Navigating from Data to Excellence

by Elizabeth Logan Buff, MS, and Samuel Hohmann, PhD

How can health information help an organization improve its performance? The authors offer an approach to measuring performance using familiar tools—a compass and a dashboard.

A healthcare organization uses clinical data in a number of ways—to treat patients, bill for services, and track outcomes, among others. But how can health information help organizations navigate toward success in a larger sense? In this article, we'll explore how some tools based on already familiar concepts—the compass and the dashboard—can direct a successful performance improvement program. In this program, health information plays a key role in efforts to monitor and improve strategic initiatives and daily operations.

For a system to survive in today's healthcare arena, it must be financially competitive, achieve clinical excellence, meet patients' expectations, and make a difference in the health status of the members of the community it serves. To accomplish these mandates, institutions need systematic performance improvement programs that guide their strategic initiatives and daily operations. A successful performance improvement program:

- is based on the organization's strategic initiatives and mission
- focuses on high-leverage areas: high-volume, high-risk, or problem-prone areas
- contains a systematic method of performance improvement that assures rapid, ongoing, sustained improvement
- is data driven
- uses an "instrument panel" to monitor performance at a glance
- is based on industry best practices
- is supported and operationalized by leadership
- is streamlined and simplified

Finding the Way: The Value Compass

To measure any health initiative, a balanced approach that encompasses and integrates clinical activities, resource management, patient satisfaction, and the effectiveness of the treatment intervention works best. Each of these components should be stated in measurable terms that focus on outcomes. It is possible for an organization to have the best price but poor clinical outcomes, or have excellent pricing and sound medical practices but be customer unfriendly.

In many institutions, ownership and responsibility for clinical, financial, and patient satisfaction are viewed as belonging to specific departments or group. Many organizations believe a physician is responsible for clinical results, the finance department guides and directs fiscal expenditures, and administration assures patient satisfaction. This compartmentalized "silo" approach does not acknowledge that healthcare organizations are inherently systems, in which any change in one department affects all players.

Team ownership of the improvement process is one of the keys to an organization's success. One way of viewing how different components are connected is to use the concept of a "value compass" to measure care rendered.[1] The clinical value compass has four cardinal points:

- functional health status (North)
- costs (South)
- patient satisfaction (East)
- clinical outcomes (West)

Such an approach redefines quality and integrates cost into the equation. The definition of quality becomes value = quality/cost.[2] A value compass represents the relationship between the indicators of quality (clinical outcomes + functional status outcomes + satisfaction divided by the costs of care).

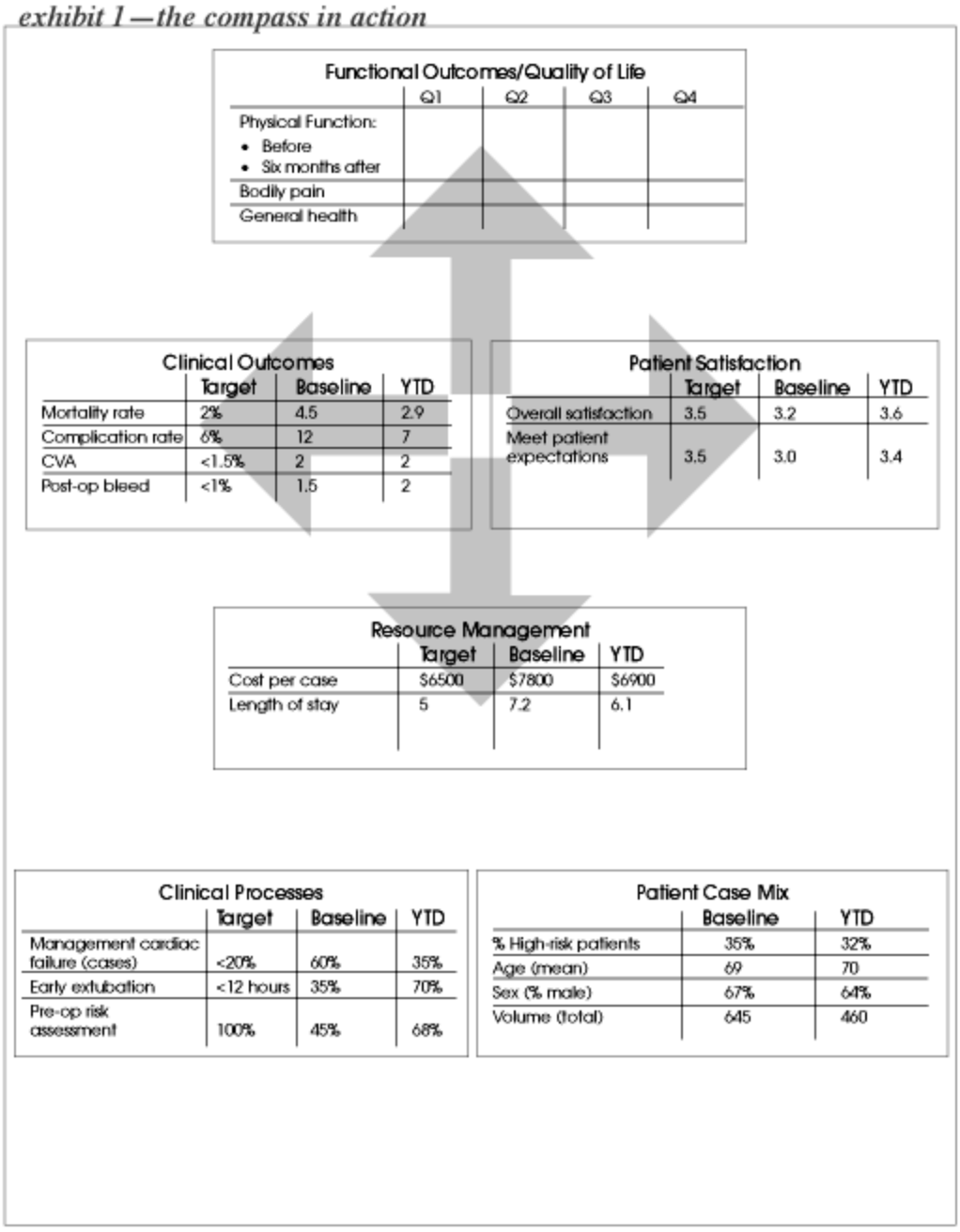
The Compass in Action: A Case Study

Our case study involves a cardiac surgery program whose cost per case and length of stay increased at a time when it was focusing on reducing said cost by 10 percent. During the same time period, complication and mortality rates were increasing and patient satisfaction had declined. Prior to taking the "value compass" approach using a multidisciplinary team (surgeon, nurse, anesthesiologist, manager, and accountant), the manager had focused on reducing costs, the clinicians had focused on the mortality rate, and so on. The connection between cost, satisfaction, and quality did not become apparent until the team used the value compass approach, making the shift from a "silo" to a "systems" thought process. The team found that higher costs were directly related to the increased use of resources (staff and supplies) needed to care for patients who developed compliations after surgery.

The team established a desired end goal: to reduce the cardiac mortality rate from 4.5 to 2 percent. Mortality rate was tracked as it was viewed as the end point of the complication rate. Next, the team reviewed all charts of patients who had died in a one-year period to determine the type and frequency of complications that occurred immediately after surgery and triggered the events that led to death. The complications were categorized, the most common being cardiac and respiratory failure.

Next, the team developed strategies to reduce or manage cardiac and respiratory failure. They developed and implemented a protocol for managing respiratory failure. In addition, a literature search revealed that early extubation reduced respiratory failure, so they initiated a program that removed patients from the ventilator six to 12 hours after surgery. Finally, the team evaluated the results of their actions. Through these interventions, the mortality rate had been reduced to 2.9 percent, the cost decreased by 15 percent, and patient satisfaction exceeded the desired benchmark. (See Exhibit 1, below.)

exhibit 1—the compass in action



Monitoring and Trending: A Dashboard Approach

An organization needs to be able to monitor and trend its own performance at a glance. Like the pilot of an airplane, we need to focus on the present and future at a high level, monitoring progress and taking action if an indicator shows deviation from an established direction. We need an "instrument panel."[3] Imagine a plane without a dashboard: the flight would be likely to crash. Healthcare organizations need an instrument panel to run a delivery system for the same reason.

We can create an instrument panel using the principles of the value compass concept. An institution or department within the organization should select a set of key indicators. When choosing your key indicators, remember these tips:

- a set of no more than 10 indicators is easiest to work with
- develop a clear understanding of definitions
- understand how and where the data will be derived

An IDS Uses the Dashboard

In this example, an integrated delivery system's (IDS) board of trustees, leadership, and staff uses its own version of an instrument panel. When a "red light" goes on, they can then drill down to determine where the problem resides and move into the action phase of performance improvement. The core indicators selected are:

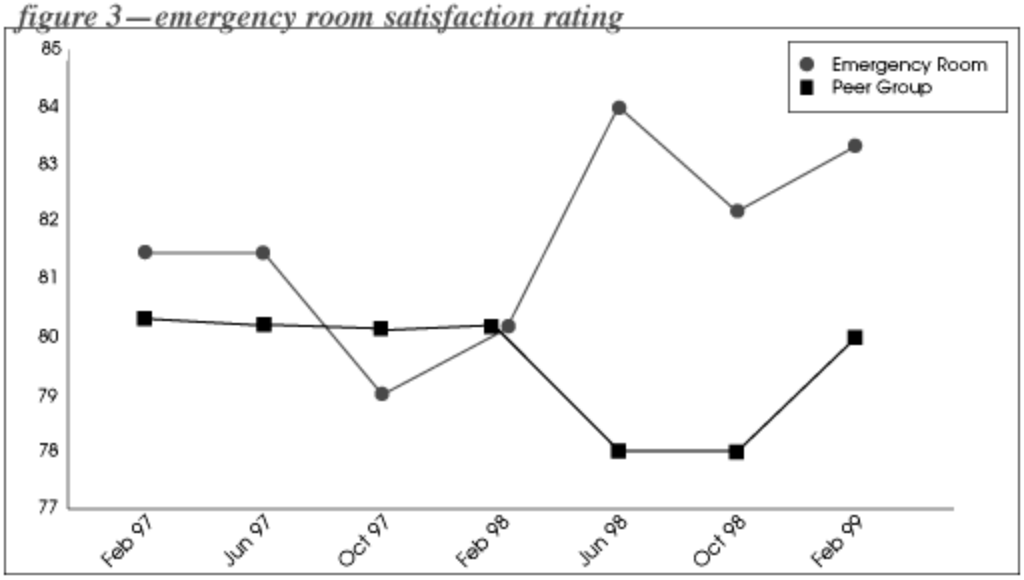
- mortality
- surgical complication and post-operative infection rates
- cesarean section rate
- patient satisfaction
- operating margin
- cost per unit of service
- days in accounts receivable
- days denied by third-party payers

For each key indicator, a benchmark (target) is selected to measure the performance. (See Exhibit 2, below.) In addition to the dashboard, control charts[4] help to trend performance over time. This allows the organization to spot downward or upward trends. (See Exhibit 3, below.)

exhibit 2—the dashboard

Indicator	Benchmark	Target	1998
Clinical			
Cardivascular mortality rate '96	QuadraMed/NJHA (QM/NJHA) '96 Minor teaching peer group	4.06	3.57
Stroke mortality rate	QM/NJHA	8.74	7.9
Cesarean section rate	QM/NJHA	21.03	19.61
Post-op infection rate	QM/NJHA	.34	.24
Surgical complication rate	QM/NJHA	10.76%	4.51%
Satisfaction—Overall			
Inpatient	Press, Ganey	75%	61%
Outpatient	Press, Ganey	75%	24%
Emergency room	Press, Ganey	75%	
Emergency room wait time	Institute for Healthcare Improvement	3	3.9
Specialized care: Princeton House	Press, Ganey		
Specialized care: Merwick	Medical Center at Princeton (MCP)	85%	78%
Home Care	MCP	95%	77%
Resource Consumption			
Operating margin	MCP	1.5%	1%
Cost per day	FACT Report	$1400	$1349
Denials as a percentage of total days	MCP	.25%	1%
Days in AR	MCP	<60	120

figure 3—emergency room satisfaction rating



As Exhibit 2 shows, benchmarks can come from several sources. In the clinical area the comparison group was New Jersey hospitals classified as minor teaching facilities, and five measures were selected. (The comparison group was selected from the QuadraMed Statewide Clinical Outcomes Report.) The measures address outcomes associated with significant numbers of hospitalized patients—that is, cardiovascular care (mortality), which is one of the largest services other than obstetrical care; stroke management, which covers predominantly Medicare patients (mortality); obstetrical care (cesarean section); and surgical care (infections and complications) related to 25 to 40 percent of hospitalized patient care. In 1998, actual rates outperformed the targets on every indicator. This performance, of course, suggests the need to reevaluate targets to continue to improve clinical outcome rates.

Three sources of benchmarking data were used to establish patient satisfaction targets: Press, Ganey, a research firm specializing in patient satisfaction measurement; the nonprofit Institute for Healthcare Improvement; and internal sources (the IDS's internal data). The breadth of care settings is represented in the seven measures: inpatient, outpatient, emergency room (two measures), specialized care (two measures), and home care. The targets for these measures have proved elusive, so efforts to attain these levels continue.

To establish appropriate targets for resource consumption, the team reviewed both internal benchmarks and the FACT Report, a report on healthcare performance distributed by the Center for Healthcare Industry Performance Studies. The four measures selected include not only operating margin and cost per day but also denials, a significant potential loss of revenue. Some of these targets have been attained while others have not. The key is to continuously assess the appropriateness of all targets, whether they were met or not, and adjust targets and interventions when needed.

Using the Data

The benchmark systems identified above also make it easier to monitor processes and track change, since many of them create their own historical data sets. From these sources, trend lines can be created—for example, in the form of control charts. In this way, "episodic" (single cause) variation or "across the board" (systematic) variation can be identified and addressed throughout the performance improvement initiative.

Of course, using the data has its own risks. First, we need to have a clear definition of what we want to measure and make sure that we have identified the appropriate population at risk. The statistics themselves can be equivocal; for example, selecting inappropriate measures can result in misrepresenting the data, a process, or outcomes of care. When distribution of rates is skewed, the mean (the sum of all values divided by the number of cases) and median (the middle value among all cases) may suggest very different pictures of a process or outcome than a distribution where the mean and median are essentially the same. In a skewed distribution, the mean length of stay might be six days, while the median length of stay might be four days. With a length of stay target of five days, has the target been attained or not? Clearly, more than half of the cases being studied have lengths of stay less than the target (since the median defines the 50th percentile) even though some high outliers may have skewed the mean length of stay.

In some cases, it may be preferable to trim cases with extreme values to understand the performance of the majority. In the long run, implementing practices to change outcomes for the majority may have a more immediate impact on institutional performance.

Another important feature of using data is that sufficient sample size must be guaranteed for many statistical analyses. In the absence of an adequate number of cases, many statistical analyses fail to provide reliable results. In such circumstances, case studies might be considered as an alternative.

The Right Path

Measuring performance is an essential part of achieving service excellence. The value compass is a useful management tool in establishing interdisciplinary focus on the value equation as it applies to clinical outcomes, satisfaction, health status of the community, and financial performance. When the compass is operationalized, the management team can set targets based on appropriate benchmarks, monitor and track changes in performance, and evaluate interventions that have been implemented to bring about change. Using the data associated with setting, monitoring, and evaluating performance targets, managers should use caution in analyzing data and in drawing conclusions, taking care to ensure that their actions are supported by the data. Once they have taken these precautions, however, they are on the road to moving from data to excellence.

Notes

1. Batalden, P., and P. Stoltz. "A Framework for the Continual Improvement of Health Care: Building and Applying Profession-al and Improvement Knowledge to Test Changes in Daily Work." *The Joint Commission Journal on Quality Improvement* 19, no. 10 (1993): 424-447.
2. Nelson, E., and P. Batalden. "Patient-based Quality Measure-ment Systems." *Quality Management in Health Care* 2, no. 1 (1993): 18-30.
3. *Ibid*.
4. On the use of control charts: Presenting observed outcome rates over time on a chart that also contains reasonable upper and lower limits of expected outcome rates. The limits may be standard deviations above and below an expected value or a confidence interval around an expected value. Using statistical process control methods, quality specialists can assess the stability of a process and determine the need for intervention.

References

Batalden, P. *Customer Knowledge.* Center for the Evaluative Clinical Sciences, Dartmouth Medical School, 1997.

Joint Commission on Accreditation of Healthcare Organizations. *The Measurement Mandate: On the Road to Performance Improvement*. Oakbrook Terrace, IL: 1993.

Wheeler, D. *Understanding Variation: The Key to Managing Chaos*. Knoxville, TN: SPC Press, 1993.

Elizabeth Logan Buff *is vice president for patient services and quality at the Medical Center at Princeton, Prince-ton, NJ. Her e-mail address is mcplbuff@aol.com.* ***Samuel Hohmann*** *is vice president for research and statistics for QuadraMed Corp., Neptune, NJ. His e-mail address is SHohmann@quadramed.com.*

Article Citation:
Buff, Elizabeth Logan and Samuel Hohmann. "Navigating from Data to Excellence." *Journal of AHIMA* 70, no. 5 (1999): 44-48.

Driving the Power of Knowledge