Clinical Collaboratives for Improving Patient Care

Shelley Niemeier, BSN, MHA, CHE, and Andrew L. Kosseff, MD

Abstract

- **Objective:** To describe a quality improvement process.
- **Setting:** A large, diverse health system.
- **Improvement process:** The Clinical Collaborative model involves identifying improvement goals in specific clinical areas, comparing the system’s performance with benchmarks, and rapidly implementing process changes designed to improve performance. After the topic is selected, there are 3 phases: pre-work, active phase, and continuous improvement. In the active phase, improvement teams attend learning sessions and work with coaches to develop action plans. Teams participate on conference calls and listservs to share ideas, obstacles, and successes. The continuous improvement phase is designed to maintain gains realized during the active phase and identify new opportunities for improvement.
- **Results:** Collaboratives on improving secondary prevention of ischemic heart disease, improving treatment of congestive heart failure, and achieving exceptional safety in health care are in the process of meeting goals or have met them. Lessons learned include involve the right people, obtain leadership support, be inventive, and provide a nonpunitive environment.
- **Conclusion:** The Clinical Collaborative process has made significant progress toward improving outcomes and creating a safer environment for patient care.

Much has been written about the value of collaborative improvement work in health care [1–4]. At our institution, we have adopted a collaborative approach to system-wide clinical improvement. This approach capitalizes on the vast improvement and clinical expertise within our system to improve care for patients throughout the system. In this paper, we describe a collaborative quality improvement process implemented across 20 facilities (“entities”) in a large health care system.

**Setting**

SSM Health Care (SSMHC), based in St. Louis, MO, is one of the largest Catholic health care systems in the country, with nearly 5000 affiliated physicians and 23,000 employees. The system includes 20 acute care hospitals and 3 nursing homes in 4 states. SSMHC health-related businesses include information systems, home care management, and support services such as materiel management and clinical engineering. SSMHC also owns an interest in Premier Medical Insurance Group, Inc., one of Wisconsin’s largest health maintenance organizations.

**CQI Beginnings**

In 1990, SSMHC developed and operationalized a continuous quality improvement (CQI) organizational philosophy, which included the adoption of CQI principles, system-wide education related to CQI tools and techniques, and the development of CQI teams to study improvement opportunities and develop solutions. Building on this groundwork, system leaders and clinicians began to assess outcomes and processes, both at the entity and system level. In 1996, SSMHC integrated Institute for Healthcare Improvement (IHI) rapid-cycle improvement methods [5] into its existing CQI methodology, with select SSMHC entities voluntarily participating in various IHI Breakthrough Series.

The system soon recognized several opportunities for improvement. First, many entities in the system not participating in the IHI Breakthrough Series were struggling with delays in their clinical improvement work or failure to achieve team goals. Second, clinical improvements developed as a result of work in the IHI Breakthrough Series were not being replicated. No effective method existed for sharing the lessons learned or process changes with others across the system. Teams that participated in the IHI Breakthrough Series were making substantive clinical improvements but did not have an effective forum for sharing their process changes with other entities in the system. The SSMHC Quality Resource Center, a department that leads and supports SSMHC’s quality improvement efforts and that assisted the teams participating in the IHI Breakthrough Series, began to see “pockets” of best practices or experts develop within various entities in the system as a result of participation in the Breakthrough Series. But again, no forum for sharing best practices or clinician knowledge with the rest of the system existed. In addition, as the system began comparing its
clinical outcome data with established benchmarks, gaps in performance were seen.

**Clinical Collaborative Model**

In 1998, SSMHC developed a formal clinical collaborative process that involved identifying improvement goals in specific clinical areas, comparing the system’s performance with benchmarks, and quickly improving performance at the appropriate SSMHC entities. The intent was to accelerate clinical improvement in the system by harnessing the expertise within SSMHC that had been developed through implementing CQI, participating in the Breakthrough Series, and winning state and national quality awards. SSMHC’s experience with applying for the Malcolm Baldrige National Quality Award 1999–2002 (winning in 2002) particularly facilitated the system’s pursuit of clinical quality improvement. The Quality Resource Center developed a Clinical Collaborative model, with Clinical Collaboratives developed for specific clinical areas. The mission of the SSMHC Clinical Collaboratives is “to provide an environment conducive to the discovery and development of clinical improvements that can be easily and rapidly diffused, so that all SSMHC entities and patients can benefit from the improved value of care.” The Clinical Collaborative model is illustrated in Figure 1.

**Topic selection**

At the start of each Collaborative, a topic or focus is selected. Factors that contribute to this decision are system data, patient satisfaction data and literature, medical literature, inquiries of physicians and other process workers and owners, regulatory requirements, and national health care issues. The Quality Resource Center, which leads the decision-making process, also considers whether a topic is applicable to multiple customers, fits clearly with the system’s mission and strategic initiatives, demonstrates significant performance gaps when system performance is compared with best practice or theoretical ideal performance, and meets multiple entity needs.

**Prework Phase**

Once the topic is developed and approved by system leadership, the Collaborative moves into its Prework Phase. At this step, measurable goals and objectives are developed based on evidence in the medical literature, best performance data, and the Joint Commission on Accreditation of Healthcare Organization’s (JCAHO) core measures [6]. A director for the Collaborative is identified during the Prework Phase, typically a SSMHC physician or system leader with a specific interest or expertise in that particular topic. Coaches for the teams are recruited. Coaches are individuals who work at either the system or individual entity level and have expertise and experience in leading and facilitating quality improvement teams. System leadership sends a formal invitation to individual entity leaders and specific content experts appropriate for that Collaborative. The entities are urged to join the Collaboratives that have a direct impact on the patients they serve.

The invitation presents the goals and objectives of the particular Collaborative along with a timeline and schedule of events and guidelines for how an entity can develop its team. These guidelines specify which disciplines are needed for the entity team and call for at least one physician champion and a “management contact,” or someone representing that entity’s leadership that can offer leadership support and
commitment to the team’s work. All teams are asked to “register” with the Quality Resource Center, where a database of team member names and an online “listserv” on e-mail is developed to allow communication with the teams. The invitation also gives the teams instructions on what baseline data to collect and how to gather that data. Approximately 1 month after the teams register with the Quality Resource Center, they submit their baseline data.

**Active Phase**

Once the teams have been identified at the individual entities, the process moves into its Active Phase. At this step, the Quality Resource Center holds an all-day learning session. Teams send at least 1 representative to St. Louis. A guest speaker with expertise in improvement for that particular Collaborative topic and who is well-respected in their profession presents information about the Collaborative topic and the latest knowledge about improvements. The teams present their baseline data and then begin developing their action plans for improvement work once they return to their entities. The coaches and director for the Collaborative spend one-on-one time with the teams, offering assistance and guidance.

When the teams return to their entities, they immediately begin testing process changes learned at the session, monitoring their data on a regular basis. This project work is supported by monthly conference calls with the director and coaches. The conference calls are scheduled for 1 hour, and each team is asked to present the progress of their team and latest results. A team may choose to have any number of its members participate on the calls, but participation averages 2 to 5 members per team. It is possible that 100 or more people may “attend” a conference call, but the calls with a large number of participants are often the most productive. The team members are familiar with the process of the calls and able to quickly summarize their results and ask questions, while the coaches facilitate the discussion. Open dialogue is encouraged, with sharing of ideas, obstacles, and solutions that have both succeeded and failed. The work during this step is supported by listserv discussions. Team members post questions, results, and ideas to the listserv and solicit feedback from fellow team members at other entities. Typically this project work continues for 6 to 9 months. At the end of the Active Phase, a second all-day learning session is held in St. Louis, where the teams present their results and process changes (both the successful and the failed process changes) to each other and celebrate successes.

**Continuous Improvement Phase**

Once the Active Phase is complete, the process moves to its Continuous Improvement Phase. This is a unique aspect of SSMHC’s Collaboratives and is designed to maintain gains realized during the Active Phase. During this phase the Collaborative takes on a less intense pace. The teams are asked to submit their data to the Quality Resource Center every 3 months. The data is compiled and distributed to all the teams for sharing purposes. Conference calls continue on a bimonthly schedule, and listserv discussion continues. Results of the teams are widely publicized, both within and outside the system. The publication of the results typically generates interest from entities that did not join the Collaborative at the beginning, and they are invited to join at this point, although teams can choose to join a Collaborative at any point in the process. Also, if any new issues have come up in the Collaborative topic, they can be added to the improvement work in this phase. The intent of this phase is to provide a forum for the teams to make additional improvements, maintain the gains realized during the active phase, and share results and lessons learned on a continuous basis. This phase does not have an end point unless the Collaborative teams determine the goals and objectives of a particular Collaborative are no longer relevant.

**Specific Collaboratives**

Six Clinical Collaboratives have been developed to date, and 85 teams have participated. Of the original 6 Collaboratives, 3 (improving prescribing practices, using patient information to improve care, and enhancing patient safety) have since been integrated with the work of the current active Collaboratives, which are

- Improving the secondary prevention of ischemic heart disease (IHD)
- Improving the treatment of congestive heart failure (CHF)
- Achieving exceptional safety in health care (Safety)

Details about the 3 current Collaboratives are described below.

**IHD**

IHD is a major cause of morbidity and mortality and was selected as the topic for the initial Collaborative because of known performance gaps, evidence-based information showing the benefits of secondary prevention, and the large volume of cardiac care provided by SSMHC hospitals [7-19]. The goal of this Collaborative is to improve processes so that 95% of patients with myocardial infarctions receive appropriate aspirin/antiplatelet, β blocker, lipid-lowering, and angiotensin-converting enzyme (ACE) inhibitor therapy. Figures 2-4 show key results of the IHD Collaborative. The numbers indicated in parentheses after specific data periods indicate the number of entities reporting for that data period. For example, in Figure 2, 8 entities reported data
Figure 2. Percent of myocardial infarction patients treated with lipid-lowering agents. Average performance of collaborative entities.

Figure 3. Percent of myocardial infarction patients discharged on β blockers. Average performance of collaborative entities.

Figure 4. Percent of myocardial infarction patients discharged on ACE inhibitors. Average performance of collaborative entities.

Figure 5. Percent of CHF patients with left ventricular ejection fraction determined. Average performance of collaborative entities.

Figure 6. Percent of CHF patients on ACE inhibitor medication. Average performance of collaborative entities.

Figure 7. Percent of CHF patients receiving smoking education. Average performance of collaborative entities.

Figure 8. Use of 4 dangerous abbreviations. Average performance of collaborative entities.

Figure 9. Use of “QD” instead of “daily.” Average performance of collaborative entities.

Figure 10. Use of “blanket orders.” Average performance of collaborative entities.
for the third quarter 2002, and 6 entities reported data for the fourth quarter. As new teams joined, their baseline data was added to the consolidated data, resulting in a decrease in the Collaborative teams’ overall performance. However, as those teams learned about the successful process changes and implemented them in their own facilities, their results began to improve. As seen in the Figures, the teams are in the process of meeting their goals or have met them. It is important to note that these are “stretch goals,” and the teams continuously work on improvements until they meet the goals. Once the goals are reached, the “bar” is raised, and new goals are established.

CHF

CHF is a common disease among patients in acute care hospitals, skilled nursing facilities, outpatient clinics, and home health agencies. As the population ages, the incidence of CHF will increase. Strategies for reducing morbidity and mortality, reducing admissions, and improving quality of life for CHF patients have been identified [20–26]. In addition, both the JCAHO and the state peer review organizations included CHF quality indicators in their monitoring for 2000–2001. SSMHC determined that a Collaborative focused on improving CHF care would not only improve patient care but help meet specific regulatory agency requirements. The goal of the Collaborative is for each entity team to make a 50% or greater improvement in the care of CHF patients in 4 areas: left ventricular ejection fraction determination, administration of ACE inhibitor medication, smoking cessation education, and providing clear discharge instructions for patients and their families.

Figures 5–7 show key results for the CHF Clinical Collaborative. As in the IHD graphs, the CHF graphs indicate the point at which the JCAHO core measures were integrated into the Collaborative. Again, the numbers indicated in parentheses after specific data periods indicate the number of entities reporting for that data period. The JCAHO mean for their core measure serves as the goal for the various indicators. As with the IHD Collaborative, the teams are in the process of meeting their goals or have met them, and once goals are reached, new goals are established.

Safety

The 1999 Institute of Medicine (IOM) report To Err is Human made patient safety a national priority [27]. Since the release of the report, there has been increasing local and national attention and scientific research on patient safety. JCAHO, other local and national research bodies, and authorities on patient safety have also recommended and implemented rigorous safety standards [27–41]. It was clear that SSMHC needed more focused safety improvement work. The goal of the Safety Collaborative is for each entity team to adopt and implement 17 established safety practices over a 3-year time frame. These safety practices were selected from national authorities as processes that would increase safety and could actually be accomplished. It was anticipated that this list of practices might need revision over the course of the Collaborative. Practices are listed in Table 1.

Figures 8–10 highlight results related to 2 key safety practices.

Lessons Learned/Success Factors

Involve the Right People

It is important to involve the correct people in the project development. One important step is to recruit a committed physician champion. It is not necessary for the physician champion to be present for every team meeting, but his or her support is critical in the identification of appropriate clinical process changes and promotion of the changes. The physician champion serves as the “voice” of the team to other physicians, helping to obtain their buy-in through peer influence and referencing clinical expertise. A representative from all the disciplines that will be affected by the process changes should participate on the team. For the CHF Collaborative, this would include a cardiologist or primary care physician, a nurse who works with CHF patients, a case manager or discharge planner, and a data analyst to assist with data gathering and reporting. Seek universal input from all clinicians who will be involved in the change before the change is finalized. It is important that relevant clinicians be aware of proposed changes in the care of their patients and not be surprised by new processes. This early input and communication will provide an opportunity for clinicians that were not part of the team to “sign off” on the changes, or perhaps identify something the team did not account for which should be added to the change. Getting this buy-in and finalizing the change before full implementation is easier to do during the pilot stages than later in the implementation. It is an advantage to have “veteran” Collaborative team members involved. The pace of work has been faster in later Collaboratives because of team members who have been involved in earlier Collaboratives and understand the process.

Home Grown Helps

The Collaborative ideas and improvement work originate within the system. This approach has proven to be more successful than simply having someone external to the system present ideas and recommendations. The actual process owners from the entities learn about the basic concepts driving each Collaborative, and then develop their own solutions. Goals for improvement may be standardized, but each entity is allowed to reach those goals by different processes, depending on local culture. SSMHC has learned to allow for
Table 1. Safety Practices

<table>
<thead>
<tr>
<th>Safety Practice</th>
<th>Rationale</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement a near-miss reporting system with resulting demonstrated process improvements</td>
<td>To improve process changes</td>
<td>SSM St. Joseph Hospital-West</td>
</tr>
<tr>
<td>Eliminate dangerous abbreviations</td>
<td>To avoid common causes of medication errors</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Design and implement an accurate patient medication list at admission and discharge. Eliminate “home medication” orders that do not specify medications, doses, etc.</td>
<td>To avoid common causes of medication errors and to provide an accurate, legible list of medications for caregivers and patients and families</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Implement an effective disclosure of unanticipated adverse outcomes policy</td>
<td>To improve communication about unanticipated adverse outcomes and to reduce liability</td>
<td>ASHRM [39]</td>
</tr>
<tr>
<td>Provide and use protocols for high-risk medications (at a minimum, heparin, insulin, and chemotherapy). Incorporate into pathways or guidelines as appropriate.</td>
<td>To reduce the chance of errors with particularly dangerous medications</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Implement a fall reduction program and demonstrate a 20% reduction in falls</td>
<td>To reduce a major source of adverse outcomes</td>
<td></td>
</tr>
<tr>
<td>Have an established sentinel event review policy that includes entity, SSMHC and JCAHO reports and demonstrate process changes that have resulted. Select 1 high-risk activity and proactively perform a root cause analysis.</td>
<td>To determine process changes that will reduce the chances of catastrophic events in the future</td>
<td>JCAHO [40]</td>
</tr>
<tr>
<td>Establish an entity Safety Center at the entity levels that oversees all safety initiatives and work. Include community members.</td>
<td>To coordinate all hospital safety work and to make all disciplines accountable for safety</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Provide pharmacy rounding in ICUs</td>
<td>To reduce errors in high-risk areas</td>
<td>Leapfrog Group [38]</td>
</tr>
<tr>
<td>Implement all safety information technology advances recommended by SSMHC’s Information Management Council as soon as they become available</td>
<td>To use information technology to improve patient safety</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Implement 24-hour pharmacy coverage and/or consultation</td>
<td>To provide expertise for reducing medication errors</td>
<td>JCAHO [31]</td>
</tr>
<tr>
<td>Provide a “state of safety” report quarterly to administrative council, employee and medical staff meetings, and governing boards</td>
<td>To inform health care administrators and providers what improvement efforts are working and what still needs to be improved</td>
<td>IOM [27,28]</td>
</tr>
<tr>
<td>Develop and use a protocol to insure proper timing of surgical prophylactic antibiotics. Incorporate into pathways or protocols as appropriate.</td>
<td>To ensure proper timing and choice of antibiotic prophylaxis, which will result in significant decreases in infections</td>
<td>AHRQ [36]</td>
</tr>
<tr>
<td>Institute a needleless IV system</td>
<td>To reduce needle stick injuries, which are a significant safety risk to patients and employees</td>
<td>OSHA [41]</td>
</tr>
<tr>
<td>Develop and implement a protocol for glucose management of diabetic patients undergoing surgery to insure tight glucose control</td>
<td>To help ensure glycemic control in diabetic patients undergoing surgery, which has been proven to markedly improve outcomes and reduce the incidence of infections</td>
<td>AHRQ [36]</td>
</tr>
<tr>
<td>Develop and implement an effective surgical site marking procedure. This should apply to procedures involving right/left distinction, multiple structures (fingers, toes) or levels (spine).</td>
<td>To avoid wrong site surgeries</td>
<td>JCAHO [29]</td>
</tr>
<tr>
<td>Reduce the risk of health care–acquired infections by complying with current CDC hand hygiene guidelines (ie, hand washing or the use of alcohol-based hand rubs)</td>
<td>To improve compliance with hand hygiene, which has been shown to terminate outbreaks in health care facilities, reduce transmission of antimicrobial-resistant organisms (eg, methicillin-resistant S. aureus), and reduce overall infection rates</td>
<td>JCAHO [29]</td>
</tr>
</tbody>
</table>
local reinvention, or for each local group to tailor the change to best fit their needs without compromising the change and returning to baseline performance.

**Obtain Leadership Support**
Assure that leadership believes in and understands the project. Ask leadership to be involved (i.e., speak about the importance of the project or how it links to the strategic plan). Leadership support at the individual entities is necessary to facilitate people’s availability for team meetings. Insure endorsement and involvement of leadership. Establish regular reporting about project work to leadership.

**Provide Data**
Provide data from your organization to show performance gaps. For example, what percentage of your myocardial infarction patients are treated with aspirin or antiplatelet medications as compared with “best practice” noted in the literature? Use comparative data of best practices from the medical literature, comparative data information systems, or sources such as JCAHO’s core measures to highlight performance gaps. Provide literature support for the clinical change. Basing Collaborative topic, goals, and objectives on established medical literature and using clinicians to select the Collaborative topic avoids the perception that leadership is dictating practice.

**Be Inventive**
Use humor and unexpected surprises to engage process owners. For example, educational posters used for employee education can use employees as “models” or note humorous phrases. A team can hold a pizza party to celebrate achieving its goals. A hospital president can vow to wear a silly outfit for a day if a team reaches its goals. Abbreviations that an entity is working to eliminate in order to reduce medication errors can be noted on stop signs and posted in physicians’ and nurses’ restrooms. Magnifying glasses can be put on medication carts for nurses to use when reading and dispensing medication orders.

**Nonpunitive Environment**
The Collaboratives all operate under a nonpunitive environment. Teams are not penalized for trying a process improvement that does not work or for not reaching their goals. Rather, these instances are examined for learning opportunities, and teams are encouraged to discuss concerns and barriers in open, candid discussions with other team members and the Collaborative coaches.

**Continuous Monitoring**
Projects can lose momentum, but continuous monitoring and distributing of results data can keep the momentum going. Specify how frequently the improvement will be measured. Actively reinforce the improvement work by celebrating successes in newsletters, presentations, and compliments to the team. Refresh the improvement project periodically by thinking of new improvement goals or researching new best performance levels.

**Applicability**
The Clinical Collaborative model is widely applicable to other settings, whether within a single health care facility, a...
system (such as SSMHHC), or multiple systems working together. The basic steps of the Collaborative model can be applied in any setting, as they follow the well-established Plan-Do-Check-Act cycle of improvement. The Quality Resource Center has used the learnings to create a basic “clinical improvement checklist” (Table 2). Organizations are encouraged to use this checklist as a reference when developing and implementing clinical quality improvement projects. Successful implementation in other settings is not assured though without some critical success factors. Critical success factors that are absolutely essential are: evidence-based data to back up the improvement idea, leadership support, the availability of a physician champion at the local level, and measurable goals.

Current Status
Currently, the IHD and CHF Collaboratives are in the continuous improvement phase. The AES Collaborative, which is much larger in scope, in the active phase. They are all continuing to monitor the outcome measures shown in Figures 2–10. In the fall of 2003, SSMHC launched 2 new Collaboratives: one focused on improving critical care and another on the care of patients with community-acquired pneumonia.

Conclusion
SSMHC’s clinical quality improvement efforts have made significant progress toward improving outcomes and creating a safer environment for patient care, and they have created an awareness throughout the system that improving outcomes and patient safety will continue to be a top priority. The Collaborative processes serve as a potent stimulus for SSMHC to continuously seek opportunities to improve all areas of its health care delivery system.

Corresponding author: Shelley Niemeier, BSN, MHA, CHE, SSM Health Care, 477 N. Lindbergh Blvd., St. Louis, MO 63141, shelley_niemeier@ssmhc.com.

References

Copyright 2003 by Turner White Communications Inc., Wayne, PA. All rights reserved.