

Evidence-Based Medicine

A Rapid-Cycle Collaborative Model to Promote Guidelines for Acute Myocardial Infarction

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Since 2000 the American College of Cardiology (ACC) has launched three Acute Myocardial Infarction (AMI) Guidelines Applied in Practice (GAP) quality improvement (QI) initiatives in Michigan in partnership with the state quality improvement organization (QIO)—Michigan Peer Review Organization (MPRO)—and local community health coalitions. The combined projects, implemented at 33 hospitals, have collectively affected close to 40% of patients with AMI in the state during this period. The results and lessons learned from the GAP Pilot Project have provided a foundation for subsequent projects and formed the basis for the current GAP QI model, which supports caregivers' efforts to improve their processes and consistently apply the guidelines for AMI care.

This article reviews the design and lessons learned from the Southeast (SE) Michigan Expansion Project and introduces the ACC AMI GAP Collaborative Model of QI, which aims to accelerate QI while supporting focused and individualized project strategies at multiple participating hospitals. The collaborative emphasized tool use and measures of success during the five phases of the project and used learning sessions to identify project barriers and develop strategies that might help overcome the barriers. We believe that this model can be used to guide QI initiatives with any clinical topic or with single hospital projects.

Article-at-a-Glance

Background: This American College of Cardiology (ACC) Acute Myocardial Infarction (AMI) Guidelines Applied in Practice (GAP) collaborative in Michigan represented ACC's third initiative, in partnership with local health care coalitions and the Michigan Peer Review Organization. The GAP Pilot Project formed the basis for this project, which supported caregivers' efforts to improve their processes and consistently apply the evidence-based guidelines for AMI care.

The Southeast Michigan Expansion Project: The Institute for Healthcare Improvement (IHI) Breakthrough Series model of improvement was modified to merge the GAP Pilot Project's design with a rapid-cycle quality improvement model. The collaborative included learning sessions that focused on five phases—planning, tool implementation, monitoring tool use, remeasurement, and results—and on increasing tool use rates in each phase.

Conclusions: Building on the work of two previous efforts, the ACC AMI GAP projects yielded substantial collective knowledge. Developing and fostering a collaborative culture allowed hospital teams to avoid barriers or overcome them successfully based on others' experiences and collectively solve problems, and it shortened the learning curve and accelerated QI.

Table 1. ACC AMI GAP Tool Kit Components*

- AMI standard orders
- Clinical pathway
- Pocket guide/pocket card
- Patient information form
- AMI-specific patient discharge form
- GAP chart stickers and posters
- Hospital performance charts

* ACC, American College of Cardiology; AMI, acute myocardial infarction; GAP, Guidelines Applied in Practice.

Recap of the First Two AMI GAP Initiatives in Michigan

Clinical practice guidelines have been developed to assist in the diagnosis and management of patients with various cardiovascular diseases, monitor the quality of medical care, and improve the rate at which evidence-based guidelines are applied in practice. Starting in 1981, the ACC, in partnership with the American Heart Association (AHA), began developing clinical practice guidelines. Today, 17 ACC/AHA practice guidelines are available to support optimal cardiovascular care. The AMI guideline was first published in 1996 and was updated in 1999.¹ However, despite publication of these guidelines and high-profile QI initiatives, there continues to be a discouraging lack of guideline implementation and impact.²⁻⁴

More recently, the Centers for Medicare & Medicaid Services (CMS) developed a monitoring system for a range of measures of clinical performance of care provided to Medicare beneficiaries. Data collected from 1997 to 1999 demonstrated continuing gaps between ideal goals of evidence-based therapy and practice in the treatment of elderly patients with several cardiovascular conditions.⁵

In 1999 the ACC's GAP Steering Committee launched the AMI GAP Pilot Project to incorporate national guidelines into care processes, focusing on caregivers and patients, by providing and implementing tools that support a systematic method of achieving adherence to key evidence-based therapies.⁶ Participants were asked to adapt and implement the AMI GAP Tool Kit,⁷ which had been designed to trigger consistent application of the ACC/AHA guidelines (Table 1, above). Guideline application was measured based on performance rates of

Table 2. AMI GAP Quality of Care Indicators*

Quality of care indicators

- Aspirin 24 hours prior to arrival or within 24 hours of arrival to hospital
- Beta-blocker within 24 hours of arrival to hospital
- Early reperfusion with thrombolytics or PTCA
- Aspirin at discharge
- Beta-blocker at discharge
- Angiotensin-converting enzyme inhibitor at discharge
- Smoking cessation counseling

Three test indicators measured

- Measurement of LDL cholesterol within 24 hours of arrival
- Cholesterol-lowering therapy at discharge for patients with high LDL cholesterol
- Dietary counseling

* AMI, acute myocardial infarction; GAP, Guidelines Applied in Practice; PTCA, percutaneous transluminal coronary angioplasty; LDL, low-density lipoprotein.

quality of care indicators consistent with the CMS national priorities (Table 2, above). The GAP Pilot Project's key finding was the very high level of adherence to most quality indicators when the standard order and discharge document tools were used^{6,8} (Figure 1, page 470). Although the AMI GAP Tool Kit was intended to support systematic processes of care that would lead to application of the guidelines, there was not a deliberate focus on or measurement of tool use during the intervention. Yet the major lesson learned from the earliest GAP initiative was that a focus on and measurement of tool use through all phases of the project was the best indicator of successful implementation of a systematic process of care. The second AMI GAP project, which was conducted with five hospitals in 2001, further substantiated the positive effect of tool use on quality of care indicator rates.⁹

The SE Michigan Expansion Project Sponsorship

In fall 2001 the ACC launched the third AMI GAP initiative in Michigan—the SE Michigan Expansion Project—with 18 participating hospitals in the greater Detroit

Adherence to Early Quality Indicators in Patients With and Without Evidence of Use of Standardized Admission Orders and Adherence to Late Indicators in Patients With and Without Evidence of Use of Discharge Form

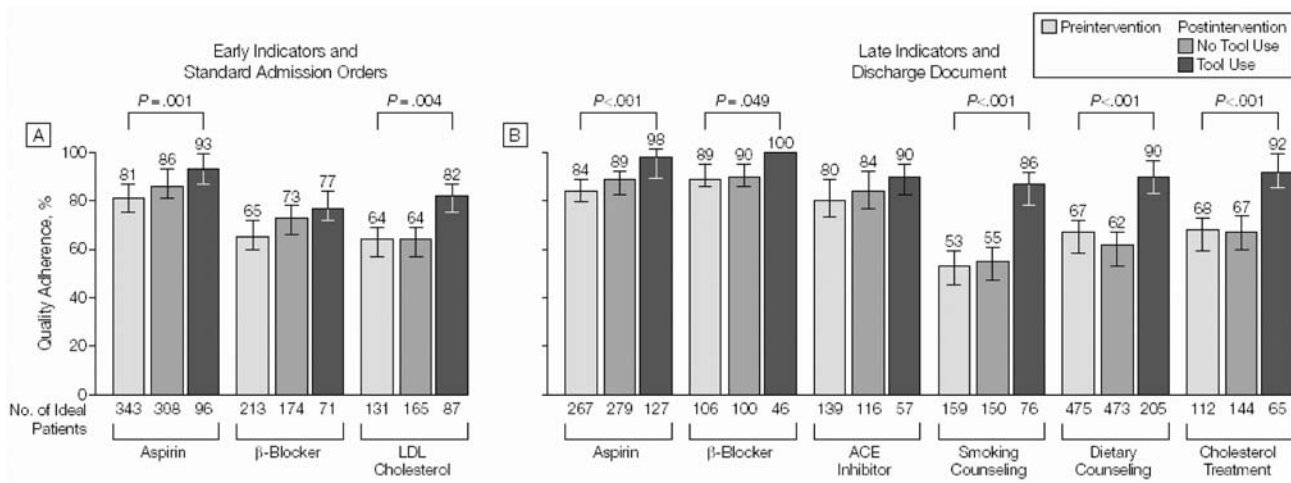


Figure 1. The GAP Pilot Project's key finding was the very high level of adherence to most quality indicators when the standard order and discharge document tools were used. The p values are for comparisons between preintervention (baseline) quality adherence levels and postintervention quality adherence levels in medical records with evidence of tool use. Error bars indicate 95% confidence intervals. Reprinted with permission from Mehta R.H., et al.: Improving quality of care for acute myocardial infarction: The Guidelines Applied in Practice (GAP) Initiative. *JAMA* 286:1269-1276, Mar. 13, 2002.

area. Sponsorship was provided through a partnership of the ACC, MPRO, and a local health coalition, the Greater Detroit Area Health Council (GDAHC). To lead the project the ACC provided a team of principal investigators [K.A.E., C.K.M.], a project manager [C.K.M.], and physician liaison [A.L.R.]. The ACC team was complemented by a project manager [P.L.B.], coordinator [S.S.-R.], and data analyst from MPRO [J.F.], and a vice president of the GDAHC [R.P.].

The advantages of the partnership sponsorship include the following:

- Credibility from the professional organization, which proved to be a drawing card for the cardiologists' participation¹⁰
- Alignment with the values and aims of the professional organization, national and local initiatives, and the participants—all to improve and measure AMI care
- Ability to provide support for the collaborative model via physician champions from the local ACC state chapter, Medicare data measurements via CMS and MPRO, and QI expertise via the ACC and MPRO project managers

- Unrestricted educational grants to support the collaborative model activities

Participants

Invitations were issued to 32 hospitals in eight SE Michigan counties (St. Clair, Macomb, Oakland, Livingston, Wayne, Washtenaw, Monroe, and Lenawee) that were not part of the GAP Pilot Project. Expectations of participation included the following:

- Providing a physician champion and project leader
- Attending the project leader learning sessions
- Customizing and implementing the AMI GAP Tool Kit
- Monitoring progress in achieving a hospitalwide implementation
- Maintaining the GAP project time line

Nineteen hospitals responded positively and began the project in December 2001 (1 hospital closed; the remaining 18 hospitals completed the project).

Hospital teams were provided with the ACC AMI GAP Collaborative Charter, which identified the problem statement, mission, goals, change package, and

ACC AMI GAP Collaborative Model

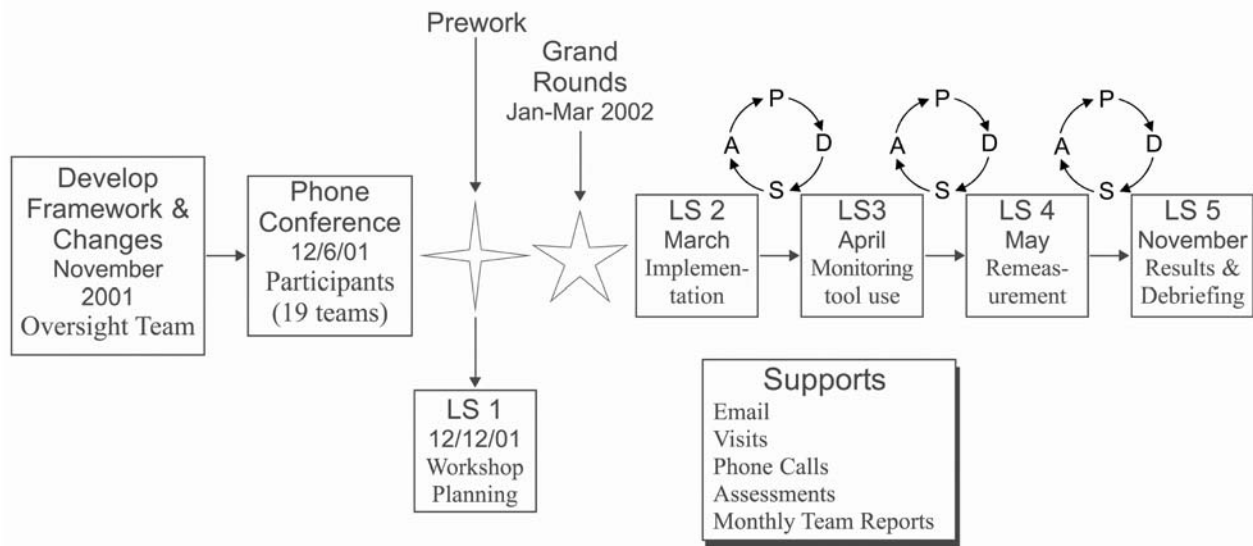


Figure 2. The ACC AMI GAP project merges a research model with a collaborative model for improvement with all participants implementing the same intervention (ACC AMI GAP Tool Kit) and aggregate pre- and postmeasurement occurring within the same time frame. Learning sessions focus on increasing the use of the GAP tools and successful implementation of the project phases of planning, tool implementation, monitoring tool use, remeasurement, and results. ACC, American College of Cardiology; AMI, acute myocardial infarction; GAP, Guidelines Applied in Practice, LS, learning session. The Breakthrough Series Collaborative Model © 2001 Institute for Healthcare Improvement, Boston, was modified by Cecelia Montoyo with permission.

participation expectations for the project sponsorship team and hospital leadership team (the chief executive officer, chief of cardiology, nursing administrator, and QI administrator) and described the ACC AMI GAP Collaborative Quality Improvement Model. The charter contents were the main focus of a leadership phone conference held before the first learning session.

ACC AMI GAP Collaborative QI Model

The foundations of the ACC AMI GAP Collaborative Model (Figure 2, above) are the principles, techniques, and strategies of the Institute for Healthcare Improvement (IHI) Breakthrough Series (BTS) Collaborative Model for Improvement¹¹ and incorporate the lessons learned from the first two GAP initiatives. Typically, the BTS Collaborative teams develop and implement individual interventions that are not measured as an aggregate but are measured and reported independently. The SE Michigan Expansion GAP initiative merged the GAP Pilot's initial research

project design with a rapid-cycle QI model that differs from the BTS model in the following ways:

- All hospitals implemented the same QI intervention (AMI GAP Took Kit)
- The project was measured as an aggregate of all hospitals (pre and post)
- External data collection for all hospitals occurred within the same period
- Learning sessions were focused on increasing the use of the GAP tools throughout planning, implementation, and monitoring

Therefore, it was imperative to maintain all hospital teams functioning at the same pace and phase of project implementation. Like other collaboratives, the ACC AMI GAP Collaborative Model was based on the establishment and support of a culture of learning and sharing among hospital teams and on accelerating change and improvement through a series of repetitive learning sessions and plan-do-study-act cycles.

The ACC AMI GAP Collaborative Model's major goals were as follows:

1. Describe expectations of participation
2. Provide in-depth, consistent, and frequent QI support that focuses on identifying and overcoming barriers to process change
3. Accelerate improvement in a rapid-cycle project
4. Focus on a higher rate of tool use
5. Measure the success of each phase of the project—planning, tool implementation, monitoring tool use, remeasurement, and results

Learning Sessions

On average, 50 team members from the 18 hospitals attended the five learning sessions led by the ACC and MPRO project managers. The learning sessions were six-hour events featuring presentations by guest speakers; project progress reports by the hospital leaders; and a variety of QI exercises, such as focused reports, brainstorming, prioritizing, and identification of current barriers. Problem-solving exercises and strategy development to overcome barriers followed.

Hospital teams were allowed time at the end of each session to apply all that was shared and learned throughout the day to draft and/or modify their project plans for the next plan-do-study-act cycle. This planning time, project leaders later reported, was particularly valuable in that the leaders could immediately modify their plans rather than being distracted by the usual workplace activities.

Often, the only measurement for a typical QI project is the rate of improvement in the quality indicators. Yet this overlooks the interim measurements necessary to determine success in each phase of the project. Thus, the learning sessions were also designed to identify and discuss such measurements. Our work indicates that monitoring the degree to which AMI care processes are systematized (consistent tool use from admission to discharge) leads to markedly improved performance indicator rates.⁸ Examples of the measurements completed in each phase, as well as a summary of barriers and the strategies to overcome them, are listed in Table 3 (pages 473–476).

Learning Session 1: Planning. *Before the initial learning session, the hospital teams were asked to review the collaborative charter, identify a physician champion and project leader, and recruit their multi-disciplinary team members.*

At the planning workshop, the basic components of a QI project were reviewed, and specific requirements of the AMI GAP project were identified, explained, and discussed. Sample plans were developed in breakout groups and shared among the collaborative members. Hospital teams began drafting their individual plans at the end of the session. Planning was an intense phase and required completion of a long list of activities (Table 3). Additional support was offered through e-mail communications and phone calls to assist with and evaluate required progress before the grand rounds and to define the hospital project leaders' participation in the grand rounds.

Several leaders modified their plans based on ideas shared at this learning session. Some recruited an emergency department (ED) physician champion and project leader who assumed responsibility for project implementation in the ED and joined the inpatient team's efforts to ensure continuity of care. Others recruited unit-based champions who assumed ownership of project activities at the unit level, monitored tool use, provided staff education and follow-up, and utilized strategies to overcome barriers.

Grand rounds were conducted at each hospital. After the first learning session, each hospital hosted the grand rounds, during which the ACC local champion and project manager presented a review of the project, including hospital-specific baseline data, the QI model, and time line, and answered questions.

Learning Session 2: GAP AMI Tool Kit Implementation. *Before the second learning session, project leaders completed a questionnaire detailing their plans and implementation progress.*

At the learning session the basic components common to all teams were summarized and then, using a technique of "adding on" (avoiding repetition of the same information), unique strategies from each of the 18 participating hospitals were identified. Setting the framework for dealing with change, a guest speaker validated the challenges of change and defined the attributes and skills needed to address resistance and barriers to change. Then the collaborative listed common barriers through a brainstorming exercise. Strategies to overcome the barriers were developed in didactic and small-group breakout sessions, with subsequent sharing in the large group.

One common barrier identified was that not everyone attended the grand rounds presentations, so some staff

Table 3. ACC AMI GAP Collaborative Phases: Measures, Barriers, and Strategies

Project phase measures	Barriers during each phase	Strategies to overcome barriers
<i>Phase 1—Planning</i>		
A. Multidisciplinary team	1. Project leaders may:	1. Getting organized
■ Members identified	■ Feel overwhelmed	■ Prepare a detailed checklist with time line
■ Meetings scheduled	■ Have competing priorities	■ Reference the collaborative charter
B. Assessment completed	2. Project leaders may:	2. Obtaining support
■ Current status evaluated	■ Lack necessary QI skills and comfort level to lead the project	■ List help needed, and potential supporters
■ Rates reported	■ Anticipate a lack of support	■ Include these "supporters" as ad hoc team members
■ Barriers identified		■ Recruit unit champions
C. Improvement plan written	3. Medical forms committee	3. Forms approval process
■ AMI GAP project time line incorporated	■ Lengthy approval process	■ Physician champion to facilitate approval
■ Milestones listed	■ Slow process may jeopardize start date	■ Approval may be more rapid if defined as "pilot"
D. ACC AMI GAP Tool Kit		
■ Tools customized		
■ Committee approval secured		
■ Printing completed before implementation date		
■ Tools considered permanent part of medical record		
E. Educational activities		
■ Grand rounds scheduled		
■ In-services scheduled		
■ Marketing plan developed		
■ Marketing plan implemented		
F. Monitoring		
■ Monitoring plan developed		
■ Monitoring tool developed		
■ Schedule determined		
■ Reporting format drafted		
G. Collaborative activities		
■ Learning session attended		
■ Staff participation committed		
■ Pre-work activities scheduled		
<i>Phase 2—GAP Tool Implementation</i>		
A. Implementation of plan	1. Physician resistance to standing orders	1. Physician champion role
■ Milestones met		■ Address one-on-one and with personal feedback
■ PDSA completed		■ Provide data feedback
■ Plan modified		

continued

Table 3. ACC AMI GAP Collaborative Phases: Measures, Barriers, and Strategies (continued)

<p>B. Educational plans</p> <ul style="list-style-type: none"> ■ Attendance evaluated ■ Additional education sessions scheduled 	<p>2. Staffing issues</p> <ul style="list-style-type: none"> ■ Shortage and turnover ■ Unreceptive to change ■ Unavailable for project education sessions 	<p>2. In-service presentations</p> <ul style="list-style-type: none"> ■ Short presentations using templates provided ■ Emphasize previous GAP project results and that GAP tools support complete and consistent care ■ Tools trigger care when the staff are busy or new and/or pool staff are used ■ Use poster in-services in high profile places
<p>C. Plan modified</p> <ul style="list-style-type: none"> ■ Staff concerns/issues discussed by team ■ Resistance and barriers addressed ■ New strategies developed 	<p>3. Confusion about data</p> <p>4. Staff perceive extra or additional documentation is necessary for new forms</p> <p>5. Lack of buy-in by some staff</p>	<p>3. Provide information about inclusion and exclusion criteria and QI calculation</p> <p>4. Forms designed with simple check boxes and replace (not add to) existing forms</p> <p>5. Promoting project buy-in</p> <ul style="list-style-type: none"> ■ Administration to publicly support and identify the project as a priority ■ Marketing department publicizes project with table tents, posters, newsletters, etc.
<p>D. Collaborative activities</p> <ul style="list-style-type: none"> ■ Document implementation issues ■ Complete prework ■ Learning session attended 	<p>6. ED not incorporated into GAP projects</p> <p>7. New forms not being used</p> <ul style="list-style-type: none"> ■ Incorrect use ■ Failure to use new forms 	<p>6. ED buy-in</p> <ul style="list-style-type: none"> ■ Recruit an ED physician champion and project leader to lend credibility and influence ■ May develop ED GAP tools and process <p>7. Promoting form use</p> <ul style="list-style-type: none"> ■ Obtain feedback, input, and support during planning and design phase ■ Unit champion to monitor status and address unit-specific issues ■ Evaluate availability of forms ■ Provide in-services for unit clerk staff (who usually place forms on charts) ■ Focus on ease of documentation ■ Re-energize with posters, examples, in-services, or one-to-one feedback

Table 3. ACC AMI GAP Collaborative Phases: Measures, Barriers, and Strategies (continued)

	8. ACS patients identified as AMI patients late in stay and standing orders are not started early on	8. Some hospitals are using ACS standing orders and including a special page or section for AMI (ACS patients will usually receive ASA and beta-blocker unless contraindicated)
<i>Phase 3—Monitoring Tool Use</i>		
A. Conduct monitoring	1. Difficulty identifying patient monitoring sample promptly after discharge and/or while still hospitalized	1. Monitoring Sample
■ Sample identified		■ Obtain a list of positive troponins from the lab and create a monitoring sample from this list
■ Patient records examined		■ Secure an AMI list from admissions department, or review list of admits each morning or each week
B. Results analyzed		■ If there are staff who follow these patients, ask for their patient list to create a monitoring sample list
■ Rates and trends reviewed		2. Monitoring strategies
■ Barriers and successes determined		■ Enlist the help of staff already reviewing the records and provide a simple form to easily track tool use
C. Collaborative activities	2. Time constraints for monitoring tool use	■ Request that the unit clerks complete tool use forms as they work with the records
■ Prework completed		3. Sample 100% of the AMI patients
■ New strategies to overcome barriers incorporated into plan	3. Samples are very small in low-volume hospitals	■ Trend missed-opportunity cases rather than low denominator rates
■ Learning session attended	4. Monitoring results are lower than expected	4. Determine trends of tool use
		■ For example, are certain nursing units not using the discharge document? Are certain physicians not using the standing orders?
		■ Examine the reasons for lack of use: Are the forms available on the chart? Were all staff in-serviced?
		■ Follow up with those not using the forms; addressing their concerns early and modifying the process will lead to increased tool use

continued

Table 3. ACC AMI GAP Collaborative Phases: Measures, Barriers, and Strategies (continued)

Phase 4—Remeasurement

A. GAP medical record process defined	1. Normal medical record processing takes longer than the rapid-cycle demands of the AMI GAP project	1. Define a special GAP medical record process in collaboration with medical records department
B. Deficient record process determined		
C. Collaborative activities	2. Physicians sometimes take (the allowed) 60 days to reconcile deficient charts	2. Outline a special effort to decrease the normal time for deficient AMI chart completion
■ Universe determined		■ Provide incomplete record list to the physician champion for direct and timely follow up with attending physicians
■ Records completed, copied, and submitted		■ Make special announcements about deficient records at the medical staff meetings
■ GAP time line met		■ Consider special GAP notices in physician mail boxes

Phase 5—Results

A. Project summary prepared	1. Plans for sharing results not detailed	1. Project results analysis should include:
B. Collaborative activities		■ Measure of systematic process (tool use rates)
■ Attend results event		■ Identification of barriers, successes, and lessons learned
■ Next PDSA cycle prepared		■ Quality of care indicator rates
		■ Results reported to administration, medical and nursing leadership, and quality improvement departments
	2. Unable to participate in collaborative results activities	2. Follow up with e-mail or one-to-one discussion

* ACC, American College of Cardiology; AMI, acute myocardial infarction; GAP, Guidelines Applied in Practice; QI, quality improvement; PDSA, plan-do-study-act; ED, emergency department; ACS, acute coronary syndrome; ASA, acetylsalicylic acid.

were lacking critical information about the project. The breakout groups identified unique education strategies, such as rotating storyboards, newsletters, staff meeting presentations, nurse report cards, unit reports cards, table tents, and unit champions, that many incorporated into their plans.

Most of the participating hospitals experienced the barrier of staff resistance to using the new AMI care forms, with the usual and predictable reactions of resistance to change and to “cookbook medicine.” However, in some of the hospitals, unit clerks thought that it was better to be cost conscious and use up the old forms that they had hidden for assured availability. Project leaders,

who had not previously included unit clerks in their in-service sessions, modified their plans to include them. By the end of the session, each hospital team identified at least one new strategy to deploy in implementing the project.

Learning Session 3: Monitoring Tool Use. *Given that the pilot project had shown that quality indicator rates were significantly higher when the standing orders and discharge document tools were used,⁸ the main focus of the third learning session was monitoring tool use and identifying barriers to high rates of tool use. Before this learning session, project leaders reviewed a sample of AMI patient records to determine*

the tool use rate. They were encouraged to talk with the staff about the rate and to identify trends of successful use, resistance, and barriers to using the tools.

At the learning session, tool use rates were shared, successes and barriers were identified, and strategies to overcome the barriers were developed in small work groups and subsequently discussed with the collaborative.

Difficulty identifying a patient sample to monitor and lack of time to complete the monitoring were the most commonly reported barriers during this phase. Project leaders who reported success in this phase offered suggestions for making the task easier. Some leaders arranged for a daily printout of patients with positive troponin levels, which served as their patient sample to monitor. Others asked cardiovascular case managers for patient lists. Asking staff members who were already reviewing the medical records to complete a simple checklist of tool use was a unique suggestion for an efficient method. For example, case managers, discharge planners, coders, and unit clerks who “break down the chart” are staff who could easily complete the monitoring during routine work.

Project leaders modified their plans to incorporate some of these new monitoring and feedback techniques. One hospital’s plan evolved so that each physician and nurse received “report cards” about the care they provided—quality of care indicator performance rates for physicians and discharge tool use rates for nurses.

Learning Session 4: Remeasurement. *Because this rapid-cycle project required that charts be identified and copied in less time than was normally allowed, the fourth session brought together the project leaders with staff from the medical records department to determine if their current processes would meet the project’s time lines. Surprisingly, these staff often had not met one another before preparing for this learning session. The medical records department staff reported that they are rarely included in the QI project teams and that they could accommodate the project by prioritizing their work.*

The hospital teams were led through a series of activities that allowed them to recognize the process changes needed to identify the patient universe and ensure that records were complete, copied, and mailed to the abstraction center to maintain the GAP remeasurement schedule. This learning session was held a couple months before the

actual remeasurement phase to allow the teams to create the GAP rapid-cycle medical record process.

The most common barrier shared was the long period (one to two months) for physicians to reconcile deficient records. Engaging the medical records staff in problem solving these issues and designing a shortened process for GAP proved to be invaluable. For most facilities it was a matter of flagging and prioritizing the GAP records. Physician champions were encouraged to monitor the status of deficient records, follow up with physicians, and discuss this issue at department meetings.

Learning Session 5: Results. *Before this session, surveys were e-mailed to physician champions and project leaders to identify successes, barriers, and lessons learned. Debriefing phone conferences were subsequently held with physician champions and project leaders to discuss the survey results.*

Results of the SE Michigan Expansion Project were presented at Learning Session 5—a dinner meeting attended by collaborative members and leaders, hospital administration, and representatives of health care purchasers in SE Michigan. Aggregate-level project results were presented, and each hospital received its individual results confidentially.

This event was a time of celebration and acknowledgement of everyone’s efforts. Although it marked the end of the ACC AMI GAP collaborative project, it was a time when hospital teams once again evaluated their status and started a new plan-do-study-act cycle to continually improve and sustain their processes of care.

Conclusions

Implementation of and participation in a collaborative QI initiative with multiple hospitals can be a daunting task. The ACC AMI GAP leadership team had a responsibility to apply lessons learned from previous experiences, offer a model that would support the project leaders, meet the objectives of the project, and help ensure success at each hospital.

Clear expectations of participation helped the hospital teams rally the appropriate resources for the project. The identification of project phases helped to focus the leaders and offered measurement and milestone checks throughout the project. The hospital clinical leadership teams played a critical role in the achievement of high tool use

rates through systematic processes and in the overall success of this GAP project. Developing and fostering a collaborative culture shortened the learning curve and accelerated QI and also allowed hospital teams to share and learn with one another, avoid barriers or overcome them successfully based on others' experiences, and collectively solve problems. The rates of tool use in the SE Michigan Expansion Project exceeded those of the initial GAP Pilot Project. This modified BTS model of project implementation helped the collaborative reach its goals and can be applied not only to other clinical topic collaboratives but also to individual hospital projects. **I**

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