

# Educating Health Professionals to Improve Quality of Care

*Current Reality, Barriers, and Related  
Actions*

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## Introduction

In March 2001, the IOM released *Crossing the Quality Chasm*. The report emphasized that health care today harms too frequently and routinely fails to deliver its potential benefits. In short, “between the health care we have and the care we could have lies not just a gap, but a chasm.” The report shows that during the last decade alone, more than 70 publications in leading peer-reviewed journals have documented serious quality shortcomings (2001).

There are a number of changes affecting health care delivery, including a shift from acute to chronic care, the need to integrate a continually expanding evidence base and technological innovations, more clinical practice occurring in teams, complex delivery arrangements, and changing patient–clinician relationships (2001).

In response to the changes underway, the health care workforce needs to be adequately prepared. Responding to the changing needs of the populations and making use of new knowledge requires that health professionals develop new skills or assume new roles.

At the same time, there is a need to modify the ways in which health professionals are accredited and regulated. Scope-of-practice acts and other workforce regulations need to allow for innovation in the use of all types of clinicians to meet patient needs in the most effective and efficient way possible. It also requires that training and ongoing licensure and certification reflect the need for lifelong learning and evaluation of competencies (2001).

The *Chasm* report calls for a major overhaul of the health care system. In the report’s chapter *Preparing the Workforce*, there is an outline of the types of new or enhanced skills required by health professionals to function in this changing environment. These skills can be grouped under five main topical headings: patient-centered care, evidence-based practice, informatics, interdisciplinary teams, and quality improvement. The following outlines some of the basic skills required in each topic area (2001).

- ?? **Informatics** - Communicate, manage knowledge, and support decision making using information technology.
- ?? **Interdisciplinary Teams** - Cooperate, coordinate, communicate, and standardize care in teams to make care more patient-centered, continuous, and reliable.
- ?? **Evidence-Based Practice** - Integrate best research with clinical expertise and patient values.
- ?? **Patient-Centered Care** - Inform and involve patients and their families in medical decision making and self management; coordinate and integrate care; provide physical comfort and emotional support; understand patients’ concepts of illness and their cultural beliefs; understand and apply principles of disease prevention and behavioral change appropriate for diverse populations.
- ?? **Quality Improvement** - Continually understand and measure quality of care in terms of structure, process, and outcomes; design and test interventions to change processes and systems of care with the objective of improving quality; identify errors and hazards in care; and understand and implement basic safety design principles, such as standardization and simplification.

As the *Chasm* report outlined, there have been many prior examinations of clinical education, particularly medical education. The striking feature of these reform efforts is their similarity in the problems identified and proposed solutions (Christakis, 1995) (Enarson and Burg, 1992). As the *Chasm* report stated with respect to medical education:

Christakis (1995) reviewed 19 reports and found eight objectives of reform among them: serve changing public interest, address physician workforce needs, cope with burgeoning knowledge, foster generalism and decrease fragmentation, apply new educational

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methods, address the changing nature of illness, address the changing nature of practice, and improve the quality and standards of education.

Despite the changes that have been made, the fundamental approach to clinical education has not changed since 1910 (2001).

The IOM Health Professions Summit hopes to build upon earlier reform efforts by bringing together a multidisciplinary group of leaders to develop concrete strategies and action steps that they will take over the next 1-3 years. It is hoped that the combination of dramatic changes underway and anticipated in the health system, as well as the breath and scope of quality problems that exist will serve to motivate these leaders to move beyond professional and organizational turf issues and together create meaningful and realistic next steps for reform of health professions education. This summit starts with participants working on one of the five topic areas outlined above.

The following explores the existing evidence-base related to the education of health professionals in quality improvement, the educational and regulatory barriers to integrating this approach in the academic and continuing education settings, proposed actions for incorporating quality improvement into health professions education, and model schools or educational programs offering curricula in this area. Embedded in this paper are questions that will serve to initiate the development of strategies for reform of health professions education.

## Why Educate Health Professionals To Improve Quality?

There is abundant evidence that serious and extensive quality problems exist throughout the U.S. health care system, resulting in harm to many Americans (Institute of Medicine, 1988). Poorly designed care processes or systems have led to unnecessary duplication of services, long waiting times and delays, and even errors or harm to patients (Chassin, 1998) (Schuster et al., 1998). The opportunity costs of poor quality include years of life lost or spent with major or minor impairments, pain and suffering, disability costs, and lost productivity (Institute of Medicine, 1988).

With the increasing attempts to measure outcomes of care in recent years, there has been more awareness of a “quality gap,” i.e., the lack of alignment between the actual outcomes of care and what is considered to be ideal care. From a patient’s perspective, the quality problems outlined above can be divided into issues of overuse, underuse, and misuse. *Overused* services include performing wasteful procedures such as over prescription of antibiotics. *Underuse* includes a failure to provide an indicated diagnostic test or a lifesaving surgical procedure. *Misuse* includes missed or delayed diagnoses, misinterpreted lab results, and providing inappropriate medical and surgical procedures that compromise patient safety and result in avoidable errors (Chassin, 1998) (Schuster et al., 1998) (2001) (Rabinowitz et al., 2001; Rabinowitz et al., 2001).

Reports of poor quality—coupled with consumer demand for better quality of health care—have altered the economic environment of health care: organizations increasingly are competing over the quality of patient outcomes and the services they provide (Buerhaus and Norman, 2001).

In such an environment, health organizations must embrace a culture of continuous measurement and quality improvement. Such a culture shift requires that health professionals be trained to minimize waste, decrease error, and ultimately improve quality of care. Educational experiences should be provided whereby health professionals define best practices by reviewing currently available information and literature; compare these with current practice to identify gaps in performance; develop policies, procedures, and standards

to organize care around the best practices; and then continuously monitor these with the aim of improving care (2001).

## What is Quality Improvement?

The Institute of Medicine has defined quality as the “degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Institute of Medicine, 1990).” To deliver quality care, health professionals must be able to be clear about what they are trying to accomplish, how they will know that a change has led to improvement, and what change they can make that will result in an improvement (Berwick, 1996). Quality can be evaluated based on structure, process, and outcomes (Donabedian, 1980)— *structure* being inputs into the system such as patients, staff, and environments; *process* being the interactions between clinicians and patients, and *outcomes* being evidence about changes in patients’ health status (Schuster et al., 1998).

To improve quality, health care organizations have chosen to adopt methods and techniques that have originated from various industrial movements such as total quality management (TQM) and continuous quality improvement (CQI). In health care the terms employed to describe the movement of improving quality differ and among these terms, there is a lack of standardized definitions, but the most common term found in the literature is *quality improvement*. The basic skills needed in this approach are as follows:

- ?? Assess current practices and compare them to relevant better practices elsewhere as a means of identifying opportunities for improvement (AAMC, 2001).
- ?? Design and test interventions to change the process of care with the objective of improving quality (Berwick et al., 1992), (Schuster et al., 1998), (Halpern et al., 2001).
- ?? Continually understand and measure quality of care in terms of structure, process, and outcomes (Berwick et al., 1992) (Institute of Medicine, 2001), including the ability to measure patient satisfaction (Halpern et al., 2001).
- ?? Identify errors and hazards in care; understand and implement basic safety design principles, such as standardization and simplification (Institute of Medicine, 2001).
- ?? Both act as an effective member of an interdisciplinary team and improve the quality of one’s own performance through self-assessment (Headrick et al., 1998), (Halpern et al., 2001)

## State of Education in Quality Improvement

Peter Beurhaus and Linda Norman (Buerhaus and Norman, 2001) recently examined the state of quality improvement in medical education and say:

In medical education, beginning in 2001, the (ACGME) specifies that residents must be able to analyze practice experiences and perform practice-based improvement activities using systematic methods; know how to partner with health care managers and providers to assess, coordinate, and improve health care; and know how these activities can affect system performance. The ACGME also requires that residents must be able to [investigate and evaluate] their own patient care appraisal and assimilation of scientific evidence, and improvements in their patient care.

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Beurhaus and Norman (2001) also examined the state of quality improvement in nursing education and offer:

In nursing education, content in quality improvement is most frequently incorporated in lectures within management courses and rarely included in clinical courses. Moreover, most nursing education programs have not required students to implement quality improvement initiatives in the clinical area. The Association of American Colleges of Nursing (AACN) report, *Essentials of Baccalaureate Education*, advocates that students be able to incorporate principles of quality management into the patient's plan of care, and nursing graduates should be able to use appropriate evaluation methods to analyze the quality of nursing care. Although a positive step, the recommendations do not require students to demonstrate that they use quality improvement methods to improve their own practice or to improve the health of their [patients].

The AACN's *Essentials of Master's Education* standards include the requirement that graduates be able to use new knowledge to analyze the outcomes of nursing interventions, initiate change, and improve practice. Graduates also are expected to be able to affect change within the health care system and make appropriate changes to improve the system, the delivery of health care, and health care outcomes. While these standards are similar to those now required of medical residents, they differ in their level of accountability for demonstrating the implementation of quality improvement in clinical care areas. Specifically, the AACN standards do not provide a mechanism to ensure that each student demonstrates an ability to improve the health of his or her client population, which is required by the ACGME.

In pharmacy, the American Council on Pharmaceutical Education (ACPE) standards (American Council on Pharmaceutical Education, 1997) include that students must design, implement, monitor, evaluate, and modify or recommend modifications in drug therapy to “insure effective, safe, and economical patient care” and identify, assess, and solve medication-related problems. They also must “provide a clinical judgment as to the continuing effectiveness of individualized therapeutic plans and intended therapeutic outcomes” and evaluate and document interventions and pharmaceutical care outcomes.

The extent to which allied health professionals are prepared in this area was not clear at the time of this writing.

Though some requirements, such as those put forth by the ACGME, put a much greater emphasis on quality improvement in education, current documented evidence of education activities in quality improvement in the health professions is rare (Headrick et al., 1998) (Mosher and Colton, 2001) (Henley, 2002). There is a consensus that there is a shortage of quality practitioners who can understand and implement safe practice innovations in their clinical settings. There is also a shortage of teachers and researchers who can begin to deeply understand how safety is maintained and pass on those insights and innovations (Croskerry et al., 2000) (Institute of Medicine, 2000).

Quality improvement is usually discussed in terms of teams improving processes or systems, but there also is another aspect of quality improvement, which is more narrowly focused on the individual clinician—continuous self-assessment. How health professionals are or should be educated to reflect on their own performance strengths and weaknesses in order to identify learning needs, conduct a review of their performance, and reinforce new skills or behaviors in order to improve performance is unclear.

## **Barriers to Achieving this Vision**

Though the health professions have advocated incorporating quality improvement in the academic preparation of health professionals, there persist several educational, practice, and regulatory barriers to implementing this vision.

### **Skepticism in Education Community**

There are few available syntheses of evidence on the effect of quality improvement in improving patient outcomes (Blumenthal and Epstein, 1996). Of those few studies that do exist, most report favorable results (Shortell et al., 1998), but there has been a lack of widespread dissemination of such experiences. Thus, there remains skepticism about how learning or practicing quality improvement could improve students' performance and patient outcomes. Such skepticism is not helped by the commercialization in the health care marketplace of for-profit guidelines, critical paths, computerized medical-information systems, and other improvement methods (Blumenthal and Epstein, 1996), and the persistent view that the use of such tools is "cookbook medicine (Brennan, 1998)."

### **Unsupportive Culture**

When faced with gaps in quality or medical errors, clinicians often blame themselves, each other, or the patient, but rarely the process or system (Lester and Titter, 2001). This persists in education, where errors are seldom discussed and are assumed to result from only personal inadequacy and failure. When errors occur, they are not necessarily incorporated into the learning process to allow trainees to develop strategies to avoid these same mistakes in the future, thus inhibiting clinicians from exploring alternative solutions, risk-taking, and problem solving (Gully et al., 2002).

In many educational settings the institutional norms are such that authoritarianism, and boundaries of practice are strictly enforced. In such environments, students in the health professions have little authority to redesign processes or systems of which they will only be part of for, on average, only a couple of years (Headrick et al., 1998) (Weeks et al., 2000). In the practice setting, nurses and allied health professionals have little authority to initiate quality improvement changes. It takes a shift in culture to support a process that allows junior physicians, nurses, pharmacists, and allied health professionals to identify and solve problems with quality of care (Weingart, 1996).

### **Low Resources and Incompatible Structures**

Even if institutions are interested in incorporating quality improvement principles throughout the educational experience, the data, time, and personnel required is demanding. The emphasis on data collection poses a challenge for some institutions, as the robust information systems required for certain data collection efforts often do not exist in such settings. Busy professionals also have little time to reflect on their practices and collect data systematically over time to enhance their understanding of the processes and outcomes of care (Nelson et al., 1998). Most process improvement or redesign efforts require interdisciplinary teams from the onset—if students are not trained in teams, then this is difficult to organize.

### **Lack of Prepared or Rewarded Faculty**

In both academic settings and continuing education programs, few educators are trained in quality improvement techniques. In many academic and practice settings, faculty roles and rewards do not support team efforts (Headrick et al., 1996). The infringement on traditional classroom-based lectures that faculty prefer to deliver to a shift to project-oriented learning

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that is required for quality improvement activities also is a source of tension (Schillinger et al., 2000).

### **Regulation and Accreditation Reluctance**

As earlier reported by Beurhaus and Norman (2001), some strides have been made in accreditation requirements in quality improvement for academic institutions, particularly in medicine. However, in their desire to assure the public of educational program quality, there is a reluctance on the part of accreditation bodies to take risks or make shifts in orientation until extensive validation of new approaches is done (Gelmon, 1996). As the evidence in the education of health professionals in quality improvement is limited, regulators will likely remain cautious.

Many accrediting bodies operate as inspectors, though there is no research justifying that such inspection is correlated with competence, quality, or even improved outcomes (Gelmon, 1996) (Brennan, 1998). If academic institutions wanted to engage in quality improvement, they would have to acknowledge flaws in systems and processes. In the current regulatory and legal system, exposing and acknowledging flaws and errors in an effort to improve them puts one at high risk for liability (Croskerry et al., 2000).

It is unclear at the time of this writing of the extent to which continuing educational requirements in quality improvement have been made by credentialing or certification bodies for practicing professionals.

### **Proposed Actions to Overcome these Barriers**

In the experiences to date in training and educating academic students and practicing professionals in methods for improving quality, educators and researchers have learned the following lessons.

#### **Reform Teaching Methods**

Teaching methods should focus on active experiential learning such as learner participation in meaningful improvement projects. Headrick and colleagues (Headrick et al., 1998) advocate that didactic learning should be planned to support and reinforce experiential learning, providing learners with concepts and skills when they can apply them. Weingart (Weingart, 1996) also recommends the reinforcement of familiar aspects of clinical education so that process improvement activities do not seem incongruous. This would entail problem solving that is “case based, intellectually rigorous, data intensive, and grounded in the scholarly literature.” Researchers (Headrick et al., 1996) also recommend that structured reflective practice can help learners examine and improve their skills and attitudes, especially with respect to teamwork

#### **Develop and Disseminate Curricula**

There also is a recommendation to include a focus in current curricula on the nature of error and the limitations of human performance (Helmreich, 2000). Error-avoidance training focuses on the avoidance of errors, and error-encouragement training focuses the learner on developing strategies for dealing with errors. Such programs promote tolerance and acceptance of errors in an effort to deal with them head on. Initial evidence has demonstrated the value of error-encouragement over error-avoidance training (Gully et al., 2002).

With regards to dissemination, recommendations have been made to develop and feature teaching cases that focus on quality, medical error, and mapping processes as part of a Web-based clearinghouse. Also, an anthology of published material on quality and quality

education needs to be developed and made available to the health professions education community at-large (Gully et al., 2002).

### **Train in Teams**

Most process improvement, measurement, or design activities necessitate interdisciplinary team (Weingart, 1996). In most cases, clinicians cannot function on their own independent of a system. Patients with chronic conditions, in critical acute care, in geriatrics, and in care at the end of life necessitate smooth team functioning because of the complexity of their needs (2001). Health professionals must be educated in a “systems thinking” environment where they think of themselves as part of larger cross-functional teams dedicated to meeting the needs of patients.

### **Modify Culture**

For quality improvement to be truly integrated into the professions, it is necessary to communicate this approach to organizational problem solving as a core competence (Weingart, 1996). This also includes introducing the definition and frequency of medical error as a topic of discussion and providing clear, related performance standards, as well as adopting a non-punitive approach to error (but not to violations of safety procedures) (Pilpel et al., 1998).

Weingart (Weingart, 1996) acknowledges the grueling pace of clinical training and that innovators must recognize scarce time and abundance of competing clinical care and educational activities. Integrating quality improvement into the fabric of clinician training will require ingenuity. He suggests lunchtime seminars on quality of care issues, 15-minute progress reports at sign-out rounds, and rewarding teams who improve quality.

### **Develop Faculty**

Faculty development may be required, especially with respect to competence in certain data collection methods. The Association of American Medical Colleges (AAMC) advocates that there be a concurrent effort to train “faculty in doing their own critical analysis along quality of care dimensions, as well as developing faculty in training students about quality of care issues (AAMC, 2001).” The AAMC also advocates that “faculty need to experience first hand quality evidence issues, such as requiring performance measures for faculty practice and evaluating faculty based on their performance.” Faculty development seminars are crucial for teaching faculty to offer educational models on quality of care integration, or “off-the-shelf” teaching cases. Researchers (Headrick et al., 1998) also suggest that an appropriate context for learning is created when faculty are working to continually improve the educational process itself.

## **Innovative Educational Programs in Quality Improvement**

The following selected educational programs were identified in the literature as having had an evaluated or long-term program focused on incorporating quality improvement tools and techniques in the continuum of health professions education. This is not an exhaustive list — it is largely made up of programs that took the time to document, evaluate, and publish their efforts.

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*Dartmouth Medical School.* The school offers two quality improvement courses, one basic and one advanced. Both include an overview of systems theory; a review of a quality-improvement case; a theoretical walk-through of an improvement project (using such tools as flow charts and Pareto diagrams); and the presentation of examples of successful improvement projects. This model emphasizes the plan-do-study-act (PDSA) cycle and ends with completion of the cycle (Weeks et al., 2000).

*Chippewa Valley Technical College, Eau Claire, Wis.* Nursing students participated in a health care organization's continuous quality improvement project targeting patient safety. Students were actively involved in chart review and became acutely aware of safety issues related to medication administration, order transcription and implementation, and documentation (Taylor, 2001).

*University of Illinois College of Medicine, Department of Family and Community Medicine.* A pilot project to develop and implement a curriculum on quality improvement into a family medicine clerkship was conducted in the 1999-2000 academic year. The curriculum involved students working alone and in small groups. After an orientation to quality improvement principles, students performed a series of chart audits of diabetes care. They then met with coordinators from a local health system to review their results. Improvement recommendations were developed and presented to the clinic director. A student evaluation included completion of the module, assessment of student knowledge and opinion, and interviews with the coordinators (Henley, 2002).

*University of Connecticut, School of Medicine.* The school offers students formal training in quality improvement, medical error prevention, and record abstraction, and provides information about national guidelines of care. Students then perform chart audits on a random sample of patients from their practice with a chosen clinical condition. After these baseline performance data are entered and analyzed by research assistants, a quality report, including peer, aggregate, and benchmark data, is given to each student and his or her preceptor. The student and the preceptor then choose and implement one improvement intervention in the practice, e.g., a disease-tracking form or a consultation-review form. After six to twelve months, the same students (now in their third year) repeat their audits, collecting post-intervention data to assess the effect of the interventions. Details of this process may be found at <http://www.commed.uhc.edu/preceptor/choice.htm> (Larson, 1995) (AAMC, 2001).

*University of Pittsburgh Medical Center Health System (UPMCHS), School of Pharmacy.* Implemented a drug-use and disease-state management (DUDSM) program at a teaching hospital associated with a large nonprofit health care system. Through a re-engineering process, resources within the pharmacy department were identified that could be devoted to the DUDSM program, including the use of clinical pharmacy specialists, promotion of staff pharmacists into the DUDSM program, a pharmacy technician, and information systems support. A strength of the program is its systematic approach for developing and implementing new initiatives, as well as monitoring compliance with all initiatives on an ongoing basis. Seventy-five initiatives have been implemented, ranging from simple dose-optimization strategies for specific drugs to complicated practice guidelines for managing specific disease states. Improved patient outcomes have been documented, including reduced length of stay, post surgical wound infection, adverse drug reactions, and medication errors. Documented cost savings exceeded \$4 million annually for fiscal years 1996-97 through 1999-2000. Overall compliance with DUDSM initiatives exceeds 80%, and physician service profiling has been initiated to monitor variant prescribing (Skledar and Hess, 2000).

*University of Miami, School of Medicine.* Requires all second-year students to perform a quality assessment (QA) of a primary care practice. Students use an assessment instrument derived from HEDIS (Health Plan Employer Data and Information Set), and other NCQA (National Committee for Quality Assurance) requirements, and JCAHO (Joint Commission on Accreditation of Health care Organizations), and AMAP (American Medical Accreditation Program) criteria. Upon completion of the QA project, students discuss their results with faculty (AAMC, 2001).

*Medical University of South Carolina, Case Western Reserve University, Cleveland University, Allegheny University of the Health Sciences, LaSalle University, Duquesne University, Carnegie Mellon University, and George Washington University* – All participated in the Institute for Health care Improvement's interdisciplinary collaborative in continuous improvement, whereby interdisciplinary learning in continuous improvement was carried out (Headrick et al., 1996).

## Proposed Questions for the Summit

On day one of the summit, participants will work in small, interdisciplinary groups in drafting strategies around one of five topics—evidence-based practice, quality improvement, informatics, interdisciplinary teams, patient-centered care. Based on the review of the literature, the IOM committee members have suggested that the following questions are the most important to be addressed for the quality improvement group. If participants think there are other important questions around this topic to address, they will have an opportunity to refine or add to this list of questions before the group work begins.

Please consider the following:

- ?? How can learning experiences be designed so that clinicians in the continuum of health professions education are able to design and measure quality of care in terms of structure, process, and outcomes?
- ?? What strategies could be used to address the shortage of faculty trained in quality improvement?

- ?? How can academic and continuing learning experiences be designed so that health professional are trained to implement safety principles and reduce errors?
- ?? What strategies can be used to promote a greater understanding of improving quality as a required core value of all of the health professions?
- ?? What strategies can be use to expand accreditation and regulation approaches beyond disciplinary methods to those that support clinician quality improvement?

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