five states (Connecticut, Delaware, Maryland, New Jersey and Rhode Island) do not have any CAHs

²Number of CAHs certified as of December 2009.

Data sources: HCAHPS data for 2009 discharges downloaded from CMS Hospital Compare website October 2010 and Flex Monitoring Team CAH database.

CMS recommends that each hospital obtain 300 completed HCAHPS surveys annually, in order to be more confident that the survey results are reliable for assessing the hospital's performance. However, some smaller hospitals may sample all of their HCAHPS-eligible discharges and still have fewer than 300 completed surveys. About 30% of reporting CAHs had 300 or more completed surveys (Table 6). The vast majority of reporting CAHs (88%) had survey response rates of 25% to 50%. During this time period, the average survey response rate for all hospitals reporting HCAHPS data to Hospital Compare was 33%.⁸

Table 6. Completed HCAHPS Surveys and Response Rates for CAHs Nationally in 2009

Total CAHs reporting HCAHPS data	Number of completed HCAHPS surveys			HCAHPS survey response rates		
	< 100 surveys	100-299 surveys	≥300 surveys	< 25%	25 – 50%	>50%
465	76	251	138	38	409	18

CAH Reporting by Condition and Measure

Process of Care Measures

Figure 3 describes the inpatient and outpatient process of care measures in Hospital Compare for 2009 discharges. Since last year’s report, CMS retired one pneumonia measure (oxygenation assessment) and added one new inpatient surgical care improvement measure (surgery patients on a beta blocker prior to arrival who received a beta blocker during the perioperative period), five outpatient AMI/chest pain measures, and two outpatient surgery measures.

Figure 3. Hospital Compare Process of Care Measures for 2009 Discharges

<i>Inpatient Heart Attack / Acute Myocardial Infarction (AMI) Measures</i>
Aspirin at arrival – AMI patients without aspirin contraindications who received aspirin within 24 hours before or after hospital arrival.
Aspirin at discharge – AMI patients without aspirin contraindications who were prescribed aspirin at hospital discharge.
ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD) – AMI patients with LVSD and without angiotensin converting enzyme inhibitor (ACE inhibitor) or angiotensin receptor blocker (ARB) contraindications who are prescribed an ACE inhibitor or an ARB at hospital discharge.
Beta Blocker at discharge – AMI patients without beta-blocker contraindications who were prescribed a beta-blocker at hospital discharge.
Fibrinolytic medication received within 30 minutes of hospital arrival – AMI patients receiving fibrinolytic therapy during the hospital stay and having a time from hospital arrival to fibrinolysis of 30 minutes or less.
PCI received within 90 minutes of hospital arrival – AMI patients receiving Percutaneous Coronary Intervention (PCI) during the hospital stay with a time from hospital arrival to PCI of 90 minutes or less.
Smoking cessation advice/counseling – AMI patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.
<i>Pneumonia Measures</i>
Initial antibiotic timing – Pneumonia inpatients that receive initial antibiotics within 6 hours after arrival at the hospital.
Pneumococcal vaccination status – Pneumonia inpatients age 65 and older who were screened for pneumococcal vaccine status and were administered the vaccine prior to discharge, if indicated.
Influenza vaccination status – Pneumonia patients 50 years and older, hospitalized in October through February who were screened for influenza vaccine status and vaccinated prior to discharge, if indicated.
Smoking cessation advice/counseling – Pneumonia patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.
Appropriate initial antibiotic selection – Immunocompetent patients with pneumonia who receive an initial antibiotic regimen that is consistent with current guidelines.
Smoking cessation advice/counseling – Pneumonia patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.

Figure 3. Hospital Compare Process of Care Measures for 2009 Discharges

<i>Heart Failure Measures</i>
<p>Evaluation of left ventricular systolic (LVS) function – Heart failure patients with documentation in the hospital record that an evaluation of the LVS function was performed before arrival, during hospitalization, or is planned for after discharge.</p> <p>ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD) – Heart failure patients with LVSD and without ACE inhibitor or ARB contraindications who are prescribed an ACE inhibitor or an ARB at hospital discharge.</p> <p>Discharge instructions – Heart failure patients discharged home with written instructions or educational material given to patient or caregiver at discharge or during hospital stay addressing activity level, diet, discharge medications, follow-up appointment, weight monitoring, and what to do if symptoms worsen.</p> <p>Smoking cessation advice/counseling – Heart failure patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.</p>
<i>Inpatient Surgical Care Improvement Measures</i>
<p>Prophylactic antibiotic received within 1 hour prior to surgical incision – Surgical patients who received prophylactic antibiotics within 1 hour prior to surgical incision.</p> <p>Prophylactic antibiotics discontinued within 24 hours after surgery end time – Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after surgery end time.</p> <p>Prophylactic antibiotic selection – Surgical patients who received the recommended antibiotics for their particular type of surgery.</p> <p>Surgery patients with recommended Venous Thromboembolism (VTE) prophylaxis ordered - Surgery patients with recommended VTE prophylaxis ordered anytime from hospital arrival to 48 hours after surgery end time.</p> <p>Surgery patients who received appropriate VTE prophylaxis within 24 hours prior to surgery to 24 hours after surgery - Surgery patients who received appropriate VTE prophylaxis within 24 hours prior to surgical incision time to 24 hours after surgery end time.</p> <p>Cardiac surgery patients with controlled 6 A.M. postoperative blood glucose – Cardiac surgery patients with controlled 6 A.M. blood glucose (≤ 200 mg/dL) on postoperative day one and postoperative day two with surgery end date being postoperative day zero.</p> <p>Surgery patients with appropriate hair removal – Surgery patients with appropriate surgical site hair removal. No hair removal or hair removal with clippers or depilatory is considered appropriate. Shaving is considered inappropriate.</p> <p>Surgery patients on a beta blocker prior to arrival who received a beta blocker during the perioperative period – Surgery patients who were taking beta blockers before coming to the hospital, who were kept on the beta blockers during the period just before and after their surgery.*</p>
<i>Children's Asthma Care</i>
<p>Use of reliever medication for inpatient asthma - Use of relievers in pediatric patients admitted for inpatient treatment of asthma.</p> <p>Use of systemic corticosteroid medication for inpatient asthma - Use of systemic corticosteroid medication in pediatric patients admitted for inpatient treatment of asthma.</p> <p>Home Management Plan of Care document given to patient/caregiver – An assessment that there is documentation in the medical record that a Home Management Plan of Care document was given to the pediatric asthma patient/caregiver.</p>
<i>Outpatient Surgical Measures</i>
<p>Prophylactic Antibiotic Received Within 1 Hour Prior to Surgical Incision - Surgical outpatients who received prophylactic antibiotics within 1 hour prior to surgical incision.*</p> <p>Prophylactic Antibiotic Selection - Surgical outpatients who received the recommended antibiotics for their particular type of surgery.*</p>
<i>Outpatient AMI/Chest Pain Measures</i>
<p>Median Time to Fibrinolysis - Median time from arrival to fibrinolysis for patients that received fibrinolysis.*</p> <p>Fibrinolytic Medication within 30 Minutes of Arrival – Outpatients with AMI receiving fibrinolytic therapy during the hospital stay and having a time from hospital arrival to fibrinolysis of 30 minutes or less.*</p> <p>Median Time to Transfer to Another Facility for Acute Coronary Intervention - Median number of minutes before outpatients with heart attack who needed specialized care were transferred to another hospital.*</p> <p>Aspirin at Arrival - Outpatients with chest pain or possible heart attack who got aspirin within 24 hours of arrival</p>

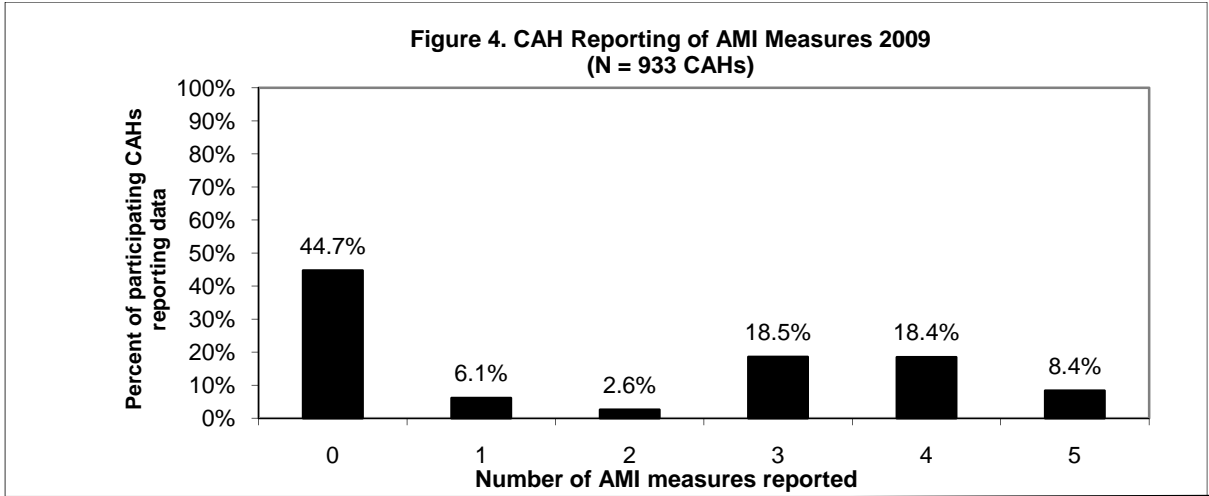
*New measures in this year's report.

Source: CMS, <http://www.hospitalcompare.hhs.gov/>, 2009.

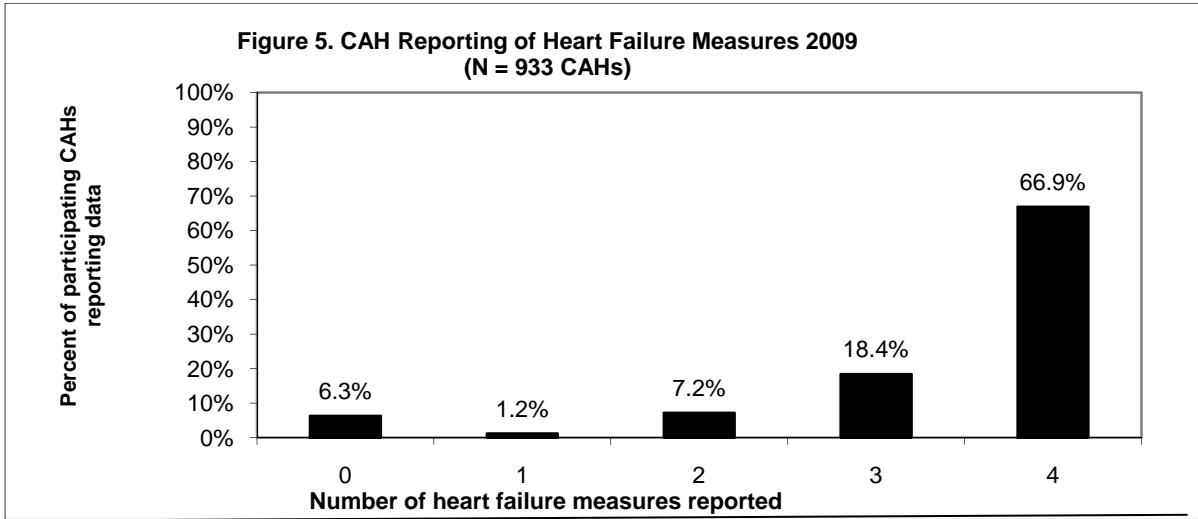
Reporting by Condition

No CAHs reported data on the children’s asthma measures or on the cardiac surgery measure. Data for the AMI percutaneous coronary intervention (PCI) were not included in the report because the total number of CAH patients nationally was less than 25. PCI procedures require specialized equipment and cardiology expertise not usually present in CAHs.

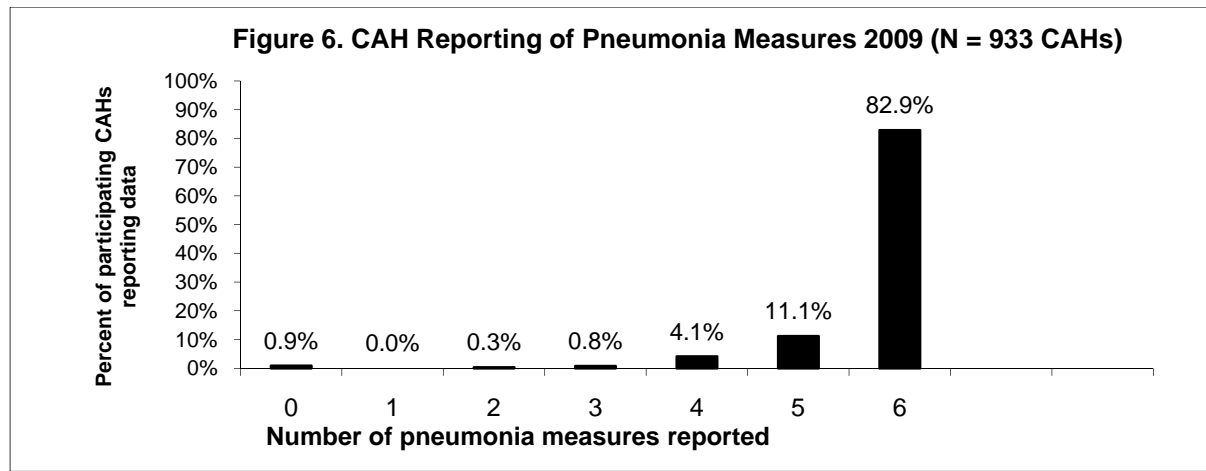
CAHs were more likely to report data on the inpatient pneumonia and heart failure measures than on the AMI and surgical improvement measures. (Reporting data was defined as having a denominator of one or more patients.) Forty-five percent of the 933 CAHs that participated in Hospital Compare for 2009 discharges did not report data on any AMI measures, while 45% reported data on three or more measures (Figure 4).



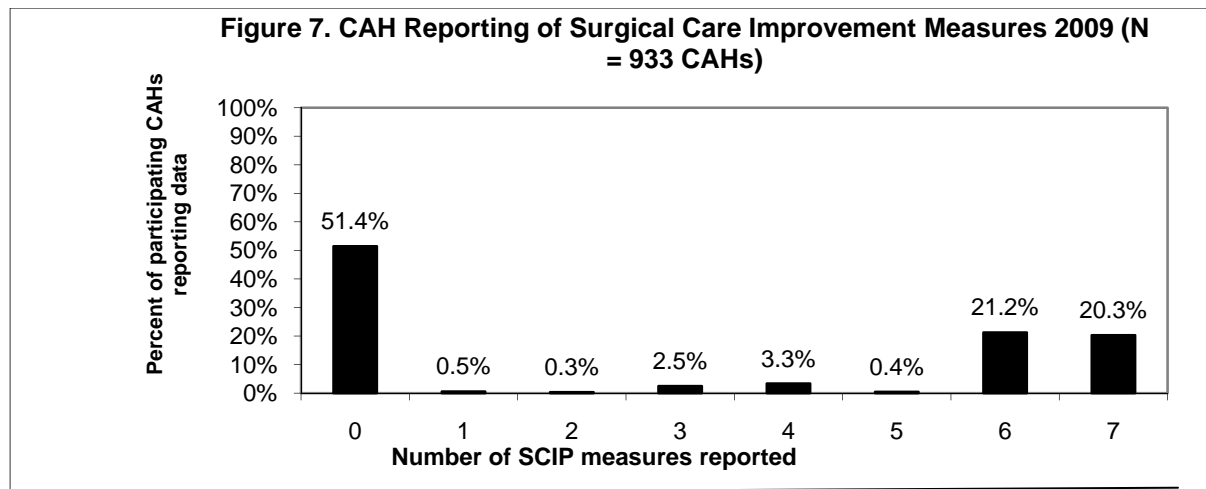
Over two-thirds (67%) of the 933 participating CAHs reported data on all four heart failure measures, while only 6% did not report data on any heart failure measures (Figure 5).



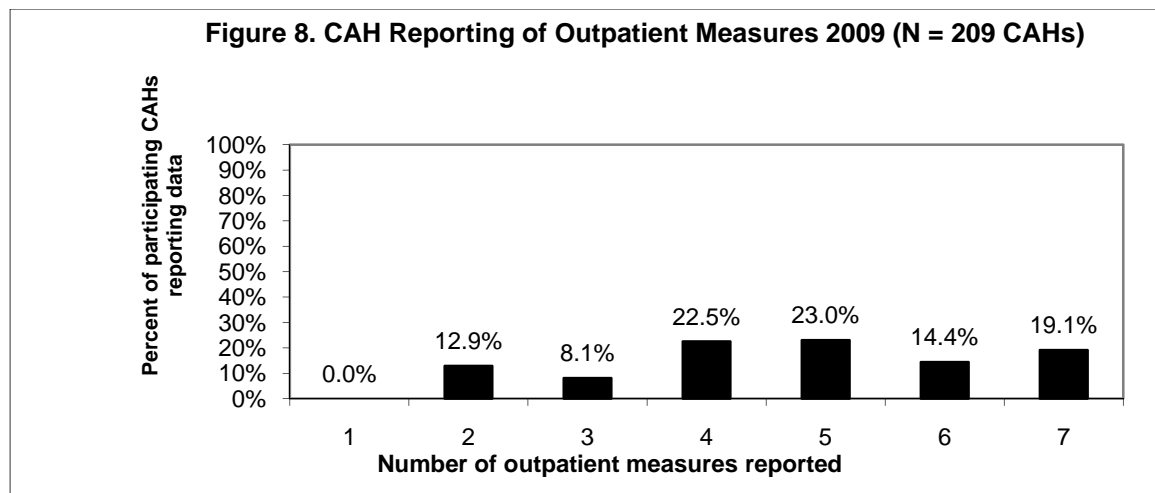
The majority of participating CAHs (83%) reported data on all six pneumonia measures and an additional 11% reported data on five measures; less than one percent did not report data on any pneumonia measures (Figure 6).



For the surgical care improvement measures, 53% of CAHs that participate in Hospital Compare did not report data on any measures, while 41% reported data on at least six measures (Figure 7). Approximately 20% of all CAHs do not provide inpatient surgery.



A total of 209 CAHs reported data on one or more outpatient measures (Figure 8). The majority of CAHs reported on four or more measures.



Reporting by Measure

The number of CAHs reporting data and the number of patients for whom data are submitted varies widely across measures. For each measure, Table 7 shows the number of CAHs that reported data for one or more patients and for 25 or more patients. (When a hospital has less than 25 patients for a measure, the number of cases is considered by CMS to be too small to reliably predict performance at the hospital level. As the number of cases used to determine hospitals' rates increases, the reliability and stability of the rates increase.)

Very few CAHs reported data for 25 or more patients on any of the AMI measures, two heart failure measures (ACE inhibitor/ARB for LVSD, smoking cessation advice), two pneumonia measures (smoking cessation advice, influenza vaccination) and the two outpatient surgery measures. The total number of CAH patients nationally per measure ranges from 45 for the AMI fibrinolytic measure to 30,220 for the pneumonia initial antibiotic timing measure.

Table 7. CAHs Reporting and Number of CAH Patients by Measure for 2009 Discharges (N = 933 CAHs)

Condition	Measure	Number of CAHs reporting data for ≥ 1 patient	Number of CAHs reporting data for ≥ 25 patients	Total number of CAH patients with data
AMI	Aspirin at arrival	495	5	2,278
	Aspirin at discharge	447	3	1,648
	ACEI or ARB for LVSD	214	0	334
	Smoking cessation advice	130	1	234
	Beta blocker at discharge	446	3	1,711
	Fibrinolytic w/in 30 minutes of arrival	41	0	45
	PCI at arrival	*	*	*
Heart Failure	Discharge instructions	856	224	14,952
	Assessment of LVS	872	377	21,417
	ACE inhibitor or ARB for LVSD	749	10	4,885
	Smoking cessation advice	680	2	2,832
Pneumonia	Pneumococcal vaccination	922	493	29,136
	Blood culture prior to first antibiotic	861	349	21,820
	Smoking cessation advice	875	77	9,091
	Initial antibiotic(s) within 6 hours	906	485	30,220
	Most appropriate initial antibiotic(s)	915	400	22,753
	Influenza vaccination	858	55	9,267
Surgical Care Improvement	Preventative antibiotic(s) 1 hour before incision	431	214	17,820
	Received most appropriate preventative antibiotic(s)	432	214	17,829
	Preventative antibiotic(s) stopped within 24 hours after surgery	429	209	17,344
	Doctors ordered blood clot prevention treatments	403	116	7,888
	Received blood clot prevention treatments 24 hours pre/post surgery	402	115	7,822
	Appropriate hair removal	441	253	23,238
	Beta blockers before/after surgery	197	43	2,947
Outpatient AMI/Chest Pain	Median Time to fibrinolysis	119	0	319
	CP/AMI received drugs for clots within 30 minutes	119	0	320
	Average minutes before OP with CP/AMI transferred	107	0	329
	Aspirin within 24 hours of arrival	209	132	9,676
	Average minutes to ECG for OP with CP/AMI	209	131	10,089
Outpatient surgery	Received antibiotic within 1 hour before surgery	115	18	1,448
	Received right kind of antibiotic	115	15	1,349

*The total number of CAH patients nationally with data on this measure was less than 25.

Data source: Hospital Compare data for Jan - Dec 2009, downloaded from CMS website October 2010

Comparison of Process of Care Results

The next section of the report compares the quality measure results for CAHs 1) by accreditation status and type of ownership and 2) with rural and urban PPS hospitals. Then, results are compared over the 2006-2009 time period for each group of hospitals.

As with our previous analyses of Hospital Compare data, several caveats are necessary in evaluating these results. Although the percent of CAHs participating in Hospital Compare has increased, participating and non-participating CAHs still differ significantly on several organizational characteristics (e.g., average number of beds, average daily census, accreditation status, type of ownership, and year of CAH certification). Thus, the quality measure results for CAHs that voluntarily participate in Hospital Compare may not be representative of all CAHs.

In comparing the results for CAHs with rural and urban PPS hospitals, it is important to recognize that hospital characteristics such as patient volume, the size and composition of medical and nursing staff, financial resources, and the availability of technology may influence the measurement of quality as well as the provision of care in the hospital environment.

Many of the differences between CAHs and rural and urban PPS hospitals are statistically significant. Some of these differences are fairly large; other differences are significant because of the large sample sizes involved, but are only a few percentage points. The latter differences may not be of practical significance, especially if the percentages are high for all groups.

Finally, it is also very important to remember that the aggregate scores for groups of CAHs, and PPS rural and urban hospitals include a wide range of scores for individual hospitals. Some individual hospitals in each group are performing much better than the average, and others are performing worse.

CAHs by Accreditation Status and Ownership

Table 8 compares the quality measure results for accredited and non-accredited CAHs. Differences between the two groups were not statistically significant for eleven measures (eight inpatient and three outpatient measures). Fourteen measures (13 inpatient and one outpatient) were significantly higher for accredited CAHs and one inpatient measure was significantly higher for non-accredited CAHs.

Table 8. Percent of Patients Receiving Recommended Care in Accredited and Non-Accredited CAHs in 2009 (N = 933 CAHs)

		Percent of Patients Receiving Recommended Care		Significance of differences between Accredited CAHs and Non-Accredited CAHs
Condition	Measure	Accredited CAHs ¹	Non-Accredited CAHs ²	
AMI	Aspirin at arrival	92.7	91.5	NS
	Aspirin at discharge	91.0	89.2	NS
	ACEI or ARB for LVSD	87.3	87.6	NS
	Smoking cessation advice	91.9	85.9	NS
	Beta blocker at discharge	92.5	88.3	0.003
Heart Failure	Discharge instructions	82.0	68.2	<0.001
	Assessment of LVS	87.7	77.7	<0.001
	ACE inhibitor or ARB for LVSD	86.8	82.3	<0.001
	Smoking cessation advice	90.4	79.7	<0.001
Pneumonia	Pneumococcal vaccination	89.2	82.9	<0.001
	Blood culture prior to first antibiotic	92.2	91.7	NS
	Smoking cessation advice	90.8	81.0	<0.001
	Initial antibiotic(s) within 6 hours	95.6	94.4	<0.001
	Most appropriate initial antibiotic(s)	88.1	86.7	0.002
	Influenza vaccination	85.9	80.5	<0.001
Surgical Care Improvement	Preventative antibiotic(s) 1 hour before incision	92.0	91.0	0.02
	Received appropriate preventative antibiotic(s)	96.2	95.7	NS
	Preventative antibiotic(s) stopped within 24 hours after surgery	90.6	92.1	<0.001
	Doctors ordered blood clot prevention treatments	89.2	87.7	0.03
	Received blood clot prevention treatments 24 hours pre/post surgery	87.8	87.5	NS
	Appropriate Hair Removal	98.1	97.1	<0.001
	Beta blockers before/after surgery	86.7	84.8	NS
Outpatient AMI/chest pain	OP with CP/AMI aspirin within 24 hrs of arrival	94.6	94.8	NS
	OP with CP/AMI received drugs for clots within 30 minutes	53.8	28.7	<0.001
Outpatient surgery	OP received antibiotic within 1 hour before surgery	83.4	83.5	NS
	OP having surgery received right kind of antibiotic	91.5	93.4	NS

NS = not significant

¹ For the inpatient measures, n = 343 accredited CAHs and n = 590 non-accredited CAHs.

² For the outpatient measures, n = 106 accredited CAHs and n = 103 non-accredited CAHs

Table 9 compares the quality measure results for CAHs by type of ownership. The number of participating for-profit CAHs is small. Consequently, this group of CAHs had a total of less than 25 patients for three AMI measures; public/government CAHs also had less than 25 patients for one of these measures.

Table 9. Percent of Patients Receiving Recommended Care in CAHs by Ownership Type in 2009

Condition	Measure	Percent of Patients Receiving Recommended Care			Significance of differences between		
		Public/ Gov't CAHs	Non-profit CAHs	For profit CAHs	Public/ Gov't and non-profit CAHs	Public/ Gov't and for profit CAHs	Non-profit and for profit CAHs
AMI	Aspirin at arrival	90.0	92.8	94.9	.03	NS	NS
	Aspirin at discharge	87.4	91.2	92.3	.02	NS	NS
	ACEI or ARB for LVSD	89.5	86.0	*	NS	*	*
	Smoking cessation advice	76.1	93.4	*	<.001	*	*
	Beta blocker at discharge	87.1	91.9	89.8	.002	NS	NS
	Fibrinolytic w/in 30 minutes of arrival	*	37.0	*	*	*	*
Heart Failure	Discharge instructions	70.6	78.5	67.4	<.001	NS	<.001
	Assessment of LVS	78.0	85.4	78.4	<.001	NS	<.001
	ACE inhibitor or ARB for LVSD	83.2	85.4	86.2	.05	NS	NS
	Smoking cessation advice	84.0	86.8	82.2	.05	NS	NS
Pneumonia	Pneumococcal vaccination	82.1	88.2	81.8	<.001	.001	NS
	Blood culture prior to first antibiotic	90.7	92.4	93.7	<.001	.002	NS
	Smoking cessation advice	82.2	88.0	87.7	<.001	NS	NS
	Initial antibiotic(s) within 6 hours	94.5	95.3	94.6	.002	.03	NS
	Most appropriate initial antibiotic(s)	85.8	88.1	88.1	<.001	NS	NS
	Influenza vaccination	79.3	85.2	82.2	<.001	.001	NS
Surgical Care Improvement	Preventative antibiotic(s) 1 hour before incision	90.9	92.1	87.2	.008	.001	<.001
	Received appropriate preventative antibiotic(s)	96.0	96.3	91.6	NS	<.001	<.001
	Preventative antibiotic(s) stopped within 24 hours after surgery	89.3	92.2	87.8	<.001	NS	<.001
	Doctors ordered blood clot prevention treatments	86.7	89.3	89.3	.002	NS	NS
	Received blood clot prevention treatments 24 hours pre/post surgery	86.3	88.1	88.1	.03	NS	NS
	Appropriate hair removal	96.4	98.2	97.4	<.001	NS	NS
	Beta blockers before/after surgery	82.9	86.9	82.2	.01	NS	NS
Outpatient surgery	Received antibiotic within 1 hour before surgery	85.4	82.8	82.6	NS	NS	NS
	Having surgery received right kind of antibiotic	93.1	91.8	92.9	NS	NS	NS
Outpatient AMI/chest pain	Aspirin within 24 hrs of arrival	93.2	95.2	95.5	<.001	.01	NS
	Received drugs for clots within 30 minutes	31.3	49.7	64.3	.003	.002	NS

¹ For the inpatient measures, N = 341 public/government CAHs; N = 551 private non-profit CAHs; N = 66 for-profit CAHs.

² For the outpatient measures, N = 66 public/government CAHs; N = 131 private non-profit CAHs; N = 12 for-profit CAHs.

*The total number of CAH patients nationally with data on this measure was less than 25.

NS = not significant

Differences in the quality measure results for private non-profit CAHs and public/government owned CAHs were not statistically significant for four measures. The results for 22 measures were significantly higher for private non-profit CAHs.

Differences between private non-profit CAHs and for-profit CAHs were not statistically significant for 19 measures. Five measures were significantly higher for private non-profit CAHs than for for-profit CAHs.

Differences between public/government owned CAHs and for-profit CAHs were not statistically significant for 16 measures. The results were significantly higher for public/government owned CAHs for three measures and for for-profit CAHs for five measures.

CAHs and PPS Hospitals

Table 10 compares results for CAH patients with rural PPS patients nationally. The percent of CAH patients receiving recommended care in 2009 was significantly lower than the percent of rural PPS patients on 25 measures. For two measures, differences between CAH patients and rural PPS patients were not significantly different.

Table 10. Percent of Patients Receiving Recommended Inpatient Care in CAHs and Rural PPS Hospitals in 2009

Condition	Measure	Percent of Patients Receiving Recommended Care		Significance of differences between CAHs and Rural PPS Hospitals
		CAHs	Rural PPS Hospitals	
AMI	Aspirin at arrival	92.1	96.9	<0.001
	Aspirin at discharge	90.2	96.7	<0.001
	ACEI or ARB for LVSD	87.4	93.9	<0.001
	Smoking cessation advice	89.7	98.7	<0.001
	Beta blocker at discharge	90.5	96.7	<0.001
	Fibrinolytic w/in 30 minutes of arrival	31.1	46.7	0.05
	PCI at arrival	*	84.0	*
Heart Failure	Discharge instructions	75.5	83.6	<0.001
	Assessment of LVS	82.7	94.7	<0.001
	ACE inhibitor or ARB for LVSD	84.7	90.9	<0.001
	Smoking cessation advice	85.6	96.3	<0.001
Pneumonia	Pneumococcal vaccination	85.9	91.5	<0.001
	Blood culture prior to first antibiotic	92.0	94.7	<0.001
	Smoking cessation advice	86.2	95.7	<0.001
	Initial antibiotic(s) within 6 hours	95.0	95.4	0.004
	Most appropriate initial antibiotic(s)	87.4	89.8	<0.001
	Influenza vaccination	83.1	88.2	<0.001

Table 10. Percent of Patients Receiving Recommended Inpatient Care in CAHs and Rural PPS Hospitals in 2009

Condition	Measure	Percent of Patients Receiving Recommended Care		Significance of differences between CAHs and Rural PPS Hospitals
		CAHs	Rural PPS Hospitals	
Surgical Care Improvement	Preventative antibiotic(s) 1 hour before incision	91.6	95.4	<0.001
	Received appropriate preventative antibiotic(s)	96.0	97.0	<0.001
	Preventative antibiotic(s) stopped within 24 hours after surgery	91.2	92.4	<0.001
	Doctors ordered blood clot prevention treatments	88.6	91.4	<0.001
	Received blood clot prevention treatments 24 hours pre/post surgery	87.7	89.7	<0.001
	Controlled 6 AM post-op blood glucose	*	91.7	*
	Appropriate hair removal	97.7	99.3	<0.001
	Beta blockers before/after surgery	85.9	90.3	<0.001
Outpatient surgery	Received antibiotic within 1 hour before surgery	83.4	89.0	<0.001
	Having surgery received right kind of antibiotic	92.1	93.4	NS
Outpatient AMI/chest pain	Aspirin within 24 hrs of arrival	94.6	94.7	NS
	Received drugs for clots within 30 minutes	45.3	54.3	0.002

¹For the inpatient measures, N = 933 CAHs and N = 958 rural PPS hospitals.

²For the outpatient measures, N = 209 CAHs and N = 916 rural PPS hospitals.

*The total number of CAH patients nationally with data on this measure was less than 25.

NS = not significant

Table 11 compares results for CAH patients with urban PPS patients nationally. Compared to urban PPS patients, the percent of CAH patients receiving recommended care in 2009 was significantly lower on 26 measures. For one measure, differences between CAH patients and rural PPS patients were not significantly different.

Some of the differences between CAHs and rural PPS hospitals, and between CAHs and urban PPS hospitals were statistically significant because of the large sample sizes involved, but the differences are not large enough to be of practical significance (e.g., some of the pneumonia and surgical care improvement measures). However, other differences are much larger.

Table 11. Percent of Patients Receiving Recommended Care in CAHs and Urban PPS Hospitals in 2009

		Percent of Patients Receiving Recommended Care		Significance of Differences between CAHs and Urban PPS Hospitals
Condition	Measure	CAHs	Urban PPS Hospitals	
AMI	Aspirin at arrival	92.1	98.5	<0.001
	Aspirin at discharge	90.2	98.6	<0.001
	ACEI or ARB for LVSD	87.4	95.6	<0.001
	Smoking cessation advice	89.7	99.4	<0.001
	Beta blocker at discharge	90.5	98.5	<0.001
	Fibrinolytic w/in 30 minutes of arrival	31.1	57.5	<0.001
	PCI at arrival	*	87.7	*
Heart Failure	Discharge instructions	75.5	87.2	<0.001
	Assessment of LVS	82.7	98.4	<0.001
	ACE inhibitor or ARB for LVSD	84.7	94.5	<0.001
	Smoking cessation advice	85.6	98.7	<0.001
Pneumonia	Pneumococcal vaccination	85.9	92.8	<0.001
	Blood culture prior to first antibiotic	92.0	95.0	<0.001
	Smoking cessation advice	86.2	97.8	<0.001
	Initial antibiotic(s) within 6 hours	95.0	94.6	<0.01
	Most appropriate initial antibiotic(s)	87.4	91.9	<0.001
	Influenza vaccination	83.1	90.4	<0.001
Surgical Care Improvement	Preventative antibiotic(s) 1 hour before incision	91.6	96.4	<0.001
	Received appropriate preventative antibiotic(s)	96.0	97.7	<0.001
	Preventative antibiotic(s) stopped within 24 hours after surgery	91.2	93.5	<0.001
	Doctors ordered blood clot prevention treatments	88.6	93.7	<0.001
	Received blood clot prevention treatments 24 hours pre/post surgery	87.7	91.7	<0.001
	Controlled 6AM post-op blood glucose	*	92.7	*
	Appropriate hair removal	97.7	99.2	<0.001
	Beta blockers before/after surgery	85.9	91.2	<0.001
Outpatient surgery	Received antibiotic within 1 hour before surgery	83.4	91.4	<0.001
	Received right kind of antibiotic	92.1	94.3	<0.001
Outpatient AMI/chest pain	Aspirin within 24 hrs of arrival	94.6	94.7	NS
	Received drugs for clots within 30 minutes	45.3	55.9	<0.001

¹For the inpatient measures, N = 933 CAHs and N = 2388 urban PPS hospitals.

²For the outpatient measures, N = 209 CAHs and N = 2285 urban PPS hospitals.

NS = not significant

*The total number of CAH patients nationally with data on this measure was less than 25.

Inpatient Measure Trends over Time for CAHs and PPS Hospitals

Figures 9-29 in Appendix B show the data trends for 2006-2009 for CAHs, rural PPS, and urban PPS hospitals. These data include all hospitals reporting in each category for each year. The numbers of hospitals are shown in Table 12.

Table 12. Number of Hospitals with Inpatient Process of Care Data by Hospital Type from 2006-2009

Hospital Type	2006	2007	2008	2009
CAHs	812	892	914	933
Rural PPS	1,004	993	973	958
Urban PPS	2,431	2,441	2,414	2,388

Figures 9-14 show the four year trends for the pneumonia measures. Performance has improved for all three groups of hospitals and is similar ($\leq 3\%$ difference) on two pneumonia measures related to receipt of antibiotics (Figures 10 and 11). CAH performance on the influenza and pneumococcal vaccination measures (Figures 9 and 13) improved, but performance by rural and urban PPS hospitals continues to outpace CAHs. CAH performance on the pneumonia smoking cessation measure has improved, but remains well below rural and urban PPS hospitals (Figure 12).

CAH performance improved for all heart failure measures (Figures 15-18). The gap in performance between CAH and PPS hospitals narrowed a little for two measures. However, CAHs continue to perform lower than PPS hospitals on all measures and the gap for one measure, percent of patients receiving ACE or ARB for LVSD, widened between 2008 and 2009.

CAH performance improved on all AMI measures (Figures 19-23); improvement on the smoking cessation measure was especially notable. However, the performance by rural PPS and urban PPS hospitals was higher at the onset and improved over the four-year time period. Consequently, a gap in performance remains between CAHs and PPS hospitals for all AMI measures. (Performance on the fibrinolytic measure (Figure 23) improved from 2008 to 2009 but continued to be lower than in 2006-2007; it should be noted that this measure is based on a very small number of CAH patients nationally.)

Performance by all groups of hospitals on the surgical care improvement measures has consistently been high ($\geq 88\%$) and the difference in performance between CAH and PPS hospitals is relatively small ($\leq 5\%$) (Figures 24-29).

HCAHPS Survey Results for CAHs

Table 13 displays the mean (average) percentages of patients that gave the highest level of response (e.g., “always”) for each of the HCAHPS survey measures in two groups of hospitals that publicly reported HCAHPS data for 2008: CAHs nationally, and all US hospitals. For all measures, CAH patients nationally had higher average scores than patients in all US hospitals.

Table 13. HCAHPS Results for CAHs Nationally for 2009

Percent of patients who reported that:	Mean (average) for:	
	CAHs Nationally (n=465)	All US hospitals (n=4,474)
Nurses always communicated well	80%	75%
Doctors always communicated well	83%	80%
Patient always received help as soon as wanted	72%	63%
Pain was always well controlled	72%	69%
Staff always explained about medications before giving them to patient	64%	60%
Yes, staff gave patient information about what to do during recovery at home	83%	81%
Area around patient room was always quiet at night	62%	57%
Patient room and bathroom were always clean	79%	70%
They gave an overall hospital rating of 9 or 10 (high) on 1-10 scale	71%	66%
They would definitely recommend the hospital to friends and family	72%	69%

Mortality and Readmission Rates for CAHs

Table 14 displays the number of CAHs nationally: 1) for which CMS did not calculate 30 day risk-adjusted mortality rates for AMI, heart failure, and pneumonia because they were not in the Hospital Compare database; 2) those that did not have the minimum 25 eligible cases per condition over the 3 year period from July 2005 to June 2008 to reliably calculate a rate; and 3) those that had rates that were not different from, better than or worse than the US rates for all hospitals.

Nationally, 90% of CAHs either were missing AMI mortality data or had too few cases to reliably calculate a rate; the remaining 10% of CAHs did not have an AMI mortality rate that is different from the US rate for all hospitals. More CAHs had the minimum number of patients to reliably calculate mortality rates for heart failure (58%) and pneumonia (71%). However, few CAHs had mortality rates that are either better than or worse than the US rates for all hospitals (less than 1% of CAHs for heart failure and 3% of CAHs for pneumonia).

Table 14. Number (Percent) of CAHs Nationally in Risk-adjusted Mortality Rate Categories

	Number of CAHs with:					
	Total	No rate data in Hospital Compare	Not enough cases to reliably calculate	Not different from U.S. rate for all hospitals	Better than U.S. rate for all hospitals	Worse than U.S. rate for all hospitals
AMI	1312	378 (28.8%)	803 (61.2%)	131 (10.0%)	0	0
Heart Failure	1312	322 (24.5%)	229 (17.5%)	755 (57.5%)	0	6 (0.5%)
Pneumonia	1312	319 (24.3%)	65 (5.0%)	891 (67.9%)	1 (0.1%)	36 (2.7%)

Table 15 shows the 30 day risk-adjusted readmission rates for AMI, heart failure, and pneumonia for CAHs nationally. For AMI, 96% of CAHs either were missing AMI readmission data or had too few cases to reliably calculate a rate, and the remaining 4% of CAHs did not have a rate that is different from the US rate for all hospitals. More CAHs had the minimum number of patients to reliably calculate readmission rates for heart failure (60%) and pneumonia (71%), but few CAHs had readmission rates that are either better than or worse than the US rates for all hospitals (0.2% of CAHs for heart failure and 0.5% of CAHs for pneumonia).

Table 15. Number (Percent) of CAHs Nationally in Risk-adjusted Readmission Rate Categories

	Number of CAHs with:					
	Total	No rate data in Hospital Compare	Not enough cases to reliably calculate	Not different from U.S. rate for all hospitals	Better than U.S. rate for all hospitals	Worse than U.S. rate for all hospitals
AMI	1312	417 (31.8%)	846 (64.5%)	49 (3.7%)	0	0
Heart Failure	1312	321 (24.5%)	200 (15.2%)	789 (60.1%)	1 (0.1%)	1 (0.1%)
Pneumonia	1312	319 (24.3%)	59 (4.5%)	928 (70.7%)	4 (0.3%)	2 (0.2%)

Clearly, mortality and readmission rates are important outcome measures for all hospitals. However, these analyses indicate that small volume limits their usefulness as individual hospital measures for CAHs, even using three years of data. Future research needs to address alternative ways of calculating outcome measures at the individual hospital level for CAHs.

DISCUSSION AND CONCLUSIONS

Nationally, participation in Hospital Compare (defined as publicly reporting data on at least one inpatient process of care measure) increased from 41% of CAHs in 2004 to 71% of CAHs in 2009. The 2009 rate is very similar to the 2008 rate of 70%. By state, the percent of CAHs reporting inpatient process of care measures for 2009 ranged from 11% to 100%. Of the 45 states in the Flex Program, six states had 100% of their CAHs publicly reporting in 2009, while six states had less than half of their CAHs reporting.

A total of 209 CAHs (15.9%) publicly reported data on at least one outpatient process of care measure. By state, the percent of CAHs reporting outpatient process of care measures for 2009 ranged from 0% to 46%.

In addition, 35% of CAHs publicly reported HCAHPS survey data to Hospital Compare in 2009. By state, the percent of CAHs publicly reporting HCAHPS data ranged from 0% to 100%. Four states had 100% of their CAHs reporting HCAHPS data.

Overall, 11% of CAHs publicly reported inpatient, outpatient, and HCAHPS data; 24% of CAHs publicly reported inpatient and HCAHPS data; five percent of CAHs publicly

reported inpatient and outpatient data; and less than one percent each publicly reported outpatient data only or HCAHPS data only. These results indicate that a subset of CAHs (40%) have expanded their public reporting efforts beyond inpatient measures to include additional types of quality measures.

At the same time, over one fourth of CAHs (27%) are not publicly reporting quality data of any kind to Hospital Compare. It is somewhat surprising that more CAHs are not reporting outpatient and HCAHPS measures, given the relevance of these measures for small rural hospitals and the fact that CAHs overall perform better than other hospitals on HCAHPS. Given that the outpatient measures are relatively new to Hospital Compare, it may just take more time for CAHs to become familiar with them.

The 30 day risk-adjusted readmission and mortality rates are not useful quality measures for CAHs, since few CAHs have rates that are either better than or worse than the US rates for all hospitals.

Federal health care reform and state level reforms in a number of states are moving toward a health care system that rewards the provision of high-quality care. In addition to using quality data for quality improvement activities, health care providers are increasingly being required to demonstrate the quality of the care they are providing to qualify for reimbursement incentives and avoid penalties for poor care. In the future, as reimbursement is linked to quality, it will be even more important for CAHs to be able to document the quality of care they provide.

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APPENDIX A: ACRONYMS USED IN THIS REPORT

Critical Access Hospital (CAH) A CAH is a facility that is designated as a CAH by the State in which it is located and meets the following criteria:

- Is located in a State that has established a State plan with CMS for the Medicare Rural Hospital Flexibility Program;
- Is located more than a 35-mile drive from any other hospital or CAH (in mountainous terrain or in areas with only secondary roads available, the mileage criterion is 15 miles) or be certified before January 1, 2006 by the State as being a necessary provider of health care services;
- Makes available 24-hour emergency care services 7 days per week;
- Provides not more than 25 beds for acute inpatient or swing bed care; and
- Provides an annual average length of stay of less than 96 hours per patient for acute care patients.
- Is a rural public, non-profit or for-profit hospital; or is a hospital that was closed within the previous ten years; or is a rural health clinic that was downsized from a hospital;

Federal Office of Rural Health Policy (ORHP)

The Office of Rural Health Policy (ORHP) promotes better health care service in rural America. Established in August 1987 by the Administration, the Office was subsequently authorized by Congress in December 1987 and located in the Health Resources and Services Administration. Congress charged the Office with informing and advising the Department of Health and Human Services on matters affecting rural hospitals, and health care, co-coordinating activities within the department that relate to rural health care, and maintaining a national information clearinghouse. Additional information is available at <http://www.ruralhealth.hrsa.gov/>

Medicare Rural Hospital Flexibility Program (Flex Program)

The Medicare Rural Hospital Flexibility Program (Flex Program) was authorized by section 4201 of the Balanced Budget Act of 1997 (BBA), Public Law 105-33. The Flex Program provides funding to States for the designation of critical access hospitals (CAHs) in rural communities and the development of networks to improve access to care in these communities. Under the program, hospitals certified as CAHs can receive cost-based reimbursement from Medicare.

Prospective Payment System (PPS)

Section 1886(d) of the Social Security Act sets forth a system of payment for the operating costs of acute care hospital inpatient stays under Medicare Part A based on prospectively set rates. Under the inpatient prospective payment system (PPS), each case is categorized into a diagnosis-related group (DRG). Each DRG has a payment weight assigned to it, based on the average resources used to treat Medicare patients in that DRG. The base payment rate is divided into a labor-related and non-labor share. The labor-related share is adjusted by the wage index applicable to the area where the hospital is located. This base payment rate is multiplied by the DRG relative weight. Hospitals that treat a high-percentage of low-income patients receive a percentage add-on payment, the disproportionate share hospital (DSH) adjustment. Approved teaching hospitals receive a percentage add-on payment for each case paid through IPPS. Finally, for outlier cases that are unusually costly, the PPS payment is increased.

APPENDIX B: GRAPHS OF TRENDS OVER TIME FOR CAHS AND PPS HOSPITALS

Figure 9. Percent of Pneumonia Patients Receiving Pneumococcal Vaccination 2006-2009

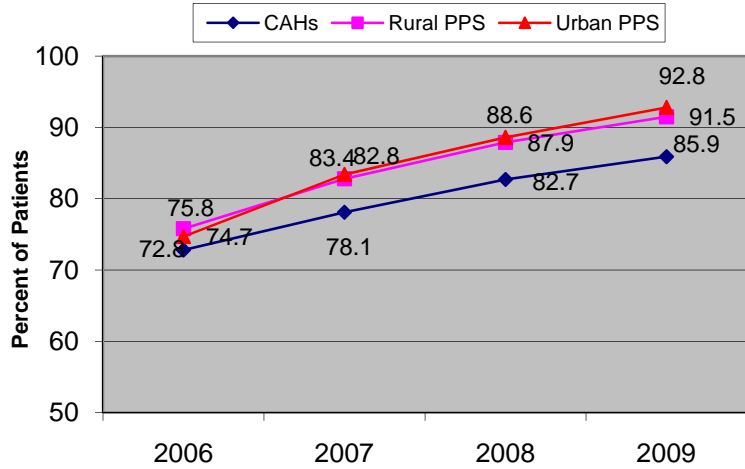


Figure 10. Percent of Pneumonia Patients Receiving Blood Culture Prior to First Antibiotic 2006-2009

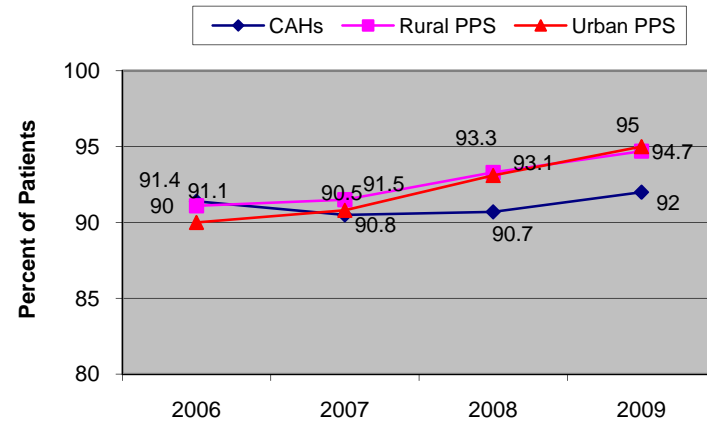


Figure 11. Percent of Pneumonia Patients Receiving Timely Initial Antibiotic 2006-2009

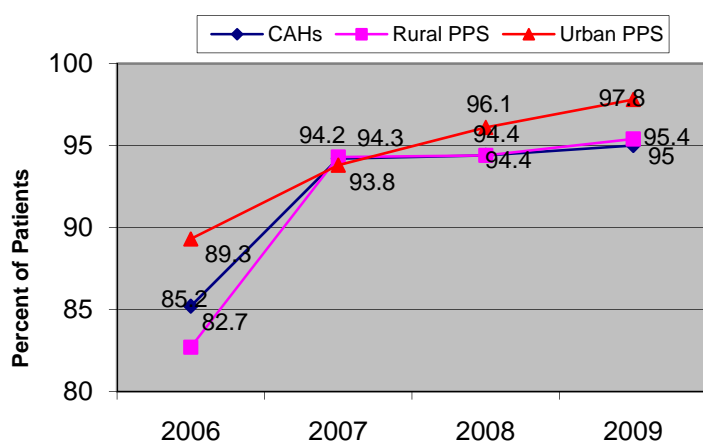


Figure 12. Percent of Pneumonia Patients Receiving Smoking Cessation Advice 2006-2009

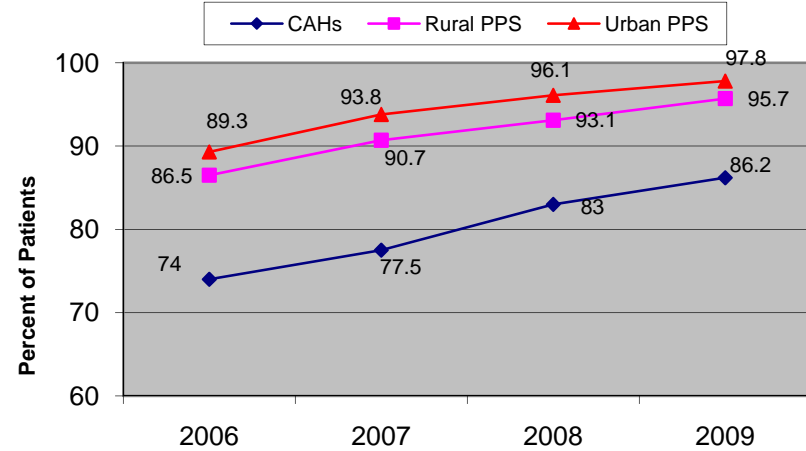


Figure 13. Percent of Pneumonia Patients Receiving Influenza Vaccination 2006-2009

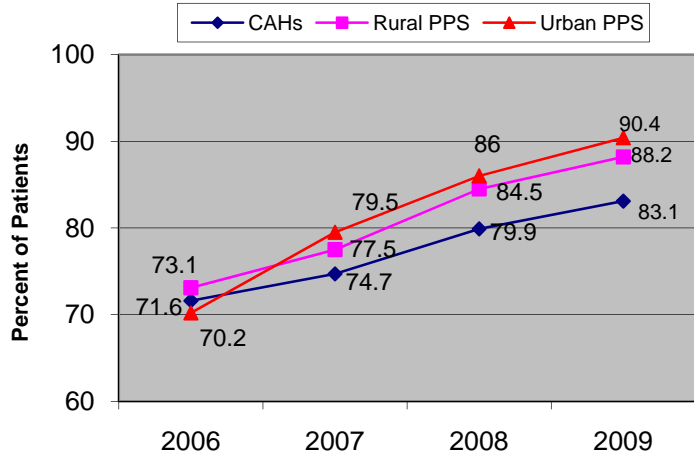


Figure 14. Percent of Pneumonia Patients Receiving Appropriate Initial Antibiotic 2006-2009

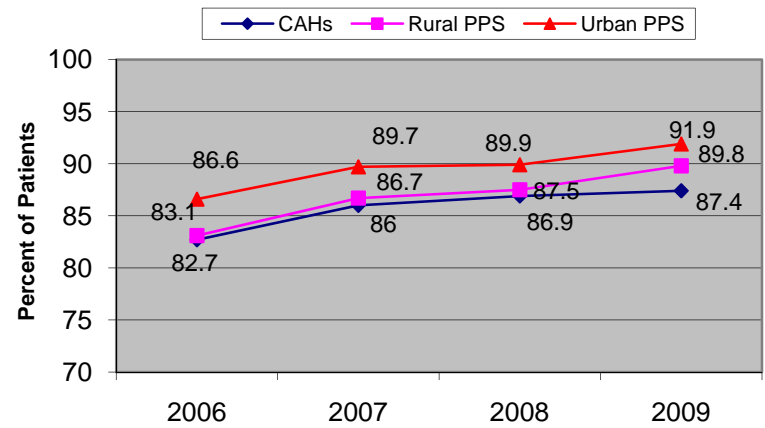


Figure 15. Percent of Heart Failure Patients Receiving Discharge Instructions 2006-2009

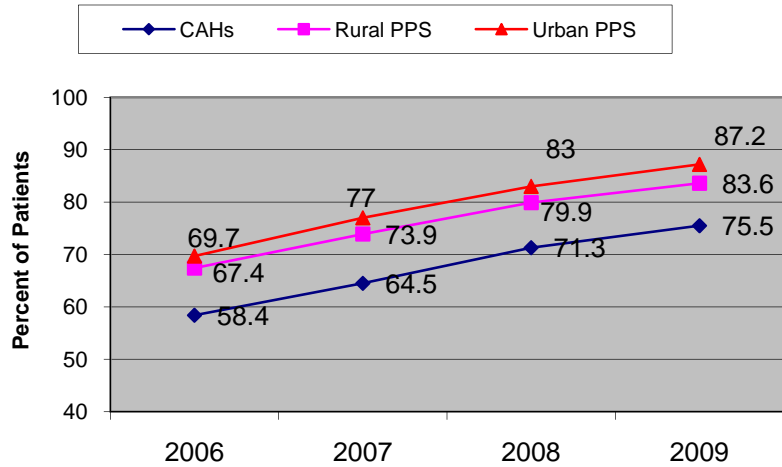


Figure 16. Percent of Heart Failure Patients Receiving Assessment of LVS 2006-2009

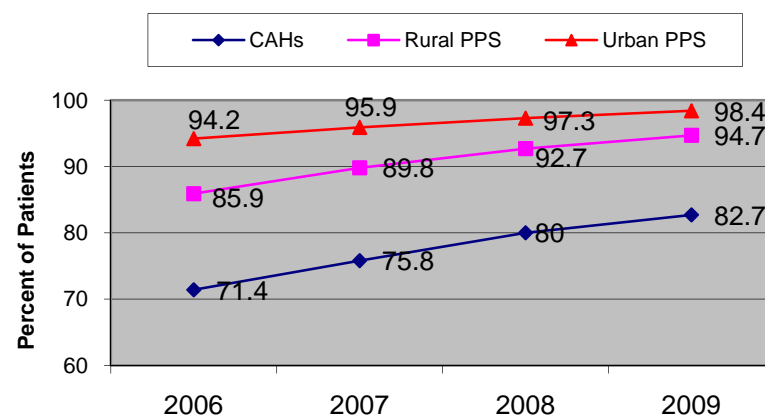


Figure 17. Percent of Heart Failure Patients Receiving ACE or ARB for LVSD 2006-2009

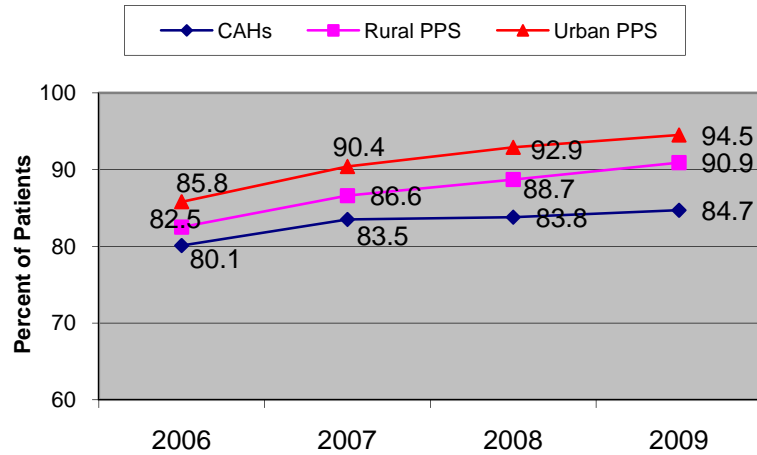


Figure 18. Percent of Heart Failure Patients Receiving Smoking Cessation Advice 2006-2009

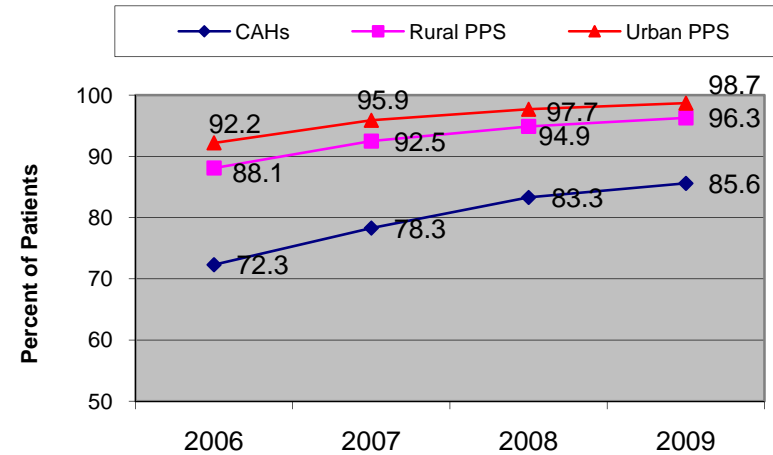


Figure 19. Percent of AMI Patients Receiving Aspirin at Arrival 2006-2009

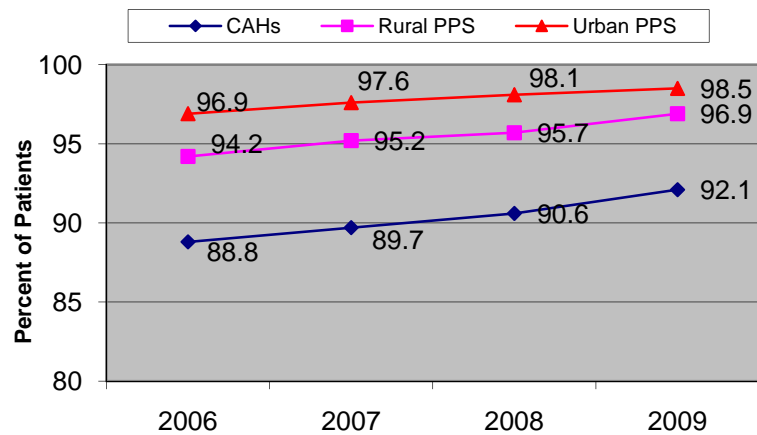


Figure 20. Percent of AMI Patients Receiving Smoking Cessation Advice 2006-2009

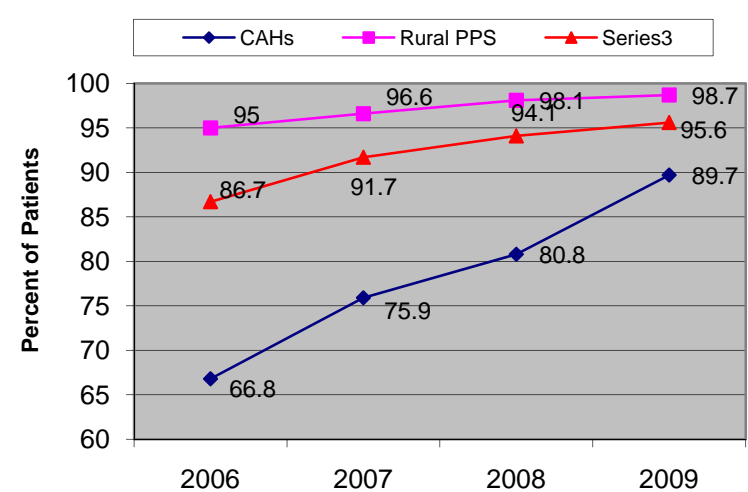


Figure 21. Percent of AMI Patients Receiving ACE or ARB for LVSD 2006-2009

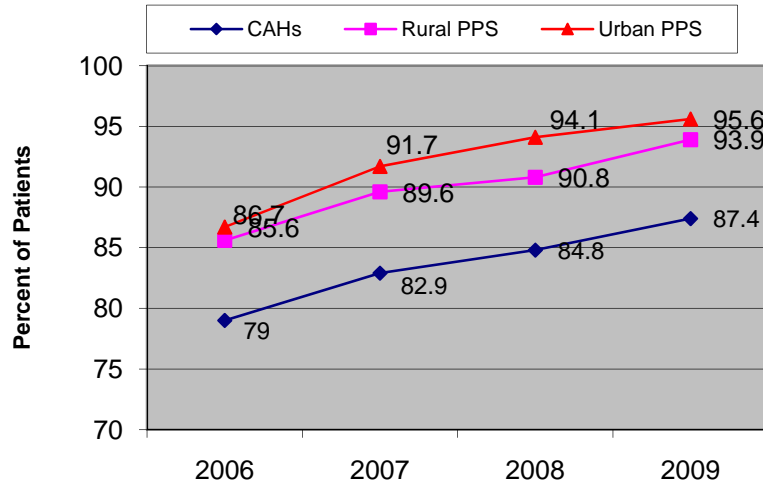


Figure 22. Percent of AMI Patients Receiving Aspirin at Discharge 2006-2009

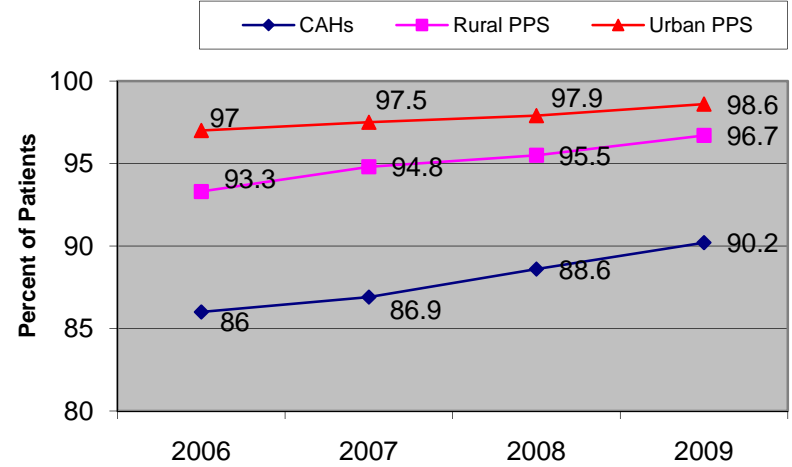


Figure 23. Percent of AMI Patients Receiving Fibrinolytic in 30 Minutes 2006-2009

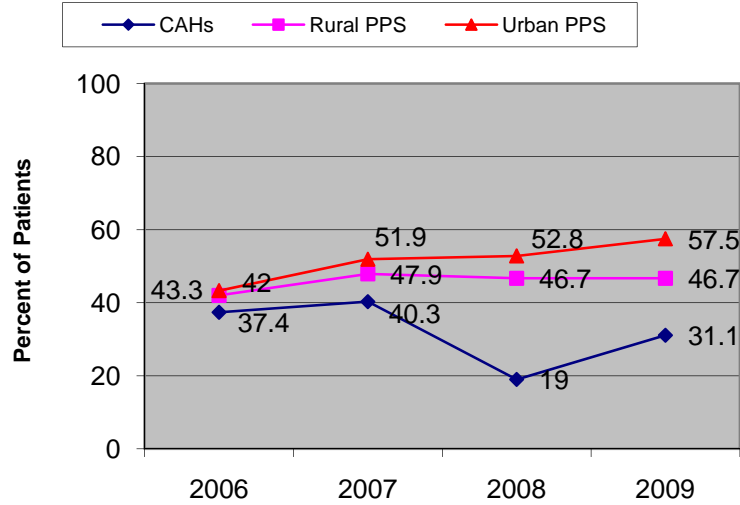


Figure 24. Percent of Surgical Patients Receiving Antibiotic 1 Hour Before Incision 2006-2009

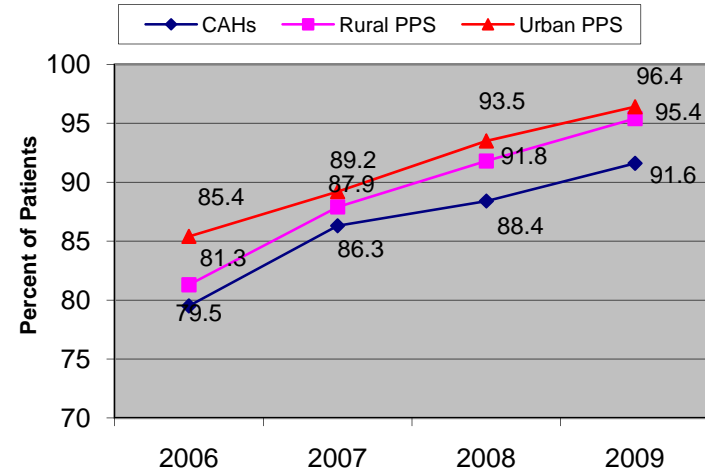


Figure 25. Percent of Surgical Patients Receiving Most Appropriate Antibiotic 2006-2009

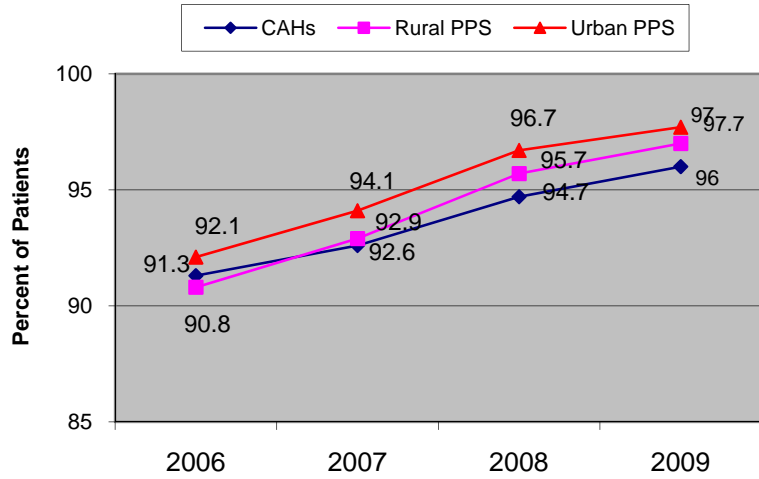


Figure 26. Percent of Surgical Patients with Antibiotic Stopped in 24 Hours 2006-2009

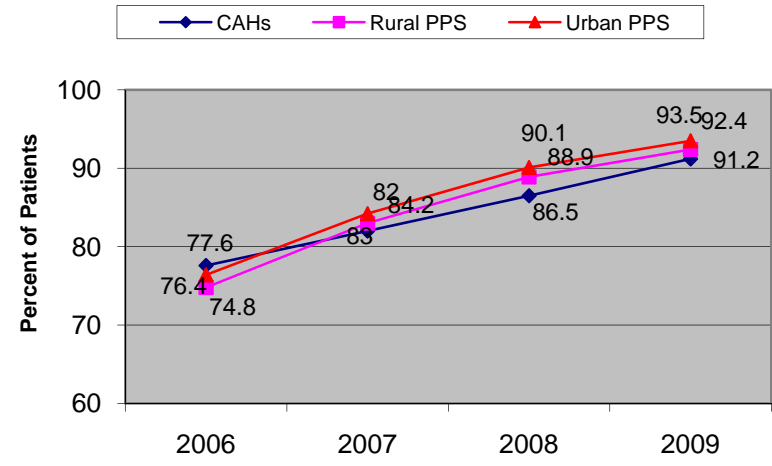


Figure 27. Doctors Ordered Blood Clot Prevention Treatments 2007-2009

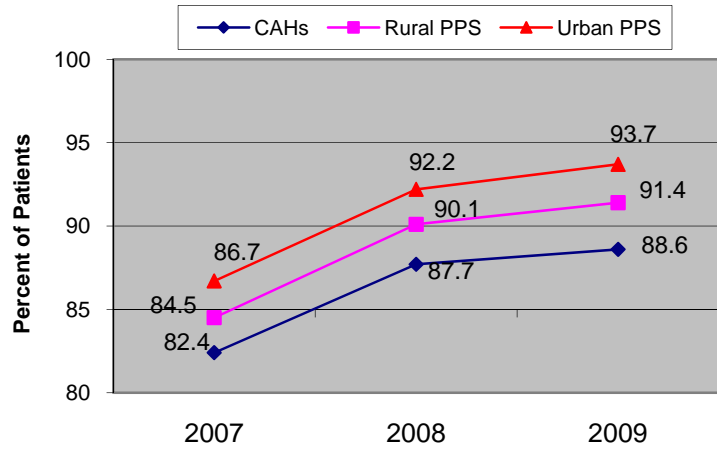


Figure 28. Received Blood Clot Prevention Treatment 24 Hours Pre/Post Surgery 2007-2009

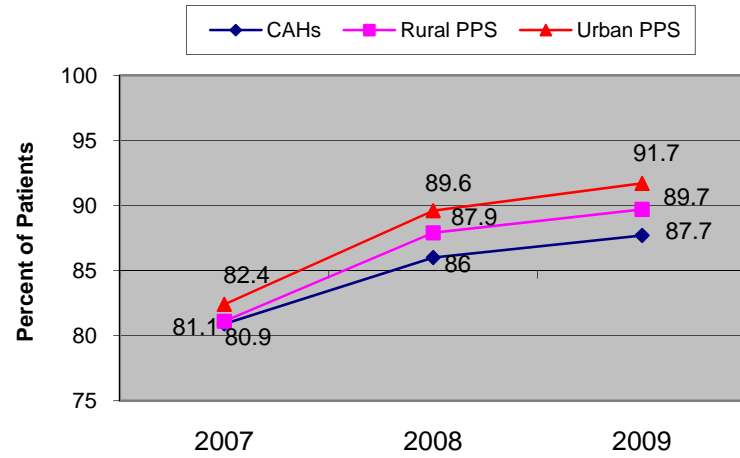


Figure 29. Appropriate Hair Removal for Surgical Patients 2008-2009

