— AMERICAN COLLEGE OF —
Medical Quality

# The Clinical Quality Fellowship Program: Developing Clinical Quality Leadership in the Greater New York Region

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## Abstract

The Institute of Medicine has noted that a key factor underlying patient safety problems in the United States is a paucity of quality and safety training programs for clinicians. The Greater New York Hospital Association and United Hospital Fund created the Clinical Quality Fellowship Program (CQFP) to develop quality improvement leaders in the New York region. The goals of this article are to describe the CQFP's structure and curriculum, program participants' perceived value, improvement projects, and career paths. Eighty-seven participants completed the CQFP from 2010 to 2014. Among program participants completing self-assessment evaluations, significant improvements were observed across all quality improvement skill areas. Capstone project categories included inpatient efficiency, transitional care, and hospital infection. Fifty-six percent of participants obtained promotions following program completion. A training program emphasizing diverse curricular elements, varied learning approaches, and applied improvement projects increased participants' self-perceived skills, generated diverse improvement initiatives, and was associated with career advancement.

## Keywords

quality improvement, training, patient safety, leadership

The Institute of Medicine (IOM) reports, *To Err Is Human* and *Crossing the Quality Chasm*, underscored the urgent need to improve quality and patient safety. They acknowledged that a key factor underlying the significant patient safety problems in the US health care system is a paucity of quality and patient safety training opportunities for clinicians.[1,2] Without such training, clinicians are often left to deal with complex problems without essential knowledge, tools, or support. Although medical schools are incorporating more education on quality improvement methods into their curricula,[3] health care organizations do not provide sufficient opportunities for training or practical application of these concepts. For physicians in particular, the need for an expanded understanding of clinical quality principles is great.[4] Some quality and patient safety training programs exist, including those sponsored by the Institute for Healthcare Improvement,[5,6] the Department of Veterans' Affairs, Dartmouth Medical School with White River Junction VA Medical Center,[7,8] Intermountain Healthcare,[9] and the Jefferson College of Population Health.[10] More recently, Karasick and Nash formally summarized the landscape for training in quality and safety.[11] They reviewed existing master's, doctoral, fellowship, and other programs. Among their findings

were that nearly all programs were tuition-based, required time away from clinical and organizational practice, and were general with no specific eligibility prerequisites.

In 2005, the Greater New York Hospital Association (GNYHA), a hospital trade association, and the United Hospital Fund (UHF), an independent, nonprofit organization working to build a more effective health care system for every New Yorker, formed a partnership to advance quality improvement and patient safety in hospitals across the greater New York region. In addition to implementing several evidence-based, clinically focused improvement collaboratives,[12-14] GNYHA and UHF together developed the Clinical Quality Fellowship

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Program (CQFP) to fill the documented void in education and training in clinical quality improvement and patient safety. CQFP's primary goal is to develop necessary skills in competitively selected physician and nurse "quality champions," and to equip them with the necessary knowledge and support to promote and sustain quality improvement in their clinical settings. There is no cost to program participants beyond their time away from work.

As there are few programs available to enable practically applied quality and patient safety training for clinicians in the United States, one goal of this article is to describe the curricular structure and key features of the CQFP. In addition, correspondingly little data are available on participant perceptions of such programs, the types of quality improvement activities undertaken by participants related to training efforts, or the career paths of participants following training completion. Accordingly, additional goals of this article are to share information on participants' perceptions of the effectiveness of the CQFP, to describe improvement efforts initiated at participant organizations as part of the CQFP, and to describe pertinent career advancements of participants following program completion.

## Methods

The CQFP is designed as a regionally based, affordable option for training and education of physicians and nurses seeking development as quality improvement leaders. A related program objective is to advance the quality and patient safety agenda in the New York region more rapidly. CQFP is managed by GNYHA and UHF together, and programmatic costs are funded by a grant from UHF to GNYHA. Annual direct costs are $75 000, and include conference space, meals, meeting expenses, program materials, and very modest faculty honoraria (currently ranging from $500 to $2000 per faculty member). These costs exclude the annual contribution of the equivalent of one full-time staff member from UHF and GNYHA. The program's main features are described in the following sections.

### Faculty and Advisory Panel

The CQFP Faculty and Advisory Panel plays a crucial and multifaceted role in the program. They select program applicants, help shape program requirements, design and deliver curriculum components, and offer "hands-on" teaching in the program. Faculty and Advisory Panel members (see Acknowledgments section) consist of senior medical, nursing, and quality leadership from regional health care systems, including public and private entities and major academic medical centers and community hospitals. The founding Chair of CQFP

served as Senior Vice President and Chief Medical Officer of Quality and Patient Safety at a large academic medical center, and the current Chair is a quality leader in the greater New York region with significant experience and knowledge in quality, patient safety, health policy, and medicine.

### Application Process and Candidates

The CQFP application process is competitive. It requires hospital leadership to nominate eligible clinicians and to commit to allowing participants time off from clinical and administrative responsibilities to satisfy program requirements. The program is tailored to physicians and nurses with limited experience conducting quality improvement and patient safety initiatives. Applicants are not required to have a prior or current quality or safety position, or training. For physicians, at least 3 years of clinical experience is required, and for nurses, a master's degree, at least 5 years of clinical experience, and some experience in an administrative role are required. The program is provided at no direct cost to participants (fellows), or to their sponsoring institutions—one of the few such quality training programs. The Faculty and Advisory Panel selects candidates after a rigorous application review. CQFP's first 2 classes accepted physician candidates only. GNYHA and UHF conducted considerable outreach and education to regional hospital leadership in 2011. The program received significantly more applicants and was expanded that year to include nurse applicants—a trend that is expected to grow because of the interdisciplinary nature of quality improvement.

### Curriculum

The CQFP curriculum emphasizes quality improvement and patient safety. However, from its inception, the CQFP curriculum has evolved each year based on changes in health care delivery models, health policy and payer priorities, and shifts in consumer demand. The passage of the Affordable Care Act (ACA) and the state health policy environment have had a significant impact on the curriculum, which now includes performance-based programs developed as part of the ACA and within the region. Refinements to the curriculum also are made annually based on feedback from the fellows and faculty. The learning techniques that will be described are used throughout CQFP to maximize absorption of a significant amount of material for the duration of the 15-month program. The program curriculum employs the following core approaches:

1. *Off-site didactic and participatory training:* The program begins with 4 full-day training "retreat" sessions, with in-depth instruction on relevant

quality improvement and patient safety topics, through a combination of didactic content, group exercises, and role-play scenarios. The retreat sessions are held several weeks apart in an environment free of routine work distractions.

2. *Longitudinal and interactive learning:* Following the initial training retreats, interactive educational webinars and in-person sessions are held to continue instruction about quality leadership, quality improvement tools and techniques, and relevant and timely health care issues. Fellows complete 5 homework assignments during the program, which include individual and group work, designed to impart practical knowledge and experience on how quality improvement and patient safety programs work in health care settings.

3. *Applied project and mentorship:* Fellows are required to design and lead a quality improvement project—the capstone. The project is conducted with an interdisciplinary team of clinicians at the fellows' home institutions to advance organizational or departmental quality or patient safety goals. The capstone is intended to be the practical application of coursework and must be endorsed by the leadership of the fellow's organization. Each fellow is assigned to a faculty member who serves as a mentor to guide him or her through the capstone process, and to navigate potential organizational challenges. Mentors include the same individuals serving on the Faculty and Advisory Panel. They are chief quality officers, chief nursing officers, chief medical officers, and other professionals in senior leadership from across the greater New York region. For the first 5 years of the Program, the number of annual discrete mentors ranged from 10 to 14. Mentors oversee 1 to 2 capstone projects each. Mentors typically devote 2 to 5 hours per month to capstone project review and other program learning components, and they receive very modest honoraria, as detailed earlier.

4. A summary of the 15-month CQFP program curriculum is provided in Table 1.

### Fellows' Final Evaluation

Following program completion, fellows are asked to complete an online survey encompassing 32 questions, with subparts, in both open- and closed-ended formats. The survey addresses diverse areas including personal and program objectives, ratings of program curriculum components, self-assessments of quality and patient safety skills, experiences conducting capstones, and suggestions for program improvement. Among the self-assessment components, fellows rate their level of confidence in specific quality and safety skill areas in comparison to a self-assessment of these same areas prior to the program. These are Likert-type scale response questions (1 = *very unfavorable* to 4 = *very favorable*), and the items asked across all 5 program years are included in the present article to evaluate program effectiveness.

### Analyses

This article provides summary information on the CQFP program in 3 broad areas: (1) a qualitative description of program structure and fellow background; (2) a brief quantitative program evaluation, derived from fellows' survey responses; and (3) a description of fellows' capstone projects and pertinent promotions following program completion. Information is provided for the CQFP's first 5 years, beginning 2009 to 2013 and completed 2010 to 2014. To assess program impact, paired *t* tests were conducted to evaluate the significance of changes in fellows' self-assessment of quality and safety skills before and after program completion. Statistical significance was assessed at an α level of .05. Descriptive data on fellow specialty, capstone project type, and promotions are provided as simple summary statistics. Analyses were conducted using Microsoft Excel Office Professional Plus 2013 (Microsoft Corporation, Redmond, Washington). Prospective institutional review board review was not sought as this activity falls within an exempt category under the Code of Federal Regulations: research on normal educational practices and the effectiveness of instructional techniques.

## Results

During the first 5 years of the CQFP, 169 candidates applied to the program, and 89 (53%) clinicians were accepted. Of the 89 fellows during the period, 75 (84%) were physicians, and the remainder were nurses. The 89 fellows represented 45 hospitals or organizations affiliated with hospitals across the greater New York region. The annual number of fellows by year was as follows: 16 (in 2010), 15, 18, 20, and 20 (in 2014). Among the 5 program years, 87 of the 89 fellows (74 physicians and 13 nurses) completed the program. One participant did not complete the program because she left the greater New York region, and another participant could not fulfill the capstone project requirement largely because of lack of leadership support.

Seventy-four physician fellows represented multiple medical specialties as follows: 43% (n = 32) primary care, 15% (n = 11) emergency medicine, 19% (n = 14) medical specialties, 7% (n = 5) pediatric specialties, 4% (n = 3) obstetrics and gynecology, 1% (n = 1) psychiatry,

**Table 1.** The Clinical Quality Fellowship Program Curriculum, at a Glance.

| Curriculum Component | Format | Frequency, Days per Year | Total Hours | Topic Examples (Abbreviated) |
|---|---|---|---|---|
| Retreat/ educational sessions | Lectures, small group discussions, role play, and expert panels | 4 | 27 | • Data use in quality improvement<br>• Executing successful meetings<br>• Leadership, followership, and team dynamics<br>• Patient safety and human errors |
| Dinner meetings | Faculty facilitated group discussions | 4 | 8 | • Accountable care organizations<br>• Health information exchange<br>• Value-based purchasing |
| Homework assignments | Self-directed small group assignments | 5 | Self-directed | • Design a capstone project<br>• Attend a medical executive/board meeting<br>• Interview an organizational quality leader<br>• Profile a quality report card |
| Webinars | Focused topics and fellow project update presentations | 10 | 12 | • Tips for a successful capstone project<br>• Fellow capstone project updates (diverse topics) |
| Learning session | Clinical quality improvement case studies, panel discussions | 1 | 4 | • Case study on improving readmission rates<br>• Faculty panel on barriers to organizational improvement |
| Capstone project | Faculty mentored quality improvement project at home institution | 1 | Multiple hours over 15 months | Numerous (see Table 3) |
| Culminating event | Presentation of projects; fellow/faculty/alumni networking | 1 | 3 | Not applicable |

3% (n = 2) radiology, and 8% (n = 6) surgery and surgical specialties. Thirteen nurses of diverse administrative and clinical specialties completed the program during the 5-year period. Because of the program application requirements noted earlier, physicians were early to mid-career level, and nurses were typically advanced in their careers.

Seventy-five percent (n = 65) of fellows during the 5-year period of 2010 to 2014 completed final program evaluations. Program evaluations encompass both fellows' pre and post self-assessments of quality improvement and patient safety skills, and fellows' one-time ratings of numerous program aspects. Changes in fellows' self-assessments of their skills are presented here. Detailed ratings by fellows of more than 30 specific program components across 9 program content domains were very favorable. They are not presented here because of space limitations but are available from the corresponding author upon request.

Fellows' self-assessments of their confidence pertinent to specific quality improvement and patient safety knowledge and skills are summarized in Table 2. Fellows are asked to assess these areas 3 months before program initiation and within 2 to 3 months following program completion. Among the 65 fellows completing pre and post self-assessments from 2010 to 2014, data are provided for 60, as 5 fellows completed evaluations anonymously, precluding the ability to perform paired pre-post analyses. The 60 fellows who provided pre-post evaluations represent 69% of all fellows completing the CQFP during the 5-year period. There were significant improvements in all 5 self-assessment areas. The 2 areas with the greatest relative increase in perceived skill were quality improvement tools (49% increase) and quality improvement initiative implementation (42% increase).

A descriptive summary of the 87 (74 physicians and 13 nurses) fellow capstone projects completed during the 5-year period is summarized in Table 3. Projects were highly varied in nature and scope. They encompassed efforts to improve safety, effectiveness, efficiency, timeliness, and patient-centeredness. Three categories comprised 51% of all capstone projects: (1) improving efficiency in inpatient or emergency department settings; (2) improving transitional care among inpatient, primary care, or other settings; and (3) reducing hospital-acquired infections or improving sepsis care. Though time spent

**Table 2.** Overview of Aggregate Improvement as Reported on Self-Assessment Scores From 5 Classes Graduating, 2010 to 2014[a].

| Self-Assessment Topic: "We would like to assess your knowledge and skills. . . . On a scale of 1 to 4, please rate your knowledge of the topics below . . ." | Average Rating Before Program (N = 60) | Average Rating After Program (N = 60) | Percent Change From Before to After | Statistical Significance |
|---|---|---|---|---|
| "Use quality improvement tools" | 2.25 | 3.35 | +49% | *P* < .001 |
| "Measure quality/use quality data" | 2.27 | 3.15 | +39% | *P* < .001 |
| "Implement quality improvement initiatives" | 2.40 | 3.42 | +42% | *P* < .001 |
| "Use health information technology to improve quality and patient safety" | 2.40 | 2.98 | +24% | *P* < .001 |
| "Organize teams/teamwork"[b] | 3.05 | 3.68 | +21% | *P* < .001 |

[a]Scores show, for an aggregate of 5 classes graduating 2010 to 2014, the percent improvement in understanding reported by fellows both before and after participating in the Clinical Quality Fellowship Program. Ratings were calculated as the average responses on a Likert-type scale (1 = *very low*; 2 = *low*; 3 = *high*; and 4 = *very high*). Overall response rates for the self-assessment before and after comparisons over the 5 years were 69%. Percentages per class are as follows: Class 1 = 100% (n = 16); Class 2 = 100% (n = 15); Class 3 = 53% (n = 9); Class 4 = 53% (n = 10); Class 5 = 50% (n = 10).
[b]For the "Teamwork" Self-Assessment Topic, n = 59.

by fellows on capstone projects was not formally quantified as part of the present evaluation, fellows noted that the commitment was significant, encompassing several hours per month, both during work and off-hours.

Table 4 summarizes types of promotions among fellows who completed the program between 2010 and 2014, based on ongoing contact with fellows as of 2016. Among 87 fellows, GNYHA and UHF have lost contact with 12 (14%). Overall, 49 (56%) of the total 87 fellows received a promotional opportunity after they completed the CQFP: 42 were among the (74) physicians and 7 were among the (13) nurses, noting that nurses are newer to the CQFP cohort. Types of promotions varied. Most promotions were in the categories of chief medical officer or medical director (31%), or in a chief quality officer/quality improvement leadership role (30%).

## Discussion

The paucity of quality and patient safety training opportunities for clinicians is well established. The CQFP is a comprehensive, regionally based program for the training of physicians and nurses seeking development as quality improvement leaders. In addition to describing the structure of, and key features of the program, this article provides additional information on the program related to fellows' backgrounds, perceptions of improvement in quality and safety skills, types of improvement efforts conducted, and career paths. Fellows who completed the program in its first 5 years represented diverse specialties. The majority of physician fellows were from primary care–related specialties. Fellows' self-assessments of quality- and safety-related knowledge and skills improved significantly in all 5 program areas evaluated.

The greatest relative improvements were in the areas of quality improvement tools and quality improvement implementation techniques. These findings may illustrate that these areas may be of greatest priority for similar programs to focus on.

The CQFP program led to the implementation of 87 capstone improvement projects during the 5-year period evaluated. Improvement projects spanned a broad range of areas representing the IOM improvement domains of safety, effectiveness, timeliness, efficiency, and patient-centeredness. The most common areas for improvement efforts were in the arena of efficiency, transitional care, and hospital infection. These findings suggest that the variety of curricular content served to generate a correspondingly varied group of improvement efforts. A review of the clinical settings of the various projects also supports that the improvement focus of hospital quality leaders is shifting from more traditional patient safety efforts to those that involve quality of care and care coordination beyond the hospital.

Among the cohort of 87 fellows, the majority (56%) reported receiving a promotion following program completion. The finding that not all promotions were specific to quality leadership roles supports the notion that development of quality and safety skills is now an important conduit to health care management career progression in general.

Information presented in this report had important limitations. First, self-appraisals of quality improvement skills were available for 69% of fellows, excluding potentially unfavorable responses from nonresponders. Second, the curriculum has evolved over time in response to participant feedback. As such, the ratings of the program were of dynamic underlying content. Third, postprogram

**Table 3.** Categories of 87 Capstone Quality Improvement Initiatives From 5 Classes Graduating 2010 to 2014, by Institute of Medicine Improvement Aim.

| General Capstone Category | Percent (n) in Category | Capstone Example |
|---|---|---|
| Safety | | |
| Reducing hospital-acquired infections or improving sepsis care | 13% (11) | Reduce infections in surgical patients by improving the timeliness of antibiotic therapy |
| Reducing patient falls | 3% (3) | Implement an evidence-based risk assessment tool to reduce patient falls |
| Improving anticoagulation to prevent venous thromboembolism | 3% (3) | Establish an anticoagulation clinic to reduce harm in an outpatient setting |
| Reducing errors through improved event reporting | 3% (3) | Improve the process of reporting events and medication errors among house staff |
| Timeliness | | |
| Improving timeliness in inpatient or emergency department settings | 22% (19) | Improve emergency department door-to-provider and admission decision-to-floor times |
| Effectiveness | | |
| Improving transitions between inpatient, primary care, or other settings; reducing readmissions | 16% (14) | Improve transitions between hospital and community-based office to reduce congestive heart failure readmissions |
| Redesigning and transforming outpatient clinic practices | 7% (6) | Expedite the medication refill process for patients in an internal medicine clinic |
| Improving and better managing chronic diseases in inpatient or outpatient settings | 7% (6) | *Inpatient*: implement a process to coordinate meals and insulin administration to improve glucose management in diabetics |
| | | *Outpatient*: improve blood pressure control |
| Standardizing perinatal care | 5% (4) | Implement a protocol for scheduling obstetric procedures to reduce scheduled deliveries performed before 39 weeks gestation without medical indication |
| Reducing variation through standardizing palliative and end-of-life care | 3% (3) | Implement a palliative care "bundle" in caring for patients in the ICU setting |
| Reducing variation through standardizing behavioral health services | 2% (2) | Develop a process to identify early warning signs of violent behavior to reduce assaults and use of intramuscular injections |
| Efficiency | | |
| Improving communications at handoffs between departments | 8% (7) | Develop a standardized process to improve communication between surgical and inpatient pediatric teams |
| Patient-centeredness | | |
| Improving patient and family experience and satisfaction | 7% (6) | Improve patient and family satisfaction with pain management in a pediatric critical care setting |

Abbreviation: ICU, intensive care unit.

evaluations were completed shortly following program completion. This may bias toward more favorable results, as longer term follow-up was not obtained. Fourth, the effectiveness of the fellows' capstone projects was not assessed, and therefore the effectiveness or results of the fellows' improvement work cannot be demonstrated. Fifth, though time spent on capstone projects was noted by fellows to be significant, it was not formally quantified. Finally, as there was no comparison group of non-trainees, any career promotions received by fellows cannot be conclusively attributed to the CQFP itself.

Overall, the descriptive information and results reported support the effectiveness of the CQFP's approach in building quality improvement and patient safety skills among diverse clinical personnel. Accordingly, the CQFP may possess some potentially distinguishing and generalizable features worthy of adoption in similar training programs being developed. These include a dedicated group of faculty who remain with participants longitudinally during the 15-month-long program, and a program that is one of the few delivered at no direct cost to fellows. In addition to national topics in the field of safety and

**Table 4.** Types of Promotions Earned by Graduates From Classes 2010 to 2014, Among 49 Fellows Who Received a Promotion[a].

| Role | Percent (n) in Role |
|---|---|
| Chairman | 4% (2) |
| Chief of Service | 4% (2) |
| Chief Medical Information Officer[b] | 4% (2) |
| Chief Medical Officer or Medical Director[b] | 31% (15) |
| Chief Nursing Officer | 2% (1) |
| Chief Quality Officer or Associate Chief Quality Officer | 12% (6) |
| Quality Improvement Leadership (not Chief Quality Officer) | 18% (9) |
| Director of a Service[c] | 16% (8) |
| Quality Improvement role (not leadership) | 8% (4) |

[a]A total of 49 (56%) of the 87 Clinical Quality Fellowship Program (CQFP) fellows from the first 5 classes obtained a promotional opportunity. The Greater New York Hospital Association and the United Hospital Fund have lost touch with 12 (14%) of the 87 CQFP fellows from the first 5 classes.
[b]One of these clinicians within each of these categories is no longer in this region.
[c]Two of these clinicians within this category are no longer in this region.

quality, the program's regional focus allows for in-depth discussion of state health care policy and regulatory issues, which are of collective and immediate importance to faculty and fellows. Finally, the inclusion of a variety of learning methods—including didactic content, independent reading and organizational homework, small group exercises, topical conference calls and discussions, and the implementation of capstone projects—contribute to the effectiveness of the program.

The CQFP program actively continues. In addition to curriculum evolution related to new federal and state policy initiatives, regional faculty composition is being expanded. It is anticipated that interest in the program will continue to grow, as it has been associated with career progression. CQFP fellow alumni have expressed interest in becoming faculty or mentors for future classes. An annual "culminating dinner" for each class brings together graduating and prior fellows. A network of fellows is developing, all of whom receive UHF and GNYHA mailings on issues of health care policy and quality, and for whom a more formal social media networking vehicle is being evaluated. GNYHA and UHF also are exploring the option of connecting the CQFP with an academic institution to allow fellows interested in obtaining advanced degrees to receive credits for completing the CQFP.

CQFP is an effective and potentially generalizable program that provides necessary and dynamic knowledge, along with practical tools and techniques, for participants to become leaders in quality improvement and patient safety.

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