

Case Study—Process and Structure for Quality and Cost Improvement

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In this article...

A partnership between cardiologist, nursing, and quality leaders resulted in significant savings and lower complications for cardiology patients at two Michigan hospitals.

The national imperative for health care organizations to decrease health care costs and improve quality continues unabated across the country. Even as the health care reform debate evolves, hospitals are rapidly preparing for anticipated changes in reimbursement and new requirements for quality and safety.

As part of this preparation, and fueled in part by independent rating organizations such as HealthGrades (which reports on hospital quality using a set of nearly 30 high-volume surgical procedures and medical conditions), the improvement focus on high-volume and high-cost patient conditions and procedures continues to gain momentum.

At Spectrum Health in Grand Rapids, Mich., the quality program focuses on 35 high-volume adult and pediatric conditions, including joint replacement. As one of the nation's leading centers for cardiac care, an initiative to improve care for this patient population led to nearly 100 percent compliance with evidence-based guidelines, reduced complication rates, reduced LOS, reduced costs, and produced several designations from HealthGrades and certification from The Joint Commission.

To make these improvements, the leaders of the Spectrum Health Meijer Heart Center partnered with the SH quality department and followed an improvement structure and process. Using the acute myocardial infarction (AMI/PCI) improvement team as the case study, let's explore the most important aspects of this support structure, including lessons learned.

Multidisciplinary improvement teams are one of the most effective structures for improving care for defined populations. Multidisciplinary team membership should

mirror the specialties and clinical staff who care for patients with the procedure or condition under study and, at a minimum, should always include:

- Medical director and nursing director – Team co-chairs
- Quality improvement specialist
- Data analyst
- Quality medical director
- Additional content experts – physicians, nurses, pharmacists, etc.
- Financial analyst

For the AMI/PCI team, members included emergency department physicians, cardiologists, hospitalists, nursing director of cardiovascular services, QIS, clinical nurse specialist, nurse managers of the emergency department, cath lab and cardiovascular nursing unit, pharmacist, care management, bed management, and nurses from each area.

Teams often choose not to include physicians at the beginning of their work. Reasons often cited include sensitivity to how busy the physician is with his/her practice and a desire not to waste a physician's time.

Unfortunately, this has several unintended consequences, the most significant that teams that fail to include physicians from the beginning will not be successful. Once physicians are added they will insist on revisiting all previous decisions and, invariably, the process will start over from the beginning. When nursing is not included, the same call for rework will result.

In our example, the cardiology medical directors, emergency department medical director, and cardiovascular services nursing director served as co-chairs of the improvement team and led all meetings. They formed a very effective leadership team that has been instrumental in the team's success—a team that has been active since 2003.



The consistent production of accurate and reliable clinical dashboards provides a foundation for identifying improvement opportunities, tracking changes over time, quantifying results of interventions, and calculating cost savings.

With shared leadership between the medical director and nursing director, joint ownership and joint accountability is established for team performance and resulting improvements. This partnership is critical, as neither nursing nor medical is responsible for patient care in isolation of one another, but it is a team-driven process of care that results in the best patient outcomes.

Also in our example, the cardiology medical director was responsible for obtaining consensus with his physician peers on evidence-based guidelines, protocols, and order sets.

He used one-on-one conversations (academic detailing) with colleagues for physician-specific issues and a variety of cardiology department meetings for discussion and agreement on the contents of order sets and protocols.

In the setting of quality improvement, the ideal medical director must

have the ability to get things done with his or her peers; most importantly, an ability to gain consensus on evidence-based protocols and order sets.

To this end, medical directors must be well-respected by their colleagues and have excellent diplomacy and negotiating skills. The characteristics are critical to the success of your medical leaders and without which, they will be much less likely to succeed.

Quality support staff

At first blush, the resources needed to implement improvements may seem like overkill. But trust us—we have used a variety of support structures, some with fewer staff and some with more, but when we used less, our performance often suffered.

For this reason, we recently returned to the triad model of support for our QI teams. We found that we

need all of our experts at the table to efficiently address the many questions and concerns that surface at team meetings.

We found that it is simply impossible for one quality staff member to be expert in all of the areas and perform all of the functions that a high-performing improvement team requires. With that said, here is our recommendation for team support.

Each team requires active support from the following three individuals:

- 1.** Medical leader with advance training in quality improvement, safety science and outcome measurement
- 2.** Quality improvement specialist with expertise in team facilitation and project management
- 3.** Data analyst with expertise in the specific quality reports used by the team

Table 1

Quality Improvements – 2003 to 2009
Key Time Intervals from Arrival in Emergency Department



Average Time	4th Qtr. 2003	4th Qtr. 2009
Time from ED arrival to first EKG	22 min	6 min
Time from ED arrival to evaluation by the physician	5 min	3 min
Time from first EKG to the interventionalist being paged	6 min	6 min
Time from the interventionalist page to response	3 min	2 min
Time from when cath lab team is called until they are ready	34 min	12 min
Time from patient's arrival in cath lab until first device	34 min	23 min
Time from patient's arrival in the ED until first device	112 min	61 min
Door-to-Balloon (D2B) Time	CY 2003	YTD 2009
D2B % within 90 minutes	37.2%	96.7%

Three Major Process Changes

1. Activation of the Cath lab by emergency medicine physicians rather than cardiologists,
2. Use of pre-hospital EKGs obtained in the field by ambulance personnel, and
3. Monitoring of performance data and provision of feedback to physicians and staff.

Quality medical director

The quality medical director (QMD) supports the team leaders, especially those with little experience in leading improvement efforts. The QMD mentors the team leaders, plans meeting agendas (often in partnership with the QIS), recommends priority improvement areas, and helps set the pace for the team.

The QMDs also bring a unique set of skills, the most important of which are interpersonal skills. They are well-respected opinion leaders (by both nursing and physicians) and have often held previous medical staff or other leadership positions.

They are consensus-builders, negotiators, and have specific expertise in the evidence base of the particular team's specialty, including the use of order sets, practice protocols, EMR

decision support tools, and the quality reports used by the team.

In our organization, Brian Hotchkiss, MD, a pediatric orthopedic surgeon, and John Maurer, MD, an internal medicine physician, have served in this role. Both embody all of the traits above, but above all else, each is viewed as a "gentleman's gentleman" and "the doctor's doctor."

In addition, they are outstanding teachers and extremely well-respected by all. Their leadership has been critical to our many successes and this is why we place such high importance on their role, the QMD, in creating an outstanding quality program.

Quality improvement specialist

Quality improvement specialists (QIS) function as the team meeting facilitators and the project managers.

They ensure that forward progress is maintained and that milestones, deliverables, and goals are met by the team.

The quality improvement specialist should ideally be one of the best and brightest in your organization. He or she should be energetic, hard working, well-respected, and a rising star.

These individuals should have experience and expertise in six specific areas:

1. Clinical improvement methods and tools
2. Lean or Toyota process redesign
3. Safety science
4. Team facilitation
5. Outcome measurement
6. Project management

Your specialists should also

embody mastery of the “soft skills.” They should be natural extroverts, “people” people, diplomats, negotiators, mediators, and consensus builders. And finally they must be able to work with and like to work with physician leaders (medical directors), nursing leaders (nursing directors) and clinical staff.

Do they need a clinical background? Not necessarily. Many very successful QISs have come from a variety of backgrounds including coding, psychology, industrial engineering, finance, and manufacturing.

Data analyst

Data analysts are your “go-to” experts on the content of clinical dashboards. They know the ins and outs of the data sources used to create the reports. They can fully describe the data production process and can assist in the technical details of data interpretation. They are the keys to successfully dealing with physician questions and objections to the data.

The analysts should also bring insight into the coding process. This is often required to understand how quality measures have been translated by the coding department from the documentation provided by the physician in the medical record. They must also possess a good understanding of severity adjustment and the underlying statistics contained in the reports.

Where do you find team members? My first stop is to “borrow” from the organization’s experts in data reporting and production—the finance department, (but please don’t tell Joe how many I have on “loan.”)

Finance staffers are also high on my list because the finance system is a primary source for the data used to create the clinical dashboards. Hence these folks possess expertise and insight into the source systems, which becomes paramount in interpreting the reports used by our teams.

The bottom line—these are the

people who answer the challenging questions posed by the physicians in the meetings. They are essential to successful discussion of dashboard content and critical in maintaining forward momentum of the teams and trust in the data by the physicians.

Financial analysis

As our quality program has evolved, our dashboards now contain a variety of cost information, such as cost of supplies, R&B, and pharmacy. They also contain an estimate of direct costs due to complications.

As our teams take a greater role in reducing the cost of care, a financial analyst is a key member of the improvement team. His/her role is to work with team members so all understand how changes in clinical practice affect the cost of care and how the modeling works to calculate the cost of complications.

While seemingly complex at first glance, the financial modeling of quality improvements, including complication reduction, standardization of clinical processes, and overall clinical outcome improvement, is really just an extension of the charge capture system.

During the clinical improvement process, the finance representative first provides a baseline of the identified condition, in this case AMI/PCI. This baseline utilizes, whatever financial decision support system the hospital utilizes from simply ratio of cost to charges to the most complex activity-based costing software.

The finance representative then works with the team to identify the changes being recommended as reflected in chargeable events. For example, supplies used, patient days, additional procedures—basically anything that is assigned a revenue code.

At that point, it is as simple as running a before and after analysis of baseline data as compared to post intervention cases. The beauty of this is that all the data necessary to calcu-

late a reasonably accurate summary of the impact of quality improvements reside right in the hospital charge master.

Team performance

Strategies to accelerate improvements and team performance generally fall into three categories:

1. Transparency using quality data
2. The role of executive sponsors (the hospitals executive team)
3. Roles of the quality committees

Throughout SH, we maintain a policy of transparency related to quality performance. Our clinical dashboards, including those for total joint replacements, are distributed to executive leadership and clinical directors monthly.

The dashboards are also reviewed by team leaders, quality leadership, team members and members of the quality committee and the board quality committees. For our larger service lines or a center of excellence such as cardiology, annual reports to the community are developed. These are distributed throughout our primary service area and also posted on our web site.

The practice of sharing our performance with a broad audience has had a powerful impact on our quality teams. First, it’s a strong motivator to improve when you know your performance is being shared with a broad audience, both internal and external.

Second, it serves as a source of pride for our staff and physicians when their performance is picked up by the media and reported in other venues.

And third, they know our patients and families will see this information and their passion to continually improve is reinforced.

Executive sponsors

Executives who often fill the role of team sponsors include the CFO,

CMO, CQO, CEO, and CNO. Their role is to provide support to the teams, often by ensuring that they have adequate resources, or in removing barriers to their progress.

We've also found that executives can play an even larger role by taking some simple steps. For example, we recommend that the executive sponsor call or touch base with team leaders at least monthly. This shows that the executive is interested in the team and that it's high on the executive's list of priorities.

The calls or meetings can be used to learn about progress, provide encouragement, and remove any barriers preventing progress. In fact, some execs schedule these calls on a monthly basis with the team leaders or place them on agendas of routine monthly meetings.

Can you imagine getting a call of interest and support from the CFO if you're the medical director or nursing director leading a QI team?

In the early days of the ortho team, our CQO would hold a monthly lunch with the team's medical director. They would discuss the progress of the team, the next steps and any help the director needed. They would also prioritize a variety of improvements contemplated by the team. We believe this was helpful in getting the team off to a good start during its startup.

Quality committees

Quality committees can have a powerful impact on team performance by serving as a motivator for continued progress.

In our organization, we have seen a direct correlation between team performance and regularly scheduled presentations (by the team leaders) to the hospital quality committee and the board quality committee.

When this practice was commonplace, progress was fast and accomplishments were many; because there is no more powerful incentive than knowing that we will present progress reports to our upline and other hospi-

tal leaders on a regular basis.

For this strategy to work, it's important to keep the forums positive, encouraging, and congratulatory in nature. In such an environment, teams will look forward to participating, see the exposure to executive leadership as a positive and a reward for doing a good job.

Measurable results

The team has demonstrated outstanding results.

To speed the care of patients with ST segment elevated myocardial infarction, the team focused on time intervals from patient arrival to key interventions. Before and after statistics are included in Table 1.

Improvements were seen across the board and door-to-balloon (D2B) times are now consistently less than 90 minutes. For the 12 months through September 30, 2009, D2B time was less than 90 minutes for 97 percent of patients.

Hematoma rates dropped from 3.8 percent to 3.1 percent, an 18 percent decrease. Coronary perforation dropped from 1.8 percent to 1.0 percent, a decrease of 44 percent. Readmission within 30 days decreased from 8.2 percent to 5.3 percent, a 35 percent decrease during the study period and LOS decreased from 2.48 days to 1.91 days, a 23 percent decrease.

In aggregate, these four measures generated an estimated total savings of \$1,370,023 through November 2008. The finance and decision support teams computed the average cost savings for each outcome by comparing cohorts of patients with and without the complication.

Although the financial savings are an important by-product of the team, the drop in readmissions and several complications are at the core of this work.

Lessons learned

Passionate physician leadership is critical to gaining consensus among

the physicians on evidence-based practice, order sets, and dashboard measures. The medical director also reviews dashboard performance with physicians one-on-one or in team meetings that help physicians understand their performance and how it compares to their peers.

A strong partnership between department medical directors and nursing directors aids joint decision making on clinical protocols and unit operations. These partnerships have been key to our highest performing hospital units and are directly correlated with quality performance and center of excellence designations.

The Meijer Heart Center at Spectrum Health has been designated a top 100 cardiovascular hospital by Thomson Reuters in nine of the last 10 years. Only 10 cardiovascular hospitals in the country have received this designation nine or more times. Our medical and nursing leaders were indispensable in this achievement.

The consistent production of accurate and reliable clinical dashboards provides a foundation for identifying improvement opportunities, tracking changes over time, quantifying results of interventions, and calculating cost savings. The data are the fuel that drives the improvement engine.

A strong partnership with finance is critical to dashboard production and understanding the meaning of dashboard measures. The cost accounting and medical record coding databases are source systems for our clinical dashboards.

The active support, engagement, and training provided by our finance colleagues allow our organization to produce clinical dashboards for any clinical condition or surgical procedure. It's not uncommon to have a dashboard in full production within 60 days following a physician request for information.



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Acknowledgement

The authors acknowledge with appreciation the assistance of the AMI team, quality and data staff in the preparation of this manuscript.

Chat with the Authors!

A Special Web Cast hosted by the Healthcare Financial Management Association will be held April 20th . The authors of this article will address issues and answer questions about quality improvement efforts. Watch your email for details on how to register for the Web Cast.

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