



Case Study

High-Performing Health Care Organization • November 2009

Dedicated Surgical Care Improvement Team Guides Changes at Reid Hospital and Health Care Services

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Vital Signs

Location: Richmond, Ind.

Type: Private, not-for-profit teaching hospital

Beds: 237

Distinction: Top 3 percent in composite of five surgical care improvement process-of-care measures among more than 2,300 hospitals (more than half of U.S. acute-care hospitals) eligible for the analysis.

Timeframe: April 2007 through March 2008. See [Appendix](#) for full methodology.

This case study describes the strategies and factors that appear to contribute to high performance on surgical care improvement measures at Reid Hospital. It is based on information obtained from interviews with key hospital personnel and materials provided by the hospital during the spring of 2009.



SUMMARY

Reid Hospital and Health Care Services is a high performer on process-of-care, or “core” measures. The measures, developed by the Hospital Quality Alliance (HQA), relate to achievement of recommended care in four clinical areas: heart attack, heart failure, pneumonia, and surgical care. This case study focuses on Reid’s achievement in providing recommended care to surgical patients in order to reduce the risk of a hospital-acquired infection.

Quality of care has been high on Reid’s agenda since the late 1990s, when the hospital began using a report card to track health care processes and outcomes. In 2004, the multidisciplinary Surgical Care Improvement Project Quality

Action Team was formed, which hospital leaders' credit with helping to achieve high performance on the surgical measures. The team is supported by:

- a strong board, administrators, and clinical leaders;
- a clinical information system that aligns physicians' orders with hospital standards, and alerts nurses about the timing of critical care;
- physician and nurse champions;
- performance data analysis and feedback; and
- a "just do it" approach to quality improvement.

ORGANIZATION

Reid Hospital and Health Care Services is the largest health care provider in the Richmond, Indiana, region, serving as the main referral site in a seven-county area with about 230,000 residents. Last year, Reid had 12,500 admissions and its providers performed over 15,000 surgeries.

Reid has made large infrastructure investments in recent years, including building a new state-of-the-art health care campus that encompasses inpatient, outpatient, and physician office care. Since 2003, the hospital has been named five times to *Hospital & Health Networks* magazine's list of "most wired" small health care institutions.¹

HOSPITAL-WIDE STRATEGIES

Reid's commitment to quality is evident in the breadth and depth of its measurement and improvement efforts. For many years, each department has selected internal quality measures that relate to the hospital's overall priorities: resource use, quality, patient satisfaction, patient safety, and revenue cycle management. After a review process to approve the quality measures, a department or unit initiates improvement projects and tracks the results. Quality Action Teams have been the vehicle for organizing these efforts, though Lean management techniques were introduced recently in an effort to achieve more rapid change.² Further,

quality measurement and improvement are supported by committed institutional leaders, physician and nurse champions, and information technology.

Even though the Centers for Medicare and Medicaid Services (CMS) requires reporting on the HQA measures for Medicare patients only, Reid monitors care for all patients because its leaders believe the standards represent the best practices. For example, it has a standardized order for pneumonia vaccination to ensure that no high-risk patients are missed. Jennifer Ehlers, Reid's vice president and chief quality officer, notes that, although standardization of care and tracking across all payer types have costs, this approach is the best way to improve the health of all members of the community.

Quality Action Teams

Leaders at Reid attribute much of their success to the Quality Action Teams that have worked over several years to improve care in various clinical areas. The Surgical Care Improvement Program (SCIP) team has been in place for five years, since the first surgical quality indicators were disseminated nationally. Despite reaching nearly 100 percent compliance on the surgical measures, the team continues work to sustain their performance levels and prepare for the introduction of new indicators.

It has been essential to include both physicians and nurses on the SCIP team, according to William Ducey, M.D., chief of surgery and physician champion. Physicians have to agree to the care standards, and nurses have to design processes to get the work done. The measures of timeliness of antibiotics, for example, require that nurses carry out physicians' orders on a timeline that nurses control.

The team meets every quarter, with subgroups meeting more frequently, particularly as indicators are revised. Core members include physicians, nurses, pharmacists, quality staff, information technology staff, and administrators. Physicians on the surgical team include representatives of both anesthesiology and surgery. Pharmacists are involved in subgroups addressing antibiotic choice and timing. While teams have tried improvement tools such as plan-do-check-

act cycles, they find such tools are less critical to success than the dedication of its members. According to Ehlers, team members' commitment and "just do it" approach, as well as their creativity, work ethic, and attention to detail, have been keys to success.

Leadership

When CMS first adopted the core measures, some of Reid's physicians were indignant that the government seemed to be telling them what to do, according to Ducey. Hospital leaders discouraged these attitudes by showing strong support for quality measurement and public reporting. Barry MacDowell, M.H.A., Reid's CEO at the time, made it clear that doctors would be held accountable for their scores and personally reviewed progress reports. Craig Kinyon, the current CEO, reviews performance reports with the board and medical staff. Occasionally, the quality action teams ask him to help remove a barrier to improvement, for example by changing a longstanding policy or making a programming request a top priority.

Other hospital leaders help spread the quality improvement culture by supporting staff and celebrating successes. In addition, physician champions convey the hospital's expectations for continued quality improvement and help persuade their peers of the benefits of complying with the care standards.

Information Systems

Reid uses a highly integrated clinical information system to support its quality agenda. After a Quality Action Team creates and gets staff endorsement of a standardized order set, it is embedded in the information system. When physicians treat patients who meet certain criteria, they are prompted to select standard orders or document the reasons for not doing so.

The system also uses automated alerts to help clinicians with the timing of sensitive care processes, such as the administration or discontinuation of a drug. For example, nurses receive alerts on their beepers if a medication has not been delivered on schedule. The alert system, which was proposed by a nurse, has helped the hospital meet care standards for drug

administration and discontinuation. Other concurrent changes also have helped. The physician order set for antibiotic administration was changed from 24 hours to 23 hours post-surgery—giving nurses a buffer between the administration time and the point at which medication administration would be out of compliance with the related core measure.

Reid also has a medication bar-coding system, which reduces the risk of errors and facilitates documentation of medication administration. Nurses carry a handheld scanner, which they use to scan patients' wristbands before administering medications. The scanner alerts them to potential errors, such as the wrong patient, wrong drug, or wrong dose.

Data Analysis and Feedback

The quality department's abstracting staff support frontline workers by compiling and feeding back performance data. Performance reports are color-coded to indicate when care does not meet standards. Each clinical section reviews its performance data at monthly meetings. The quality staff prepare a report for each clinical section that reports variances on the level of individual physicians (the results are reported anonymously, although physicians can see their own rates). Physicians have responded by improving their own scores over time. For example, the surgery section reviews:

- performance on HQA surgical care indicators, including details on failures;
- "not yet reportable" indicators (on normothermia and beta blocker use, see below);
- performance on additional, hospital-developed surgery indicators (by type of surgery and surgeon);
- incidence of surgical site infections; and
- rates of compliance with guidelines on hand washing.

In addition to reviewing aggregate data at the clinical section level, the quality department staff

review each case that falls out of compliance with the involved doctors and nurses. If system errors are to blame, follow-up action is taken to fix the process.

Reid tracks compliance with hand washing guidelines in order to promote patient safety. After reviewing the literature, it developed a surveillance effort in which staff are asked to observe whether their colleagues follow the hospital's guidelines on hand washing. About 2,400 observations are recorded each month. Hand washing rates have improved from 72 percent in 2004 to about 94 percent in 2008, and have since remained stable. The observation method has been corroborated by data on the volume of hand soap or sanitizer used.

SURGICAL CARE IMPROVEMENT STRATEGIES

Reid created the original SCIP Quality Action Team in 1994, when CMS adopted the first set of surgical care improvement measures. Since then, the team has grown and evolved to keep up with changes in the core measures. In 2008, a new subgroup was formed in preparation for the addition of a beta blocker measure to the core measure set. (A new process-of-care measure, Surgery Patients on Beta-Blocker Therapy Prior to Arrival Who Received a Beta-Blocker During the Perioperative Period, became one of the required reporting measures in the first quarter of 2009 and will be publicly reported on Hospital Compare in December 2009.) Reid is also tracking compliance with normothermia, or maintenance of a safe body temperature in surgical patients, in anticipation that it may be added to the core measure set. The Joint Commission has made normothermia one of the voluntarily reported SCIP measures for 2009, and Reid expects that it eventually will be a publicly reported core measure.

The post-operative normothermia subgroup is led by the chief of anesthesia, Sukhminder Bhangoo, M.D. The team experimented with many different strategies, ultimately choosing to warm patients during surgery, since this approach fits best within their overall surgical process. When team members found that

staff had trouble remembering to document patients' temperatures, they suggested a fix: creation of an alert on the circulating nurse's computer when it is time to take a patient's temperature. Data on compliance with this standard are reported to the anesthesiology department, with each anesthesiologist's rate shown. This approach engages the anesthesiologists in achieving the standard. Performance levels rose to Reid's "green" status, meaning the standard is being met 90 percent of the time or better through data review, discussion of the standard, and system changes.

Push Accountability to the Department Level

Early in Reid's quality improvement journey, responsibility for monitoring, documenting, and reporting performance was centralized in the quality department. More recently, individual hospital departments have been given responsibility for tracking certain indicators, under the theory that when frontline staff are engaged and accountable, the quality culture is strengthened. Staff in the ICU, for example, are responsible for monitoring patients' post-surgical blood glucose levels. Respiratory therapists and nurses take joint responsibility for setting patients' beds so their heads are elevated to help prevent pneumonia. Kay Cartwright, vice president of nursing, notes, "It is an entire organizational culture, so no department even thinks it is an option to not meet the quality standards to which they are assigned."

Redesign Care Processes

Because of the importance of preventing deep vein thrombosis (DVT), or blood clots, Reid had begun to redesign the DVT screening process before CMS announced it would be added as a core measure. Reid now screens all adult patients to determine their risk for DVT and uses an automated prompt to facilitate ordering of blood thinners, when needed. Upon admission, patients are asked about risk factors such as having limited mobility, being overweight, or having had a recent surgery. An automated system calculates their level of risk for DVT and issues an order set for consideration by the doctor if it is high. The doctor can

choose to prescribe Lovanox, the preferred medication, or document why heparin or no drug would be better for a particular patient. Because the process is applied to all patients, supported by the technology, and agreed to by physicians, Reid has reached very high levels of compliance on this measure.

RESULTS

Reid exceeded state and national averages on all surgical process-of-care measures in the period between January 1 and December 30, 2008 (Exhibit 1).

Exhibit 2 is a consolidated report tracking Reid’s performance on all core measures, color-coded to highlight measures for which it has and has not reached its internal standard. Originally, the hospital standard was to be at or above 90 percent of the Voluntary Hospitals of America scores.³ When achieving that benchmark became routine, Reid adopted a gold standard of superior performance, which involves meeting and exceeding the benchmark performance of

hospitals performing in the top 10 percent in the nation (as taken from the quarterly preview reports from CMS).

CHALLENGES AND LESSONS LEARNED

Hospitals looking to achieve high performance in surgical measures might take the following lessons from Reid’s experience:

- Multidisciplinary teams can design, implement, and monitor performance improvement work.
- Technology, such as automated alerts and bar-coding, can support process improvements and work redesign.
- Physicians should be encouraged to take on leadership roles and join improvement teams.
- Evidence from peer-reviewed literature can help persuade physicians that CMS measures are the right measures of performance.

Exhibit 1. Reid Hospital & Health Care Services Scores on Surgical Care Improvement Core Measures Compared with State and National Averages

| Surgical Care Improvement Indicator | National Average | Indiana Average | Reid Hospital & Health Care Services |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|--------------------------------------|
| Percent of surgery patients who were given an antibiotic at the right time (within one hour before surgery) to help prevent infection | 89% | 90% | 99% of 4,979 patients |
| Percent of surgery patients who were given the right kind of antibiotic to help prevent infection | 94% | 95% | 98% of 484 patients |
| Percent of surgery patients whose preventative antibiotics were stopped at the right time (within 24 hours after surgery) | 87% | 88% | 99% of 437 patients |
| Percent of all heart surgery patients whose blood glucose is kept under good control in the days right after surgery | 85% | 88% | 100% of 121 patients |
| Percent of surgery patients needing hair removal from the surgical area before surgery, who had hair removed using a safe method (electric clippers or hair removal cream, not razor) | 96% | 98% | 100% of 696 patients |
| Percent of surgery patients whose doctors ordered treatments to prevent blood clots after certain types of surgeries | 87% | 88% | 99% of 389 patients |
| Percent of surgery patients who got treatment at the right time (within 24 hours before or after surgery) to help prevent blood clots after certain types of surgery | 84% | 85% | 97% of 389 patients |

Source: www.hospitalcompare.hhs.gov. Data are from January through December 2008.

Exhibit 2: Reid Hospital & Health Care Services Scores Performance on All Core Measures

CMS Public Reported Indicators

AHA*, HQA** CMS*** National 'Best Practice' Clinical Quality Indicators

| | (CAC) | CMS National Avg | CMS Indiana Avg | Top 10% Hospitals | VHA Goals >= | 3 Q 07 | 4 Q 07 | 1 Q 08 | 2 Q 08 | 3 Q 08 | 4 Q 08 | 1 Q 09 | 2 Q 09 Preliminary |
|--------------------------------------------------------------------|-------|------------------|-----------------|-------------------|--------------|---------|---------|---------|---------|---------|---------|---------|--------------------|
| 1 AMI - Aspirin at Arrival | 94% | 93% | 100% | 90% | 100% | 98% | 100% | 100% | 99% | 99% | 100% | 100% | |
| 2 AMI - ACE or ARB drug for LeftVentricularSystolicDysfunction | 90% | 92% | 100% | 90% | 95% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| 3 AMI - Aspirin Prescribed at Discharge | 93% | 93% | 100% | 90% | 100% | 100% | 100% | 100% | 97% | 100% | 100% | 100% | |
| 4 AMI - Beta Blocker Prescribed at Discharge | 93% | 95% | 100% | 90% | 100% | 100% | 100% | 99% | 100% | 100% | 100% | 100% | |
| 5 AMI - Adult Smoking Cessation Advice/Counseling | 95% | 97% | 100% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| 6 AMI - Fibrinolytic Agent Received w/in 30min.of Arrival | 41% | 11% | 100% | 90% | 0 cases | 0 cases | 0 cases | 0 cases | 0 cases | 0 cases | 0 cases | 0 cases | |
| 7 AMI - PCI balloon inflation w/in 90min of Arrival | 77% | 77% | 98% | 90% | 86% | 92% | 100% | 85% | 73% | 63% | 100% | 83% | |
| 8 HF- Evaluation of Left Ventricular Function | 89% | 93% | 100% | 90% | 99% | 98% | 100% | 100% | 100% | 99% | 98% | 100% | |
| 9 HF- ACE or ARB drug for LeftVentricularSystolicDysfunction | 89% | 87% | 100% | 90% | 100% | 97% | 97% | 100% | 100% | 100% | 100% | 100% | |
| 10 HF - Adult Smoking Cessation Advice/Counseling | 91% | 94% | 100% | 90% | 100% | 100% | 100% | 100% | 93% | 100% | 100% | 100% | |
| 11 HF - Discharge Instructions | 76% | 77% | 99% | 90% | 91% | 90% | 93% | 95% | 92% | 97% | 94% | 95% | |
| 12 PN - Initial ABX within 6 hours of Arrival | 93% | 94% | 100% | 90% | 100% | 97% | 99% | 98% | 98% | 98% | 98% | 97% | |
| 13 PN- Pneumococcal Vaccination | 84% | 87% | 99% | 90% | 99% | 99% | 99% | 99% | 99% | 97% | 98% | 96% | |
| 15 PN - Adult Smoking Cessation Advice/Counseling | 89% | 93% | 100% | 90% | 97% | 94% | 100% | 98% | 100% | 100% | 100% | 96% | |
| 16 PN - Blood Cultures in ED Prior to Initial Antibiotic | 91% | 92% | 100% | 90% | 98% | 97% | 97% | 100% | 99% | 99% | 93% | 99% | |
| 17 PN - Initial Antibiotic Selection Immunocompetent Patient | 87% | 85% | 98% | 90% | 93% | 97% | 94% | 99% | 98% | 95% | 98% | 100% | |
| 18 PN - Influenza Vaccination (Seasonal Oct-Mar) | 82% | 84% | 99% | 90% | n/a | 97% | 95% | n/a | n/a | 91% | 97% | n/a | |
| 19 SCIP- Prophylaxis Antibiotic =< 1 hour prior to Incision | 89% | 90% | 99% | 90% | 97% | 98% | 99% | 99% | 99% | 99% | 99% | 99% | |
| 20 SCIP-Appropriate Selection of Antibiotic | 94% | 95% | 100% | 90% | 99% | 99% | 94% | 99% | 99% | 99% | 100% | 100% | |
| 21 SCIP- Prophylactic Antibiotic Stopped w/in 24 hrs after Surgery | 87% | 88% | 99% | 90% | 95% | 99% | 97% | 100% | 99% | 99% | 99% | 98% | |
| 22 SCIP-VTE Prophylaxis Ordered | 87% | 88% | 99% | 90% | 99% | 99% | 100% | 99% | 100% | 98% | 100% | 100% | |
| 23 SCIP-VTE Prophylaxis Received Timely | 84% | 85% | 98% | 90% | 93% | 98% | 96% | 97% | 99% | 96% | 98% | 100% | |
| 24 SCIP- Controlled Postop Serum Glucose-Cardiac Surgery | 85% | 88% | 100% | 90% | 85% | 97% | 100% | 100% | 100% | 100% | 100% | 100% | |
| 25 SCIP- Appropriate Hair Removal | 96% | 98% | 100% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| 26 SCIP- Beta Blocker Perioperative for Pts on BB | 87% | 87% | 100% | | | | 100% | 100% | 100% | 90% | 90% | 90% | |
| 27 CAC - Relievers/Pediatric Inpatient Asthma | na | na | 100% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| 28 CAC - Systemic Corticosteroids/Pediatric Inpt Asthma | na | na | 100% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |

*AHA-American Hospital Association
 **HQA-Hospital Quality Alliance
 ***CMS-Centers for Medicare/Medicaid Services

| | |
|-----------|--|
| Top 10% | |
| =>90% | |
| 80% - 89% | |
| =<79% | |

Gold Indicators represent that we rank within the Top 10% of hospitals in the Nation!

MC/MyDocuments/PublicIndicators/CMSGoals03.08

Source: Reid Hospital & Health Care Services Scores, October 2009. Data are from July 1, 2007, to June 30, 2008.

- Standardizing order sets can help achieve compliance with recommended care.
- Hospitals can support staff in their improvement efforts through smart technology and recognition.

Ehlers emphasizes the importance of having the support of hospital administrators, in addition to medical staff. Quality improvement staff can elicit the support of a hospital’s leaders by showing them performance data, asking department leaders to adopt and report on improvement goals, and encouraging the CEO to articulate a plan and report progress to the

board. She notes that most people who work in hospital management are competitive, and soon the improvement goals will become their own. “Be sure to give them recognition and feedback for their help,” she says. “As more of the hospital leaders embrace the goals, resources will follow.”

FOR MORE INFORMATION

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NOTES

- ¹ “The 100 Most Wired,” *Hospital & Health Networks*, July 2003, 40–51. The designation “most wired” is based on a survey that measures the use of information technology in quality improvement efforts, customer service, public health and safety, business processes, and workforce issues.
- ² The principles of Lean management are based on Toyota’s approach to streamlining its operations and eliminating waste. See <http://www.leansolutions.net>.
- ³ The Voluntary Hospitals of America is a for-profit cooperative of approximately 1,400 non-for-profit hospitals in the United States. Among its roles, VHA promotes collaboration among members, including by creating a database of members’ CMS and other quality indicators. Hospitals such as Reid can compare their performance with that of peer hospitals.

APPENDIX. SELECTION METHODOLOGY

Selection of high-performing hospitals for this series of case studies on surgical care is based on data submitted by hospitals to the Centers for Medicare and Medicaid Services. We use five measures that are publicly available on the U.S. Department of Health and Human Services' Hospital Compare Web site, (www.hospitalcompare.hhs.gov). The measures, developed by the Hospital Quality Alliance, relate to practices in surgical care.

Surgical Care Improvement Process-of-Care Measures

1. Percent of surgery patients who received preventative antibiotic(s) one hour before incision
2. Percent of surgery patients who received the appropriate preventative antibiotic(s) for their surgery
3. Percent of surgery patients whose preventative antibiotic(s) are stopped within 24 hours after surgery
4. Percent of surgery patients whose doctors ordered treatments to prevent blood clots (venous thromboembolism) for certain types of surgeries
5. Percent of surgery patients who received treatment to prevent blood clots within 24 hours before or after selected surgeries

The analysis uses all-payer data from April 2007 through March 2008. To be included, a hospital must have submitted data for all five measures (even if data submitted were based on zero cases), with a minimum of 30 cases for at least one measure, over four quarters.* Approximately 2,300 facilities—more than half of U.S. acute-care hospitals—were eligible for the analysis.

No explicit weighting was incorporated, but higher-occurring cases give weight to that measure in the average. Since these are process measures (versus outcome measures), no risk adjustment was applied. Exclusion criteria and other specifications are available at <http://www.qualitynet.org/dcs/ContentServer?cid=1141662756099&page name=QnetPublic%2FPage%2FQnetTier2&c=Page>.

While a high score on a composite of surgical care improvement process-of-care measures was the primary criteria for selection in this series, the hospitals also had to meet additional criteria: not a government-owned hospital, at least 50 beds, not a specialty hospital, not an outlier on patient experience, as measured by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), full accreditation by the Joint Commission, not an outlier in heart attack and/or heart failure mortality, and no major recent violations or sanctions.

* Two additional surgical care improvement measures were added in 2007 but were not included in the composite score for selection purposes because data were not available for four quarters.

ABOUT THE AUTHOR

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This study was based on publicly available information and self-reported data provided by the case study institution(s). The Commonwealth Fund is not an accreditor of health care organizations or systems, and the inclusion of an institution in the Fund's case studies series is not an endorsement by the Fund for receipt of health care from the institution.

The aim of Commonwealth Fund–sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions' experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of quality does not necessarily mean that the same level of quality will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving quality and preventing harm to patients and staff.

