

## Hospital Compare Quality Measures: 2010 National and North Carolina Results for Critical Access Hospitals

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### Key Findings

#### *National*

- The 2010 CAH national participation rate in Hospital Compare (defined as publicly reporting data on at least one inpatient process of care measure) is 74%.
- By state, the percent of CAHs reporting inpatient process of care measures for 2010 ranges from 22% to 100%. Of the 45 states in the Flex program, eight states have 100% of CAHs reporting while five states have less than half of CAHs reporting.
- 282 CAHs (21.2%) reported data on at least one outpatient process of care measure. By state, outpatient reporting ranges from 0% to 84% of CAHs.
- 505 CAHs (38%) reported Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data. State HCAHPS reporting ranges from 0% to 100%.
- One-fourth of CAHs are not publicly reporting any quality data to Hospital Compare.

#### *North Carolina*

- North Carolina's CAH reporting rates are higher than CAHs nationally.
- Compared to quality scores for all other CAHs nationally, North Carolina CAHs have:
  - Insufficient data to compare five inpatient measures and two outpatient measures.
  - No statistically significant differences for nine inpatient measures and two outpatient measures.
  - Significantly higher scores on 12 inpatient measures.
  - No significantly lower scores on any measures.
- HCAHPS results for North Carolina CAHs are similar to the national CAH results, and both are better than the results for all US hospitals.

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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.

## **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 process of care measure to Hospital Compare increased from 41% for 2004 discharges to 74% for 2010 discharges.<sup>1-5</sup>

The current Hospital Compare quality measures include inpatient process of care measures that reflect recommended treatments for acute myocardial infarction (AMI), heart failure, pneumonia, and surgical care improvement, 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. Definitions of the current process of care measures are included in Appendix A.

At the end of 2010, 1,329 CAHs were located in 45 states. These reports examine state-level CAH participation in Hospital Compare and quality measure results for 2010 as well as trends from 2008-2010 for each state with CAHs. Previous Flex Monitoring Team reports analyzed CAH participation and Hospital Compare inpatient quality measure results nationally for 2004-2009 and at the state level for 2006-2009.

## **Data and Approach**

Data on the inpatient and outpatient process of care measures and HCAHPS survey results for January through December 2010, and data on the 3 year (July 2007 to June 2010) mortality and readmission rates calculated by CMS, were downloaded from the CMS Hospital Compare website when they became available in October 2011. These data were linked with previously downloaded data for 2006-2009 and data on all CAHs maintained by the Flex Monitoring Team.

### *Inpatient and Outpatient Process Measures*

For this report, the percentages of patients that received recommended care for the inpatient and outpatient 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. Two outpatient AMI/chest pain measures, time to patient transfer for specialized care and time to ECG, are reported by hospitals as the median number of minutes for eligible patients at that hospital (a lower number of minutes is better). For this report, an

average (mean) score was calculated by summing the median times for all CAHs in the state, all CAHs nationally, and all US hospitals, and dividing those times by the number of hospitals reporting.

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.

The percent of CAH patients receiving recommended care in each state was then compared to the percent of CAH patients that received recommended care in all other states combined. For each state, the inpatient and outpatient measure scores were classified as: 1) insufficient data (less than 25 patients total); 2) not significantly different than CAHs in all other states; 3) significantly higher than all other CAHs; or 4) significantly lower than all other CAHs.

Chi-square tests were used to calculate whether the differences between the percent of patients who received recommended care in one state and the percent of patients who received recommended care in all other states were statistically significant, using a significance level (p-value) of .05. Chi-square is a common test for significance of the relationship between two categorical variables; it compares the actual frequencies with the frequencies we would expect if there was no relationship between the variables. Significance at the .05 level means that we are confident that 95 out of 100 times, the differences between the two groups did not occur solely by chance.

The ability to calculate the statistical comparisons depends on the number of CAH patients in each state for whom measure data were submitted. By state, the number of quality measures with sufficient data to do the statistical comparisons ranges from 0 to 26.

### *HCAHPS*

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.<sup>6</sup>

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.

### *Mortality and Readmission Rates*

CMS calculates hospital-level 30-day risk-standardized mortality and readmission rates for pneumonia, heart failure, and AMI 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 for 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.<sup>7</sup>

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.

### **Reporting of Data to Hospital Compare**

As in previous years, the percent of CAHs reporting data to Hospital Compare varied considerably across states. In North Carolina, 20 of the 23 CAHs in 2010 reported data to Hospital Compare on at least one inpatient process of care measure for 2010 discharges (Table 1). The North Carolina participation rate of 87.0% was higher than the national rate of 74%. The 2010 rate was lower than the rate in 2009. (These numbers do not include CAHs that submit quality measure data to their Quality Improvement Organization (QIO) only, and do not allow it to be publicly reported to Hospital Compare).

**Table 1. CAHs Reporting Inpatient and Outpatient Quality Measure Data and HCAHPS Data in Hospital Compare in North Carolina and Nationally 2006-2010**

	North Carolina				National			
	Number of CAHs	Inpatient data	Outpatient data	HCAHPS data	Number of CAHs	Inpatient data	Outpatient data	HCAHPS data
<b>2006</b>	21	17 (81.0%)	N/A	N/A	1287	811 (63.0%)	N/A	N/A
<b>2007</b>	21	19 (90.5%)	N/A	N/A	1293	891 (68.9%)	N/A	N/A
<b>2008</b>	21	19 (90.5%)	N/A	9 (42.9%)	1301	914 (70.3%)	N/A	442 (34.0%)
<b>2009</b>	23	21 (91.3%)	5 (21.7%)	10 (43.5%)	1312	943 (71.9%)	209 (15.9%)	465 (35.4%)
<b>2010</b>	23	20 (87.0%)	6 (26.1%)	10 (43.5%)	1329	977 (73.5%)	282 (21.2%)	505 (38.0%)

Table 1 also shows that the number of CAHs in North Carolina that reported HCAHPS data was 10, for an HCAHPS reporting rate of 43.5%. This rate was greater than the national HCAHPS reporting rate of 38.0% for CAHs.

The number of CAHs in North Carolina that reported outpatient data was six, for an outpatient reporting rate of 26.1%. This rate was greater than the national outpatient reporting rate for CAHs of 21.2%.

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.

Table 2 shows the number of completed HCAHPS surveys in 2010 per CAH in North Carolina and nationally, in the three categories reported by CMS: "less than 100 surveys", "100 to 299 surveys", and "300 or more surveys." It also shows the survey response rates for the CAHs in North Carolina and nationally.

**Table 2. Number of Completed HCAHPS Surveys and Response Rates for CAHs in North Carolina and Nationally 2010**

	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%
<b>North Carolina</b>	10	1	4	5	0	10	0
<b>National</b>	505	97	274	134	39	444	22

**Inpatient Process of Care Results for CAHs in North Carolina and Nationally**

Table 3 displays the Hospital Compare inpatient quality measure results for 2010 discharges for CAHs in North Carolina, CAHs nationally, and all US hospitals. Data are not reported for a measure where the total number of CAH patients in the state with data on the measure was less than 25.

Among CAHs nationally that reported data on the inpatient process of care measures, the majority reported data on the pneumonia and heart failure measures. Over 90% of the reporting CAHs had data on at least five pneumonia measures and two heart failure measures. Over half reported data on one AMI measure: aspirin at arrival; just under half reported data on two AMI measures: aspirin at discharge and beta blocker at discharge. Between 42% and 47% of reporting CAHs had data on seven of the surgical care improvement measures.

For the process of care measures, the number of CAHs reporting and the number of patients for whom data are available may differ by measure for several reasons. Hospitals have had a longer time to become familiar with and report on the older measures. Some measures only apply to a portion of patients (e.g., the smoking cessation advice measures only apply to smokers), and several measures exclude patients with contraindications for receiving that type of medication. Small rural hospitals transfer many AMI patients seen in their emergency departments to larger hospitals, so they may have fewer eligible patients for the inpatient AMI measures. About two-thirds of CAHs provide inpatient surgery. The surgical care improvement measures apply to selected surgeries; some (e.g., hysterectomies) are more commonly provided in CAHs than others (e.g., cardiac procedures).

Compared to all US hospitals, patients in CAHs are less likely to receive recommended care on the inpatient AMI and heart failure measures. The percentages of patients in CAHs and all US hospitals receiving recommended care are similar for a number of the pneumonia and surgical care improvement measures; CAH rates are lower for some measures (e.g., vaccination and smoking cessation measures).

## **Outpatient Process of Care Results for CAHs in North Carolina and Nationally**

Table 4 shows the Hospital Compare outpatient quality measure results for 2010 discharges for CAHs in North Carolina, CAHs nationally, and all US hospitals. Among CAHs nationally that reported data on the outpatient process of care measures, the most frequently reported measures were two outpatient AMI/chest pain measures: aspirin within 24 hours of arrival or prior to transfer and time to ECG.

For the outpatient measures that assess the percentages of patients receiving recommended care, CAHs are similar to all US hospitals for two measures and somewhat lower for two measures. For the outpatient timing measures, average time to transfer is about the same (98 minutes) and time to ECG is lower for CAHs.

### **Statistically Significant Differences between North Carolina CAHs and All Other CAHs**

When the inpatient and outpatient quality scores for CAH patients in North Carolina are compared to those of all other CAHs nationally, North Carolina CAHs have:

- Insufficient data to compare four inpatient AMI measures (ACEI or ARB for LVSD, smoking cessation advice, fibrinolytic w/in 30 minutes of arrival, and PCI at arrival); one inpatient surgical care improvement measure (controlled 6AM post-operative blood glucose); two outpatient measures (outpatient with CP/AMI received drugs for clots within 30 minutes, and outpatient received antibiotic within one hour before surgery).
- No significant differences for three inpatient AMI measures (aspirin at arrival, aspirin at discharge, and beta blocker at discharge); one heart failure measure (smoking cessation advice); three pneumonia measures (smoking cessation advice, initial antibiotics within six hours, and influenza vaccination); two inpatient surgical care improvement measures (doctors ordered blood clot prevention treatments, and received blood clot prevention treatments 24 hours pre/post-surgery); two outpatient measures (outpatient with CP/AMI received aspirin within 24 hours of arrival, and outpatient having surgery received the right kind of antibiotic).
- Significantly higher scores on three heart failure measures (discharge instructions, assessment of LVS, and ACE inhibitor or ARB for LVSD); three pneumonia measures (pneumococcal vaccination, blood culture prior to first antibiotic, and most appropriate initial antibiotics); six inpatient surgical care improvement measures (preventative antibiotics one hour before incision, received appropriate preventative antibiotics, preventative antibiotics stopped within 24 hours after surgery, appropriate hair removal, beta blockers before/after surgery, and urinary catheter removed first or second day after surgery).
- No significantly lower scores on any measures.



**Table 3. Hospital Compare Inpatient Process of Care Results for 2010 Discharges for CAHs in North Carolina, CAHs Nationally, and All US Hospitals**

		CAHs in North Carolina (n=19)			CAHs Nationally (n=977)			All US Hospitals (n=4,317)		
		Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care
<b>AMI</b>	<b>Aspirin at arrival</b>	8	40	97.5%	501	2,194	93.1%	3,565	375,828	98.8%
	<b>Aspirin at discharge</b>	8	31	90.3%	452	1,569	90.8%	3,474	418,090	98.8%
	<b>ACEI or ARB for LVSD</b>	*	*	*	194	312	84.3%	2,885	75,566	96.4%
	<b>Smoking cessation advice</b>	*	*	*	111	168	82.7%	2,694	136,574	99.6%
	<b>Beta blocker at discharge</b>	8	32	93.8%	460	1,602	90.6%	3,486	407,099	98.5%
	<b>Fibrinolytic w/in 30 minutes of arrival</b>	*	*	*	26	33	48.5%	410	1,140	62.0%
	<b>PCI at arrival</b>	*	*	*	*	*	*	1,559	58,101	91.2%
<b>Heart Failure</b>	<b>Discharge instructions</b>	19	406	90.4%	895	14,329	79.8%	4,074	614,962	89.9%
	<b>Assessment of LVS</b>	19	537	95.9%	907	20,990	84.3%	4,091	767,866	98.2%
	<b>ACE inhibitor or ARB for LVSD</b>	16	147	94.6%	780	4,854	85.9%	3,931	243,582	95.0%
	<b>Smoking cessation advice</b>	15	79	88.6%	681	2,614	86.7%	3,809	129,441	98.7%
<b>Pneumonia</b>	<b>Pneumococcal vaccination</b>	19	714	93.6%	966	29,508	86.8%	4,163	504,930	94.1%
	<b>Blood culture prior to first antibiotic</b>	19	628	96.2%	888	22,220	93.6%	4,038	504,903	96.2%
	<b>Smoking cessation advice</b>	18	211	92.4%	907	8,658	88.3%	4,089	198,877	97.7%
	<b>Initial antibiotic(s) within 6 hours</b>	19	672	96.4%	940	29,217	95.4%	4,129	534,415	95.8%
	<b>Most appropriate initial antibiotic(s)</b>	18	531	91.5%	951	22,299	88.7%	4,136	338,146	92.9%

Definitions of these measures can be found in Appendix A.

\*The total number of patients in the state or nationally with data on this measure was less than 25.

**Table 3. Hospital Compare Inpatient Process of Care Results for 2010 Discharges for CAHs in North Carolina, CAHs Nationally, and All US Hospitals**

		CAHs in North Carolina (n=19)			CAHs Nationally (n=977)			All US Hospitals (n=4,317)		
		Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care
Surgical Care Improvement	Influenza vaccination	16	222	90.1%	893	9,601	85.6%	4,066	175,841	91.7%
	Preventative antibiotic(s) 1 hour before incision	9	501	98.0%	444	19,044	92.9%	3,635	1,091,583	97.4%
	Received appropriate preventative antibiotic(s)	9	503	99.6%	440	19,113	96.7%	3,632	1,103,318	97.7%
	Preventative antibiotic(s) stopped within 24 hours after surgery	9	486	97.7%	439	18,548	93.6%	3,628	1,050,953	95.7%
	Doctors ordered blood clot prevention treatments	9	293	93.5%	422	8,990	90.6%	3,616	545,333	95.0%
	Received blood clot prevention treatments 24 hours pre/post-surgery	9	293	92.5%	418	8,926	89.7%	3,609	543,492	93.3%
	Controlled 6AM post-op blood glucose	*	*	*	*	*	*	1,189	176,684	94.1%
	Appropriate Hair Removal	9	700	100.0%	458	25,081	99.0%	3,670	1,584,551	99.7%
	Beta blockers before/after surgery	6	183	95.1%	219	3,635	89.2%	3,382	459,876	94.1%
	Urinary Catheter removed 1st/2nd day before surgery	8	417	93.0%	408	10,758	90.0%	3,580	684,515	91.1%

Definitions of these measures can be found in Appendix A.

\*The total number of patients in the state or nationally with data on this measure was less than 25.

**Table 4. Hospital Compare Outpatient Process of Care Results for 2010 for CAHs in North Carolina, CAHs Nationally, and All US Hospitals**

		CAHs in North Carolina (n=6)			CAHs Nationally (n=282)			All US Hospitals (n=3,473)		
		Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care	Hospitals reporting at least one patient	Total number of patients	Percent of patients receiving recommended care
Outpatient AMI/Chest Pain	Received drugs for clots within 30 minutes	*	*	*	149	481	47.4%	1,043	5,416	55.9%
	Aspirin within 24 hours of arrival or prior to transfer	6	324	95.4%	281	12,853	95.5%	2,964	161,373	95.6%
Outpatient Surgery	Received antibiotic within 1 hour before surgery	*	*	*	158	2,423	84.4%	3,227	665,613	94.3%
	Received right kind of antibiotic	4	44	95.5%	154	2,418	90.9%	3,209	672,515	94.5%

		CAHs in North Carolina (n=6)			CAHs Nationally (n=282)			All US Hospitals (n=3,473)		
		Hospitals reporting at least one patient	Total number of patients	Average minutes	Hospitals reporting at least one patient	Total number of patients	Average minutes	Hospitals reporting at least one patient	Total number of patients	Average minutes
Outpatient AMI/Chest Pain	Time to patient transfer for specialized care	*	*	*	181	844	98.8	1,648	12,716	98.1
	Time to ECG	6	340	8.3	281	13,434	9.8	2,973	167,843	11.5

Definitions of these measures can be found in Appendix A.

\*The total number of patients in the state or nationally with data on this measure was less than 25.

## HCAHPS Survey Results for CAHs in North Carolina and Nationally

Table 5 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 three groups of hospitals that publicly reported HCAHPS data for 2010: CAHs in North Carolina, CAHs nationally, and all US hospitals.

Compared to all US hospitals, CAHs nationally had greater percentages of patients that assessed their experiences receiving care positively, i.e. gave the highest level of response for each of the HCAHPS survey measures.

Caution should be exercised in comparing HCAHPS results for states that have few CAHs reporting results and/or CAHs whose results are based on fewer than 100 completed surveys.

Table 5 also shows that the number of CAHs in North Carolina that reported HCAHPS data was 10, for an HCAHPS reporting rate of 43.5%. This rate was greater than the national HCAHPS reporting rate of 38% for CAHs.

**Table 5. HCAHPS Results for 2010 for CAHs in North Carolina and Nationally and all US Hospitals**

Percent of patients who reported that:	Mean (average) for:		
	North Carolina CAHs (n=10)	CAHs Nationally (n=505)	All US Hospitals (n=4,526)
Nurses always communicated well	83%	81%	76%
Doctors always communicated well	85%	84%	80%
Patient always received help as soon as wanted	73%	74%	64%
Pain was always well controlled	73%	72%	69%
Staff always explained about medications before giving them to patient	64%	66%	61%
Yes, staff gave patient information about what to do during recovery at home	83%	84%	82%
Area around patient room was always quiet at night	65%	63%	58%
Patient room and bathroom were always clean	78%	80%	72%
They gave an overall hospital rating of 9 or 10 (high) on 1-10 scale	74%	73%	68%
They would definitely recommend the hospital to friends and family	75%	73%	70%

## Mortality and Readmission Rate Categories for CAHs in North Carolina and Nationally

Table 6 displays the number of CAHs in North Carolina and nationally 1) that did not have mortality data in Hospital Compare for AMI, heart failure, and/or pneumonia; 2) those that did not have the minimum 25 eligible cases per condition over the 3 year period from July 2007 to June 2010 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, 91.8% of CAHs either were missing AMI mortality data or had too few cases to reliably calculate a rate; the remaining 8.2% 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 (73%). 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 4% of CAHs for pneumonia).

**Table 6. Number (Percent) of CAHs in North Carolina and 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	North Carolina CAHs	23	3 (13.0%)	17 (73.9%)	3 (13.0%)	0	0
	CAHs Nationally	1329	347 (26.1%)	873 (65.7%)	209 (8.2%)	0	0
Heart Failure	North Carolina CAHs	23	3 (13.0%)	7 (30.4%)	13 (56.5%)	0	0
	CAHs Nationally	1329	286 (21.5%)	275 (20.7%)	760 (57.2%)	0	8 (0.6%)
Pneumonia	North Carolina CAHs	23	3 (13.0%)	1 (4.3%)	18 (78.3%)	0	1 (4.3%)
	CAHs Nationally	1329	280 (21.0%)	81 (6.1%)	928 (69.8%)	0	40 (3.0%)

Table 7 shows the 30 day risk-adjusted readmission rates for AMI, heart failure, and pneumonia for CAHs in North Carolina and nationally. For AMI, 97.2% of CAHs either were missing AMI readmission data or had too few cases to reliably calculate a rate, and the remaining 2.8% 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 (61.3%) and pneumonia (73.6%), but few CAHs had readmission rates that are either better than or worse than the US rates for all hospitals (0.3% of CAHs for heart failure and 0.2% of CAHs for pneumonia).

**Table 7. Number (Percent) of CAHs in North Carolina and 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	North Carolina CAHs	23	5 (21.7%)	17 (73.9%)	1 (4.3%)	0	0
	CAHs Nationally	1329	393 (29.6%)	899 (67.6%)	37 (2.8%)	0	0
Heart Failure	North Carolina CAHs	23	3 (13.0%)	5 (21.7%)	15 (65.2%)	0	0
	CAHs Nationally	1329	286 (21.5%)	228 (17.2%)	811 (61.0%)	1 (0.1%)	3 (0.2%)
Pneumonia	North Carolina CAHs	23	3 (13.0%)	1 (4.3%)	19 (82.6%)	0	0
	CAHs Nationally	1329	280 (21.1%)	71 (5.3%)	976 (73.4%)	0	2 (0.2%)

### Trends Over Time

The figures that follow Table 4 compare the North Carolina and national data trends for CAHs for 2008, 2009 and 2010. The percentages for each year are based on all CAH patients for whom data were reported that year. Again, data are not shown for measures with fewer than 25 patients per year.

Over this time period, the percentage of CAH patients nationally that received recommended care increased for all inpatient process of care measures. Some states may have greater year-to-year fluctuation in results due to small sample sizes for some measures.

## **Future Issues for CAH Quality Reporting**

Three key issues have implications for CAH quality reporting in the future: 1) CMS changes to the Hospital Compare quality measure set; 2) implementation of the Medicare Beneficiary Quality Improvement Project (MBQIP) by the Office of Rural Health Policy, which will encourage and assist CAHs in quality reporting; and 3) continued interest in payment reform at the national level, including the establishment of Value Based Purchasing demonstrations involving CAHs and other low volume hospitals.

### *Changes to CMS Hospital Compare*

In January 2012, CMS is making several changes to the Hospital Compare inpatient quality measure set that will reduce the number of pneumonia, heart failure and AMI measures.<sup>10</sup> These changes include:

- Retiring the pneumonia initial antibiotic timing measure due to concerns about potential incentives to overuse antibiotics.
- Retiring the pneumonia, heart failure and AMI smoking cessation advice measures and the pneumonia influenza and pneumococcal vaccination measures.
- Suspending data collection for three inpatient AMI measures (aspirin at arrival, ACEI/ARB for LVSD, and beta blocker at discharge) because performance is uniformly high nationwide (although CAH performance is not as high as other hospitals).
- Adding two new global influenza and pneumococcal vaccination measures.

### *The Medicare Beneficiary Quality Improvement Project*

The Office of Rural Health Policy (ORHP) created the Medicare Beneficiary Quality Improvement Project (MBQIP) as a Flex Grant Program activity within the core area of quality improvement. The primary goal of this project is for CAHs to implement quality improvement initiatives to improve their patient care. CAHs that opt to participate in MBQIP were asked to sign a Memorandum of Understanding (MOU) allowing ORHP to access their quality measure data. As of December 2011, 42 of the 45 Flex states were participating in MBQIP and 879 CAHs had signed MOUs.

The MBQIP measures include the CMS inpatient pneumonia and heart failure measures (to be implemented starting in 2011-2012); CMS outpatient AMI/chest pain, outpatient surgery, and HCAHPS measures (starting in 2012-2013); the outpatient Emergency Department Transfer Communication measures and Pharmacist CPOE/verification of medication orders within 24 hours (starting in 2013-2014).

### *Quality Reporting and Payment Reform*

Beginning in FY 2013, the CMS Value-Based Purchasing (VBP) Program will provide Medicare incentive payments to acute care hospitals that are paid under the Prospective Payment System, based on how well the hospitals perform on certain quality measures or how much the hospitals' performance improves from their baseline performance. Although CAHs are currently excluded from the CMS VBP Program, the Patient Protection and Affordable Care Act of 2010 included provisions for CMS to establish VPB demonstrations for CAHs and other low volume hospitals excluded from the VPB Program.



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3. Casey, M., Burlew, M. and Moscovice, I. *Critical Access Hospital Year 3 Hospital Compare Participation and Quality Measure Results*. Flex Monitoring Team Briefing Paper No. 20, August 2008. [http://www.flexmonitoring.org/documents/BriefingPaper20\\_HospitalCompare3.pdf](http://www.flexmonitoring.org/documents/BriefingPaper20_HospitalCompare3.pdf)
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## Appendix A: Definitions of Current Hospital Compare Process Measures

### ***Inpatient AMI - Heart Attack and Chest Pain***

**Aspirin at arrival** – Acute myocardial infarction (AMI) patients without aspirin contraindications who received aspirin within 24 hours before or after hospital arrival. (Is both an inpatient and outpatient measure.)

**Aspirin at discharge** – AMI patients without aspirin contraindications who were prescribed aspirin at hospital discharge.

**ACEI or ARB for LVSD** – (Angiotensin Converting Enzyme [ACE] Inhibitor or Angiotensin Receptor Blocker [ARB] for Left Ventricular Systolic Dysfunction) - AMI patients with left ventricular systolic dysfunction (LVSD) and without angiotensin converting enzyme inhibitor (ACE inhibitor) contraindications 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 within 30 minutes of arrival** – AMI patients receiving fibrinolytic therapy during the hospital stay and having a time from hospital arrival to fibrinolysis of 30 minutes or less (this is both an inpatient and outpatient measure.)

**PCI at arrival** – Percutaneous Coronary Intervention (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** – AMI patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.

**Time to transfer for specialized care** – median time to transfer to another facility for acute coronary intervention (this is only an outpatient measure.) Median number of minutes before outpatients with heart attack who needed specialized care were transferred to another hospital (a lower number of minutes is better)

**Time to ECG** – (This is only an outpatient measure.) Median number of minutes before outpatients with heart attack (or with chest pain that suggest a possible heart attack) got an ECG (a lower number of minutes is better)

### ***Heart Failure***

**Discharge instructions** – Heart failure patients discharged home with written instructions or educational material given to patient or care giver at discharge or during the hospital stay addressing all of the following: activity level, diet, discharge medications, follow-up appointment, weight monitoring, and what to do if symptoms worsen

**Assessment of LVS** – Evaluation of left ventricular systolic (LVS) function - Heart failure patients with documentation in the hospital record that an evaluation of the left ventricular systolic (LVS) function was performed before arrival, during hospitalization, or is planned for after discharge.

**ACE inhibitor or ARB for LVSD** – Heart failure patients with left ventricular systolic dysfunction (LVSD) and without angiotensin converting enzyme inhibitor (ACE inhibitor) contraindications or angiotensin receptor blocker (ARB) contraindications who are prescribed an ACE inhibitor or an ARB at hospital discharge.

**Smoking cessation advice** – Heart failure patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.

### ***Pneumonia***

**Pneumococcal vaccination** – Pneumonia inpatients age 65 and older who were screened for pneumococcal vaccine status and were administered the vaccine prior to discharge, if indicated.

**Blood culture prior to first antibiotic** – Cultures performed in the emergency department prior to initial antibiotic received in hospital - Pneumonia patients whose initial emergency room blood culture specimen was collected prior to first hospital dose of antibiotics.

**Smoking cessation advice** – Pneumonia patients with a history of smoking cigarettes, who are given smoking cessation advice or counseling during a hospital stay.

**Initial antibiotics within six hours** – Pneumonia inpatients that receive within 6 hours after arrival at the hospital. Evidence shows better outcomes for administration times less than four hours.

**Most appropriate initial antibiotics** – Immunocompetent patients with pneumonia who receive an initial antibiotic regimen that is consistent with current guidelines.

**Influenza vaccination** – Pneumonia patients age 50 years and older, hospitalized during October, November, December, January, or February who were screened for influenza vaccine status and were vaccinated prior to discharge, if indicated.

### ***Surgical Care Improvement Project***

**Preventative antibiotics one hour before incision** – Surgical patients who received prophylactic antibiotics within 1 hour prior to surgical incision. (This is both an inpatient and outpatient measure.)

**Received appropriate preventative antibiotics** – Prophylactic antibiotic selection – Surgical patients who received the recommended antibiotics for their particular type of surgery. (This is both an inpatient and outpatient measure.)

**Preventative antibiotics stopped within 24 hours after surgery** – Prophylactic antibiotics discontinued within 24 hours after surgery end time – Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after surgery end time.

**Doctors ordered blood clot prevention treatments** – Surgery patients with recommended venous thromboembolism prophylaxis ordered – Surgery patients with recommended venous thromboembolism (VTE) prophylaxis ordered anytime from hospital arrival to 48 hours after *Surgery End Time*.

**Received blood clot prevention treatments 24 hours pre/post-surgery** – Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery – Surgery patients who received appropriate venous thromboembolism (VTE) prophylaxis within 24 Hours prior to *Surgical Incision Time* to 24 Hours after *Surgery End Time*.

**Controlled 6AM post-op blood glucose** – Cardiac surgery patients with controlled 6 A.M. postoperative blood glucose – Cardiac surgery patients with controlled 6 A.M. blood glucose ( $\leq 200$  mg/dL) on postoperative day one (POD 1) and postoperative day two (POD 2) with *Surgery End Date* being postoperative day zero (POD 0).

**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.

**Beta blockers before/after surgery** – Surgery patients on a beta blocker prior to arrival who received a beta blocker during the perioperative period – Surgery patients who were taking heart drugs called beta blockers before coming to the hospital, who were kept on the beta blockers during the period just before and after their surgery.

**Urinary Catheter removed 1st/2nd day after surgery** – Inpatients whose urinary catheters were removed within 2 days after surgery to reduce the risk of infections – Shows the percent of surgery patients whose urinary catheters were removed on the first or second day after surgery.

*Source: CMS. Hospital Compare. Technical Appendix. Available at: <http://www.hospitalcompare.hhs.gov/staticpages/for-professionals/poc/Technical-Appendix.aspx#POC3>. Accessed January 5, 2012.*

## Appendix B: North Carolina CAHs and CAHs Nationally for Inpatient and Outpatient Measures

Figure 1. AMI: Aspirin at Arrival

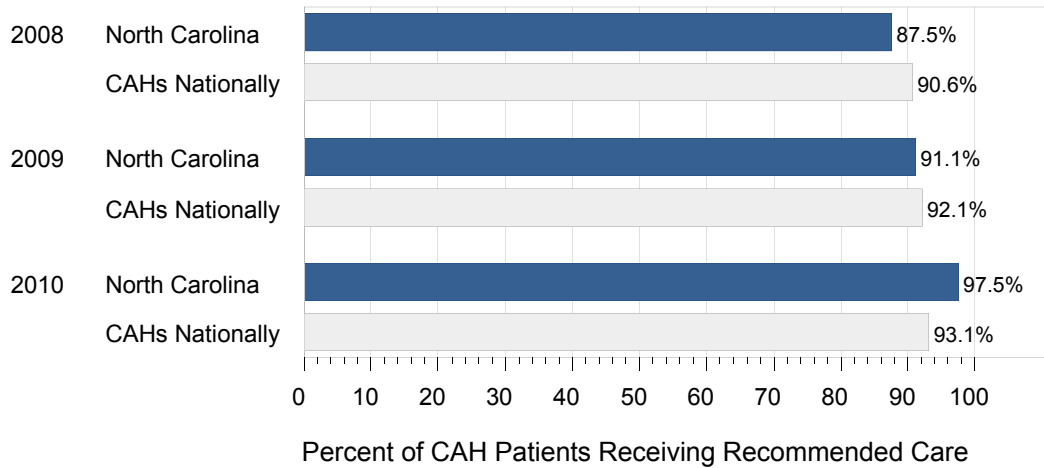


Figure 2. AMI: Aspirin at Discharge

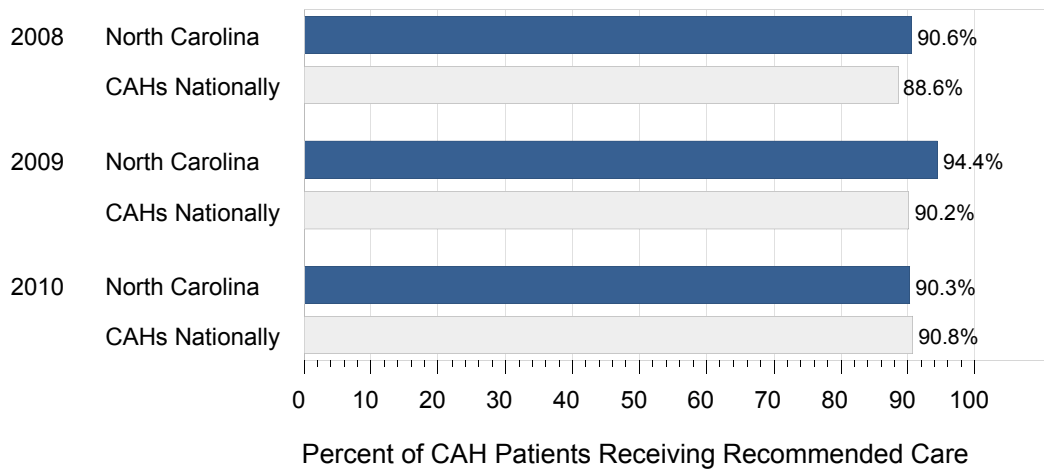


Figure 3. AMI: Beta Blocker at Discharge

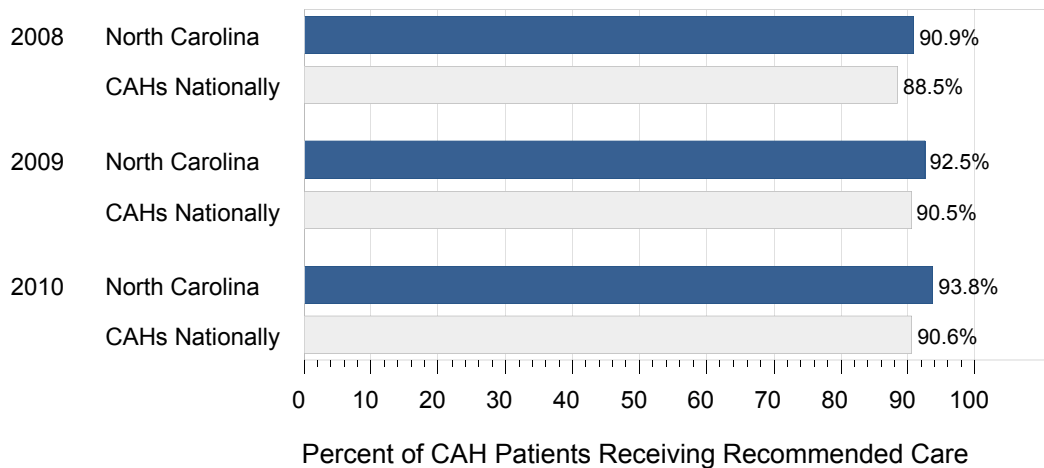


Figure 4. Heart Failure: Discharge Instructions

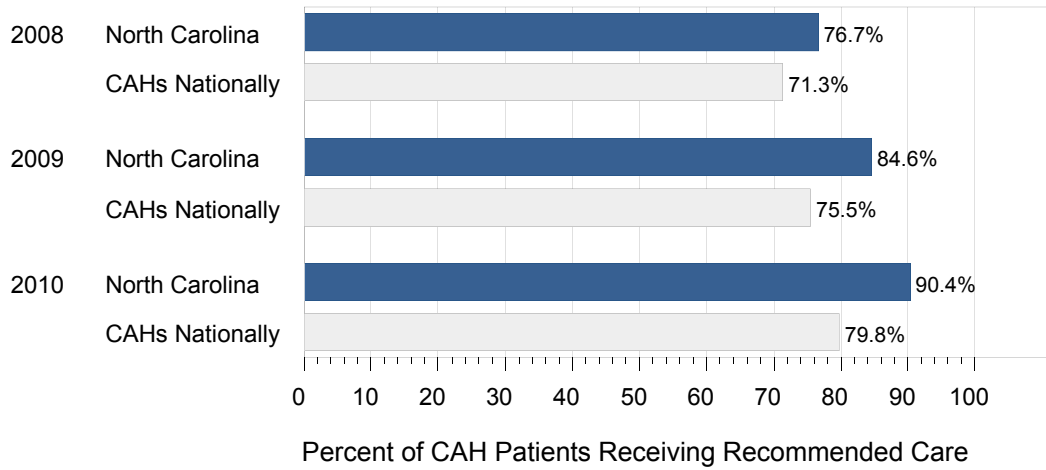


Figure 5. Heart Failure: Assessment of LVS

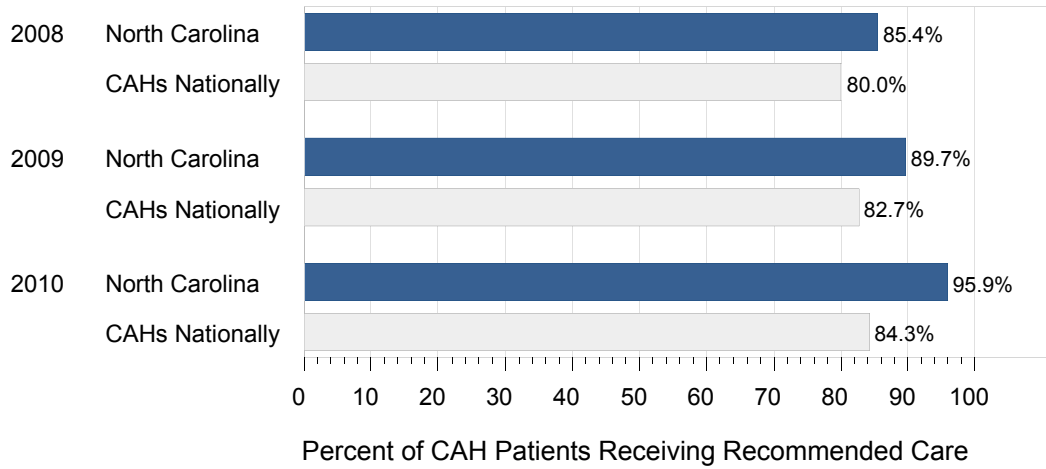


Figure 6. Heart Failure: ACE Inhibitor or ARB for LVSD

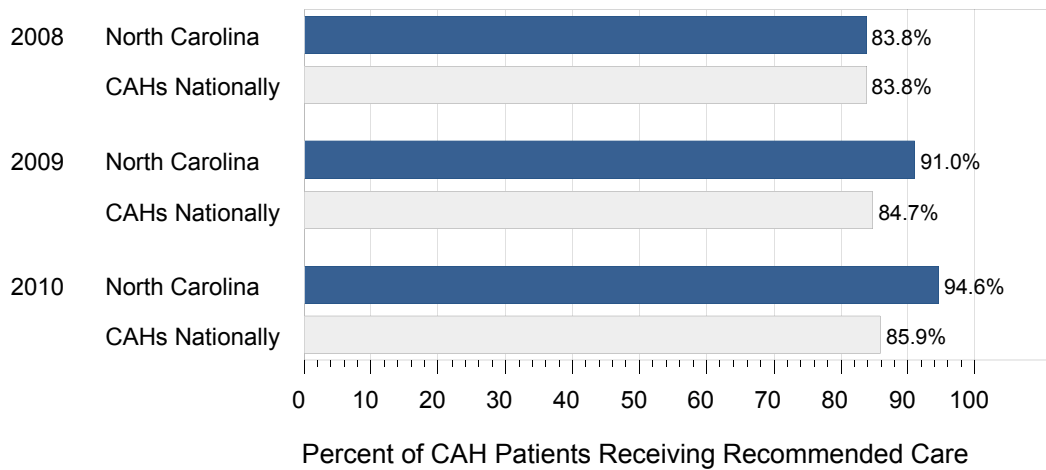


Figure 7. Heart Failure: Smoking Cessation Advice

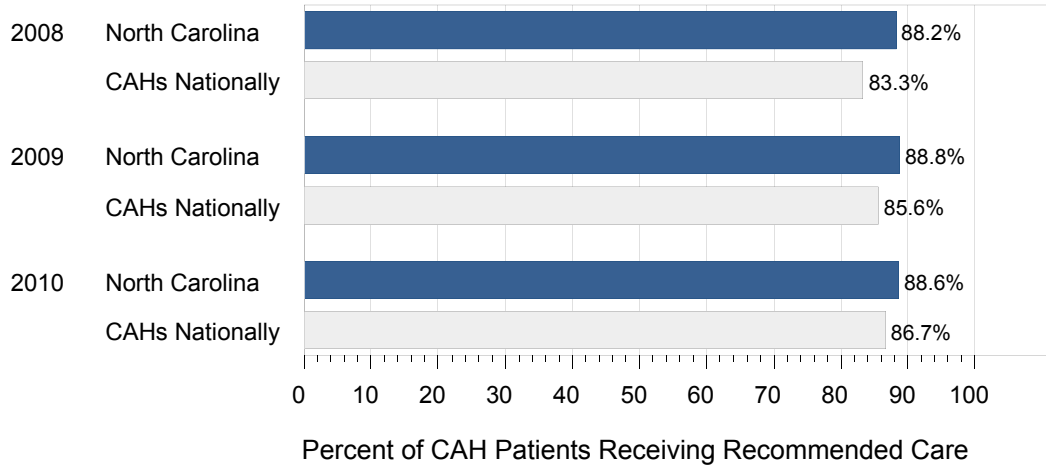


Figure 8. Pneumonia: Pneumococcal Vaccination

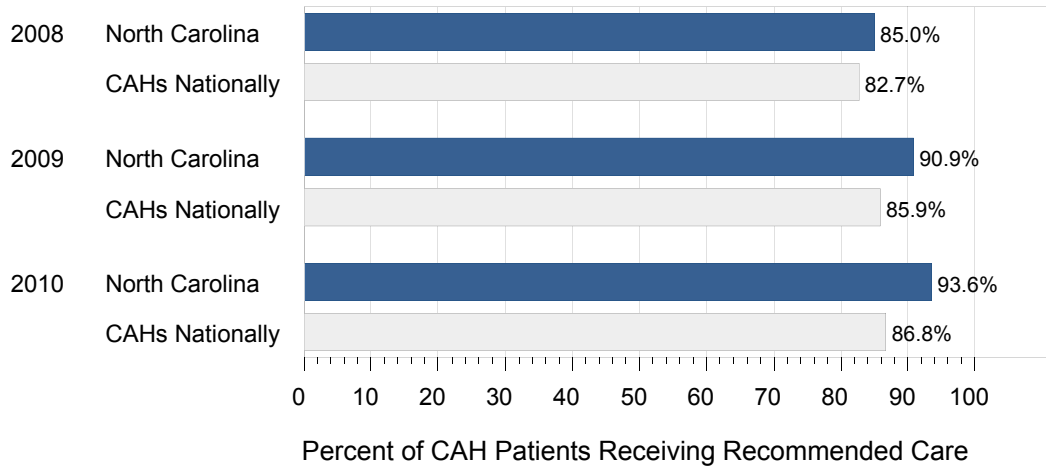


Figure 9. Pneumonia: Blood Culture Prior to First Antibiotic

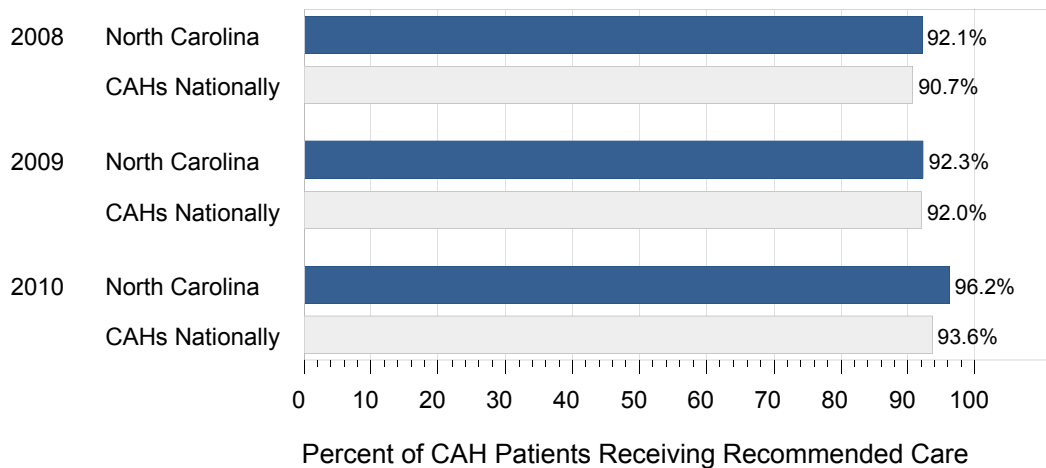


Figure 10. Pneumonia: Smoking Cessation Advice

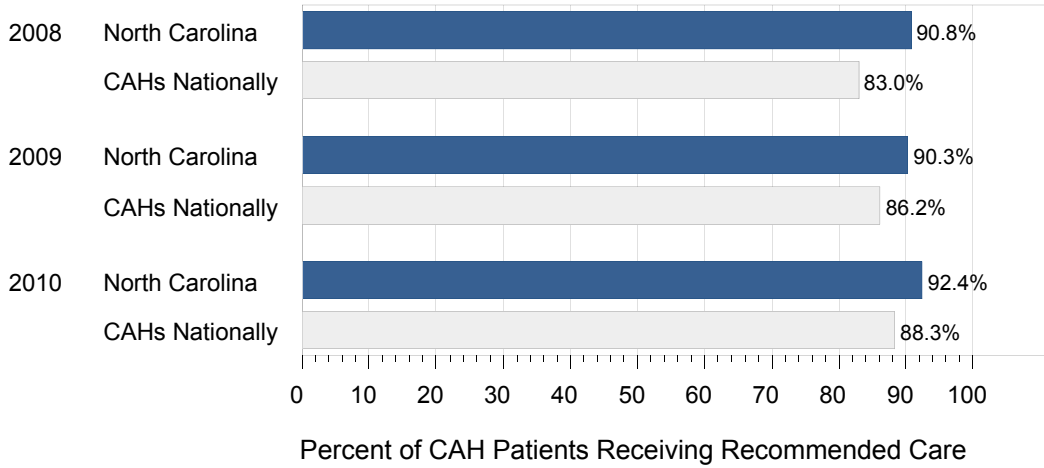


Figure 11. Pneumonia: Timely Administration of Initial Antibiotic

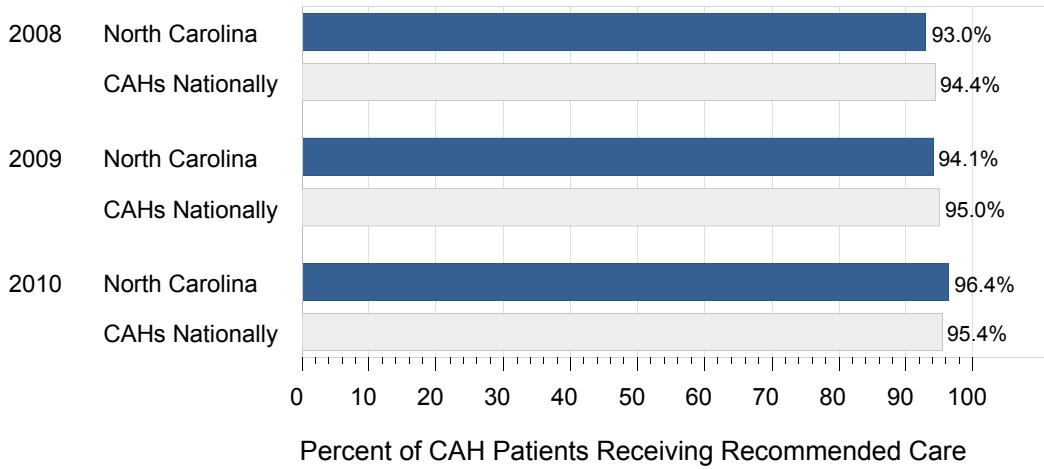


Figure 12. Pneumonia: Most Appropriate Initial Antibiotic(s)

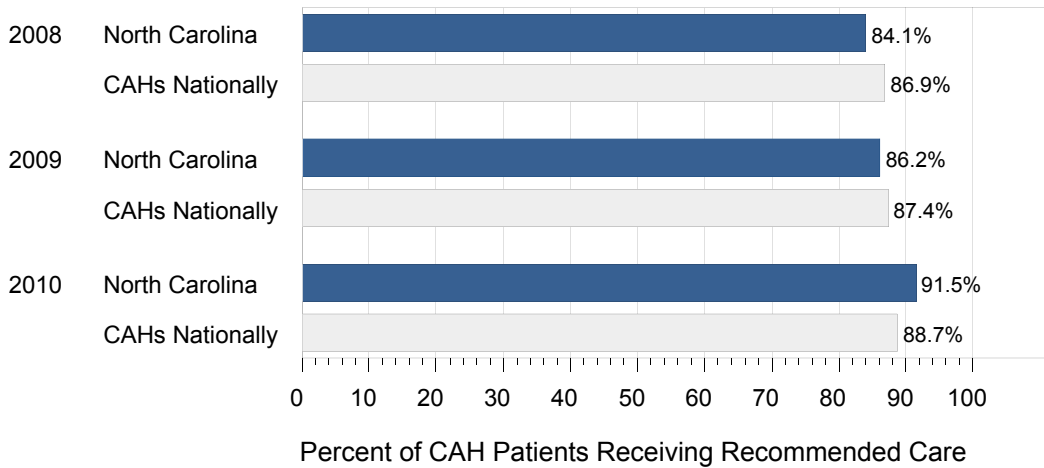




Figure 13. Pneumonia: Influenza Vaccination

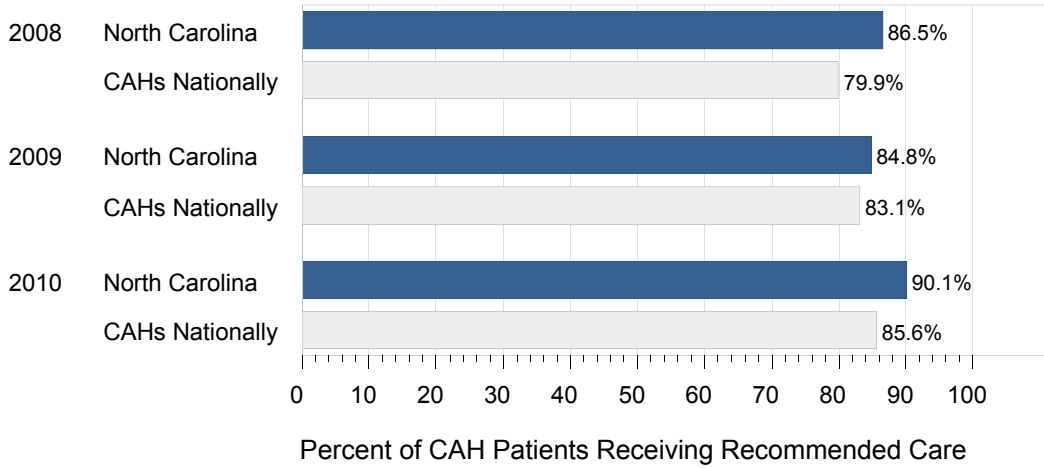


Figure 14. Surgical Care Improvement: Preventative Antibiotic(s) One Hour before Incision

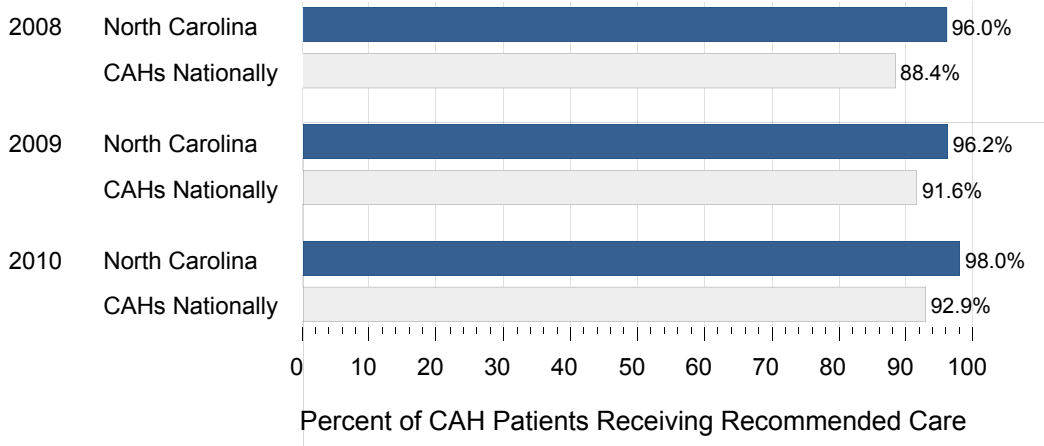


Figure 15. Surgical Care Improvement: Received Appropriate Preventative Antibiotic(s)

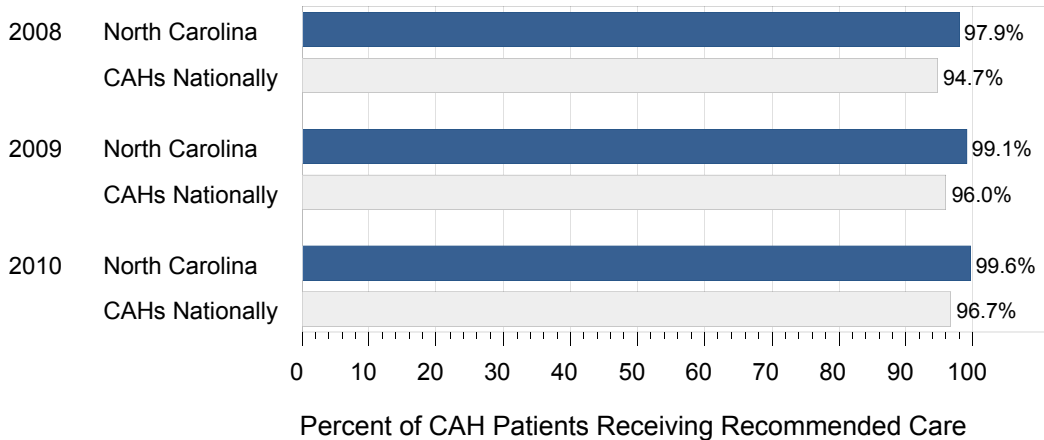


Figure 16. Surgical Care Improvement: Preventative Antibiotic(s) Stopped w/in 24 Hours Post Surgery

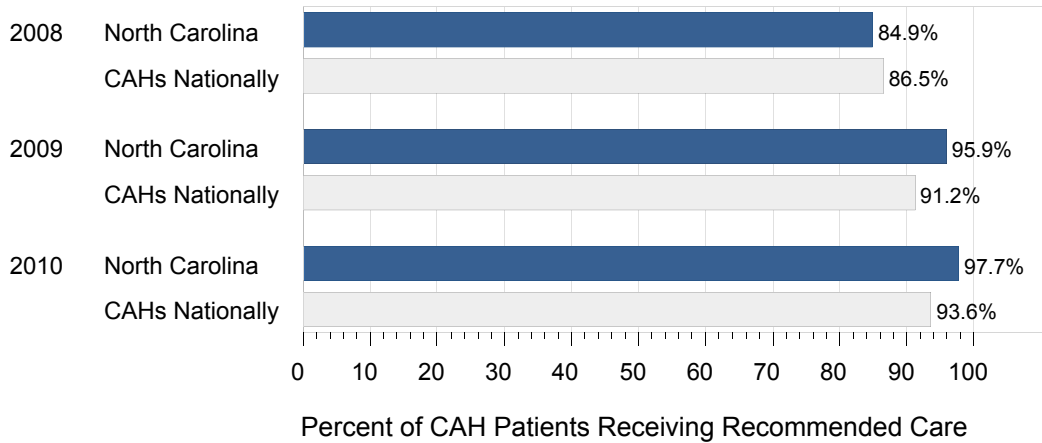


Figure 17. Surgical Care Improvement: Doctors Ordered Blood Clot Prevention Treatments

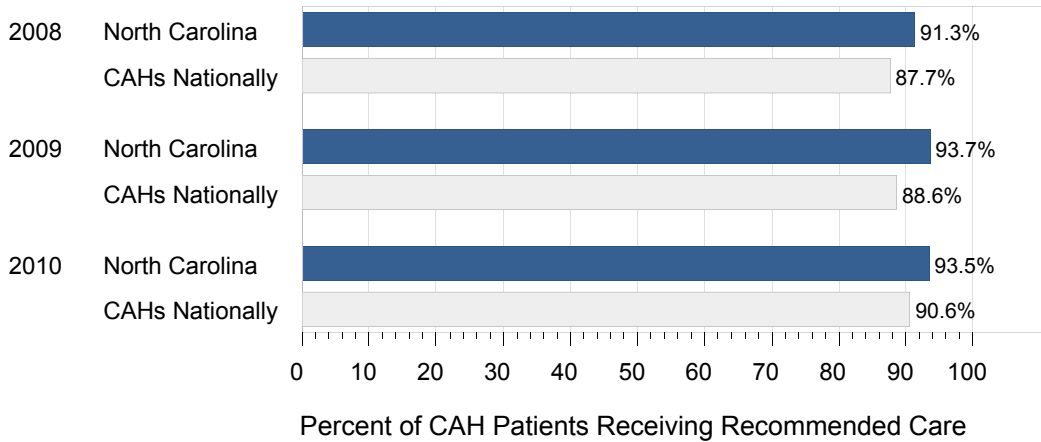


Figure 18. Surgical Care Improvement: Recvd Blood Clot Prevention Treatments 24 Hrs Pre/Post Surgery

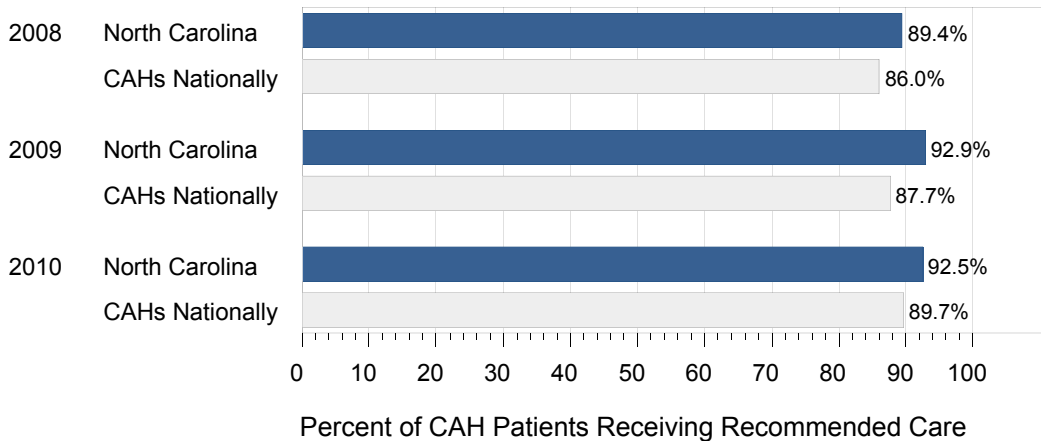


Figure 19. Surgical Care Improvement: Appropriate Hair Removal

