

Flex Monitoring Team Briefing Paper No. 2

**Quality Improvement Activities
in Critical Access Hospitals:
Results of the 2004 National CAH Survey**

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The Flex Monitoring Team is a consortium of the Rural Health Research Centers located at the Universities of Minnesota, North Carolina, and Southern Maine. With funding from the federal Office of Rural Health Policy (PHS Grant No. U27RH01080), the Flex Monitoring Team is 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 Critical Access Hospitals (CAHs); and engaging rural communities in health care system development.

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EXECUTIVE SUMMARY

This report describes the quality improvement results from a national survey of 474 CAH administrators conducted in early 2004. Survey respondents were asked about: 1) their use of standardized guidelines or protocols; 2) collection and uses of data on quality measures; and 3) quality improvement assistance provided by external organizations, including state Medicare Quality Improvement Organizations (QIOs), state hospital associations, and support hospitals.

More than four-fifths of CAHs report using standardized protocols or clinical guidelines for the care of patients with acute myocardial infarction, pneumonia, chest pain, and congestive heart failure. Over half of CAHs report using protocols for care of patients with diabetes, and more than one-quarter of CAHs report using protocols for other conditions, including trauma/emergency care, stroke, obstetrics, COPD/asthma, and orthopedics/joint replacement.

More than four-fifths of CAHs report collecting data on quality measures for patients with pneumonia, acute myocardial infarction, and congestive heart failure. About two-thirds of CAHs that provide surgical services collect data on quality measures for surgical patients; a similar proportion of all respondents collect quality data on patients with chest pain. One-fourth of CAHs also report collecting data on quality measures for other conditions, including emergency care/trauma, obstetrics, infections, stroke, and COPD/asthma.

The vast majority of CAHs that collect some type of data on quality measures, use the data to implement new protocols or revise existing protocols, for risk management, to identify staff continuing education needs, and for peer review. More than three-fourths of the CAHs use the data for benchmarking, and over half use it for public reporting. This trend has positive implications for CAH participation in the National Voluntary Hospital Reporting Initiative, although sample size and measurement issues remain concerns for many small rural facilities.

Many CAHs are working with QIOs, state hospital associations, support hospitals, and/or other CAHs on efforts such as QI continuing education, implementation of protocols, and collection and analysis of quality data. Over 70% of CAHs receive assistance from their QIOs in the form of guidelines/protocols, quality improvement continuing education for staff, and assistance with data collection and analysis. The most frequently reported types of quality improvement (QI) assistance received from state hospital associations are QI continuing education for staff, assistance with data collection and analysis, and a forum for working with other CAHs on QI. Over half of CAHs report receiving QI assistance from their support hospital in the form of continuing education for staff and guidelines/protocols. Significant proportions of CAHs also receive help implementing specific interventions to improve patient care and assistance with data collection and analysis from their support hospitals.

These survey results present encouraging evidence that many CAHs are actively involved in key quality improvement activities, despite the challenges they face. The survey results also indicate that CAHs are continuing to successfully build external relationships to support their QI activities.

INTRODUCTION

Rural hospitals face many challenges in implementing quality improvement (QI) initiatives, including limited resources, low patient volume, small staffs, and inadequate information technology.^{1,2} Critical Access Hospitals (CAHs), the smallest rural hospitals, are especially challenged. However, through cost-based reimbursement, the Medicare Rural Hospital Flexibility program (Flex Program) provides CAHs with additional financial resources that can be used for quality-related activities. Previous surveys and site visits have documented multiple strategies used by CAHs to enhance their QI activities.^{3,4,5} In addition, many states are using state Flex Program grant funds to fund quality initiatives targeted to CAHs.⁶

This report describes the quality improvement results from a national survey of 474 CAH administrators conducted in early 2004. The study is part of the overall monitoring effort of the Flex Program conducted by the Flex Monitoring Team, a collaboration of the Rural Health Research Centers at the Universities of Minnesota, North Carolina, and Southern Maine, and funded by the federal Office of Rural Health Policy.

METHODS

Data for this report were collected through a national telephone survey of Critical Access Hospital administrators conducted between January and April 2004. The survey was developed by the Flex Monitoring Team and fielded by the Survey Research Center in the Division of Health Services Research and Policy at the University of Minnesota. Survey questions addressed changes in the scope of services provided by the CAH, organizational linkages, quality improvement and patient safety activities, access to capital, and community relationships.

A random sample of 500 CAHs was selected for the survey, stratified into two groups: 1) CAHs that were certified by the Centers for Medicare and Medicaid Services (CMS) as of May

1, 2001 and had responded to a previous survey of CAHs conducted in 2001 and 2) CAHs that were certified after May 1, 2001 and no later than December 1, 2002 (based on certification dates provided by CMS). The 500 CAHs in the sample represent approximately two thirds of all CAHs that were certified as of December 1, 2002. All of the hospitals in the sample had at least one year and up to four years of CAH operational experience before they were surveyed. One CAH closed prior to being surveyed, and two others were removed from the sample because their CEOs reported being certified after December 1, 2002, reducing the sample to 497 CAHs. A total of 474 CAHs responded to the survey, yielding a response rate of 95%.

In the area of quality improvement, survey respondents were asked about: 1) their use of standardized guidelines or protocols; 2) collection and uses of data on quality measures; and 3) quality improvement assistance provided by external organizations, including state Medicare Quality Improvement Organizations (QIOs), state hospital associations, and support hospitals.

For this analysis, the CAH survey data were merged with data from the 2002 American Hospital Association Annual Survey to provide additional information about the organizational characteristics of the CAHs. Chi-square tests were used to determine the statistical significance of differences among CAHs in key variables of interest.

SURVEY RESULTS

Use of Standardized Protocols/Clinical Guidelines

Evidence-based clinical guidelines are increasingly being used by health care practitioners to assist them in decisionmaking about appropriate care for patients. The National Guideline Clearinghouse, an initiative of the Agency for Healthcare Research and Quality, is a comprehensive database of evidence-based clinical practice guidelines that currently contains 1,276 guidelines.⁷ The Centers for Medicare and Medicaid Services (CMS) is assessing the

extent to which care for Medicare beneficiaries meets recommended guidelines.⁸ CMS is tracking national and state-level changes in 22 quality indicators for several conditions, including acute myocardial infarction (AMI), congestive heart failure (CHF), pneumonia, and stroke in inpatient settings. In 2000-2001, the national weighted average percentage of Medicare beneficiaries who received recommended treatments for AMI ranged from 38% for smoking cessation counseling during hospitalization to 84% for administration of aspirin within 24 hours of admission.⁸

Few studies have specifically examined the use of clinical guidelines in rural hospital settings. Sheikh and Bullock⁹ found that Medicare patients in rural Kansas hospitals were less likely than those in urban hospitals to receive several recommended treatments for AMI. In their national study of Medicare beneficiaries with AMIs, Baldwin et al.¹⁰ found that both rural and urban hospitals were not meeting many of the recommended treatment guidelines for AMI. AMI patients in rural hospitals were less likely than those in urban hospitals to receive several recommended treatments. Smaller and more remote rural hospitals also were less likely than larger rural hospitals to provide several recommended AMI treatments. In small remote hospitals, the proportion of patients who received each recommended intervention ranged from 34% for early reperfusion to 77% for receipt of aspirin during hospitalization. In a national survey of 72 CAHs, more than 80% reported implementing one or more clinical guidelines or protocols since conversion to a CAH.⁵ The most frequently mentioned protocols addressed CHF, pneumonia, AMI, diabetes, and chest pain.

In the current survey, more than four-fifths of CAHs report using standardized protocols or clinical guidelines for the care of patients with AMI, pneumonia, chest pain, and CHF (Table 1). Over half of CAHs report using protocols for care of patients with diabetes; the lower use of

protocols for diabetic patients may reflect the fact that these protocols generally address care in outpatient settings. In response to an open-ended question, more than one-quarter of CAHs also report using protocols for other conditions; the most common other conditions are trauma/emergency care, stroke, obstetrics, chronic obstructive pulmonary disease/asthma, and orthopedics/joint replacement.

Table 1
CAHs' Use of Standardized Protocols/Clinical Guidelines (n=471)

Type of Protocol/Guideline	Percent of CAHs
AMI (acute myocardial infarction/heart attack)	88.5%
Pneumonia	84.4%
Chest pain	83.7%
CHF (congestive heart failure)	81.7%
Diabetes	56.9%
Other conditions ¹	25.3%
Stroke	5.3%
Trauma/Emergency Care	5.3%
Obstetrics	4.4%
COPD/Asthma	3.0%
Orthopedics/joint replacement	2.7%

¹Some CAHs reported using protocols for more than one other type of condition.

Half of the CAHs use guidelines for all five conditions (AMI, pneumonia, chest pain, CHF, and diabetes) (Table 2). Almost one-quarter (23%) use guidelines for four of the five conditions. Only 7% of CAHs do not use guidelines for any of the five conditions.

Table 2
Number of Protocols/Guidelines Used by CAHs (n=474)

Guideline Use	Percent of CAHs
Use guidelines for all five conditions (AMI, pneumonia, chest pain, CHF, diabetes)	49.6%
Use guidelines for four conditions	23.2%
Use guidelines for three conditions	11.8%
Use guidelines for two conditions	5.5%
Use guidelines for one condition	2.5%
Do not use guidelines for any of the five conditions	7.4%

Table 3 compares selected characteristics of CAHs that use each type of protocol asked about in the survey and those that do not. System members are more likely than non-members to use all types of protocols. Differences between the two groups are statistically significant ($p < .05$) for AMI and CHF. CAHs that are JCAHO accredited are more likely ($p < .05$) than those that are not accredited to use pneumonia protocols; there are no other significant differences by accreditation status. The use of protocols also differs across regions of the country. Regional differences are statistically significant ($p < .01$) for AMI and chest pain. The south census region has the lowest protocol use, except for diabetes. Diabetes is the only condition with significant differences in protocol use by CAH size, as measured by average daily census.

Table 3
Use of Protocols/Guidelines by Selected Characteristics of CAHs (n=474)

	Percent of CAHs that Use Protocols/Guidelines				
	AMI	Pneumonia	Chest Pain	CHF	Diabetes
<u>System membership</u>					
Member (n=158)	93.6% ¹	87.8%	84.6%	87.3% ¹	57.7%
Non-member (n=315)	86.0%	82.7%	83.2%	78.9%	56.4%
<u>JCAHO accreditation</u>					
Accredited (n=51)	84.3%	94.0% ²	86.3%	82.4%	51.1%
Not accredited (n=409)	89.0%	82.8%	83.1%	81.1%	57.4%
<u>Census division</u>					
Northeast (n=23)	95.7% ³	87.0%	78.3% ³	82.6%	45.5%
South (n=102)	80.4%	81.2%	72.6%	78.4%	51.0%
Midwest (n=237)	92.4%	85.7%	87.8%	83.5%	61.0%
West (n=98)	85.7%	82.3%	85.7%	78.4%	54.4%
<u>Average daily census</u>					
< 5 (n=113)	90.3%	89.5%	85.0%	86.7%	68.5% ⁴
5-9 (n=120)	86.7%	82.4%	79.2%	75.8%	56.4%
10-35 (n=121)	87.6%	81.0%	84.3%	78.5%	49.1%
> 35 (n=117)	89.7%	85.1%	86.3%	86.2%	53.7%

Accreditation status, census region, and average daily census (defined as admissions/inpatient days) are based on 2002 AHA data.

¹Differences between system members and non-members are significant at $p < .05$

²Differences between accredited and non-accredited CAHs are significant at $p < .05$

³Differences across census divisions are significant at $p < .01$

⁴Differences across Average Daily Census groups are significant at $p < .05$

Collection and Uses of Data on Quality Measures/Indicators

National and state hospital organizations, federal health care agencies, not-for-profit organizations, and business coalitions have promoted several voluntary efforts to measure and improve quality, especially in hospital environments.¹¹⁻¹⁵ The Medicare Prescription Drug, Improvement and Modernization Act of 2003 took these efforts a step further by linking Medicare prospective payment reimbursement to hospitals= public reporting of quality data.¹⁴ Although CAHs are exempt from the requirement because they are not reimbursed through the prospective payment system, some CAHs have chosen to participate in public reporting.

In the survey, CAHs were asked whether they collect data on quality measures for patients with pneumonia, AMI, CHF and chest pain, and surgical patients. These conditions were selected because of their prevalence in rural hospitals and the fact that these conditions are included in the National Voluntary Hospital Reporting Initiative measures, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) core measures, and the CMS 7th Scope of Work quality measures.

More than four-fifths of CAHs report collecting data on quality measures for patients with pneumonia, AMI, and CHF (Table 4). About two-thirds of CAHs that provide surgical services collect data on quality measures for surgical patients; a similar proportion of all respondents collect quality data on patients with chest pain. One-fourth of CAHs also report collecting data on quality measures for other conditions, including emergency care/ trauma, obstetrics, infections, stroke, and COPD/asthma.

System members are more likely to report collecting data on the quality measures than non-members, but the differences are not statistically significant (Table 5). JCAHO accredited CAHs are significantly more likely ($p < .05$) than non-accredited CAHs to collect quality

Table 4
CAHs' Collection of Data on Quality Measures/Indicators (n=467)

Type of Quality Measure	Percent of CAHs
Pneumonia	87.2%
AMI	84.9%
CHF	83.3%
Surgical patients (e.g., appropriate antibiotic prophylaxis) ¹	67.4%
Chest pain	68.8%
Diabetes	49.2%
Other conditions (e.g., Emergency Room/trauma, obstetrics, infections, stroke, COPD/asthma) ²	26.4%

¹This question was only asked of CAHs that provide surgical services (n=394).

²This was an open-ended question; some CAHs reported collecting data for more than one other condition.

Table 5
Selected Organizational Characteristics of CAHs that Collect Data on Quality Measures (n=474)

	Percent of CAHs Collecting Quality Measure Data					
	AMI	Pneumonia	Chest Pain	Surgical Patients	CHF	Diabetes
<u>System membership</u>						
Member (n=158)	87.3%	89.1%	73.1%	69.6%	85.4%	53.4%
Non-member (n=315)	83.8%	86.2%	66.7%	66.5%	82.3%	47.2%
<u>JCAHO accreditation</u>						
Accredited (n=51)	92.0%	97.9% ¹	77.6%	76.7%	94.0% ¹	61.7%
Not accredited (n=409)	84.2%	86.0%	67.7%	66.6%	82.0%	47.5%
<u>Census division</u>						
Northeast (n=23)	100.0% ²	95.5%	52.2%	80.0%	95.7% ²	59.1%
South (n=102)	83.2%	90.0%	65.0%	61.8%	87.0%	43.2%
Midwest (n=237)	87.0%	87.8%	73.4%	68.6%	83.8%	52.1%
West (n=98)	78.4%	81.3%	65.3%	67.5%	75.3%	44.4%
<u>Average daily census</u>						
< 5 (n=113)	81.4%	89.4%	62.4%	58.5%	82.1%	51.2%
5-9 (n=120)	84.3%	87.5%	67.2%	68.3%	85.0%	48.3%
10-35 (n=121)	86.7%	86.6%	71.4%	67.7%	80.7%	46.6%
> 35 (n=117)	87.2%	85.2%	73.9%	74.2%	85.3%	50.4%

Accreditation status, census region, and average daily census (defined as admissions/inpatient days) are based on 2002 AHA data.

¹Differences between accredited and non-accredited CAHs are significant at p < .05

²Differences across census divisions are significant at p < .05

measure data for patients with pneumonia and CHF. Regional differences are statistically significant ($p < .05$) for AMI and CHF. The Northeast census division has the highest percentage of CAHs collecting quality measure data, except for chest pain. There are no statistically significant differences based on size, as measured by average daily census.

About three-quarters of CAHs' that use guidelines for pneumonia, AMI and CHF collect quality data on these conditions (Table 6). Use of guidelines without collecting data is most common for chest pain (20.4% of CAHs) and diabetes (17.7% of CAHs). Data collection may be less common for these two conditions, because they are not part of the initial set of measures in the National Voluntary Hospital Reporting Initiative.

Table 6
Relationship between CAHs' Use of Protocols/Guidelines and Collection of Data on Quality Measures/Indicators

	Pneumonia (n = 463)	AMI (n=468)	CHF (n=463)	Chest Pain (n=461)	Diabetes (n=436)
CAH uses guidelines and collects data on this condition	77.1%	77.1%	72.0%	63.1%	39.0%
CAH uses guidelines but doesn't collect data on this condition	7.6%	11.5%	10.2%	20.4%	17.7%
CAH doesn't use guidelines but collects data on this condition	10.2%	8.1%	11.5%	5.6%	10.6%
CAH does not use guidelines or collect data on this condition	5.2%	3.2%	6.5%	10.9%	32.8%

The 447 CAHs that collect quality data on one or more of the conditions described above were asked whether they use the data for several specific purposes and about any other uses of the data. The vast majority of CAHs use the data internally to implement new protocols or revise existing protocols, for risk management, to identify staff continuing education needs, and for

peer review (Table 7). More than three-fourths of the CAHs use the data for benchmarking, and over half of CAHs use it for public reporting.

Table 7
CAHs' Uses of Quality Measurement Data (n=447)¹

Type of Use	Percent of CAHs
Implement new protocols or revise existing protocols	93.7%
Risk management	90.1%
Identify staff continuing education needs	83.2%
Peer review	82.9%
Benchmarking of data	79.2%
Public reporting of data	57.0%
Other uses (e.g. overall quality/performance improvement) ²	9.2%

¹CAHs that did not report collecting any quality data were not asked about their uses of the data.

²Some CAHs reported more than one other use for the data.

Nine percent of the CAHs report using the quality data for additional purposes, including overall quality/performance improvement, JCAHO accreditation, reports to the hospital board and/or medical staff, credentialing, patient safety activities, CMS/government requirements, and Quality Improvement Organization (QIO) initiatives.

Quality Improvement Assistance Provided by External Organizations

The Medicare Rural Hospital Flexibility Program requires CAHs to have an agreement for credentialing and quality assurance with a support hospital, peer review organization, or another appropriate and qualified entity. This requirement has encouraged many CAHs to expand their existing relationships and/or develop new relationships with support hospitals, statewide organizations, and other CAHs to conduct quality-related activities.

The surveyed CAHs were asked whether they receive specific types of quality improvement assistance from their state Medicare Quality Improvement Organization (QIO), state hospital association, and support hospital, and if these organizations provided any other support for the CAH's QI activities. The most frequently reported types of QI assistance received

from QIOs are guidelines/protocols, QI continuing education for staff, and assistance with data collection and analysis, with over 70% of CAHs indicating they receive these types of assistance (Table 8). The proportion of CAHs that report receiving QI assistance from their QIO varies significantly by state.

Table 8
Quality Improvement Assistance Provided by Medicare Quality Improvement Organization (n=463)

Type of Assistance	Percent of CAHs
Guidelines/Protocols	81.1%
QI continuing education for staff	76.0%
Assistance with data collection and analysis	73.0%
Help implementing specific interventions to improve patient care	48.0%
A forum for working with other CAHs on QI	42.6%
Peer review	40.4%
Other support for QI activities (e.g., serve as a resource to answer questions; help with benchmarking, public reporting, and CMS Quality Initiative; provide patient education materials)	13.1%

The most frequently reported types of QI assistance received from state hospital associations are QI continuing education for staff, assistance with data collection and analysis, and a forum for working with other CAHs on QI (Table 9). The proportion of CAHs that report receiving assistance from their state hospital association varies significantly by state.

Over half of CAHs report receiving QI assistance from their support hospital in the form of continuing education for staff and guidelines/protocols (Table 10). Significant proportions of CAHs also receive help implementing specific interventions to improve patient care and assistance with data collection and analysis from their support hospitals.

Table 9

Quality Improvement Assistance Provided by State Hospital Association (n=472)

Type of Assistance	Percent of CAHs
QI continuing education for staff	74.2%
Assistance with data collection and analysis	66.3%
A forum for working with other CAHs on QI	65.6%
Guidelines/Protocols	47.2%
Help implementing specific interventions to improve patient care	32.8%
Other support for QI activities (e.g., peer review, patient safety, public reporting)	21.7%

Table 10

Quality Improvement Assistance Provided by CAH's Support Hospital (n=473)

Type of Assistance	Percent of CAHs
QI continuing education for staff	55.6%
Guidelines/Protocols	54.3%
Help implementing specific interventions to improve patient care	45.7%
Assistance with data collection and analysis	42.5%
A forum for working with other CAHs on QI	36.2%
Other support for QI activities (e.g., consultation, annual review of QI plans, and peer review).	27.1%

For several types of QI assistance, the majority of CAHs receive assistance from more than one outside organization. More than a third of CAHs identify their QIO, State Hospital Association and support hospital as sources of QI continuing education for their staff, while less than 5% of CAHs do not identify any of the three organizations as a QI continuing education resource. One-fourth of CAHs receive assistance with QI data collection and analysis from their QIO and state hospital association, and an additional one-quarter of CAHs receive assistance from these two organizations and their support hospital.

CONCLUSIONS

These survey results present encouraging evidence that many CAHs are actively involved in key quality improvement activities, despite the challenges they face. The majority of CAHs are using standardized protocols or clinical guidelines to improve patient care. They are also collecting quality measure data for patients with several medical conditions that are commonly treated in small rural hospitals, and using the data for a variety of internal QI activities. In addition, just over half of CAHs use their quality data for public reporting. This trend has positive implications for CAH participation in the National Voluntary Hospital Reporting Initiative, although sample size and measurement issues remain concerns for many small rural facilities.

The survey results also indicate that CAHs are continuing to successfully build external relationships to support their QI activities. Many CAHs are working with QIOs, state hospital associations, support hospitals, and/or other CAHs on efforts such as QI continuing education, implementation of protocols, and collection and analysis of quality data.

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