

Flex Monitoring Team Briefing Paper No. 3

**Critical Access Hospital
Patient Safety Priorities and Initiatives:
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 patient safety results from a national phone survey of 474 CAH administrators conducted in early 2004. Survey respondents were asked about: 1) top patient safety priorities; 2) familiarity with the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) National Patient Safety Goals and implementation of initiatives related to the goals; 3) factors that limit or support their ability to implement patient safety interventions; and 4) pharmacist staffing and computer software to improve medication safety.

Medication safety and prevention of patient falls are the most frequently cited categories of CAH patient safety priorities and initiatives. Over half of CAHs describe medication safety as their top patient safety priority or initiative. About one-fourth of CAHs indicate that initiatives to prevent patient falls or eliminate the use of restraints are their top priority, especially in skilled nursing facility and swing beds.

Approximately 11% of the CAHs in the survey are accredited by JCAHO. Overall, 63% of the surveyed CAHs report being familiar with the JCAHO National Patient Safety Goals. The proportion of CAHs that are implementing initiatives in each goal area ranges from 55% in the area of improving effectiveness of clinical alarm systems to 88% in the area of reducing the risk of health care-acquired infections.

More than half of CAHs report that financial resources, staff time, and technology are limiting factors in their ability to implement patient safety interventions. Staff technical expertise is a limiting factor for 39% of hospitals, while 27% of the CAHs view information on effective interventions for rural hospitals as a limiting factor.

Sixty-three percent of CAHs have a pharmacist on site for less than 40 hours per week. More than half of CAHs use multiple resources for pharmacist consultation when a pharmacist is not on site. Two-thirds of CAHs report having a staff pharmacist on call. About half of CAHs use a retail pharmacist either in their community or a neighboring community, and about half use a pharmacist at another hospital. Half of the CAHs report using software to determine appropriate medication doses and 61% report using software to screen for potential adverse drug events.

The survey findings provide encouraging evidence of CAH interest in patient safety, but should be interpreted cautiously, because of the significant number of CAHs that reported that financial resources, staff time, and technology are limiting factors in their ability to implement patient safety interventions. Clearly, more research is needed to assess the extent of patient safety activities being implemented in CAHs and their impact on patient outcomes.

INTRODUCTION

The publication of two landmark Institute of Medicine reports focused national attention on patient safety issues.^{1,2} Numerous organizations, including the Agency for Healthcare Research and Quality (AHRQ), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the National Quality Forum (NQF) have recommended interventions and standards designed to improve patient safety in hospital environments.^{3,4,5} Small rural hospitals differ from larger urban facilities in their organizational, staffing, financing and other characteristics. Therefore, it is important to evaluate the rural relevance of patient safety standards and to consider how rural facilities can best access the financial support and human resources expertise needed to implement and sustain patient safety interventions.^{6,7}

Patient safety initiatives are an important component of hospital quality improvement activities. As part of Medicare Rural Hospital Flexibility Program (Flex Program) monitoring of efforts to improve the quality of care provided by Critical Access Hospitals (CAHs), previous surveys and site visits have documented multiple strategies used by CAHs to improve patient safety.^{8,9,10}

This report describes the patient safety 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 CAH 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. In addition to patient safety activities, survey questions also addressed changes in the scope of services provided by the CAH, organizational linkages, quality improvement 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 patient safety, survey respondents were asked about: 1) top patient safety priorities or initiatives; 2) familiarity with the JCAHO National Patient Safety Goals and implementation of initiatives related to the goals; 3) factors that limit or support their ability to implement patient safety interventions; and 4) pharmacist staffing and use of computer software to improve medication safety. For this analysis, the CAH survey data were merged with data from the 2002 American Hospital Association Annual Survey to provide additional information about CAH characteristics. Chi-square tests were used to determine the statistical significance of differences among CAHs.

RESULTS

Patient Safety Priorities

Medication safety and prevention of patient falls are the most frequently cited categories of CAH patient safety priorities and initiatives (Table 1). Over half of CAHs describe medication safety as their top patient safety priority or initiative. Specific types of medication safety initiatives cited by the CAHs include:

- efforts to report, measure, benchmark, and reduce medication errors;
- implementation of technology (e.g., computerized medication distribution systems, bar code scanning equipment, and software to identify drug interactions);
- changes in medication prescription, administration, and storage processes (e.g., read-back of verbal orders, elimination of dangerous abbreviations, replacement of handwritten medication administration records, elimination of multi-use vials and concentrated electrolytes, and use of unit doses);
- increased pharmacist involvement in medication safety activities (e.g., pharmacist reviews all medication orders, pharmacist provides more education of nursing and medical staff); and
- patient education regarding medications.

Table 1
Top Patient Safety Priority or Initiative (n=474)

Type of Priority	Percent of CAHs ¹
Medication safety	52.5%
Falls/restraints	24.3%
Medical errors in general; no specific priorities/initiatives	7.2%
Infection Control	3.8%
Environmental safety/building codes/upgrading of equipment	3.0%
Patient identification	2.3%
JCAHO National Patient Safety Goals	2.3%
Guidelines/protocols for specific conditions (e.g., pneumonia, AMI)	2.1%
Surgery (e.g., preventing wrong-site surgery)	1.9%
Other (e.g., staff training, emergency care, quality indicators and benchmarking, pain management)	5.9%

¹Total is greater than 100% because 24 CAHs named two top priorities.

About one-fourth of CAHs indicate that initiatives to prevent patient falls or eliminate the use of restraints are their top priority, especially in skilled nursing facility (SNF) and swing beds. (Over half (55%) of CAHs in the survey have SNF services and 95% have swing beds). The CAH initiatives to prevent patient falls or eliminate the use of restraints include:

- tracking and analysis of data on falls;
- identification and monitoring of patients at high risk of falls;
- staff education on fall prevention;
- use of special equipment such as bed alarms, chair alarms, lift devices, low beds, and floor pads; and
- increased use of physical therapy and exercise programs for patients.

Other priority areas cited by the CAHs include: infection control, environmental safety, building codes, and upgrading of equipment; patient identification; the overall JCAHO National Patient Safety Goals; guidelines/protocols for specific conditions (e.g., pneumonia, AMI); and surgery (e.g., preventing wrong-site surgery).

JCAHO National Patient Safety Goals

JCAHO developed its first set of six National Patient Safety Goals to help accredited organizations address specific areas of concern with regard to patient safety, and required all accredited hospitals to be surveyed for implementation of the recommendations associated with each goal beginning in January 2003. JCAHO added a goal focused on reducing the risk of health care-acquired infections for 2004 and new goals addressing reconciliation of medications and prevention of patient falls for 2005.¹¹

Although the majority of U.S. hospitals are accredited by JCAHO, rural hospitals are much less likely than urban hospitals to be accredited, and smaller hospitals are significantly less likely to be accredited than larger facilities.¹² In 2001, JCAHO implemented a special

accreditation program for CAHs, which includes customized standards, a special survey process, and a flat survey fee.¹³

Approximately 11% of the CAHs in the survey are accredited by JCAHO (Table 2). The proportion of CAHs that are accredited varies significantly by facility size and by census region. Larger CAHs are significantly more likely to be accredited as are CAHs in the northeast and the south census regions.

Overall, 63% of the surveyed CAHs report being familiar with the JCAHO National Patient Safety Goals, including 86% of accredited CAHs and 60% of non-accredited CAHs (Table 3). The proportion of CAHs that are implementing initiatives in each goal area ranges from 55% in the area of improving effectiveness of clinical alarm systems to 88% in the area of reducing the risk of health care-acquired infections.

Table 2
CAH Size and Census Region by Accreditation Status
(n = 463)¹

	Percent of CAHs that are JCAHO Accredited
All CAHs	11.0%
Facility Annual Admissions ²	
Less than 250	4.3%
251- 500	5.0%
501- 800	9.7%
Greater than 800	26.9%
Census Region ³	
Northeast	21.7%
South	17.7%
Midwest	8.8%
West	7.1%

¹11 CAHs did not have 2002 AHA survey data.

²Differences across admission categories are significant at p < .001

³Differences across census divisions are significant at p < .05

Table 3
CAHs' Familiarity with JCAHO National Patient Safety Goals and Implementation of Patient Safety Initiatives in JCAHO 2004 Goal Areas

	Percent of CAHs		
	JCAHO Accredited (n=51)	Non-Accredited (n=412)	All (n=474) ¹
Familiar with JCAHO National Patient Safety Goals	86.3%	60.1%	63.3%
Implementing Initiatives in Goal Area:			
Improving accuracy of patient identification	88.2% ³	60.3%	64.1%
Improving effectiveness of communication among caregivers	88.0% ⁴	71.6%	74.0%
Improving safety of using high-alert medications	84.0%	75.3%	76.5%
Eliminating wrong-site/patient/procedure surgery ²	88.1%	76.6%	77.8%
Improving safety of using infusion pumps	85.4% ⁵	66.2%	68.4%
Improving effectiveness of clinical alarm systems	70.8% ⁴	52.8%	55.4%
Reducing risk of health care-acquired infections	88.2%	87.2%	87.5%

¹All CAHs includes 11 CAHs that responded to the CAH survey questions, but did not have JCAHO accreditation information from the 2002 AHA survey.

²This question was only asked of CAHs that provide surgical services (n = 355)

³Differences between accredited and non-accredited CAHs are significant at p < .001

⁴Differences between accredited and non-accredited CAHs are significant at p < .05

⁵Differences between accredited and non-accredited CAHs are significant at p < .01

Accredited CAHs are significantly more likely (p < .001) than non-accredited CAHs to report being familiar with the patient safety goals. Accredited CAHs are also significantly more likely than non-accredited CAHs to report having patient safety initiatives in four National Patient Safety Goal areas: improving accuracy of patient identification, improving effectiveness of communication among caregivers, improving safety of using infusion pumps, and improving effectiveness of clinical alarm systems.

The relatively high percentages of non-accredited CAHs that are familiar with the National Patient Safety Goals and are implementing initiatives in the goal areas are encouraging evidence of widespread rural hospital interest in patient safety activities, and likely reflect the efforts of JCAHO and other organizations to publicize the National Patient Safety Goals and to

align them with other national patient safety initiatives, such as the National Quality Forum’s core “safe practices.”¹⁴

CAHs’ Ability to Implement Patient Safety Interventions

More than half of CAHs report that financial resources, staff time, and technology are limiting factors in their ability to implement patient safety interventions (Table 4). Staff technical expertise is a limiting factor for 39% of hospitals, while 27% of the CAHs view information on effective interventions for rural hospitals as a limiting factor.

Table 4
Factors that limit, support or have no impact on CAHs’ ability to implement patient safety interventions (n =474)

Factors	Percent of CAHs		
	Limit	Support	No Impact
Financial resources	55.3%	17.9%	26.8%
Staff time	53.8%	19.2%	26.8%
Technology needed to implement patient safety interventions	52.1%	29.1%	18.4%
Staff technical expertise	38.6%	27.9%	33.5%
Information on effective interventions for rural hospitals	27.3%	26.6%	46.1%

Pharmacy Staffing and Computer Systems

Medication errors account for a significant proportion of adverse events in hospitals and are associated with increased lengths of stay, additional costs, and increased mortality among hospitalized patients.¹⁵ Research has shown that pharmacists can play an important role in implementing medication safety initiatives in hospitals.^{16,17} Computer programs that allow pharmacists to check for appropriate dosing, contraindications, and drug interactions have also been demonstrated to significantly reduce adverse drug events.¹⁸

No national data are available on pharmacist staffing in rural hospitals. However, a USDHHS study¹⁷ concluded that there is a national shortage of pharmacists in hospitals, based

on reports of increased vacancy rates, difficulty recruiting, and increased demand for pharmaceutical services. A survey of rural hospitals in Illinois found a 14% vacancy rate for pharmacists.¹⁹

Data from a University of Minnesota RHRC research project on rural pharmacies in Minnesota, North Dakota, and South Dakota indicate that a substantial number of rural pharmacists provide pharmacy services part-time in hospitals and nursing homes in addition to their retail pharmacy responsibilities.²⁰ These results suggest that part-time pharmacists in many small rural hospitals may have insufficient time to provide leadership or actively participate in medication safety initiatives.

The mean number of pharmacist hours per week on site at CAHs is 23.8 hours; the median is 20 hours. Sixty-three percent of CAHs have a pharmacist on site for less than 40 hours per week, including 20 CAHs (4.2%) that do not have a pharmacist on site at all (Table 5). Over one-third of CAHs have a pharmacist on site between one and ten hours per week.

Table 5
Pharmacist Hours Per Week On Site at CAH (n=472)

Number of Hours	Percent of CAHs
None	4.2%
1-10	35.4%
11-20	14.8%
21-39	8.4%
40	20.9%
More than 40	16.1%

Accredited CAHs are significantly more likely ($p < .001$) than non-accredited facilities to have a pharmacist on site 40 hours a week or more (Table 6). Larger CAHs (as measured by total facility admissions) also are significantly more likely ($p < .001$) than smaller facilities to have a pharmacist on site 40 hours a week or more.

Table 6
Characteristics of CAHs with pharmacist on site 40 or more hours per week
(n = 472)¹

	Percent of CAHs with Pharmacist on Site ≥ 40 Hours
Accreditation status ²	
Accredited	68.6%
Non-Accredited	33.7%
Total facility annual admissions ²	
1-250	7.6%
252-500	22.3%
501-800	48.4%
> 800	73.1%

¹Accreditation status and admissions are based on 2002 AHA data. Total facility admissions include hospital unit and nursing home unit admissions.

²Differences between accredited and non-accredited CAHs and across admission groups are significant at $p < .001$

CAHs that have a pharmacist on site 40 hours a week or more are significantly more likely ($p < .001$) than those with less than 40 pharmacist hours on site to have implemented initiatives in JCAHO goal areas related to medication safety: improving accuracy of patient identification; improving safety of using high-alert medications, and improving the safety of using infusion pumps (Table 7). CAHs with full-time pharmacist services on site are also significantly more likely ($p < .05$) to have implemented initiatives related to reducing the risk of health care-acquired infections.

Table 8 shows the resources used by CAH nursing and medical staff when they need to consult with a pharmacist and one is not on-site. Two-thirds of CAHs report having a staff pharmacist on call; five CAHs indicate that their pharmacists are not officially “on call,” but take calls as needed. About half of CAHs use a retail pharmacist either in their community or a neighboring community, and about half use a pharmacist at another hospital, such as the CAH’s support hospital. Five percent of CAHs use contract or consultant pharmacists; another 2.5% use

a variety of other resources, including poison control centers, the Internet, physicians, and clinic pharmacists.

Table 7
Pharmacist Hours Per Week On Site at CAH and Implementation of Initiatives in JCAHO Patient Safety Goal Areas Related to Medication Safety (n=470)

JCAHO Goal Area	Percent of CAHs	
	Pharmacist On Site Less Than 40 Hours Per Week	Pharmacist On Site 40 Hours or More Per Week
Improving accuracy of patient identification	56.2% ¹	78.0%
Improving safety of using high-alert medications	71.8% ¹	85.5%
Improving safety of using infusion pumps	61.6% ¹	80.2%
Reducing risk of health care-acquired infections	84.8% ²	92.0%

¹Differences between CAHs with a pharmacist on site less than 40 hours and those with 40 hours or more are significant at $p < .001$

²Differences between CAHs with a pharmacist on site less than 40 hours and those with 40 hours or more are significant at $p < .05$

Table 8
CAH Resources for After-Hours Consultation with a Pharmacist (n=474)

	Percent of CAHs
Staff pharmacist on call	65.0%
Retail pharmacist in community	49.4%
Pharmacist at another hospital	47.7%
Other resources	10.2%
Contract/consultant pharmacist	5.3%
Staff pharmacist takes calls but is not on-call	1.1%
Retail pharmacist in another community	1.3%
Other (e.g., poison control center, Internet, physicians, Indian Health Service clinic pharmacist)	2.5%

One-fourth of CAHs rely solely on a staff pharmacist on call, while 10% only use a pharmacist at another hospital only, and 9% only use a retail pharmacist in the community (Table 9). The remaining CAHs use various combinations of resources for after-hours consultation with a pharmacist.

Table 9
CAHs' Use of Multiple Resources for After-Hours Consultation with Pharmacist
(n=470)

Resources Used	Percent of CAHs
Staff pharmacist on call only	24.0%
Staff pharmacist on call and retail pharmacist in community	12.6%
Staff pharmacist on call, retail pharmacist in community, and pharmacist at another hospital	12.3%
Staff pharmacist on call and pharmacist at another hospital	10.9%
Pharmacist at another hospital only	9.6%
Retail pharmacist in community only	8.5%
Other resource only	2.1%
Retail pharmacist in community and other resource	2.1%
Other combinations	7.8%

Finally, CAHs were asked about their use of pharmacy computer software. Half of the CAHs (53%) report using software to determine appropriate medication doses and 61% report using software to screen for potential adverse drug events (Table 10).

Table 10
CAHs' Use of Pharmacy Computer Software (n=435)

	Percent of CAHs
Use software to determine appropriate medication doses	52.6%
Use software to screen for potential adverse drug events	61.2%

CONCLUSIONS

The 2004 CAH survey results indicate that the vast majority of CAHs are implementing patient safety activities and have a relatively high level of awareness of national patient safety initiatives, for example, the JCAHO national patient safety goals. These findings provide encouraging evidence of CAH interest in patient safety, but should be interpreted cautiously, because more than half of CAHs also reported that financial resources, staff time, and technology are limiting factors in their ability to implement patient safety interventions. In addition, almost two-thirds of CAHs have a pharmacist on site for less than 40 hours per week, suggesting that

many facilities have limited time for pharmacists to provide leadership or actively participate in medication safety initiatives. Clearly, more research is needed to assess the extent of patient safety activities being implemented in CAHs and their impact on patient outcomes.

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