

**Title of Project: Partnering to Improve Patient Safety in Rural
West Virginia Hospitals**

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STRUCTURED ABSTRACT

Purpose: The purpose of this project was to implement an internet-based event reporting system in rural West Virginia hospitals to support improvements in patient safety.

Scope: The project represented an expansion of an 8 hospital pilot. The pilot, although successful, did not reach many of the state's small rural hospitals. The goal of the AHRQ HIT grant was to implement the system in 24 rural WV hospitals, including 6 critical access hospitals.

Methods: Implementation included 1) training on the reporting software, 2) analysis and reporting of hospital-specific and aggregate benchmarking data on events (quarterly), 3) administration of the AHRQ Hospital Survey on Patient Safety Culture, 4) calculation of WV-specific PSIs (annually), 5) formation of learning collaboratives around adverse drug events and falls prevention, and 6) a quasi return-on-investment analysis.

Results: 27 facilities including 16 critical access hospitals joined the project. The ADE collaborative documented under-reporting of ADEs in the software and identified possible educational/training remedies. The Falls Collaborative resulted in an overall decrease in the rate of falls. The ROI analysis was positive. Three of the partners created the WV Patient Safety Center. Sixteen of the participating hospitals have joined the Center.

Keywords: Culture, voluntary reporting, information technology

PURPOSE:

Project objectives:

- 1) Monitoring safety event reporting from participating hospitals and offering concise, action-oriented feedback through quarterly composite reports, including peer group benchmarking, beginning in January 2005 and continuing through the duration of the project.
- 2) Comparing the event reports with surveillance from other sources such as the claims-based AHRQ patient safety indicators (PSIs).
- 3) Developing a learning network among participating hospitals, characterized by sharing results from patient safety data collected in all collaborating institutions using a standardized instrument and data collection technology. Conducting at least three topic-specific collaboratives among participating institutions during the project, aimed at addressing safety issues identified by the reporting system.
- 4) Building a business case for ongoing network operation supported by hospital fees by documenting cost savings in duplicate reporting systems eliminated, litigation and insurance costs avoided, and error mitigation.

SCOPE

Shortly after the release of the IOM Report, "To Err is Human," the West Virginia Medical Institute, Incorporated, Board of Directors chose to make patient safety a priority area and invested \$500,000 to support the creation of a voluntary event reporting system for WV hospitals. WVMI partnered with the creator of Dr. Quality, an internet-based event reporting

system. The West Virginia Hospital Association (WVHA) originally declined to participate due to concern about liability for hospitals. In the end 8 facilities expressed interest in participating, 6 of them larger facilities (bed size over 100) based in more urban areas of this largely rural state. Two of the original participants were Critical Access Hospitals (CAHs). Subsequently, WVMI was able to assist the WVHA to work towards a change in legislative language that would provide hospitals choosing to report events voluntarily to WVMI (the State's Quality Improvement Organization) with protection against litigation. With experience from the pilot project and liability concerns addressed, WVMI invited Quantros, Inc. (the company that purchased Dr. Quality), WVHA, Verizon, and the WV State Office of Rural Health to join them in applying for an AHRQ Transforming Healthcare Quality through Information Technology Implementation grant to reach out to the state's rural hospitals, including the smallest, the Critical Access Hospitals. Verizon joined the project to help address the technological challenges faced by small rural hospitals. The State Office of Rural Health became a partner to provide additional expertise and potential funding for aspects of the project related to the CAHs.

METHODS

Marketing and Training: Every rural hospital in West Virginia was eligible for inclusion in this project. The project manager, Patty Ruddick, and WVHA representative, Jean Fisher, contacted all the eligible hospitals (letter, email, phone) to alert them that the grant had been received. They then scheduled visits with every hospital that expressed an interest to introduce them to the project. If the hospital CEO approved, the team worked with the facility risk manager to schedule an on-site training with all identified staff on the use of the reporting system.

Technology Assessment: A newly retired Verizon employee was brought onto the project team to conduct a facility-by-facility technology assessment, including infrastructure and capacity. A report and recommendations were made to the project team and action, as appropriate and feasible, taken to address any deficiencies.

Patient Safety Culture Survey: The AHRQ Hospital Survey on Patient Safety Culture was distributed to each facility in year 1 of the project at the beginning of each training session and collected at the end. Respondents were those employees selected by the facility's administration to enter events and/or train other staff to use the system to enter events; as such it was not a representative or random sample of employees. The response rate was 100% at these sessions. Additional surveys were sent on request to those facilities that wanted to expand the population surveyed. In year 2, surveys were again distributed during training on the updated version of the software, Occurrence Report Management (ORM), and then collected, with additional copies provided to facilities requesting them. In year 3, surveys were distributed to risk managers at the major learning collaborative and mailed to those facilities which did not participate. Distribution was handled by the facilities themselves. Completed surveys in each year were sent to WVMI for scanning and data analysis. Data were analyzed by individual question, by dimension of patient safety, by CAH vs. non-CAH, by JCAHO-accredited vs. non-JCAHO accredited, and by staff position. Hospital-specific PowerPoint presentations of the data were created. Risk Managers were all invited to participate on a telephone conference call that explained the PowerPoint presentation using aggregated data, and also gave them the opportunity to ask questions and address concerns.

Patient Safety Indicators: State UB92 data were requested from the WV Health Care Authority in 2005 (for 2004 data) and in 2006 (for 2005 data). The data were cleaned and the AHRQ PSI program run to generate state-specific data. Each hospital received the results for their own facility compared to the statewide PSIs. A teleconference to review the PSI data and address questions and concerns was held.

Event Denominators: Using reporting taxonomy in the commercial patient safety event reporting system (ORM; Quantros, Inc.), we identified clusters of related event types and examined raw reporting frequencies to create combined categories. These categories were easily understood and were expected to contain sufficient cases for meaningful comparison. We conducted a systematic review of the medical literature using PubMed to find articles which explicitly calculated rates of adverse events and defined denominators used in rate calculation. We chose the most commonly reported denominators related to our numerator measures as candidate denominators. We asked the project's participating hospitals to submit data for each of the candidate denominators for two consecutive quarters, and we examined the resulting submissions for consistency based on known or suspected relationships among the denominator measures. We revised the denominators based on this feasibility study and developed a demonstration report.

We identified eleven measures which we expected to have relative frequencies between 1% and 7% in the voluntary reporting system data. We retrieved 456 citations and identified 60 articles that appeared to have patient safety event denominator information, for which we obtained reprints. Forty-seven articles published between 1995 and 2004 had useable denominator definitions for calculating rates of adverse events. There were 5 potential denominators, only two of which proved readily and consistently available in hospitals (total discharges and patient days). Using patient days as a denominator for all measures produced reasonable consistency in event rates from quarter to quarter and documented variation among hospitals. We used the measures described above for comparative reporting and trending in individual hospitals and among groups of hospitals for the final 8 quarters of the project.

Members of the project participated in telephone conferences calls quarterly. The timing of the calls coincided with the release of the event reports and provided the venue for discussing findings and addressing questions and concerns.

Learning Collaboratives: The telephone conferences with participating hospitals were one vehicle employed by the project to promote a learning network by sharing the results of data (event, survey, PSIs). In addition, learning collaboratives were conceived by staff as a vehicle for addressing the more prevalent patient safety issues observed in ORM data. Two major collaboratives were undertaken, one related to adverse drug events (ADEs) and the other related to falls. A pilot effort, involving either one hospital (ADE project) or two hospitals (Falls collaborative), was the precursor for each of the two collaboratives. The ADE pilot was intended to assess the level of under-reporting of ADEs over a given period of time in the voluntary system (ORM), compared to an extensive chart review for inpatient care over the same period. This pilot project found that only 4% of the ADEs identified through the record review were reported in the passive, voluntary system. This finding validated what had been reported in

the literature. Hospitals were invited to participate in a collaborative to first assess their level of ADE reporting, and subsequently to develop appropriate interventions to improve reporting. Collaboratives involved training in recognizing ADEs, and a commitment to provide the ORM data for analysis and chart review.

The Falls collaborative grew out of the WV Patient Safety Improvement Corps (PSIC) falls-prevention effort. The WV PSIC Team conducted two root cause analysis (RCA) trainings for 300 health care workers across the state. Participants were invited to join a falls prevention collaborative. Involvement required retrospective reporting of falls in their facility in the six months prior to the training, and prospective reporting of falls occurring in their facilities starting three months after training for a six month period. Monthly conference calls took place over the course of both collaboratives to share “best practices” and “lessons learned.”

Return-on-Investment: A sub-contract for the ROI analysis was entered into with The Center for Business and Economic Research (CBER) at Marshall University.

Near miss events were used as a proxy for medical errors to estimate potential cost savings to the health care facilities in an effort to better quantify the monetary value of participating in the error reporting system.

Direct measures of technology included the actual costs for software, hardware, operational costs, outside training and vendor consulting. Indirect measures included the in-kind costs of lost work time for training the administration and staff to use the new technology. However, as a benefit of participating in the three-year AHRQ grant, hospitals had not had to pay for the ORM product. This changed when the grant ended in October 2007. Nevertheless, the investments for participating hospitals over the course of the three year project included staff time for training on the system, using the product to report events, and participating in educational events or collaboratives. Records of staff involvement were collected by the hospitals and reported to WVMI as evidence of their in-kind support of the grant effort. Along with training and technical assistance to the hospitals, the grant also supported reporting, benchmarking, learning collaboratives, and evaluation of results.

Marketing and training costs, defined as the associated costs for reproducing media and materials in the promotion of, and the start-up training for, the ORM system, were calculated by WVMI. The cost and amount of visits required for training varied depending upon several factors such as size of staff to be trained, number of physical locations of hospital or care center, travel time for training staff, and facility availability.

A population of “near-miss” events reported during the period from December 13, 2004 to January 22, 2007 (n=1,434) was drawn from the ORM database. The events were not classified as to hospital of occurrence to maintain confidentiality. Of these “near miss” occurrences, the majority (73.6%) were classified as medication errors.

A comprehensive review of literature covering all aspects of costs associated with medical errors provided estimates of cost savings, length-of-stay, reporting rates, and fatalities for use in the ROI calculations.

For the purposes of this study the 27 hospitals included in the project were grouped by bed size to account for costing information by group and for confidentiality purposes.

The groups included:

16 - Small (Critical Access) Hospitals (25 or fewer beds)

4 - Medium Hospitals (26-99 beds)

8 - Large Hospitals (100 or more beds)

Perceived Value/Utility: A return-on-investment speaks to the financial benefit or cost of an IT investment, but not how it is used, or whether the various staff involved with it see its value or utility. In order to get at the latter, an effort was undertaken to interview 3 key informants at each of the participating hospitals. The key informants were the CEO or his/her designee, the risk manager, and a floor nurse who used the system. A letter from the project's principal investigator was sent by email or U.S. mail to each CEO and risk manager requesting their participation in an interview. A copy of the 8 interview questions was included. The risk manager was also requested to identify a floor nurse and provide contact information. A letter and copy of the questions were subsequently sent to the identified nurses. Efforts were made to contact each of the 3 informants at each facility up to 4 times. The interviews were all conducted by the PI, who also summarized the findings.

Interviewees were asked the following questions:

- 1) How has the use of the Occurrence Reports Management System (ORM) affected the collection of patient safety incident or near miss reports in your facility? Please provide specific examples.
- 2) How has the use of ORM affected the analysis and use of medication errors to implement change in your medication use process?
- 3) How has an emphasis on collecting "near miss" events affected your use of reports to implement change in appropriate processes?
- 4) Has your hospital undertaken a specific quality improvement project based on information you gleaned from this data, either your own or grouped data? Can you give me an example of what you have done?
- 5) What are the biggest challenges to using ORM in your facility and how do those challenges compare to how you used to collect and analyze patient safety incident or near miss reports? Please provide an example(s) of how you used to collect and analyze reports.
- 6) In what ways has an emphasis on collecting and interpreting data about voluntary patient safety incidents or near miss reports helped your facility to become a learning organization? Please give examples.
- 7) What role do the results from the AHRQ Hospital Survey on Patient Safety Culture play in your goal to become an organization that learns from patient safety events? Please give me an example of how your institution uses the survey results.
- 8) Tell me anything you want about what you have learned about the role of voluntary reporting in preventing harm to patients.

RESULTS

Marketing and Training

During the first 8 months of the project all 35 qualified hospitals in the state were contacted and presentations made. By the end of the first year a total of 27 hospitals, including 16 critical access hospitals, had signed a contract to participate. One participating CAH merged with a larger hospital and no longer had inpatient beds.

Technology Assessment

The critical access hospitals, overall, were the most resource poor, i.e., limited numbers of computers, limited access to available computers, limited numbers of technically savvy staff to support the computers. In addition, the telephone lines serving the facilities were found to be poor. Used laptops were provided to each of the participating hospitals by WVMI . The consultant and project manager also worked with Verizon to provide access to a T1 line for one very rural facility. A small grants program to support computer technology was created with the remaining Verizon Foundation funds. Small grants of up to \$700 were made to a majority of the facilities to reimburse them for the purchase of computers or software in support of patient safety.

Patient Safety Culture Survey

In the aggregate, there was little change observable in the dimension scores from time 1 to time 2 (figure 1). This finding may be understood, in part, by how the surveys were administered – a number of participating hospitals were concerned that the surveys were completed by different populations of people and/or positions at time 1 and time 2.

Culture survey results also compared critical access hospitals to other WV hospitals at time 1 (figure 2), and JCAHO-accredited hospitals to state-accredited hospitals at time 2. CAHs scored lower on frequency of events reported and communication openness, and higher on the following dimensions: overall perceptions of safety, staff, hospital management support, teamwork across hospital units, and hospital handoffs and transitions. JCAHO-accredited hospitals scored higher with respect to openness of communications, and lower on the following dimensions: overall perceptions of safety in their facilities, staffing, hospital management support, teamwork across units, and hospital hand-off and transitions. We also compared nursing staff responses to administration/management responses, and found that in almost every dimension, administrative staff rated their facility's patient safety culture more positively than did nursing staff. This discrepancy continued in the first remeasurement period (and in some cases actually widened) with the largest discrepancies found in the dimensions hospital management support for patient safety and nonpunitive response to error (Figure 3).

Figure 1

Hospital Survey on Patient Safety Culture Period 1 – Period 2 Comparisons

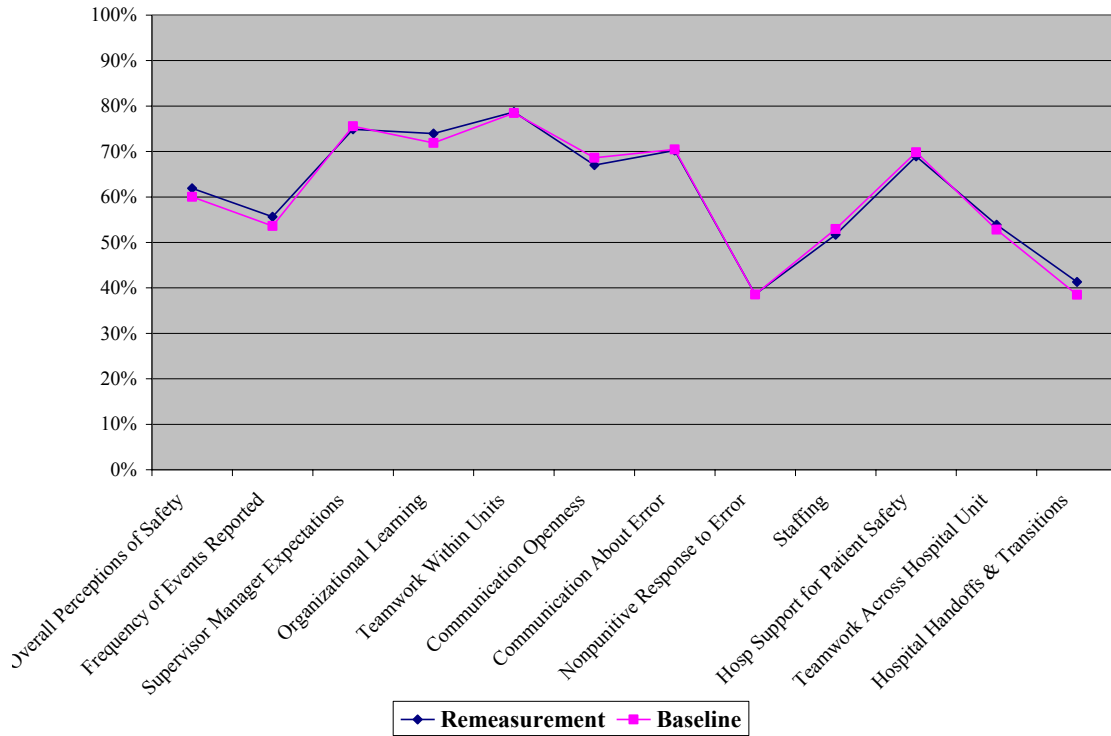


Figure 2

Hospital Survey on Patient Safety Culture CAH vs. Non-CAH Period 1

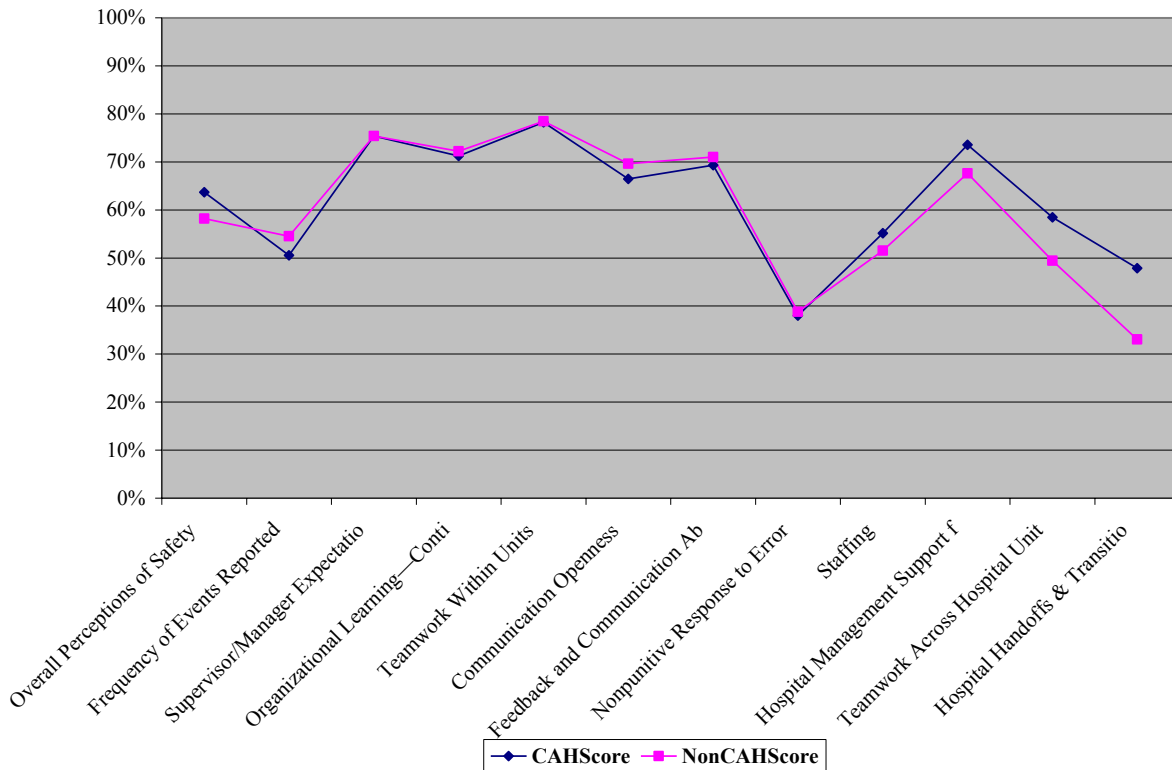
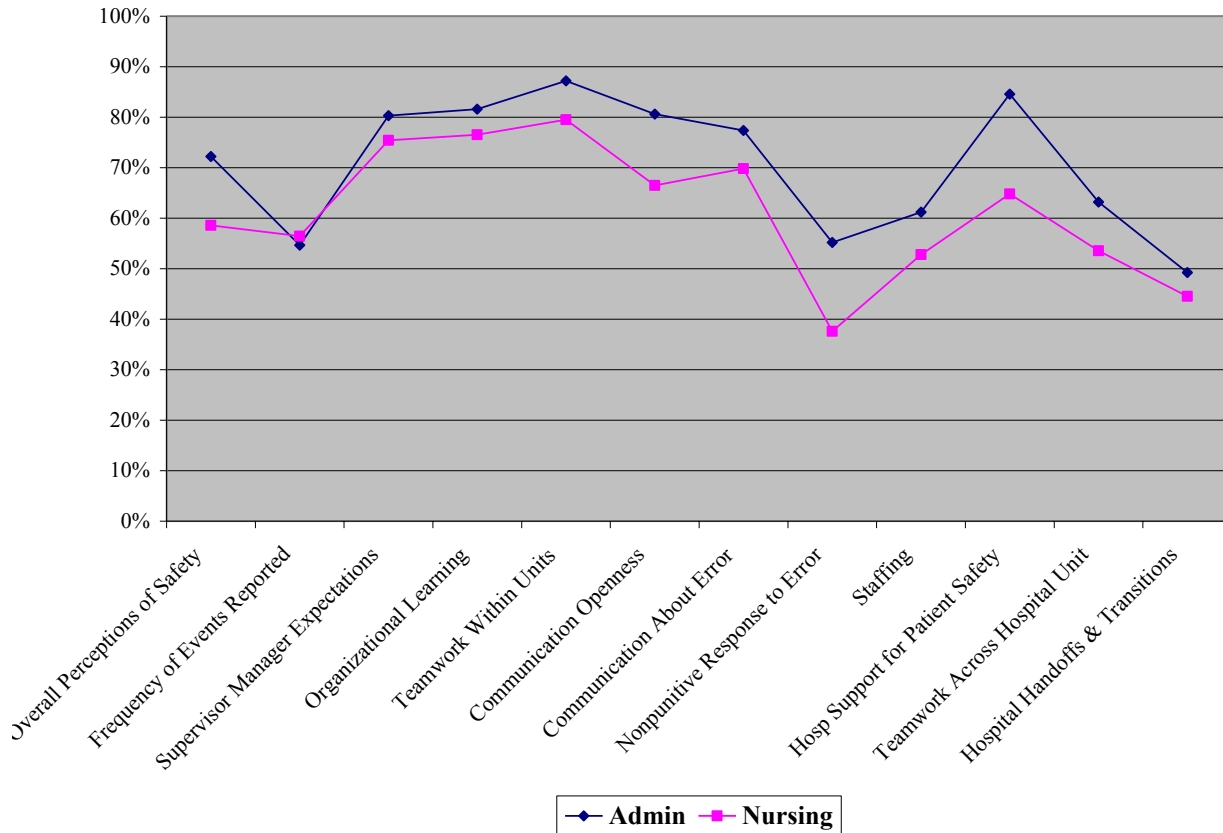


Figure 3

Hospital Survey on Patient Safety Culture Nurse-Admin Remeasurement Comparisons

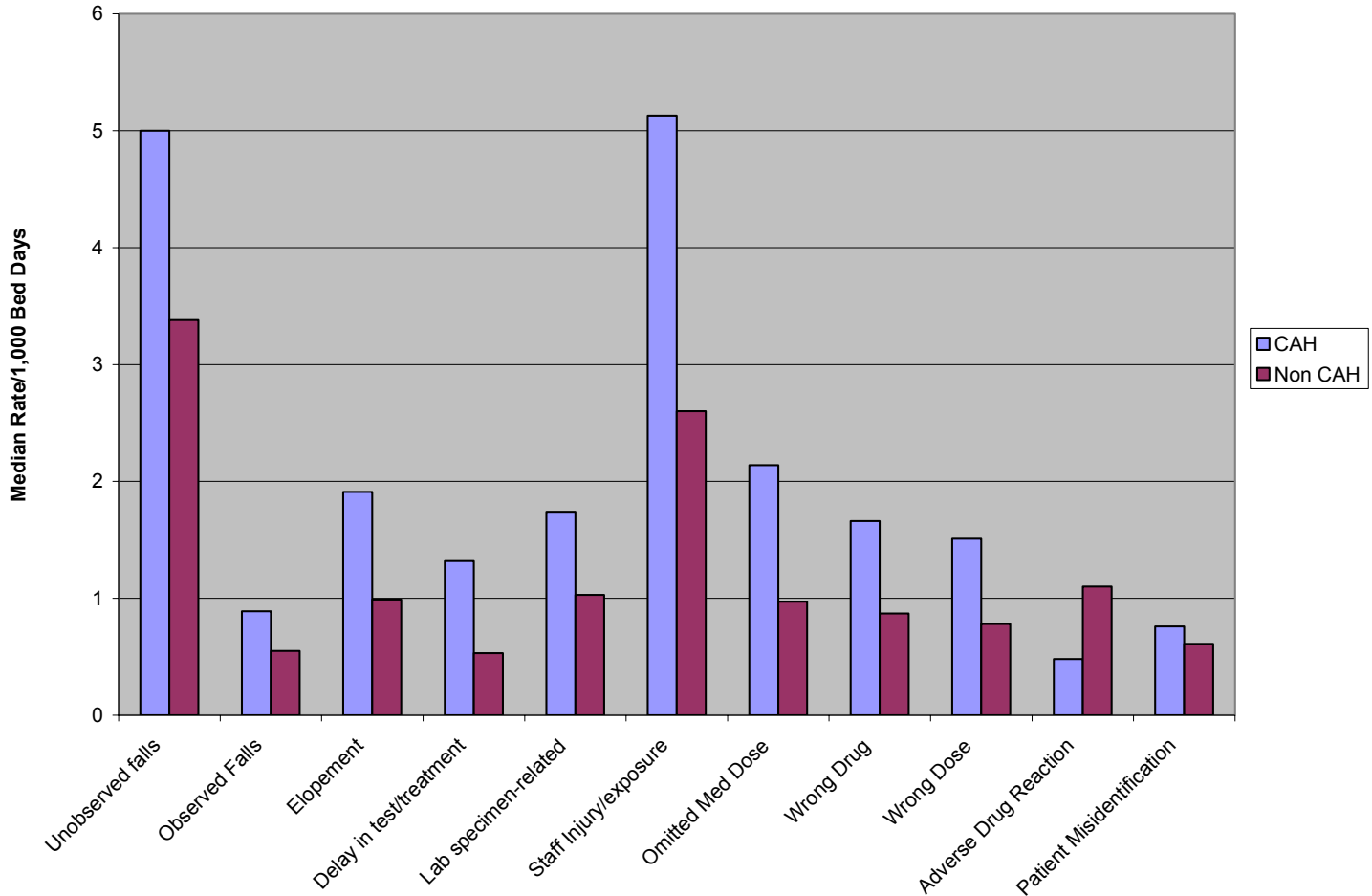


Event Reporting

Hospital participation increased from 11 (5 CAH, 6 non-CAH) at the start of the project to 26 (15 CAH, 11 non-CAH) in the most recent quarter; reported safety events nearly doubled in that time period. However reporting rates remained nearly constant over the 8 quarters (52±4 events/1,000 patient days). We tracked the rates of eleven categories of events expected to yield stable quarterly rates statewide and in larger hospitals. Most adverse event categories were reported more frequently in CAHs. For example, the rate of reported delay in treatment or testing was nearly constant at 0.5/1,000 patient days in non-CAHs, but increased over the 8 quarters from 0.5 to 3 in CAHs. Two exceptions were patient misidentification (approximately equal and slight declines in both groups) and adverse drug reactions (reported roughly twice as frequently in non-CAHs) (Figure 4).

**Median Event Rates over 9 Quarters
Critical Access and non Critical Access Hospitals
West Virginia Patient Safety Project 2005-7**

Figure 4



Event rates in this passive surveillance system were substantially lower than have been reported in research settings. For example, Morse¹ reported a fall rate of 29/1,000 bed days, which is about 6 times the highest rate reported in our surveillance. Active surveillance of adverse drug events in one hospital participating in our study showed only 4% reported in the passive, voluntary system. In spite of this evidence of underreporting, participating hospitals have used the system as intended, discovering and remedying problems suggested by trends in the data.

Return-on-Investment

The ROI calculation used the following formula:

¹ Morse JM, Morse RM. Calculating fall rates: methodological concerns. QRB Qual Rev Bull. Dec 1988;14(12):369-371.

$$ROI = \frac{(\text{Potential savings from decrease in adverse drug events} - \text{Cost of Technology})}{\text{Cost of Technology}}$$

The cost savings portion of this calculation was comprised of the potential savings derived from “near miss” events, assuming that the events would have resulted in an adverse event with an associated increased LOS and/or injury were it not for the increased awareness by the hospitals participating in this study. The cost categories included additional testing and treatment required for the effects of adverse events, as well as lost time and lost wages for employees. An estimate of cost savings for medication errors was drawn from the literature, along with associated length-of-stay information, and an estimate of associated fatalities. Average costs per incident of \$6,658 applied to 1,056 events in this study indicated potential cost savings of over \$7 million.

Potential legal and compensatory damages paid for extreme events resulting in increased mortality rates were not included in this analysis.

The average ROI for small (Critical Access) hospitals was 65%; the average for medium size hospitals was 42%; and the average for large hospitals was 224%.

The cost savings for each hospital type in this model is the same dollar amount per occurrence due to the confidentiality rules governing the project. The 1,434 near-miss events studied were identified by hospital bed size only. For the calculations shown above, the cost savings were based on the daily charge for adverse drug events multiplied by an incident rate per hospital. Costs for catastrophic events including legal fees and damage awards were not included in this calculation. Because of this estimation, and the fact that cost information for non-medication errors could not be justifiably quantified, the above calculations represent a very conservative estimate of ROI.

Learning Collaboratives

Adverse Drug Event Collaborative: Of 9 hospitals participating, one did not report any ADEs and one reported only ineligible drugs. The expanded project was hampered by a widespread misunderstanding of what was meant by surveillance. Unlike the pilot facility, the smaller hospitals didn’t have the human resources to do pharmacy-based surveillance. Differences in the data from quarter-to-quarter suggest there was probably a misunderstanding in what was required in spite of monthly conference calls to talk through these issues. Fifty-four actual ADEs were reported, with most coming from a single facility. Of the 54, only 45 were eligible for the study. The exercise was worth doing, but did not succeed in accomplishing the goal of the study. To achieve a successful active surveillance program would probably require another round of design, simplification, and direct interaction between the original pilot hospital and some of the smaller facilities to get a truer picture of what they are capable of doing. We may need to consider more reasonable expectations for very small hospitals. The collaborative did have a positive impact, in that staff willingly agreed to participate, including talking about issues and reporting data. There is value in raising awareness of ADEs and the acceptability of reporting. By the measure we had originally envisioned the collaborative did not succeed, but with respect to its impact on awareness and willingness to report, it had a positive effect.

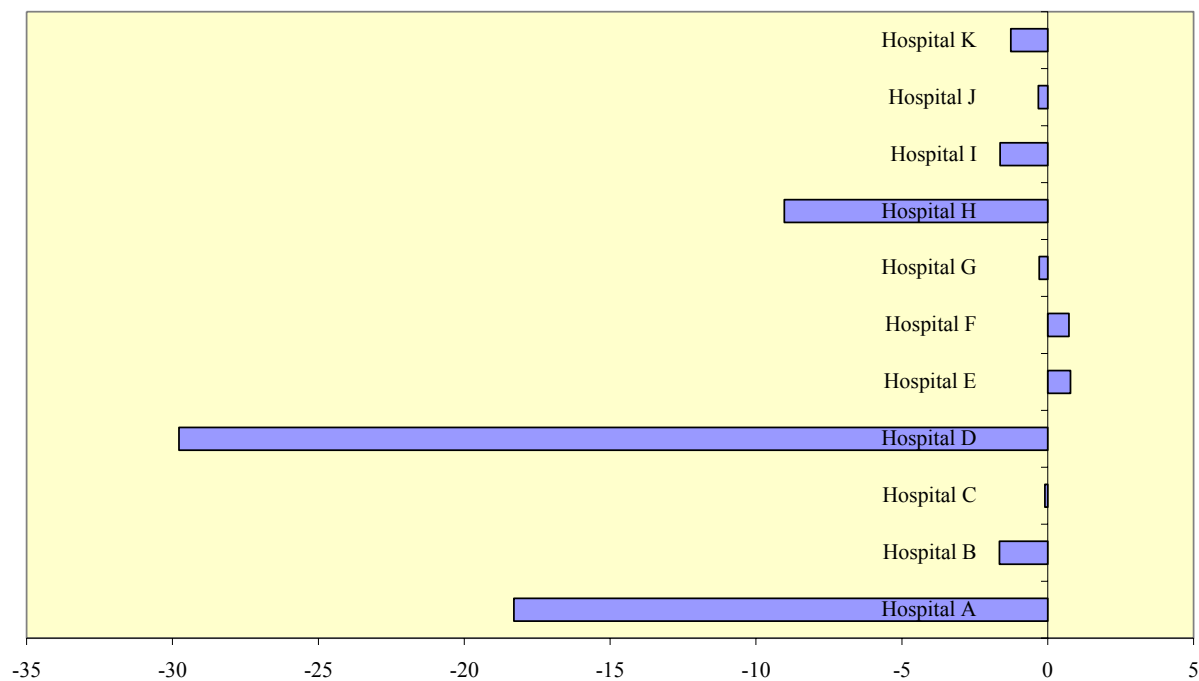
Falls Collaborative: Thirteen facilities (11 hospitals and 2 long-term care facilities) participated in this project. The long-term care facilities were excluded from the final data analysis since they recorded “near miss” falls differently from the hospitals, specifically as actual falls, potentially skewing the results. Of the 11 facilities whose data were included in the final results, eight were rural facilities participating in the AHRQ HIT grant, including six Critical Access Hospitals (CAHs).

In analyzing the falls data, we used patient days as the denominator (as it is relatively consistent across facilities), and number of falls as the numerator. Rates were expressed as falls per 1,000 patient days.

The total falls per 1,000 patient days across all facilities decreased 45%, from 133.9 at baseline to 73.05 at remeasurement. Nine of the eleven facilities experienced a drop in falls per 1,000 patient days from baseline to remeasurement (Figure 4).

Figure 4

**Absolute Change in Number of Falls per 1,000 Patient Days
From Baseline to Remeasurement**



This project demonstrated that RCA can be an effective tool for reducing the rate of falls in acute care facilities for even the smallest rural health providers, and can be easily taught in group settings. Statewide learning sessions were an efficient method of conducting such instruction. In addition, group learning sessions also provided an opportunity for similar facilities to discuss best practices and lessons learned, as well as any problems or concerns encountered with the RCA process.

Perceived Value/Utility:

Interviews were completed for 48 (48/81= 60%) individuals, 15 CEOs (56%), 19 risk managers (70%), and 14 floor nurses (52%). Critical Access Hospitals represented just over half (~56%) of the participating hospitals and half (24 of 48) of the respondents.

The perceived challenges of the project related both to the technology and to the IT product employed. Technological challenges included insufficient computers (even with the 1 or 2 computers provided by the project) and the placement of computers. Computer placement was an issue because computers needed to be located in a setting that provided some privacy to allow anonymous reporting, but still needed to be reasonably close to where the staff worked. IT challenges included getting staff trained in the use of the software. This was true particularly but not exclusively in the small CAHs, given staff schedules, work demands, and significant staff turnover. This was an issue among CEOs as well as nurses and risk managers. In addition to initial training on the computer and on the use of the product, there was the need for “booster” sessions. Since events happened infrequently, staff might not have used the reporting tool for two or more months post-training and might have forgotten how to navigate the system.

Another set of challenges related to getting staff to report events, near miss events in particular:

- 1) It requires too much of an individual’s time (15-20 minutes) to complete the report;
- 2) There continues to be a fear of retaliation;
- 3) There are too many mandatory, “forced” fields and you cannot move through the report until these are completed;
- 4) The system “times out” after a period of time and requires you to start over. This was a particular problem for nurse managers who may be called away to the floor while reporting;
- 5) Limited numbers of computer stations;
- 6) Computer literacy and getting people trained and comfortable was a challenge in the beginning of the project

In spite of the challenges, informants uniformly commented that the information provided by ORM through completed reports was invaluable. For example, for medication errors the ORM data helped them to be better able to track and analyze the problem and where it was occurring, as well as increasing staff awareness of the issue.

Informants saw value in voluntary reporting: Informants believed that their staff saw that 1) the information being input was being used, 2) the focus of reports and follow-up was on the event not on the people, and 3) reporting near miss events helped to keep people safe.

With respect to the patient safety culture survey data, the results were mixed. Many respondents, too often the CEO, didn’t know anything about the survey. Those informants, including CEOs, who were aware of the survey and had seen results reported sharing the information with their management and leadership teams, and in some cases with their board of trustees. Informants saw the value of comparative or benchmark data, which enabled managers and others to see where their facility stood compared to their aggregate peer group. This comparative value included event rate data, culture survey results, and PSIs.

There was a generally expressed recognition that every event did not get reported.

West Virginia Patient Safety Indicators 2004-2005: The following table illustrate the data provided to participating facilities on their patient safety indicators. The project received positive feedback from participating hospital administrators who perceived value in being able to see where they stood compared to all WV hospitals aggregated together. The WV PSIs, unlike AHRQ-run PSIs, reflected data from both DRG and cost-based reimbursed facilities.

Table 1.

**AHRQ Risk-Adjusted Patient Safety Indicator Rates--WV, 2005
State Total
Discharges Reported to the WV Health Care Authority**

Indicator	Hospital X		Hospital Rates		Percentiles of All Hospital Rates		
	Num-erator	Denom-inator	Crude	Adjusted	10th	50th	90th
Complications of Anesthesia	4	66,748	0.060	0.063			
Death in Low-Mortality DRGs	42	64,032	0.7	0.7			2.3
Decubitus Ulcer-No Prday	1,588	72,166	22.0	20.3	4.2	19.5	40.0
Failure to Rescue	1,014	9,912	102.3	107.8		107.8	171.9
Foreign Body Left in During Proc	12	243,828	0.049	0.049			0.117
Iatrogenic Pneumothorax	118	208,012	0.6	0.7			1.1
Infection Due to Medical Care	245	162,484	1.5	1.6		0.8	2.9
Postop Hip Fracture-No Prday	14	39,929	0.351	0.457			0.869
Postop Hemor or Hemat-No Prday	129	58,523	2.2	2.1		0.9	4.3
Postop Physio Metabo De-No Prday	32	28,325	1.1	0.5			1.0
Postop Resp Failure-No Prday	307	22,338	13.7	13.3		9.1	28.0
Postop PE or DVT-No Prday	500	58,146	8.6	8.6		5.7	11.0
Postoperative Sepsis	87	6,293	13.8	14.8		13.4	28.2
Postop Wound Dehiscence-No Prday	27	10,649	2.5	2.8			8.7
Accidental Puncture/Laceration	534	220,315	2.4	3.5		1.4	6.7

Conclusions, Significance, Implications:

“Partnering to Improve Patient Safety in Rural West Virginia Hospitals” has had a strong, positive impact on patient safety in the state. Over 75% of eligible hospitals participated in the project, including all but two of the state’s 18 critical access hospitals. Implementing a new IT product, even if it is free, involves a considerable human resources investment with respect to training time, reporting time, and time to participate in collaboratives and on conference calls. An initial measure of the impact of the project is the work done over this last year by two of the original project partners (WVMI and WVHA) and the WV Medical Association to develop a state Patient Safety Center that will continue the efforts of the project with funds from participating facilities. Even more significantly, within a month of the project’s end 16 of the project hospitals had already signed-up with the Center to participate.

Although some facilities were already engaged in implementing EHRs, the implementation of the internet-based event reporting system is believed by many of the participants to be a positive way to get staff, many of whom are not sophisticated computer users, accustomed to making their reports on a computer in preparation for an EHR implementation in the future.

With respect to IT supporting improvements in patient safety in these facilities there is certainly reason for optimism. The falls learning collaborative demonstrated the measurable impact on falls using the data generated by the ORM. As importantly, the use of the data to measure change (falls) or as evidence of under-reporting (adverse drug events) has helped raise staff awareness according to key informants. IT has helped speed up the process from event report to action, and concurrently enabled staff to see that something intended to improve patient safety is actually being done with the information they provide.

On the other hand, the aggregate results from the culture survey did not change significantly from year 1 to year 2, most likely due to our methodology. There are differences in patient safety culture between the CAHs and other larger facilities, between those hospitals that are JCAHO-accredited and those accredited by the state, and between nurses and administrators. Year 3 survey data has been scanned and is currently being analyzed for release back to the hospitals in early 2008.

There is a general consensus that the events reported do not reflect the universe of events that occur. Conversely, many feel that the use of this passive surveillance system is capturing more near miss events than ever before, although not an exhaustive list. However, some participants find it hard to know to what to attribute positive changes in reporting, or improvements in patient safety given the environment in which they have worked since the release of the IOM report, “To Err is Human.” Specifically informants question whether the success should be attributed to the JCAHO emphasis on National patient Safety goals, the IHI initiatives, and/or to other federal, state and local activities directed toward improving patient safety rather than to this project. It is probable that success in this area can be attributed, in some measure, to all of these efforts.

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Oral and Poster Presentations

1. The West Virginia Patient Safety Project. Oral presentation, International Society for Quality in Health Care 24th International Conference, Boston, MA, Oct. 3, 2007.
2. Improving Self-Reporting of Adverse Drug Events in a West Virginia Hospital. Tri-Regional Conference, St. Petersburg Beach, FL, June 15, 2006.
3. Getting the Most Out of the AHRQ Hospital Survey on Patient Safety Culture. AHQA Technical Conference, Miami, FL, February 23, 2006.
4. Using the AHRQ Hospital Survey on Patient Safety Culture – Lessons Learned. QualityNet Conference, Hunt Valley, MD, September 16, 2005.
5. Advancing Patient Safety in Rural Hospitals in West Virginia. National Rural Health Association Annual Conference, New Orleans, LA, May 20, 2005.

6. Paying Extra Dividends: Spillover Benefits of Investing in the QIO Program. QIO Tri-Regional Conference, June 15 2006.
7. "Enhancing comparability of research results with structured review." American Public Health Association, Philadelphia, PA. December 13, 2005.
8. "On-line Modules Focus on Hospital and Physician Quality Data and Consumer Decision Support Tools," Strategic Innovation in Health Care Delivery, Philadelphia, PA. March, 2004.
9. "Patient Safety Indicators and Their Relationship to Patient Safety Data," AHQA Technical Conference, New Orleans, LA. March, 2004,
10. "Improving Patient Safety in Rural West Virginia, AHQA Technical Conference, San Francisco, CA. January, 2005,
11. "Partnering to Improve Patient Safety in West Virginia," National Patient Safety Conference, Orlando, FL. May, 2005.
12. "AHRQ Patient Safety Project- the West Virginia Experience," Agency for Healthcare Research and Quality, Washington DC. June, 2005,
13. "Update on AHRQ Patient Safety Project," Charleston Area Medical Center, Charleston, WV. October 19, 2005,
14. "Patient Safety Program for Delaware Hospitals and Related Entities," Delaware Healthcare Forum, Dover, DE. October 25, 2005,
15. "Patient Safety Culture in West Virginia," West Virginia Rural Health Conference, Roanoke, WV. October 27, 2005,
16. "Assessing the Culture of Safety in Rural West Virginia," 4th Annual Patient Safety Conference, Charleston, WV. November 4, 2005,
17. "Improving Self-Reporting of Adverse Drug Events," West Virginia Critical Access Meeting, Charleston, WV. December 8, 2005,
18. "Factors in Reducing Repeat Falls," WVASHRM Meeting, Bridgeport, WV. September 8, 2006,
19. "How to reduce Repeat Falls in Healthcare Facilities in West Virginia." WV Health Care Conference, Charleston, WV. May 23, 2006.
20. "The Rate of Adverse Events in Critical Access Hospitals." AHRQ Patient Safety and Health IT, Washington , D.C. June 5, 2006.
21. "Improving the Rate of Self-Reported ADEs in West Virginia." AHRQ Patient Safety and Health IT, Innovations Café Poster Session, Washington, D.C. June 4-7, 2006.
22. "Using the AHRQ Hospital Survey on Patient Safety." AHRQ Patient Safety and Health IT, Innovations Café Poster Session, Washington, D.C. June 4-7, 2006
23. "Patient Safety Culture in CAHs: How CAHs Compared to AHRQ Benchmarks." AHRQ Patient Safety and Health IT, Innovations Café Poster Session, Washington, D.C. June 4-7, 2006
24. "Patient Safety in WV: Yesterday, Today, Tomorrow," WVMI Board Retreat, Covington, VA. October 8, 2006.
25. "RCAs in Falls Prevention," Falls Collaborative, Flatwoods, WV. October 10, 2006.
26. "Patient Safety Falls Collaborative," OHFLAC Annual Team Building Meeting," Charleston, WV. October 25, 2006,
27. "Patient Safety and HIT in Rural Health Care Settings," Fourteenth Annual West Virginia Rural Health Conference, Roanoke, WV. October 26, 2006,

28. "Improving Self-Reporting of Adverse Drug Events in Rural West Virginia," 2006 Nursing Evidence-Based Practice: A State of the Science Conference, Charleston, WV. November 10, 2006,
29. "Event Rates: In Search of a Good Denominator." AHRQ Patient Safety and Health IT Conference. Washington, D.C. June 5, 2006
30. "Adverse Drug Events" National Conference on Small Numbers. Poster Session. Dallas-Fort Worth Marriott. March 28-29, 2007.

Sponsored Conferences:

1. Nov 2004, 2005, 2006- The Annual West Virginia Patient Safety Conference, Charleston, WV.
2. July 26, 2007. West Virginia Patient Safety Wrap-Up. Marriott, Charleston, WV.