2005

From Here to There: Lessons from an Integrative Patient Safety Project in Rural Health Care Settings

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Abstract

To date, few studies have focused on patient safety issues that occur in rural health care settings. This article presents and discusses the methodology and the key findings obtained from a multi-method research study of patient safety in rural health care settings, funded by the Agency for Healthcare Research and Quality. Interdisciplinary teams of health care providers from 30 rural hospitals and Indian Health Service settings in a nine-state area of the West participated in this initiative. Study instruments included surveys, interviews, and textual analysis of responses to case studies. Data indicate that health care providers strongly affirm the importance of patient safety and want access to guides and resources that help achieve that goal. However, the lack of shared agreement regarding the definition, recognition, responsibility, reporting, and disclosing of errors compromises the development of a patient safety agenda. Using e-mail and a secure Web site, the authors developed a model for retrieving data, increasing discussion, providing resources, and disseminating findings.

Introduction

Up until now, most of the patient safety initiatives following the publication of the Institute of Medicine report, *To Err Is Human: Building a Safer Health System*[1] have focused on urban and tertiary care settings. Thus, little is known about the status of patient safety initiatives in rural areas or the extent to which urban interventions can be transplanted into rural settings. To respond to this lacuna, our research focuses on the working conditions in rural health care settings and the factors that shape recognition, reporting, disclosure, and resolution of patient safety issues (including errors and adverse events). Because little information in this area was available at the time this study was initiated, we designed an exploratory, multi-method approach that could help explicate the complex individual and organizational processes that influence the development and acceptance of patient safety measures in rural health care settings.

Materials and Methods

Participants

We enrolled interdisciplinary teams of 3–5 health care providers (physician, nurse, pharmacist, and administrators, including quality control personnel) in 30 hospitals in a 9-state area of the rural West. The participants also included health care providers who worked in the Indian Health Service (IHS) settings. The use of a multi-state area for this study ensured that participating hospitals would not be identified and allowed us to examine issues across different systems. In each hospital, one team member served as a key contact. The hospitals that participated in this research were representative of those found in states with large rural populations.[2] They included acute care facilities (69 percent), or a combination of acute and long-term care facilities (31 percent); the majority (75.9 percent) had fewer than 50 acute care beds. More than half of the participating hospitals (51.7 percent) lacked Joint Commission on Accreditation of Health Care Organizations (JCAHO) accreditation and 44.8 percent lacked ethics committees. While most hospitals had an onsite pharmacy (82.8 percent), only 34.5 percent had a full-time, onsite pharmacist. All of the hospitals had access to the Internet.

Study protocol

The multi-method research agenda involved seven sub-studies. The instruments for the quantitative studies included a hospital data sheet and three surveys: a Close-Call Pilot Safety Culture Assessment, developed by the Department of Veterans Affairs; an Error Tool Survey and a Patient Safety Staff Survey that were developed by the investigators.[3] The hospital data sheet, completed by the key contact in each hospital, provided baseline organizational data. The Safety Culture Assessment, completed by all the team members, assessed attitudes and beliefs relative to the recognition, reporting, and disclosing of errors. The Error Tool Survey, also completed by team members, assessed the kinds of errors that were actually reported in participating hospitals. The Patient Safety Survey, distributed to staff in the participating hospitals, assessed organizational processes, as well as attitudes and behaviors.

The qualitative studies included quarterly interviews with the key contact in each hospital, e-mail questionnaires, and textual analysis of team member responses to two-to-three case studies per month. The interviews provided the opportunity to discuss, in greater depth, the kinds of patient safety issues that developed in each hospital, as well as the individual and organizational processes that were used to respond to them. The e-mail questionnaires allowed us to explore information about specific issues, such as pharmacy protocols when questionable orders were received. The case studies, also e-mailed to team members, were based on the kinds of patient safety issues that occur in rural hospitals. Each case study included a series of companion questions to which participants were encouraged to respond, which provided a mechanism to

discover what kinds of events were recognized as errors. With the permission of the participants, responses to the case studies were posted anonymously on a discussion board located on a secure Web site. All participants had access to the Web site.

As data emerged and was analyzed, results and resources were shared with participating team members in each hospital via the web site and ongoing emails. The team members, in turn, disseminated resources to other health care providers in their respective systems. This cyclical methodology forged an ongoing relationship between the researchers and the research participants, and also allowed the findings from each sub-study to inform the development of the next round of enquiry.

The flexibility of this methodology also allowed for an expansion of the original research agenda via a collaboration with Rush Medical College, Chicago. An interdisciplinary patient safety team, under the direction of Dr. Robert McNutt, also received and analyzed the rural case studies. This endeavor led to the development of a case study model that includes a description of the topic and outlines key issues, learning points, clinical guides, and suggestions for improvement. Researchers at the University of Montana distributed the model summaries, via e-mail, to the rural team members who then reviewed and critiqued the summaries so that they could be revised, when needed, to more realistically accommodate the rural context.

This dynamic exchange of information between Rush Medical College and the rural sites showcased the challenges and uncertainties that accompany any discussion of patient safety. Even when there is agreement as to the technical definition of errors, the application of the definition in particular cases can prove problematic. The lack of definitive clinical guides or standards can make it difficult to categorize diagnosis and treatment issues as errors. Differences of opinion were welcomed and, at times, the development of a summary required several iterations and revisions. Rather than proving cumbersome, however, this process seemed to facilitate trust. Rural health care providers applauded the willingness of their colleagues at Rush Medical College to revisit, reconsider, and revise.

Admittedly this methodology is time-consuming for the researchers and the research participants because it involves a continual process of data collection, analysis, reporting, product development, and dissemination. In addition, the researcher assumes the role of a facilitator. However, the researchers and participants receive information and resources that they value, and so the constraints appear to be offset by the benefits. For example, each hospital that participated in the staff patient safety survey received a detailed report that summarized key findings from the individual hospital as well as the group responses. Some of the findings then led to changes in hospital practices or policies. The case studies provided a blameless way for health care providers to present and discuss patient safety issues that could—and did—occur in rural hospitals. One nurse noted, "That could definitely happen here; it *has* happened here. But it came from somewhere else so we could talk about it." Through this

dialogue, health care providers learned of the extent to which they lacked shared agreement of definitions of errors. In return, health care providers scheduled time for interviews, provided responses to case studies and questionnaires, and participated in the various survey activities. The success of this approach is evidenced by the fact that after nearly three years, none of the original hospitals has left the study, new hospitals have joined, and health care providers remain actively engaged in a dialogue.

Results

While a more extensive description of the results can be found in our cited publications,[4–12] the following section summarizes findings from several parts of the study, in order to allow for a meaningful discussion. Overall, the findings derived from this study highlight the complexity and the interdisciplinary scope of the patient safety problem, including factors related to the cognitive aspects of error-related processes (the differential recognition of error across disciplines); behavioral aspects (perception vs. action); and organizational structures (reporting mechanisms, barriers, and outcome measures).[3]

Cognitive aspects of error-related processes

Our data indicate that rural health care providers uniformly rated themselves as concerned about patient safety and, when completing organizational culture and climate assessments, consistently rated their institutions and themselves as proactive, supportive of non-punitive approaches, willing to report errors, and able to initiate actions that increase safety. While these findings initially appeared to be quite reassuring, our data also indicate that health care providers varied in their ability to recognize errors, allocate responsibility for patient safety, design interventions that increase patient safety, implement new practices, and sustain change. Among the health care disciplines there were vastly different perceptions as to what constitutes an error, who is a member of the patient care decisionmaking team, who holds responsibility for patient safety, and how errors should be disclosed and resolved.[3]

Behavioral component of error-related processes

When health care providers completed surveys that assessed the kinds of errors they actually reported and their experiences associated with those reports, narrow—and oftentimes divergent—definitions of errors emerged. Health care providers primarily recognized and reported medication-related errors and patient falls. The medication errors generally involved one of three issues: incorrect dose, time, or port. Although most of the health care providers viewed their role in reducing medical errors as reporting errors; making recommendations for procedure and policy changes; reviewing reported events; and participating in the investigation of causes, actually engaging in these processes was recounted by few. Only a minority of health care providers reported participation in any error-resolution process including the investigation of errors, review of errors, or

analysis of errors.[12] Indeed only 9 percent to 15 percent of health care providers had ever participated in processes such as Failure Mode and Effect Analysis (FMEA) or Root Cause Analysis.

Organizational structures

Health care providers also reported that they encountered barriers that impeded reporting, such as short staffing; use of temporary staff; lack of time; disagreement as to what constitutes an error; lack of feedback about corrective steps; peer pressure; lack of confidentiality; and lack of mandatory reporting systems. In addition, a range of fears associated with economic, ethical, legal, and psychological consequences appear to influence decisions relative to recognizing, reporting, disclosing, and resolving errors. A vast majority of our team members, as well as surveyed hospital staff (Staff Patient Safety Survey), indicated that they would like to receive additional resources and information about standards of practices of care; changes in procedures; clinical guidelines; general statistics about trends; and the summary of events related to patient safety and medical errors.[12]

The interplay among factors

These three domains—cognitive, behavioral, and organizational—provide a backdrop for understanding the way health care providers recognize, report, and disclose errors. For example, when case studies depicted medication errors associated with the wrong dose, time, or port, these were usually recognized as errors, identified as such, and attributed to nursing. However, when the case studies contained errors associated with diagnosis and/or treatment, included in the Institute of Medicine's definitions of errors (delays in treatment; use of outmoded treatments; failure to employ needed tests; failure to act on results of testing; errors in diagnosis and administration of treatment; or failure to communicate), the health care providers were hesitant to acknowledge that an error had occurred.[1] Physicians, for example suggested that such cases represented not errors, but practice variances, sub-optimal outcomes, or clinical judgments. At times, they noted the need for more aggressive management but use of the word "error" or "mistake" was consistently avoided. Physicians also noted that they did not judge one another's decisions and did not look in one another's charts. Thus, when responding to case studies, they often believed that specific interventions, such as disclosure to the patient, notations in the chart, referral to a hospital-based Morbidity and Mortality meeting (M&M), or filing of incident reports, were unnecessary.

Nurses who responded to the case studies were also hesitant to designate treatment and diagnostic issues as errors, noting that they lacked the authority and the training to question a physician's decisions. Moreover, nurses reported that when they did question orders, they were often rebuffed, criticized and told "not to practice medicine." One nurse noted, "I'm in charge of quality control and I've pushed for patient safety, and now, some doctors won't talk to me." Nurses reported poor access to resources such as authoritative clinical guidelines, and so

lacked the confidence, knowledge, training, and authority to question unsafe clinical practices.[1] these data provided a context for a finding that emerged in one of our earlier studies. In that study, nurses reported that their most frequent problem involved unclear or confusing orders, and yet nearly one in four nurses took no action when encountering that problem.[5, 7]

When administrators responded to case studies, they generally acknowledged their overall responsibility for ensuring patient safety, but also noted a lack of clinical knowledge to determine if clinical events associated with specific cases should be deemed as errors. They often referenced a reliance on a medical peer review process, noting that "clinical judgment" rests with the physician. Overall, pharmacists were quite confident about their own abilities to recognize errors and take appropriate action, but noted that organizational and professional barriers limited their ability to make systemic changes that could increase safety. For example, participating pharmacists who encountered problems in the management of warfarin therapies reported that they wanted to establish pharmacist-managed warfarin clinics, but encountered resistance among the medical staff.

We explored these issues further when administering a staff-wide Patient Safety Survey. Responses mirrored the findings that emerged in earlier studies. Health care providers agreed that patient safety was an important issue and most indicated that their hospital had a "no shame/no blame" approach. Most health care providers said they were comfortable talking about errors. When asked to identify which profession had primary responsibility for ensuring patient safety, nearly all respondents assigned that responsibility to nurses. When given a medication scenario attributable to nursing, an overwhelming majority of the respondents indicated that they believed an error had occurred (97.5 percent) and that they would report it (96.3 percent). Only about two-thirds of them, however, would tell the patient about this error. However, there was less agreement when respondents were given a second case in which a physician failed to prescribe appropriate treatment: Only about two-thirds of our respondents indicated that they believe an error had occurred, three-quarters of them would report it, and slightly more than half of them would tell the patient about it. A sizeable number of the respondents in this second case did not respond to the question regarding reporting of this error (10.1 percent), or to the question regarding telling the patient (8.5 percent).[3]

These inconsistencies may provide some insight as to why only a minority (40 percent) of the respondents to the Patient Safety Survey believed that the error-related data for their hospital are accurate. Although many simply stated that they do not know if data are accurate, almost two-thirds of the pharmacists and nearly half of administrators directly indicated that they believe the error-related data are not accurate. Those who believed that there was not a general agreement and understanding among staff in their hospital about what constitutes an error offered two reasons for this situation: inconsistent and vague guidelines; and narrow definitions that encompass only medication errors or errors that have caused harm.[3] In addition, peer pressure and fear were also mentioned as factors contributing to this lack of agreement and understanding.

Corroborating the findings

Findings from the various studies were discussed with the key contacts in each hospital on a quarterly basis. This activity cross-validated the findings and helped uncover issues that required further exploration. For example, when asked to explain why diagnosis and treatment problems were rarely identified as errors, a common response from nurses was, "We haven't gone there yet." A typical response from administrators was, "Our medical staff would handle something like that. Administration wouldn't necessarily hear about it." When explaining pharmacy protocols, a pharmacist noted that incorrect medication orders, received from physicians, were not logged as errors as long as the pharmacy intercepted and corrected them. He noted that as long as the error did not reach the patient, "Our doctors don't think of those things as errors." A physician who acknowledged the need to increase patient safety also noted that errors typically involved the administration of medication and so "patient safety is not my role— it's a nursing responsibility." A quality control officer cautioned, "You don't want a flashing blue light" and so events that could be "legally discoverable" should not appear in the charts.

In addition to these constraints, health care providers noted other barriers, such as the difficulty in standardizing care or creating effective teams when there is a heavy reliance on temporary personnel. At times, they conveyed the fear that physicians may leave rural communities if pressured to conform to patient safety initiatives, such as use of clinical guides or standards of practice. In nearly every conversation, they indicated lack of time to focus on patient safety and noted that "time" would be the most valuable of resources.

Discussion

The lessons from this research study offer useful insight when designing an agenda that supports both basic research activities and the development of resources. Although health care research has traditionally relied on experimental, control/treatment group design where some subjects receive benefits and others do not, qualitative, solution-focused approaches have gained wider acceptance. Qualitative methodology seems particularly useful in resource-strapped rural areas where assignment to a control group is often viewed as highly unfair and unjust. Likewise, the traditional pre/post design is often viewed as highlighting one's lack of skill or ability. Thus there can be considerable resistance to participating in studies that employ these methodologies.

We do not believe that we could have secured the participation of rural hospitals if we had proposed the use of a more traditional, experimental model. The use of a recursive, multi-method approach was more amenable because it fosters a relationship between the researchers and the participants that encourages collaboration and honesty while building a foundation for resource development. These features correspond to the importance that rural communities place on trust, familiarity, and mutual support.[6–8] Thus, for extremely busy health care providers,

the time expended in this research study seemed worth the investment. Indeed throughout the research cycle, health care providers routinely expressed their appreciation for the resources and assistance they received, and underscored their willingness to remain involved in the project.

Because we had this level of involvement, this recursive methodology also produced a wealth of data that helped identify organizational, as well as intra- and inter-personal issues that contribute to patient safety. Some of these issues, such as the lack of congruence between one's conceptual beliefs and one's behaviors, may not have been otherwise observed. If we only measured beliefs, or only focused on the kinds of errors that were actually reported, our understanding of the complex processes that either hinder or support the creation of safer systems would have been more limited and less reliable.

Finally, this study also provided guidance for the development of resources that promote the shared goal of patient safety. The data from the sub-studies underscore the fact that rural health care providers want to provide safe care and are willing to examine processes and make insightful recommendations that increase safety. However, they need to be able to share agreement of definitions and learn to discuss patient safety issues in ways that are nonconfrontational and neutral. Early in this study, we learned that words like "error" and "mistake" create strong reactions that leave lingering and painful memories. When participating in the various activities, including interviews, surveys, questionnaires, and analysis of case studies, health care providers offered detailed and honest accounts of error-related events, some occurring 20–30 years ago, that still troubled them. The emotional burden associated with the word error and the memories of painful events can hinder or prevent dialogue as well as the development of a uniform approach to patient safety. Given this pain, and the overall lack of agreement as to definitions and processes for resolution, it takes tremendous courage for a person to look at a situation and label it as an error or mistake.

Thus it is imperative to develop processes that encourage health care providers to talk about patient safety in ways that promote an open exploration of areas of agreement and disagreement. In order to reach that goal, the case study model, developed in collaboration with Rush Medical College, was fine-tuned so that it focused on the identification of topics, issues, learning points, guides, and ideas for improvement, rather than the straightforward identification of errors. By focusing on solutions, we obtained a level of engagement and dialogue across settings that may not otherwise have been achieved. In addition, health care providers reported that once they had successfully discussed the case studies with one another, it became easier to raise and discuss issues that were occurring in their own settings. These discussions, in turn, have led to new understandings of team processes, including an appreciation of ways that health care providers can offer useful and time-saving services to one another.

Finally, we learned that resources can be easily and affordably delivered via e-mail, an issue of importance in financially constrained and geographically isolated rural communities where high tech solutions are often viewed with skepticism.

Approaches such as computerized physician order entry (CPOE) systems, for example, seem unaffordable. Throughout this study, health care providers reiterated the need for technologies that are affordable, accessible, time-sensitive, and designed for generalists who work in several departments on a daily basis. Since participating, rural health care providers had a basic understanding of e-mail and many of the hospitals had Web sites, a mechanism for ongoing dialogue and the exchange of information was put in place for the duration of the study.

Conclusion

Our data indicate that rural health care professionals are genuinely concerned about patient safety. They care for people they see every day on Main Street; their lives intersect in the local schools, churches, clubs, stores, and Little League teams. They have a high regard for the network of relationships that tie a community together, often noting, "We are in this together."

At the same time, a network of relationships does not guarantee mutual understanding or shared visions. As a result, decisions about recognizing, reporting, and disclosing errors that occur in rural health care settings have far-reaching consequences. As one administrator noted, "It takes a long time to build trust and no time to lose it."

Thus rural health care providers strongly affirmed the need for resources that have been developed and tested for the rural environment. They want access to guides and standards of practice that can be implemented in their small settings. They want to know what measures will tell them they are on the right track. Above all, they want integrative, interdisciplinary approaches that will help promote and sustain dialogue.

Although our project has added to the knowledge base relative to patient safety in rural areas, more study is needed. One rural health care provider noted, "I signed on for the project because it had the word 'rural.' You don't see that very much." We believe the lessons learned from this project regarding the organizational, intra- and inter-individual factors that contribute to patient safety, as well as the areas of need and methods for development and dissemination of resources should guide the future research and intervention. Although the traditional research designs using methodologies such as a random assignment to experimental and control groups are often not feasible in resource-strapped rural settings, the use of scientifically rigorous design and psychometrically sound measures is important in order to obtain findings that are reliable and valid as well as to make causal inferences in field settings. Consistent with the literature on conducting research in these settings,[13] we encourage supplementing the use of various quasi-experimental designs with the use of multivariate data, careful assessment of initial differences among participants, and valid operationalization of measures. In addition, the use of a recursive, multi-method approach that fosters a mutually rewarding relationship between the researchers and the participants, and encourages collaboration and trust is of utmost importance in order to ensure successful outcomes of patient safety projects in rural areas.

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References

1. Kohn LT, Corrigan JM, Donaldson MS, editors To err is human: building a safer health system. A report of the Committee on Quality of Health Care in America, Institute of Medicine. Washington, DC: National Academy Press; 2000.

2. Cook AF, Hoas H, Guttmannova K. A description of bioethics activities in rural hospitals. Cambridge Quarterly of Healthcare Ethics 2000;9(2):230–8.

3. Cook AF, Hoas H, Guttmannova K, Joyner JC. An error by any other name. Am J Nurs 2004;04(6):32–43;quiz 44.

4. Cook AF, Hoas H. Are health care ethics committees necessary in rural hospitals? HEC Forum 1999 Jun;11(2):134–9.

5. Cook AF, Hoas H, Joyner J. Ethics and the rural nurse: a study of problems, values and needs. Journal of Nursing Law 2000;7(1):41–53.

6. Cook AF, Hoas H. Where the rubber hits the road: implications for organizational and clinical ethics in rural healthcare settings. HEC Forum 2000 Dec;12(4): 331–40.

7. Cook AF, Hoas H, Joyner JC. No secrets on Main Street. Am J Nurs 2001 Aug;101(8):67–71.

8. Cook AF, Hoas H. Voices from the margins: a context for developing bioethics-related resources in rural areas. Am J Bioeth 2001;1(4)W12.

9. Cook AF, Hoas H, Guttmannova K. Ethical issues faced by rural physicians. South Dakota Journal of Medicine 2002;55(6):221–4.

10. Cook AF. Is our health care good enough? Rural Nurse Connection 2002 Summer;P:1–2.

11. Cook AF, Hoas H, Grayson C. Asking for organs: different needs and different values. Journal of Clinical Ethics 2003;14(1/2):37–48.

12. Cook AF, Hoas H, Guttmannova K. Not by technology alone…project seeks to assess and aid patient safety in rural areas. Biomed Instrum Technol 2003;37(2):128–30.

13. Cook TD, Campbell DT. Quasi-experimentation: design and analysis issues for field settings. Boston: Houghton Mifflin; 1979.