Evaluating Quality Improvement Training Programs

Do they increase the ability of people to successfully engage in work to improve health and health care?

**SUMMARY**

Public health and health care workers have many opportunities to acquire training in quality improvement (QI). However, there is limited evidence about whether and how these training programs increase the ability of these individuals to successfully engage in work to improve health and health care. Information about the impact of such programs on organizational culture and patient outcomes is also scarce. This information gap may lead to under-investment in effective QI training opportunities and over-investment in training that is not effective.

The goal of *Evaluating Quality Improvement Training Programs* was to learn what works in QI training programs so that more organizations adopt best practices and more health providers acquire training in quality improvement.

**CONTEXT**

Public health and health care workers have many opportunities to acquire training in quality improvement (QI). However, there is limited evidence about whether and how these training programs increase the ability of these individuals to successfully engage in work to improve health and health care. Information about the impact of such programs on organizational culture and patient outcomes is also scarce. This information gap may lead to under-investment in effective QI training opportunities and over-investment in training that is not effective.

**RWJF’s Interest in This Area**

RWJF has funded several national programs that employed quality improvement approaches to improve health care processes, staff engagement, and patient outcomes.
• **Improving Chronic Illness Care** (1998 to 2010) aimed to improve the health of chronically ill patients by helping large numbers of organized health systems redesign how they deliver care through the Chronic Care Model. The program’s clinical improvement program engaged dozens of practices and health systems throughout the country in Breakthrough Collaboratives.¹ For more information, read the Program Results Report.

• **Pursuing Perfection** (2001 to 2008) supported efforts by seven health care organizations to dramatically improve their care processes and patient outcomes and to demonstrate to the broader provider community that ideal care is attainable. The program used continuous quality improvement tools such as Plan-Do-Study-Act (PDSA) cycles² and improvement collaboratives to accomplish its goals. For more information, read the Program Results Report.

• **Paths to Recovery** (2002 to 2008) was designed to increase access to substance abuse treatment by improving the quality and efficiency of the delivery system at the provider level. Participating agencies used strategies originally developed by private industry that emphasized making a series of small, rapid-cycle changes to improve quality. For more information, read the Program Results Report.

• **Transforming Care at the Bedside** (2003 to 2008) developed, tested, and disseminated a structured process of continuous quality improvement for empowering nurses and other front-line hospital staff to take the lead in improving the work environment and the quality of patient care on medical-surgical units. For more information, read the Program Results Report.

• **Improving the Science of Continuous Quality Improvement Program and Evaluation** (2007 to 2011) awarded nine grants for research projects in three categories: (1) providing a framework for the identification, classification, and evaluation of quality improvement initiatives; (2) developing new quality improvement measures; and (3) addressing data collection and analysis methodologies. For more information, read the Program Results Report.

**Scanning the Field**

From 2007 through 2011, researchers at the Boston University School of Management Health Policy Institute, led by Sally K. Holmes, MBA, supported efforts by RWJF’s

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¹ The Breakthrough Series Collaborative was created by Donald Berwick, MD, and his team at the Institute for Healthcare Improvement in Cambridge, Mass. The collaborative is a short-term (six- to 15-month) learning system that brings together a large number of teams from hospitals or clinics to seek improvement in a focused topic area.

² The PDSA cycle promotes continual improvement through planning (with attention to historical and current data), doing (pilot testing improvement interventions on a small scale), studying the pilot test results, and acting by implementing the improvements if the pilots are successful.
Human Capital Team to increase the number of health care workers who are highly proficient in quality improvement methods and tools.³ To achieve this, researchers:

- Surveyed the field to find out the scope and availability of QI training, as well as to determine factors hindering or encouraging the use of training
- Developed online resources and ideas for QI training research projects that the Human Capital Team might consider for future funding

Researchers determined that, although numerous QI training options exist, learners are not well connected with these resources. They also found that getting training in the use of quality improvement methods and tools does not necessarily assure that staff members will adopt the processes. The researchers concluded that more effective incentives are needed to foster widespread adoption of quality improvement in health care.

The results of this effort led to the development of a new RWJF national program to assess QI training.

**Funding**

The RWJF Board of Trustees authorized *Evaluating Quality Improvement Training Programs* for up to $2 million, to run between May 2008 and June 2013.

**THE PROGRAM**

The goal of *Evaluating Quality Improvement Training Programs* was to learn what works in QI training programs so that more organizations adopt best practices and more health providers acquire training in quality improvement.

RWJF requested proposals in May 2008 for evaluations of existing QI training programs to produce evidence that would inform decision-making about whether and how to invest in QI training. RWJF staff was particularly interested in comparing QI programs so as to standardize, across projects, the staff and patient outcomes found to be most directly linked to QI training. They asked applicants to address questions that included:

- What are the essential components of effective QI training?
- What mechanisms for introducing QI training will result in widespread adoption and use in clinical settings?
- What characteristics and experiences predisposed learners to successfully acquire proficiency in quality improvement?

³ See Program Results Report for grant ID# 65102, available online.
Management

RWJF Research and Evaluation staff, led by Senior Program Officer Lori Melichar, PhD, managed the program internally. Melichar also directed the related initiative, Improving the Science of Continuous Quality Improvement Program and Evaluation (see Program Results Report for more information).

Holmes, who had led Boston University researchers in the survey of the QI training field, assisted Melichar by working across projects to identify project strengths and challenges as well as common themes.4

Funded Projects

RWJF program staff commissioned outside evaluators and others engaged in QI training to review proposals and recommend projects to RWJF staff. These five projects received three-year grants, beginning in January 2009, ranging from about $300,000 to $400,000:

- Academy for Educational Development (AED) and FHI 360,5 Washington: Evaluation of Training/Capacity Building Conducted by the National Quality Center (ID#s 65497 and 69490)
- Cincinnati Children’s Hospital Medical Center, Cincinnati: To Achieve the Best: Evaluating Quality Improvement Training as a Means to an End (ID# 65499)
- Emory University, Rollins School of Public Health, Atlanta: Evaluation of a Two-Pronged Training Program to Build Capacity for Quality (ID# 65496)
- RAND Corporation, Santa Monica, Calif.: RAND Evaluation of the Perfecting Patient Care University (ID# 65495)
- University of North Carolina at Chapel Hill, Chapel Hill, N.C.: Evaluating the Effectiveness of NACCHO Quality Improvement Training Initiatives (ID# 65498)

See the Appendix 1 for grant details and contact information.

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4 Grant ID# 69444; $26,200, November 1, 2011 to May 31, 2013.

5 The first grant went to AED and the second to FHI 360. FHI 360 was created in 2011 by teams of experts from Family Health International and the Academy for Educational Development, and all AED programs transferred to FHI 360 in that year. FHI 360 is a nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. Its staff includes experts in health, education, nutrition, environment, economic development, civil society, gender equality, youth, research, and technology. FHI 360 serves more than 60 countries and all U.S. states and territories.
Grantee Meetings

Melichar and other RWJF Research and Evaluation staff convened three meetings of program grantees and non-grantee experts in quality improvement. Two were held at the Foundation’s offices in Princeton, N.J., and one was a virtual, web-based meeting:

- At the program kickoff meeting on December 17, 2008, at RWJF, grantees offered initial descriptions of their projects and discussed standardizing QI training measures and organizational and patient care measures.

- At the second, March 9, 2011, meeting, grantees of this program joined with grantees from the related program, *Improving the Science of Continuous Quality Improvement Program and Evaluation*, in a new community called Advancing the Science of Quality Improvement Research and Evaluation (ASQUIRE). Grantees of the earlier program, which ended in August 2011, presented findings of their research projects.

- At a virtual ASQUIRE meeting on February 13, 2013, grantees from both programs came together again for presentations of project findings by grantees from *Evaluating Quality Improvement Training Programs*. Attendees, who included non-grantee quality improvement experts, also discussed ways to continue to foster a community in continuous quality improvement research.

PROJECT ACTIVITIES, RESULTS, FINDINGS, AND LESSONS

This section describes the activities of each of the five projects and then provides its results, findings, and bibliography.

Evaluation of Training/Capacity Building Conducted by the National Quality Center

Researchers from Academy for Educational Development (AED) and FHI 360 evaluated QI training and capacity building conducted by the National Quality Center, with the goal of providing information on how quality improvement technology transfer\(^6\) comes about and how knowledge is applied in clinical settings. The National Quality Center is an initiative funded by the federal Health Resources and Services Administration (HRSA) to advance the quality of care of individuals living with HIV/AIDS by providing no-cost, state-of-the-art technical assistance for all grantees funded by the Ryan White HIV/AIDS Treatment Modernization Act of 2006.

\(^6\) “Technology transfer” is the process of transferring knowledge, skills, and technology among institutions and organizations in order to make them accessible to a wider range of users.
RWJF funded AED\(^7\) and then FHI 360\(^8\) to conduct the evaluation. Susan J. Rogers, PhD, led the project at AED, followed by Myriam Hamdallah, MPH, and Stacey Little, PhD, at FHI 360.

**Quality Improvement Training Programs Evaluated**

The study included 10 clinical sites located throughout the United States and receiving Ryan White funding. See Appendix 2 for list of sites. The sites participated in a range of QI training programs and activities offered by the National Quality Center, which provides no-cost technical assistance to all Ryan White Program-funded grantees to improve the quality of HIV care nationwide. (See National Quality Center [website](#) for a complete list and descriptions of offerings.)

These included:

- **National and Regional Training**, a one-day introduction to quality management
- **National Technical Assistance Calls**, monthly web-conference calls on a variety of topics
- **Quality Academy**, a series of online tutorials offered free-of-charge 24/7
- **Training of Quality Leaders**, a three-day session for quality program managers
- **Training-of-Trainers**, a program to prepare experienced individuals to develop and conduct training themselves. It includes pre-session work, a three-day session, and the expectation that participants will conduct at least three trainings post-session.
- **Training on Coaching Basics**, an advanced program for graduates of Training of Quality Leaders or Training-of-Trainers. It includes pre-session work, a three-day session, and months of post-course work.

**Evaluation Design**

Project goals were to:

- Identify the types of QI training each site received from the National Quality Center
- Identify the process and effectiveness of quality improvement technology transfer
- Identify the relative impact of various QI training programs and activities on HIV quality management programs
- Evaluate the organizational and contextual factors that facilitate or inhibit quality improvement technology transfer

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\(^7\) Grant ID# 65497; $190,305, January 1, 2009 to February 29, 2012

\(^8\) Grant ID# 69490; $115,193, July 1, 2011 to February 29, 2012
The study design incorporated three types of assessment:

- **Retrospective Baseline Assessment**, which addressed the QI training received by participants in the past and its effects through an online survey of site quality leaders and others involved with quality improvement as well as interviews of site quality leaders

- **Prospective Assessment**, which evaluated QI training received during the 24-month study period and its effects through online surveys completed quarterly by site staff and interviews of the site quality leaders

- **Summative Assessment**, which was an overall summary of all past QI training and effects through an online site survey with quality leaders and others involved with quality improvement, interviews of quality leaders, and visits to a limited number of sites

**Project Strengths and Challenges**

Holmes said that “the strength of this work is that the subject matter—quality improvement training for staff working in the HIV/AIDS field—continues to be critically important to the provision of excellent care for people living with HIV/AIDS.” At the same time, the researchers had difficulty recruiting and engaging study participants in the targeted sites, “which may compromise generalizability of results,” she said.

One of the key criteria for a site to be included in the study was having received only a limited number of hours of capacity building through a related New York State Department of Health AIDS Institute project, HIVQUAL. This was necessary in order to be able to attribute findings to National Quality Center offerings. According to project directors, many sites that were available were not representative of all Ryan White grantees that had received training, and several sites that met study criteria were not available to participate. Thus, the sample of 10 sites, “while diverse, was not representative of the larger grouping of Ryan White Program sites that the National Quality Center serves.”

**Key Findings**

Researchers reported key findings in a report to RWJF:

- **The various QI training programs had a moderate to high impact on a site’s ability to conduct quality improvement.** The Training-of-Trainers program had the highest impact overall, followed by the Quality Academy, National and Regional Trainings, and the Training of Quality Leaders program.

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9 HIVQUAL was developed by the New York State Department of Health AIDS Institute and is offered to Ryan White-funded agencies throughout the United States through a partnership (HIVQUAL-US) with the federal Health Resources and Services Administration (HRSA).
Examples of specific applications of learning from the National Quality Center training include:

- Refining quality management and annual work plans
- Using Training-of-Trainers learnings to provide training internally
- Using Training of Quality Leaders learnings to prioritize daily workload

The participating sites initiated many new quality improvement projects. Examples include:

- Improving clinic flow, client satisfaction, and scheduling
- Increasing rates of specific clinical services, such as screenings
- Promoting consumer involvement
- Retaining HIV-positive persons in care

Barriers to quality improvement activities include:

- A shifting of priorities due to increased workload resulting from staff turnover
- Lack of full senior management support for quality improvement activities
- The effect of the current economic climate on funding for quality improvement activities

Facilitators to technology transfer include:

- Participation in quality improvement projects, a key facilitator that enabled staff to put knowledge into action
- Quality management meetings, which were used as venues for staff training and knowledge transfer
- The National Quality Center’s range of resources from beginner to advanced, which was critical to incremental learning. Easy-to-access interventions that are self-paced and self-initiated (e.g., the Quality Academy and resources offered by the center’s website and listserv) were more frequently utilized and resulted in more quality improvement program changes.

To address challenges in advancing quality improvement, some site staff suggested having QI information customized or marketed to senior managers who are in the position to address barriers. They also suggested that the National Quality Center could provide information, strategies, and training on how to prioritize and implement quality improvement activities, as well as better promote quality improvement activities within the organization to garner increased leadership buy-in.
Overall, stated a report to RWJF from the project directors, “Ryan White Program-funded staff have accessed valuable training opportunities provided by the National Quality Center and other entities and transferred that information to others at their agencies.” Despite lacking resources to send many staff to trainings or the dedicated time for them to access calls or online modules, “quality managers are able to disseminate important knowledge and skills from training opportunities to colleagues.”

There were no publications or presentations from this project.

**To Achieve the Best: Evaluating Quality Improvement Training as a Means to an End**

Researchers at Cincinnati Children’s Hospital Medical Center, led by Daniel J. McLinden, EdD, evaluated the experience of participants in two QI training programs at the medical center and the factors that influenced successful implementation of quality improvement. They also assessed the effectiveness of participants’ post-program quality improvement projects on outcomes for patients, families, and medical center operations.

**Quality Improvement Training Programs Evaluated**

This mixed-methods evaluation focused on two QI training programs developed and offered at Cincinnati Children’s:

- **Intermediate Improvement Science Series (I²S²),** a course directed to clinical and nonclinical health care leaders. The course includes six two-day off-site sessions over six months with project work between sessions. Five cohorts totaling 146 participants completed the program during the grant period. In addition, six cohorts totaling 140 participants who had completed the program earlier were included to determine long-term outcomes.

- **Advanced Improvement Methods (AIM),** a course to train faculty in advanced quality improvement methods that enable them to conduct and publish rigorous quality improvement research projects. The course includes four two-day sessions and five 90-minute webinars. Two cohorts of 25 participants were the primary data source, with an additional two cohorts of 26 participants as the source for interviews on impact and outcomes.*

Researchers from Boston University’s School of Public Health, Department of Health Policy and Management, led by Martin Charns, DBA, collaborated with McLinden and colleagues at Cincinnati Children’s under a subcontract and participated along with the

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*Grant ID# 65499, $399,300, January 1, 2009 to March 31, 2012
Cincinnati Children’s team in design, data collection, interpretation, and reporting and had the added role of meta-evaluation.\textsuperscript{11}

**Evaluation Design**

The research team used multiple methods to collect data in several domains:

- **Contextual factors** (I\textsuperscript{2}S\textsuperscript{2} only): Participant surveys before and one week after program completion on perceptions of quality improvement, organizational support for quality improvement, and pre-program experience with quality improvement

- **Training program quality**: Post-session surveys of participants

- **Learning outcomes**: Participant self-assessments before and after the program to assess changes in perceived quality improvement knowledge and ability due to training

- **Application and impact for I\textsuperscript{2}S\textsuperscript{2}**:
  - Participant surveys assessing quality improvement efforts six months post-program.
  - Participant interviews on QI training, projects, and skill application and impact
  - Post-program surveys of participants’ quality improvement project team members to assess member perceptions of organizational support for quality improvement, their quality improvement skills, and project team effectiveness

- **Application and impact for AIM**: Participant interviews conducted to gain insight on QI training, projects, and skill application and impact.

- **Organizational context for quality improvement at Cincinnati Children’s**: Interviews with medical center senior management and clinical leaders to understand the development of a quality improvement culture (strategy, leadership commitment, and organizational spread) and context for the QI training programs (characteristics of successful participants, impact of quality improvement spread, and sustainability of QI training).

**Project Strengths**

“The fact that they were studying the efficacy of a well-established and well-regarded QI training program is a major strength of the evaluation project,” said Holmes. “This study also has a great deal of potential for being able to share and replicate the instrument they used for evaluating the program.”

\textsuperscript{11} Consultants from Knowledge Advisors assisted in developing assessment tools, also under a subcontract. Knowledge Advisors is an international consulting firm headquartered in Chicago that provides measurement of learning and talent.
Key Findings

The evaluators reported a comprehensive set of findings to RWJF. Key findings include:

Short-Term Outcomes:

- **Satisfaction**: 93 percent of I²S² respondents and 95 percent of AIM respondents were “satisfied with the quality” of the program they attended.
- **Learning**: 93 percent of I²S² respondents and 95 percent of AIM respondents agreed that they “learned new knowledge and skills.”
- **Application**: At program completion, 94 percent of I²S² respondents and 93 percent of AIM respondents anticipated that they “will be able to apply the knowledge and skills” they acquired.
- **Application of learning**: Six months post-program, 88 percent of I²S² respondents reported participating in a least one quality improvement project since program completion. Of those, 79 percent felt that the project was successful. About half of the graduates reported leading at least one project and 75 percent felt that project was successful.

Involvement in post-program quality improvement projects was more limited among AIM participants external to Cincinnati Children’s. Some reported that limited or no organizational support for quality improvement was a barrier.

Contextual and Individual Factors

- **Support for application of training**: Key facilitators to applying quality improvement knowledge and skills reported by participants include:
  - Support and buy-in by both leadership and staff
  - Access to resources, including staff in other divisions or departments
  - Working with a quality improvement coach
  - Quality improvement knowledge exchange among training classmates

Lack of support by department leadership and staff was the leading barrier to application of quality improvement knowledge and skills in the work environment.

- **Time as a barrier**: I²S² participants noted the difficulty of engaging staff in quality improvement due to involvement in multiple projects, time constraints, and general work overload.
- **Culture**: Key strategies at Cincinnati Children’s for building a culture of quality improvement were:
  - Aligning organizational goals and resources to build “critical mass” through the strategic training of division leaders
  - Establishing senior leadership accountability through performance goals
  - Broad communication of quality improvement knowledge and lessons learned through organizational dashboards

**Challenges to creating a culture of quality improvement were:**
  - Variations in the readiness of senior leaders to engage in quality improvement projects
  - Difficulty conveying concepts to others
  - Lack of buy-in from department staff for creating small staff clusters to do quality improvement work while others continue with their usual work

- **Personal factors**: Most (90%) I²S² participants indicated that they were “personally motivated to participate.” Some 73 percent had participated in at least one quality improvement project, and 38 percent had led at least one project prior to program participation.

- **Level of investment**: The substantial investment required for QI training, driven by the cost of participation time, is both a facilitator and a barrier. The time required is a cause for significant gains in learning and subsequent application. Yet, the cost of entry (both the personnel time required and the financial cost of that time) may be prohibitively high for some organizations lacking resources for this level of commitment.

**Impact on Outcomes for Patients, Families, and Medical Center Operations**

- **More than 80 percent of I²S² respondents reported that their post-program projects had a moderate-to-very-high impact on:**
  - “Improving patient and family experience” (84%)
  - “Increasing staff interest and involvement in quality improvement” (84%)
  - “Improving productivity/efficiency” (82%)

- **At the six-month follow-up, I²S² participants had disseminated their quality improvement work professionally as follows:**
  - Delivered a presentation or poster at a professional conference (40%)

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12 Organizational dashboards are visual representations of key organizational success indicators.
— Published a peer-reviewed article (10%)
— Published in a non-peer-reviewed forum (5%)

- Participants also spread their I²S²-inspired quality improvement project:
  — To other units/programs within Cincinnati Children’s (34%)
  — To other organizations (14%)

**Essential Components to a “Quality” Quality Improvement Training Program**

Participants reported the following essential components of a quality QI training program:

- **Leadership support to create and nurture a quality improvement culture**
- **Substantive investment of time from attendees, the quality improvement project team, faculty, and coaches**
- **Guided application (by an identified coach assisting the quality improvement project leader) of a quality improvement project to build capability and spread quality improvement**
- **Purposeful participant selection strategy that includes:**
  — Cohorts with roughly equal numbers of physicians, nurses, allied health professionals, and nonclinical managers
  — Early training of corporate executives and other senior leaders followed by later training of clinical leaders and other hospital executives. This diversity facilitated quality improvement spread throughout the organization through a common leadership experience.

**Presentations**


Evaluation of a Two-Pronged Training Program to Build Capacity for Quality

Researchers at Emory University’s Rollins School of Public Health led by Kimberly Jeanne Rask, MD, PhD, evaluated the effectiveness of two training programs developed at Emory Healthcare in increasing knowledge, influencing organizational culture, and fostering quality improvement initiatives in the organization.\(^\text{13}\)

Quality Improvement Training Programs Evaluated

One training course targeted healthcare leadership and the other targeted front-line clinical and administrative staff:

- **Leadership for Healthcare Improvement Program** aims to equip health system leaders with a basic understanding of quality improvement concepts and a clearly articulated vision of the organization’s quality culture. Of the participants, 10 percent were physicians, 25 percent were nurses, and the remainder was administrative directors of both clinical and nonclinical departments.

  Evaluation methods included:

  - Pre- and post-course surveys of 545 participants’ knowledge of quality improvement terms, concepts, and tools
  - Interviews with a random sample of 29 participants from 11 different sessions to explore their experience with the course and opportunities to translate knowledge into clinical practice
  - A survey, focused on course effectiveness, of Emory employees who took the course. The survey was adapted from one developed by researchers at Cincinnati Children’s Hospital Medical Center.

- **Practical Methods for Healthcare Improvement Program** aims to develop employee capacity to lead and manage improvement initiatives in their local clinical service areas. Of the participants 20 percent were physicians and 20 percent were nurses, while the remainder represented both clinical and nonclinical departments.

  Evaluation methods included:

  - Review of 44 group quality improvement projects (from 146 participants) initiated as part of the Practical Methods courses

\(^\text{13}\) Grant ID# 65496; $349,476, January 1, 2009 to June 30, 2011
— Interviews with a random sample of 22 participants to describe attitudes and experiences with the training program

— A survey, focused on course effectiveness, of Emory employees who took the course. The survey was adapted from one developed by researchers at Cincinnati Children’s Hospital Medical Center.

Project Strengths and Challenges

The ability to compare the effectiveness of different in-house training programs taught to leadership and to frontline staff was a prime strength of this project, according to Holmes.

The comparison revealed a weakness, she said. Frontline staff was trained with the expectation that they would do a project, while leaders appear to have been given an overview of quality improvement with no commitment to sponsor a quality improvement project. Frontline staff did not always receive support from their direct supervisor when they returned from training and sought to do a project. “Perhaps, if the leaders had a commitment to get involved, their support may have mitigated the resistance frontline staff experienced,” said Holmes.

Project director Rask found the recruitment of interviewees from both courses to be a significant challenge, given participants’ demanding schedules. The team made multiple telephone calls and sent multiple emails to yield a sample smaller than had been expected.

Key Findings

Researchers reported key findings at the virtual ASQUIRE meeting in February 2013.

Leadership for Healthcare Improvement Program

- Participants demonstrated substantial improvement in knowledge of quality improvement terms, concepts, and tools after the course, increasing between 28 and 45 percentage points to a minimum of 80 percent correct in each of five content areas.

- After completing the course, more than 90 percent of participants agreed that:
  — “I understand the role of leadership in creating a patient-centered and collegial culture.”
  — “I am able to view data over time and draw conclusions regarding variation or true trends.”
  — “I understand that process improvement will reduce common variation trends.”
Practical Methods for Healthcare Improvement Program

- The 44 implemented projects (of 49 initiated) addressed:
  - Improving clinical care (13)
  - Improving clinical operations (6)
  - Improving patient safety (8)
  - Patient access and care coordination (10)
  - Improving financial performance (7)

- Some 29 projects documented improvements during the evaluation period.
- Some 13 projects reported significant challenges with team functioning.
- Some 18 projects were mature enough to be sustainable by the end of the course.

- Participants’ average “superficial” understanding of quality improvement at baseline increased to “understand topic well and can apply it” after completing the course.

- In a follow-up with 22 projects one year after course completion:
  - Nineteen projects were fully implemented as planned.
  - Thirteen projects were still active as of February 2013.

**Conclusions**

Researchers offered the following conclusions in a report to RWJF:

The results of this evaluation have shown that the transfer of quality improvement knowledge into practice by senior leaders and managers can be achieved through well-organized and comprehensive training programs. The study underscores the feasibility of implementing an in-house, onsite QI training program capable of reaching multiple levels of an organization in order to more rapidly achieve and promote quality improvement adoption.

**Project Lessons**

- Carefully consider the study population when selecting outcome measures. For example, if the majority of participants are from non-clinical departments, patient safety measures may not be relevant. (Project Director Kimberly J. Rask, Emory University, Rollins School of Public Health)

- Conduct interviews with program participants as soon after the training event as possible. It may be difficult for participants to recall their experiences accurately if
much time has passed. (Project Director Rask, Emory University, Rollins School of Public Health)

- **Tailor specific recruitment strategies to physicians or their participation in training programs may be low.** At Emory project staff used a series of recruitment letters (with information about the study and an offer to conduct the interview at the convenience of the participant), telephone calls, and emails. (Project Director Rask, Emory University, Rollins School of Public Health)

**Journal Articles**


**Presentations**

Sarah Blake. “Knowledge Translation through Training: A Study of Organizational Learning in Quality Improvement,” poster presentation at the 2011 Academy Health Annual Research Meeting, Seattle. Abstract available online (scroll down through alphabetical list by presenter name).


**RAND Evaluation of the Perfecting Patient Care University**

Researchers at **RAND Corporation**, led by Donna O. Farley, PhD, MPH, and Kristine G. Morganti, PhD, MPH, examined the effects of the QI training program, **Perfecting Patient Care University**, on subsequent quality improvement activities of the organizations that have sent staff for this training.

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14 Perfecting Patient Care University is operated by the Pittsburgh Regional Health Initiative, which seeks to improve health care safety and quality in southwestern Pennsylvania.

15 Grant ID# 65495; $349,511, January 1, 2009 to December 31, 2011
**Quality Improvement Training Program Evaluated**

Perfecting Patient Care University aims to provide health care leaders and clinicians with the tools, expertise, and networks to implement quality improvement projects in their organizations. The program trains individuals at multiple organizational levels to embed continuous quality improvement into routine practice. The curriculum is based on the principles of the Toyota Production System. Over 1,700 individuals, from 276 organizations, have participated in Perfecting Patient Care training.

The evaluation focused on the three original formats for delivering the program:

- **Four-Day Open Perfecting Patient Care University**: Groups of 20–25 participants from multiple, unrelated institutions prepare for quality improvement projects in their own organizations. Since 2001, 725 people have completed the Open University.

- **Four-Day Customized Perfecting Patient Care University**: Groups of 20–25 participants from a single organization receive customized training.

- **Champions of Work Redesign**: Groups of 8 to 10 health care professionals in the same specialty from multiple institutions receive tools and training to improve patient safety and health care quality in their own work settings and form networks together. Participants attend the four-day regular training, receive on-site coaching, and meet monthly over one year to share experiences and findings.

**Evaluation Design**

Four questions guided the evaluation:

- To what degree have institutions implemented quality improvement changes post-training?

- What are the organizational factors associated with successful quality improvement implementation?

- How strongly are tailoring of the training and follow-up coaching associated with more significant and sustainable quality improvement?

- What effects has the training had on subsequent clinical and organizational outcomes?

Researchers conducted a two-part evaluation:

- **Retrospective evaluation**, in which they assessed outcomes for organizations participating in 2006 through 2008, capturing information on their entire training and post-training implementation experiences. The sample of 30 organizations included:
  - Nine organizations that had attended the Open University, with a range of represented organization types (health system, hospital, physician office, long-term care, etc.)
— Five organizations that had attended a customized university program

— Sixteen organizations that were part of the Champions program (nurses, physicians, and pharmacists in separate programs).

Data collection included team member surveys, group interviews, and project materials from the team at each organization that had carried out its quality improvement project following the training. Evaluators conducted both a process evaluation (assessing the organizations’ experiences in implementing their quality improvement work) and an outcome evaluation (assessing impacts of that work on the organizations’ care delivery processes and outcomes).

*Prospective evaluation*, a case study design in which they followed two organizations through training and the subsequent design and implementation of quality improvement activities using skills obtained in training. Researchers documented actions, perceptions, and experiences of those implementing the activities. The two organizations that worked with quality improvement coaches were:

— A single-physician medical practice

— A community health center satellite office of a federally qualified health center

Data collection included initial in-person interviews, bi-monthly telephone calls, and surveys administered at baseline (program start) and at the end of the study period.

**Project Strengths and Challenges**

This was an “ambitious and extraordinarily well conceptualized and designed study of a well-known training initiative,” said Holmes. “I have the sense that we have just scratched the surface of the findings from this study.”

Holmes noted that the researchers were not able to get subjects to complete evaluation materials to the extent intended. Project directors observed that, while the sample of 30 organizations is “substantially larger” than in many studies, “it still is a fairly small sample that offers only limited power for statistical inference in the analysis.”

**Key Findings**

Researchers noted key findings in a report to RWJF.

**Retrospective Evaluation**

Findings are organized by the four questions guiding the evaluation:

- **Overall, organizations made substantial progress in implementing improvements.**
  - They credit Perfecting Patient Care training with making a major contribution.
— Respondents reported:
  • Improved care processes and practices
  • Improved patient outcomes and experience of care
  • Increased efficiencies and standardization
  • Improved staff satisfaction and work life
  • Achievement in enhancing the organization’s quality improvement culture

• Respondents reported that important supports for quality improvement success were organizational commitment, capacity, and learning, specifically:
  — Having a culture conducive to success
  — Visible leadership support for improvements
  — Having information technology in place for monitoring data
  — Willingness to take risks to make change happen
  — Commitment to a multidisciplinary team approach
  — Acceptance of efficiency as a goal

• A combination of Perfecting Patient Care training, additional training, and coaching were associated with improved outcomes.
  — The 82 percent of organizations that had some coaching reported that it was important to reinforce learning throughout the implementation process.
  — Success measures derived by RAND were affected most strongly by the combination of Perfecting Patient Care training and coaching. These were:
    • Measurable improvement in outcomes
    • Monitoring for sustainability
    • Diffusion of quality improvement to other work within the unit
    • Diffusion of quality improvement to work across the organization
  — Cultural achievements (i.e., the enhancement of the organization’s quality improvement culture) gained from Perfecting Patient Care affected diffusion of quality improvement activity.
  — Perfecting Patient Care training alone did not affect any success measure; only the combination with additional training and coaching did.

• Cultural achievements gained from Perfecting Patient Care were associated with implementation effectiveness. This appeared to be an iterative process:
organizational culture changed with improvement success, which then reinforced more improvements in the quality improvement culture.

Prospective Evaluation

In a report to RWJF, evaluators observed that this prospective evaluation “highlights the importance of evaluating quality improvement training and implementation with medical practices. Medical practices differ tremendously from hospitals or other healthcare organizations and, to date, less research has been conducted on medical practices.”

The evaluation of the two medical practices yielded a set of lessons for QI training and implementation. Key lessons include:

- Training sessions should be limited to one hour at a time in a small busy practice, preferably using on-site, as-needed training methods.
- An electronic medical record is critical for collecting data to be used for measurement and improvement.
- Implementation of electronic medical records requires specific resources and advanced preparation, yet does not immediately result in successful meaningful use.
- Attempting to address multiple large quality improvement implementation efforts simultaneously may overwhelm already burdened staff and reduce the opportunity for practice success.
- Buy-in from front-line staff and practice leadership (i.e., the physician) is critical to successful implementation of process change.
- QI training needs to be a continuous process that includes formal training and ongoing, informal coaching, with consistency in effort and commitment.

Journal Articles


**Evaluating the Effectiveness of NACCHO Quality Improvement Training Initiatives**

Mary V. Davis, DrPH, and colleagues at the North Carolina Institute for Public Health\(^{16}\) at the University of North Carolina at Chapel Hill examined the effectiveness of QI trainings for local health departments provided by the National Association of County and City Health Officials (NACCHO).\(^{17}\) They collaborated on the project with faculty experts from the University of Southern Maine and the University of Minnesota and staff from NACCHO.

**Quality Improvement Training Programs Evaluated**

The three trainings provided by NACCHO were:

- **Demonstration site projects**—applied training offered to 41 health departments. The departments completed a self-assessment and used quality improvement techniques to address identified weaknesses. The training included meetings with consultants, peer or collaborative network discussions, and formal, tailored QI training sessions.

- **A series of five webcasts** available to any health department staff member

- **Face-to-face workshops** offered at meetings of state associations of county and city health officials in Colorado, Connecticut, Michigan, Nebraska, and Ohio

**Evaluation Design**

The evaluation included two research methods:

- A survey to evaluate the effectiveness of the three QI training methods on improving participants’ (local health department employees) knowledge, skill, and ability to conduct quality improvement. Some 289 individuals from 143 health departments completed the survey after participating in one of these training methods.

- Qualitative research methods that examined how and under what circumstances local health departments with staff that had participated in the demonstration site trainings developed a culture of quality improvement.

\(^{16}\) The North Carolina Institute for Public Health is part of the Gillings School of Global Public Health at the University of North Carolina at Chapel Hill.

\(^{17}\) Grant ID# 65498, January 2009-June 2012 ($325,842).
— Evaluators conducted telephone interviews with representatives from six demonstration site health departments. At each site interviewees included at least the administrator and the quality improvement coordinator and team members.

— The interview findings informed the development of case study protocols, which evaluators conducted at 10 health departments. Each department was rated on the extent to which it had developed a quality improvement culture.

Project Strengths and Challenges

A major strength of this project, according to Holmes, is its focus on the training of public health professionals in quality improvement. “My experience suggests that the public health field is both different and behind other healthcare fields,” she said. It would be helpful to have more information on the features of training that are “most useful or challenging given the particular challenges public health workers face.”

Key Survey Findings

Evaluators reported key findings from the survey in an article in the *Journal of Public Health Management and Practice* in 2012, entitled “Effectiveness of Public Health Quality Improvement Training Approaches: Application, Application, Application.”

- Among public health professionals participating in one type of training only:
  — Participants at demonstration site trainings reported the greatest gains in knowledge, skills, and skill application.
  — Workshop participants had the least gains in these areas.

- Public health professionals who participated in multiple types of training had higher scores in each area (knowledge, skills, and skill application) than those who participated in only a single training. Participants of demonstration site trainings and one other training type showed the greatest gains, although these were not statistically significant.

- Participants of only the webcast training showed the highest levels of receptivity to learning about quality improvement.

- Among those participating in one type of training only:
  — Participants in demonstration site trainings had the highest average scores on their ability to successfully participate in a quality improvement project, followed by webcast participants and, finally, workshop participants.

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— The highest average scores for ability to participate successfully in a quality improvement project were for demonstration site participants who also participated in a webcast.

- According to the evaluators, the findings suggest that “a public health QI training framework should include both didactic training on QI content and opportunities for QI application.”

**Key Qualitative Research Findings**

Evaluators reported key findings from the case studies in an article in press (as of August 2013) in the *American Journal of Public Health* entitled “Creating Quality Improvement Culture in Public Health Agencies”:

- **Of the 10 case study health department sites:**¹⁹
  - Four had features of conducting informal quality improvement.
  - Three had features of conducting formal quality improvement in specific areas.
  - Three had features of creating a quality improvement culture but had not achieved all the elements of such a culture.

Categories were cumulative. For example, agencies creating a quality improvement culture had all the features of the previous two categories.

- **Examples of features differentiating local health departments conducting informal quality improvement, conducting formal quality improvement, or creating a quality improvement culture are as follows:**
  - In agencies conducting informal quality improvement:
    - Administrator does not make quality improvement a priority; staff tends to organize and drive quality improvement efforts.
    - Among senior managers, a minority is committed to quality improvement.
    - More training is needed for staff at all levels of the organization.
    - Quality improvement is sporadically practiced, with infrequent quality improvement meetings. The organization may not have established data collection systems.
    - Health department accreditation is a major driver of quality improvement.

¹⁹ The three categories (conducting informal quality improvement, conducting formal quality improvement, and creating a quality improvement culture) are combinations of six quality improvement culture development categories described in NACCHO’s *Roadmap to a Culture of Quality Improvement*, available online at [http://qiroadmap.org](http://qiroadmap.org).
— In agencies conducting formal quality improvement or creating a quality improvement culture:

- Administrator is likely to be viewed as the “coach” or “quarterback” of quality improvement and participates in state and/or national efforts. Administrator has a strong vision for, and is passionate about, quality improvement.

- The majority of senior management is committed to quality improvement and has training and support to lead quality improvement efforts.

- The majority of staff has participated in quality improvement training.

- Agencies have a designated quality improvement team with regular meetings and representation across all divisions. They are likely to have a strategic plan that informs quality improvement activities and a data collection and analysis infrastructure.

— The agencies’ quality improvement activities tend to be driven by a belief in the importance of quality improvement rather than by the requirements of accreditation.

— Agencies conducting formal quality improvement differ from those creating a quality improvement culture on several features:

- While agencies conducting formal quality improvement are able to withstand some barriers, those creating a quality improvement culture are able to use barriers as motivators for quality improvement.

- Emerging issues, such as budget cuts, slowed the work of the agencies conducting formal efforts. Those creating a quality improvement culture used such issues as a platform to manage the event with quality improvement.

- Sustainability is likely in a culture of quality improvement due to staff and leadership commitment. Quality improvement efforts at the other agencies may not withstand the loss of key personnel.

— The five key agency ingredients needed to build a sustainable culture of quality improvement are:

— Leadership and staff commitment to quality improvement

— Valuing innovation and aligning quality improvement practices with strategic goals and mission

— Strong experience in performance management, quality improvement, and evidence-based decision making. This provides the core capacity to lead improvement efforts and encourage adoption by others.

— Being held accountable for the quality of services, programs, and outcomes by governing bodies, funders, and others
— Core infrastructure and resources that support ongoing quality improvement initiatives, such as available data and quality improvement teams

**Project Lessons**

- **When designing and implementing an evaluation of a training program, include staff from the organization that provides the training.** Staff that has experience delivering the training program can be helpful in creating a process for collecting data that is appropriate for the particular context. This helps ensure that the results of the evaluation are relevant. (Project Director Mary V. Davis, University of North Carolina at Chapel Hill)

**Journal Articles**


**Presentations**


**CONTINUING TO BUILD THE FIELD**

In RWJF’s earlier national program, *Improving the Science of Continuous Quality Improvement Program and Evaluation*, research teams tackled an array of projects aimed at improving evaluation frameworks, quality improvement measures, and data collection and methodology. The work completed through *Evaluating Quality Improvement Training Programs* is another step in advancing the science of quality improvement research, evaluation, and training.
Observing Common Themes

While the five projects evaluated different QI training programs using a variety of evaluation methods, several themes emerged from their findings, according to consultant Holmes.

- Curricula and program factors such as modality (in-person session, online tutorial, etc.) and dosage (single session, multi-session, multi-part, etc.) directly shape learning from training programs.
- Equally important, however, are opportunities to apply new skills and organizational factors that affect adoption of what has been learned from the training.
- An organizational culture oriented to quality improvement, with leadership support and clear sponsorship of quality improvement projects, “all appear to influence staff acceptance of and engagement with quality improvement,” said Holmes.
- With regard to evaluation design, Holmes pointed out that researchers developed or refined “methods to capture valid, comparative, and generalizable information about the effects of QI training.” And their experiences “underscored the importance of mixed-method (quantitative and qualitative) approaches to understanding not only the impact of training but the significant issues that underlie progress and sustainability.”

Recognizing the Importance of Tools

The most important outcomes of Evaluating Quality Improvement Training Programs, said RWJF’s Melichar, were the new surveys, indices, measures, and methods evaluators created to assess participants’ experience with a training program.

Quality improvement training seeks to improve the skills of health care providers. “As with any outcome of a human capital program, proficiency in quality improvement skills is challenging to assess. The outcome of quality improvement activities depends on much more than the skill of the leader of the initiative,” said RWJF’s Melichar. “If you’re going to evaluate these kinds of programs, you’re going to need innovative, dynamic methods and measures that capture information about context and culture as well as activity and health outcomes.”

Much of the discussion at the February 2013 virtual ASQUIRE meeting focused on “How can we get these tools out in the field? How can we understand when people are using the tools and have them give us feedback?” Melichar said. “There was a willingness to share these broadly and a sense that people shouldn’t be re-inventing the wheel.”
Identifying the Need for a Repository for Quality Improvement Measures

The results of both programs point to the need for “some kind of repository of quality improvement research and evaluation measures where people could post their measures and receive feedback on them,” said Melichar. “If we could get researchers to consider using or modifying what members of the RWJF ASQUIRE community have made available first, before seeking to develop an instrument from scratch, this would be a next step in continuing to advance quality improvement science.”

Fostering a Community through ASQUIRE

The researchers and evaluators funded through Improving the Science of Continuous Quality Improvement Program and Evaluation and Evaluating Quality Improvement Training Programs are the core of a burgeoning community of professionals engaged in the science of quality improvement. On February 12, 2013 (the day before the virtual ASQUIRE meeting), RWJF launched a new website\(^{20}\) envisioned as a repository for quality improvement work. The site offers the growing community of researchers, evaluators, and other health care professionals in the field a place to access resources and to connect with colleagues.

“We have built a community of people who are struggling with these challenges,” Melichar said, “and when they have future challenges it is our hope that they will go to people in this community to help work them out.”

AFTERWARD

Projects conducted through Evaluating Quality Improvement Training Programs ended at the completion of the individual grants. Grantees continued with additional data analyses and prepared manuscripts for publication.

Grantees are members of the ASQUIRE community and may continue to develop connections with each other as well as the other ASQUIRE participants.

Prepared by: Mary B. Geisz
Reviewed by: Kelsey Menehan and Molly McKaughan
Program Officer: Lori Melichar
Program Area: Human Capital
Program ID: PQI

\(^{20}\) The website, The Science of Continuous Quality Improvement, is available online.
APPENDIX 1

Project List

Academy for Educational Development Inc. (AED) and Family Health International (FHI 360) (Washington, DC)
Evaluation of Training/Capacity Building Conducted by the National Quality Center

AED:
ID# 65497 (January 2009–February 2012) $190,305

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FHI 360:
ID# 69490 (July 2011–February 2012) $115,193

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Cincinnati Children’s Hospital Medical Center (Cincinnati, Ohio)
To Achieve the Best: Evaluating Quality Improvement Training as a Means to an End
ID# 65499 (January 2009–March 2012) $399,300

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Emory University, Rollins School of Public Health (Atlanta, Ga.)
Evaluation of a Two-Pronged Training Program to Build Capacity for Quality
ID# 65496 (January 2009–June 2011) $349,476
Project Director
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RAND Corporation (Santa Monica, Calif.)
RAND Evaluation of the Perfecting Patient Care University
ID# 65495 (January 2009–December 2011) $349,511

Project Directors
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University of North Carolina at Chapel Hill (Chapel Hill, N.C.)
Evaluating the Effectiveness of NACCHO Quality Improvement Training Initiatives
ID# 65498 (January 2009–June 2012) $325,842

Project Director
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APPENDIX 2

Organizations Participating in Evaluation of Training/Capacity Building Conducted by the National Quality Center

- Miriam Hospital Immunology Center, Providence, R.I.
- Cape Cod Hospital Infectious Disease Clinic Services, Hyannis, Mass.
- DeKalb County Board of Health, Decatur, Ga.
- Ampla Health, a network of 11 federally qualified community medical clinics serving five counties in northern California
- Orange County Health Department, Orlando, Fla.
- Orange County Health & Family Services, Orlando, Fla.
- Polk County Health Department Patient Care Clinic, Bartlow, Fla.
- Regional Medical Center at Memphis, Memphis, Tenn.
- University of Texas Southwestern Medical Center, Dallas, Texas
- Wayne State University HIV/AIDS Program, Detroit, Mich.