

# Quality Improvement Strategies and Best Practices in Critical Access Hospitals

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**ABSTRACT:** *Context:* Critical access hospitals (CAHs) face many challenges in implementing quality improvement (QI) initiatives, which include limited resources, low volume of patients, small staffs, and inadequate information technology. A primary goal of the Medicare Rural Hospital Flexibility Program is to improve the quality of care provided by CAHs. *Purpose:* This article describes key quality improvement initiatives for a national sample of CAHs that are actively involved in implementing quality-related initiatives in collaboration with support hospitals and statewide organizations. *Methods:* Researchers conducted a national telephone survey of 72 CAHs and 2 in-depth case studies of CAHs. *Findings:* The survey and case studies demonstrate that many CAHs are successfully implementing QI activities, including patient safety initiatives, improvements in overall QI processes and peer review processes, and implementation of QI projects focused on treatment of 1 or more specific diseases. The CAHs are involved with multiple external organizations in these activities. The administrators of the 2 case study CAHs have made QI a priority for their hospitals; ensured that resources are available for QI activities; and worked with their support hospitals, statewide organizations, and other CAHs to develop and implement rural-relevant QI initiatives. *Conclusions:* Cost-based Medicare reimbursement has been a key factor in the ability of CAHs to fund additional staff, staff training, and equipment to improve patient care. The commitment of hospital leaders and key staff is a crucial factor in moving QI initiatives forward in CAHs.

Rural health care providers face many challenges in implementing quality improvement (QI) initiatives, which include limited resources, low patient volume, small staffs, and inadequate information technology.<sup>8,9</sup> The environment is especially difficult for critical access hospitals (CAHs). The Medicare Rural Hospital Flexibility Program supports QI activities in CAHs in several ways. First, it 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. Second, hospitals converting to CAHs must undergo a state certification survey, which focuses attention on quality issues. Third, through Medicare cost-based reimbursement, CAHs receive 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.<sup>10,11</sup> The current study describes key QI initiatives for a national sample of CAHs that are actively involved in implementing quality-related initiatives in collaboration with support hospitals and statewide organizations. This study is based on

Two landmark Institute of Medicine reports focused national attention on health care quality and patient safety.<sup>1,2</sup> Since then, national and state hospital organizations, federal agencies, not-for-profit organizations, and business coalitions have promoted voluntary efforts to measure and improve quality.<sup>3-7</sup> The Medicare Prescription Drug Act of 2003 took these efforts a step further by linking Medicare reimbursement to the quality reporting of hospitals.<sup>6</sup>

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**Table 1. Quality Improvement Activity That Has Made the Most Significant Contribution to Improving Patient Care Since CAH Conversion (n = 72)**

Activity	Number and (%) of CAHs*
Patient safety initiatives	12 (16.7)
Improvement of overall QI process*	10 (13.9)
Improvement of peer review process	8 (11.1)
Implementation of a QI project focused on treatment of 1 or more specific diseases	8 (11.1)
Improvement of process of transferring patients from the CAH to other hospitals	5 (6.9)
Other activities	21 (29.2)
No changes in QI postconversion	8 (11.1)

\* CAH indicates critical access hospital; QI, quality improvement.

a telephone survey of 72 CAHs and in-depth case studies of 2 CAHs.

**CAH Survey**

The CAH survey was conducted in March and April 2003. The 75 CAHs in the sample were selected based on their responses to a 2001–2002 survey of 388 CAHs.<sup>11</sup> They represented the top 20% of composite scores on scales that measured the chief executive officers’ (CEOs’) assessment of improvements in the CAH’s quality-related activities and its participation in QI activities with support hospitals and statewide organizations. The CAHs are located in 24 states and were certified as CAHs for a minimum of 2 years before the survey.

Two hospitals closed prior to the survey, and 72 responded, for a response rate of 98.6%. The surveys were conducted with the CEO (n = 63) and/or another individual identified by the CEO as being the most knowledgeable about the CAH’s QI activities (eg, QI directors and directors of nursing [n = 42]). Respondents were asked to describe the QI activity that has made the most significant contribution to improving patient care since CAH conversion. They were also asked about (1) staffing and equipment changes to improve diagnosis or treatment of patients, (2) changes in QI training for staff, (3) changes in the provision of feedback to staff

regarding quality issues, and (4) implementation of clinical guidelines. These 4 areas were selected based on the frequency of responses to an open-ended question about QI activities in the 2001–2002 survey.

**Most Significant Quality Improvement Activity.** Of the 72 CAHs surveyed, 89% reported a positive change in their QI program following conversion, describing a diverse range of QI activities (Table 1). The most frequent categories were (1) patient safety initiatives (eg, infection prevention, implementation of dispensing equipment to reduce medication errors, and alarms to prevent patient falls), (2) improvement of the overall QI process, (3) improvement of the peer review process (eg, implementing external chart review), and (4) QI projects focused on treatment of a specific disease (eg, pneumonia or acute myocardial infarction). Other significant activities included improvement in transfer processes, implementation of QI processes used by the CAH’s support hospital, addition of new services, and improvements in staffing.

The majority of respondents (81%) reallocated staff for the new QI activity; 11% added new staff, and 8% used contracts or consultants. Sixty-four percent funded the QI activity internally; 22% used grant funds; and 13% used a combination. The large proportion of funding from hospital budgets suggests that these QI activities have considerable internal value for the CAHs.

Support hospitals (59%) and groups of CAHs (52%) were the external organizations most likely to be involved in the QI activities, followed by hospital networks (44%), state offices of rural health (36%), hospital associations (31%), and quality improvement organizations (QIOs) (27%). Several CAHs described important relationships with their support hospitals:

We receive information from (support hospital) . . . they are a larger facility and able to look at the QI issues. . . . Our top priority has always been patient care . . . but having a resource enabled us to implement programs with other hospitals and benchmark with hospitals in the network to see where we are, eg, how fast turnover is in the ER, etc.

Our affiliated hospital is part of the team . . . we teleconference two times a month to see if the project is going well.

Other CAHs described working with CAHs in a network or group on peer review, standards of care, and other quality-related issues:

Our network hospital has a QI director who took all the QI directors from CAHs and developed a new peer review process. . . . Providers from our hospital send blind records to another hospital and their

providers do the peer review process ... we were able to look at outside information from other providers. ... We are all small rural hospitals in the same situation.

**Changes in Staffing, Equipment, and QI Training.**

Significant proportions of CAHs have made staffing changes (60%) and obtained new or replacement equipment (83%) to improve patient diagnosis or treatment since conversion (Table 2). The most frequently reported staffing changes were addition of nursing staff (19%), ancillary staff (19%), and physicians (11%). Several CAHs indicated that improved Medicare reimbursement had allowed them to increase staffing and improve wages:

Conversion to CAH allowed the hospital to remain open and have money to recruit primary care physicians. We utilized flex grant money for recruitment fees ... used extra money with cost-based reimbursement to help afford startup costs to set them up.

We are able to fill vacancies ... with CAH conversion we were able to increase the pay scale in nursing ... now we can recruit and retain ... before we were a rotating door.

The top categories of new or replacement equipment were CT scanners, radiology-related equipment, and lab equipment. The primary source of funding for equipment purchases was operating revenues; additional sources included grants, gifts, loans, and revenue bonds. Many CAHs described Medicare cost-based reimbursement as a key factor that allowed them to purchase needed equipment:

Conversion to CAH enabled us to implement an electronic network of communication and have widespread use of PCs.

The hospital converted to CAH status to survive ... We are getting to the point where we can buy new equipment. In the past we only replaced old equipment.

With the T-1 line we can send trauma information immediately. We could not have afforded this prior to CAH, could not have gotten it if we were not a CAH hospital.

Two thirds of surveyed CAHs have changed their staff QI training since conversion, including upgrading in-service training (22%), increasing staff participation in conferences (10%), and implementing computer-based learning (8%). More than 60% have changed the

**Table 2. Staffing and Equipment Changes That Have Improved Patient Diagnosis or Treatment Since CAH Conversion (n = 72)**

Changes	Number and (%) of CAHs*,†
Type of staffing change	
Added staff	
Nursing staff	14 (19.4)
Ancillary staff (eg, lab, radiology)	14 (19.4)
Physicians/medical staff	8 (11.1)
Physician assistant/nurse practitioner staff	5 (6.9)
QI staff*	5 (6.9)
Other administrative or professional staff (eg, social worker, pharmacist, paramedics)	7 (9.7)
Other changes	5 (6.9)
No change	29 (40.3)
Type of new equipment	
CT scan*	21 (29.2)
Radiology/teleradiology/telemetry/T-1 line	18 (25.0)
Lab equipment/chemistry analyzer	18 (25.0)
Computers/electronic medical records/software	9 (12.5)
Defibrillators/crash carts	8 (11.1)
Mammography	7 (9.7)
Cardiac monitor/patient monitoring equipment	7 (9.7)
Bone density measurement	7 (9.7)
Surgical/laser surgery/anesthesia equipment	6 (8.3)
Cardiac stress testing/cardiac rehabilitation	5 (6.9)
Hospital beds/transfer stretchers	5 (6.9)
Ultrasound	5 (6.9)
Other	16 (22.2)
No change	12 (16.7)

\* CAH indicates critical access hospital; QI, quality improvement; CT, computerized tomography.

† Some CAHs reported more than 1 type of staffing or equipment change.

way they provide feedback to staff regarding quality issues, most frequently through increased provision of QI information at meetings (24%), improvements in the peer review process (18%), and improved communication with staff (11%).

**Use of Clinical Guidelines/Protocols.** More than four-fifths of CAHs have implemented one or more

**Table 3. Clinical Guidelines/Protocols Implemented Since CAH Conversion and Source of Guidelines/Protocols**

	Number and (%) of CAHs*,†
Type of guideline/protocol (n = 72)	
Congestive heart failure	30 (41.7)
Pneumonia	28 (38.9)
Acute myocardial infarction/cardiac	13 (18.1)
Diabetes	8 (11.1)
Chest pain/angina	7 (9.7)
Appropriate use of antibiotics/ prophylactic antibiotics/ infection control	4 (5.6)
Atrial fibrillation	4 (5.6)
Other	42 (58.3)
In process of developing protocols	4 (5.6)
None	13 (18.1)
Sources of clinical guidelines/protocols (n = 59)	
Quality improvement organization	15 (27.3)
Support hospital	12 (21.8)
CAH staff/group of CAHs	7 (12.7)
State hospital association	5 (9.1)
American Heart Association, American Diabetes Association	4 (7.3)
Consultant	4 (7.3)
State guidelines	3 (5.5)
Other	5 (9.1)

\* CAH indicates critical access hospital.  
† Some CAHs reported more than 1 type of protocol.

clinical guidelines or protocols since conversion (Table 3). The most frequently mentioned protocols address congestive heart failure, pneumonia, acute myocardial infarction, diabetes, and chest pain. CAHs also report using guidelines addressing other conditions (eg, stroke, abdominal pain), specific settings and procedures (eg, emergency department, rapid sequence intubation), and hospital-wide issues (eg, pain management, handwashing). The most common guideline sources are quality improvement organizations and support hospitals.

**Key Survey Findings.**

- Since conversion, CAHs have implemented a variety of QI activities that have contributed significantly to improving patient care, including patient safety initiatives, improvements in overall QI and peer review processes, and implementation of QI projects focused on treatment of specific diseases.

- A wide variety of external organizations are involved in these QI activities. More than half of CAHs have worked with their support hospitals and with groups of CAHs on their QI activities.
- Cost-based Medicare reimbursement has allowed many CAHs to fund additional staff, staff training, and equipment to improve patient care.

**Case Studies**

From the 72 CAHs surveyed, 2 CAHs were selected for case studies based on their survey responses and potential to serve as “best practice” models for other CAHs. Site visits were conducted at Lincoln Hospital in Washington State in July 2003 and at Hancock County Memorial Hospital in Iowa in September 2003. Two researchers conducted interviews with several key individuals from each CAH (eg, the CEO, medical director, director of nursing, quality improvement director, and pharmacist) and with other organizations involved in CAH QI activities (eg, network and support hospital staff).

**Lincoln Hospital.** Lincoln Hospital is located in Davenport, Wash. (population 1,720), about 35 miles from Spokane. The hospital converted to a CAH in August 2000 and has 25 beds, including swing beds, and an attached skilled nursing facility. It owns 3 medical clinics that are certified rural health clinics. The medical staff includes 3 full-time and 2 part-time family physicians, a general surgeon, 2 nurse practitioners, and 2 physician assistants, all employed by the hospital. Visiting specialists from Spokane provide a variety of specialty services.

**Quality Improvement Initiatives.** Until about 3 years ago, Lincoln Hospital had a traditional quality assurance program that was done primarily because it was required by Medicare and state licensure. Now, however, its overall approach to QI and staff attitudes toward quality-related activities are changing. QI is seen as a hospital-wide effort that involves all departments, and as described by 1 staff member, “has become a daily occurrence rather than a quarterly report.”

Under the leadership of the CEO, who is strongly committed to QI, Lincoln has implemented several initiatives to improve the quality of care. The hospital has developed a comprehensive QI process and employs a balanced scorecard management approach.<sup>12</sup> A Quality Improvement Committee, which includes representatives of the board of directors and the medical staff, the administrator, the vice president of clinical services, and the quality improvement coordinator, is responsible for overall management of the QI program and oversees each hospital department’s identification

and correction of quality-related problems. Each department develops a plan that assigns responsibility for monitoring and evaluation activities and identifies the scope and aspects of care to be addressed, the use of indicators, and review criteria.

Historically, Lincoln was similar to many rural hospitals in assigning responsibility for quality assurance to an administrative coordinator with multiple other responsibilities. In January 2003, the hospital hired a full-time QI coordinator to assist medical, nursing, and other staff in developing and implementing a process for collecting data on quality indicators. The QI coordinator reviews 25 to 30 patient charts a week, including all observation patients and a sample of inpatient, outpatient, and emergency patients. The initial focus was on corporate compliance with Medicare requirements (eg, documentation of reasons for observation and the presence of signed consent forms, advance directives, and orders for billed items). A second phase is addressing compliance with clinical protocols for the care of patients with chest pain/acute myocardial infarction and community acquired pneumonia. The Quality Task Force, which includes the vice president of clinical services, director of acute care nursing, administrative coordinator, and QI coordinator, reviews chart audit results monthly. Individual profiles are shared with each medical staff member.

**Changes in Peer Review, Privileging, and Protocols.** Prior to conversion, Lincoln tried to conduct peer review activities on a quarterly basis with nearby rural hospitals, but lack of comparable services limited the acceptability of this process. The federal requirement for outside quality oversight provided an opportunity to consider other peer review options. Lincoln decided to contract with Holy Family Hospital in Spokane for peer review, using a family practice physician with rural practice experience.

The physician reviewer reviews charts on-site for about 4 to 6 hours monthly. Charts are selected using screening criteria such as unexpected mortality, unscheduled readmission for the same problem, differing admission and discharge diagnoses, nosocomial infection, and transfers to another facility. The reviewer uses a standardized set of questions that address whether diagnoses and conditions were identified correctly, treatment was appropriate and effective, communication was effective, and documentation was complete. He scores cases from 0 to 4 (3 is an adverse outcome and 4 a serious adverse outcome) and meets with the medical staff to discuss trends and issues that arise during reviews.

The overall focus of the peer review process is on how care can be better, and discussions of identified cases are

viewed as learning opportunities. The Lincoln physicians find it useful to have information about practice changes brought to them (eg, how cardiologists are using beta blockers). A physician describes the new approach as “more positive” and “a much healthier process.”

With the assistance of the physician reviewer, the hospital is implementing more formalized processes for credentialing and privileging, and it is developing relationships with Spokane specialists for formal proctoring opportunities to ensure that local physicians are proficient to do specialized procedures.

**Pharmacy and Medication Safety.** Previously, a pharmacist handled the hospital pharmacy responsibilities part-time in addition to full-time retail work, leaving little time for QI activities. The hospital now has a pharmacist for 30 hours per week. For the past 6 months, she has been working to implement Pyxis, a computerized medication ordering and dispensing system, and a telepharmacy connection with Sacred Heart Hospital in Spokane. Lincoln was 1 of 4 rural hospitals that received a \$175,000 grant from Inland Northwest Health Services (a nonprofit corporation formed by the major Spokane health systems) to cover the costs of purchasing the Pyxis machine, software, and training.

The hospital is changing from handwritten medication administration records to computerized entry and review of medication orders by the pharmacist and from having the pharmacist set up patient medications to having nurses retrieve medications from the Pyxis system. When the telepharmacy program is fully implemented, the Lincoln charge nurse will be able to scan and send a medication order to Sacred Heart for pharmacist review after-hours. Verified orders will be transmitted to the Pyxis, where the charge nurse can access the medications. Use of the Pyxis system and telepharmacy are expected to reduce transcription and dosing errors.

The pharmacist also has been working on the implementation of protocols related to standards of care—for example, the use of heparin and antibiotic selection for pneumonia patients. Future plans include developing a more formal program of tracking medication errors, establishing a quality assurance program for telepharmacy and Pyxis, and conducting standard of care quality audits on prescribing practices and trends.

**CAH Quality Network.** Lincoln was one of the first CAHs certified in Washington. State health officials who conducted the certification survey were very positive about the peer review process and told other rural hospitals about it. Several rural hospitals in eastern Washington subsequently set up similar peer review contracts with Holy Family.

In 2002, 10 rural hospitals in eastern Washington, including Lincoln, began formalizing a CAH Quality Network to legitimize the sharing of quality information and benchmarking and to obtain legal protection against discovery of the peer review data. The Washington Department of Health contracted with the Washington Health Foundation to help start the network. The foundation helped fund consulting services and provided a quality consultant who has legal and nursing experience to assist with network development.

The network is legally incorporated and grew to 21 members as of July 2003. Members are helping to fund the network infrastructure and in return will be able to obtain network services, including peer review and credentialing, at cost. Some members plan to use the network for peer review, credentialing, and sharing quality data for benchmarking; others only want to share data. The physician reviewer will work full-time for the network through a contract with Holy Family, and the network will need to recruit another physician to help provide services in western Washington. In the future, network services will be available to nonmembers on a cost-plus basis. Ultimately, the network wants to develop rural-relevant standards of care for member hospitals.

**Key Aspects of QI at Lincoln Hospital.**

- Competitive pressures have motivated Lincoln Hospital to demonstrate that its quality of care is equivalent to that of Spokane hospitals. Relative proximity to Spokane also provides opportunities such as physician proctoring by Spokane specialists and resources to implement teleradiology and telepharmacy services. Availability of these services improves access to care for Lincoln patients and has the potential to improve the quality of care and reduce medical errors.
- Lincoln Hospital has strong and visionary leadership that is committed to QI, has effectively communicated that commitment to hospital staff, and has dedicated resources to QI activities.
- By converting to a CAH and obtaining rural health clinic status for its clinics, Lincoln has financially stabilized the health care system in Davenport and nearby rural communities. Cost-based reimbursement allows the hospital to allocate additional funds to QI activities.
- The hospital's contractual relationship with the family physician from Holy Family Hospital has resulted in a positive peer review process focused on improvement of care. It has become a peer review model for other CAHs in Washington.

- Lincoln Hospital has actively participated in development of the statewide CAH Quality Network. The network's plans to share quality data for benchmarking, and ultimately to develop rural-relevant standards of care, have potential to improve the quality of care provided by all CAHs in Washington.

**Hancock County Memorial Hospital.** Hancock County Memorial Hospital (HCMH) is located in Britt, Iowa (population 2,052), about 32 miles from Mason City. HCMH converted to a CAH in August 2000 and has 25 beds, including swing beds. It owns 4 medical clinics; 2 are provider-based and 2 are stand-alone rural health clinics. HCMH is a county-owned hospital affiliated with Mercy Health Network-North Iowa. Its secondary referral hospital, Mercy Medical Center-North Iowa, is in Mason City. The Mercy Network includes hospitals and primary care clinics in 9 rural communities.

The HCMH administrator, chief financial officer, director of nursing, pharmacist, physical therapist, and physicians are employed by Mercy Medical Center. The medical staff includes 3 family physicians, 2 nurse practitioners, and a physician assistant. Two independent surgeons perform surgery, and visiting specialists provide a variety of specialty services. The 7 CAHs in the Mercy Network have formal agreements with Mercy Medical Center that cover credentialing, performance improvement, quality assurance, peer review, transfer, and referral activities.

**Quality Improvement Initiatives.** In the past, HCMH collected quality assurance data, but the process was not very meaningful to staff. As a result of its CAH certification survey, the hospital took a critical look at its quality structure. The administrator has a nursing background, a strong interest in QI, and previous experience working at Mercy Medical Center and with rural hospitals in the Mercy Network on quality issues. Since she came to HCMH 3 years ago, the hospital has made major changes in how it conducts QI activities, both as an individual facility and in collaboration with other network hospitals.

HCMH uses a straightforward QI process that starts with problem identification and moves to implementation of action steps. The hospital's QI plan is coordinated with its strategic plan and the network-wide quality plan, and it has implemented a balanced scorecard management approach to improving strategic performance. In addition to the Quality Management Committee of the medical staff, which focuses on peer review, HCMH established a Departmental QI Committee that includes the administrator, director of nursing-clinical services, chief financial officer,

department directors, and a Mercy Network representative. The committee meets monthly and focuses on how departments can work better together on quality issues (eg, it has implemented procedures to ensure timely reporting of lab results and clarified pharmacy and nursing responsibilities for checking crash-cart supplies).

The director of medical records is HCMH's quality assurance coordinator and selects medical charts for review by the medical staff or the hospitalist nurse practitioner. The hospitalist NP reviews all inpatient charts to determine if care followed medical guidelines and was properly documented. Results are summarized for all providers and each individual provider and are discussed by the physicians and mid-level practitioners in bimonthly medical staff QI meetings. HCMH occasionally sends charts to Mercy Medical Center for review. The acute care director has primary responsibility for nursing record review.

HCMH collects QI data involving general variances, medication errors, patient falls, and provider issues using a Mercy paper form. Department managers send completed forms to the director of nursing-clinical services, who analyzes the data and generates trend reports for hospital committees and task forces that address quality issues. The Mercy Network is moving to a computerized system for reporting of incidents and near misses.

***Mercy Network Support for QI.*** Initial efforts to develop a network-wide quality plan started about 6 years ago but moved slowly at first to limit network hospitals' fears regarding loss of independence. More recently, the Network Nursing and Patient Care Team, which includes the directors of nursing from all Mercy Network hospitals, identified a need to work more closely together on quality issues, including identifying quality indicators and benchmarking.

The Mercy Network has begun to participate in the National Voluntary Hospital Reporting Initiative. However, it has taken a significant amount of information system time to support the CART (Center for Medicare and Medicaid Services [CMS] Abstraction and Reporting Tool) software, and they have not received timely reports. Network hospitals are collecting data and benchmarking with each other on 3 pneumonia and 2 congestive heart failure indicators, and they are reporting their data to CMS in the aggregate.

In 2002, the Mercy Network developed a project consultant position to support the network hospitals in quality-related functions and to assist them with credentialing, risk management, and regulatory issues. The project consultant is a Mercy Medical Center employee with extensive nursing and administrative

experience. Network hospitals pay part of her salary because they value the assistance.

The first Mercy Network hospital to convert to CAH status had some difficulties with its certification survey. Subsequently, Mercy Medical Center and the network hospitals developed a "mock survey" process to help hospitals prepare for their CAH surveys. The "mock survey" teams include the project consultant and network hospital nursing and administrative staff. The Mercy Network plans to do mock surveys every other year because the state does not have the resources to survey that often, and hospitals find the process useful.

***Pharmacy Best Practices and Medication Safety.*** The HCMH pharmacy is staffed by a pharmacist 24 hours per week. At other times, she can usually be reached by cell phone, and a pharmacist at Mercy Medical Center is available 24 hours a day/7 days a week. The pharmacy is computerized, allowing the pharmacist to look up drug interactions and prepare computerized medication administration records. Computerization has freed up nursing time, facilitated tracking of medication errors, and made it easier for a substitute pharmacist to fill in for the regular pharmacist. About 2½ years ago, the hospital pharmacist and nurses obtained online access to Micromedex, a medication information resource for staff and patient education. HCMH obtained the pharmacy computer system and Micromedex as a satellite of Mercy Medical Center, which was much less expensive than purchasing them independently. However, Mercy is now changing computer systems, raising questions about whether it will continue to support the existing network hospital computer systems in the future.

The pharmacist and acute care director assist with tracking of medication errors, which are reported to the Pharmacy and Therapeutics and the Departmental QI Committees. A Medication Errors Task Force, including the pharmacist, acute care director, 2 staff RNs, and a medical staff representative, examines medication error trends and develops actions to prevent errors.

In collaboration with other Mercy Network hospitals, HCMH has implemented several pharmacy "best practices" initiatives. Network pharmacists developed a competency-based orientation manual and training process for pharmacy technicians. The pharmacists meet regularly and share protocols, policies, forms, and patient education materials, which are adapted to meet local needs.

***Patient Safety Network.*** With funding from a 3-year, \$600,000 federal rural health network development grant, HCMH, Mercy Medical Center, and the other Mercy Network hospitals have formed the Patient Safety Health Care Network of North Iowa. They are developing and implementing a plan to

improve patient care and reduce medical errors across the network hospitals, clinics, and pharmacies, with a special focus on medication safety.

**Key Aspects of QI at HCMH.**

- The CAH requirements and certification survey process helped formalize relationships with regard to QI activities between small rural hospitals in the Mercy Network, including HCMH, and Mercy Medical Center. They also led to the development of the Mercy Network’s ongoing “mock survey” process, which focuses attention on quality issues for CAHs.
- Membership in the Mercy System benefits HCMH’s QI program in several ways. HCMH management and staff have access to Mercy Medical Center staff expertise and information technology. They also have peer groups of individuals in similar positions at other network hospitals to work with on quality issues.
- HCMH’s leadership places a high priority on QI and has an action-oriented approach to quality issues. The administrator’s extensive clinical experience, personal interest in quality and patient safety issues, and knowledge of Mercy System resources are strong assets for developing and implementing QI initiatives.
- The QI process at HCMH is collaborative and involves staff throughout the hospital. Mid-level practitioners are actively involved in the QI process, including participating in medical staff QI meetings.
- Cost-based reimbursement for the CAH and its rural health clinics have allowed HCMH to allocate internal funds for quality-related activities. The collaborative efforts of the Mercy Network rural hospitals and Mercy Medical Center have generated additional federal grant dollars for patient safety activities.

**Study Limitations**

The CAHs in this study were selected based on their involvement in implementing quality-related activities and participation in QI activities with outside organizations. In addition, they had been certified as CAHs for a minimum of 2 years. Therefore, the study results may not apply to all currently certified CAHs. Future research should assess the QI activities and strategies of a larger, nationally representative sample of CAHs, as well as analyzing the longer term impact of CAH conversion on quality of care.

**Conclusions**

The results of the survey and site visits demonstrate that many CAHs are successfully implementing QI strategies, despite the challenges they face. Survey

respondents and case study interviewees described the importance of cost-based Medicare reimbursement in their ability to fund a range of postconversion activities that improve the quality of care, including additional staff, staff training, and equipment. The commitment of hospital leaders and key staff is another crucial factor in moving QI initiatives forward in CAHs. The administrators of the case study CAHs have made QI a priority for their hospitals and ensured that resources are available for QI activities. Working with their support hospitals, other CAHs, and statewide organizations, they have demonstrated the importance of building linkages to develop and implement rural-relevant QI initiatives.

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