



Quality Matters

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A BIMONTHLY REPORT ON INNOVATIONS IN HEALTH CARE QUALITY IMPROVEMENT

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Welcome to *Quality Matters*, a bimonthly roundup of news and opinion on quality and efficiency, information technology, performance improvement initiatives, and policy innovations.

In Focus: Quality Improvement Training for Medical Students and Residents

By Martha Hostetter

Summary: A decade ago new competencies for graduate medical education called for residents to learn to how work within larger health care systems and to measure and establish processes to continually improve their performance. Since then, several innovative programs on both the undergraduate and graduate levels have begun to teach health care quality improvement through didactic instruction and hands-on experiences, and a few have shown that physicians in training are able to improve care processes. Still, more work needs to be done to clarify the goals of quality improvement training, evaluate its effectiveness, and make measurement and improvement part of professional behavior.

Over the last decade, several high-profile reports have called for reform of medical education.¹ From these reports, a consensus has emerged that it's not enough for medical students, residents, and other trainee health care professionals to be taught the biomedical sciences and fundamentals of evidence-based care; clinicians also need to know how to deploy their knowledge in the messy, real world of hospitals and clinics. This means knowing how to work collaboratively with other health professionals, communicate effectively with patients, navigate a complex and changing care system, manage scarce resources and reduce waste, and be accountable for their performance. It also means identifying and understanding their panel of patients—for example to ascertain the prevalence of diabetes—so they can effectively manage care. Just as crucial, they also must know how to measure and improve the quality of their care.

Recognizing the importance of these goals, the Accreditation Council for Graduate Medical Education (ACGME), which accredits medical residency programs, in 1999 adopted **six competencies** for graduate medical education, including two that were new to most educators. The first, which falls under the rubric of “practice-based learning and improvement,” requires residents to demonstrate the ability to investigate and

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evaluate their care of patients, appraise and assimilate scientific evidence, and continuously improve patient care. The second, a systems-based practice competency, requires residents to demonstrate their awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal care.²

While acknowledging the challenges of addressing these new requirements, many medical educators also recognized their value. As they saw it, medical education programs were not preparing students to cope with the systems-based problems they would encounter. “Knowing what to do and wanting to do the right thing were necessary but not sufficient,” says Linda Headrick, M.D., M.S., senior associate dean for education at the University of Missouri–Columbia School of Medicine. Headrick became convinced of the need for medical education reform back in 1990, after she took part in a study of ways to teach residents how to screen for lipid disorders. In the study, residents received three different, progressively more intensive levels of guidance: some heard a standard lecture only; some received this education, as well as generic reminders of the lipid screening guidelines on each eligible patients’ chart; and a third group received the education and timely information about what to do for each patient, based on care guidelines. Surprisingly, all residents performed about the same: those who received detailed feedback about their patients were no more likely to screen for lipids when recommended than other residents, and there was no correlation between how well residents performed on an exam testing knowledge of lipid disorders and what they did for their patients.³

A resident survey suggested the real problem: there were many barriers to lipid screening, including time constraints and confusion over the test ordering form. “This experience led me to the need for quality improvement training—to create systems that help people deliver the right care at the right time,” Headrick said.

This year’s 100th anniversary of the Flexner report—which called for a scientific approach to medical education and spurred changes in teaching institutions throughout the U.S.—is prompting renewed scrutiny of medical education and demands for more and faster reform.⁴ In this issue of *Quality Matters*, we look at how

far we have come in integrating quality improvement into medical training, and what more needs to happen to ensure physicians are prepared to provide safer, more effective, higher-quality care.⁵

Early Attempts at Change

Residency programs across the nation have responded to the new graduate medical education competencies by hiring additional teaching staff or retraining faculty; adding elective or required courses on patient safety, quality improvement, health care systems, and related topics; and developing hands-on projects to give residents opportunities to learn how to measure and improve care processes. Still, programs have struggled to incorporate the new competencies into crowded curricula and clinical schedules. Many have developed short and/or elective courses that fail to provide the practical, longitudinal experiences required for improvement cycles. And some educators struggle to convince residents of the value of quality improvement training.

For their part, medical schools have been slower than residency programs to develop quality improvement curricula—perhaps because the Liaison Committee on Medical Education, which accredits undergraduate medical schools, requires medical schools to provide information on how quality improvement and patient safety are incorporated into curricula, but does not provide official standards for accreditation. And because medical students have short rotations, it can be difficult for schools to create meaningful opportunities for their students to take part in clinical improvement projects. Still, in a recent survey, the majority of medical schools reported that quality improvement was part of their required curricula.⁶ M. Brownell Anderson, M.Ed., senior director of educational affairs at the Association of American Medical Colleges, says that medical schools do so by incorporating learning goals into existing courses and clerkships, rather than teaching discrete courses on improvement techniques.

Innovative Programs

Some innovative programs—on the undergraduate and postgraduate levels—are attempting to bridge the gap between medical education and practice by providing meaningful opportunities for their students to engage in performance improvement.

One of the most comprehensive is the Leadership Preventive Medicine Residency, based at [Dartmouth-Hitchcock Medical Center](#). In this two-year program, residents from multiple clinical specialties receive didactic training in data management, leadership, and improvement skills and also spend time in a public health agency. In addition, says Tina Foster, M.D., M.P.H., its program director, faculty coaches work closely with residents to develop and carry out long-term improvement projects. “[Residents] spend the first year of training in a series of structured rotations, which help them to identify a patient population of interest, explore that population’s current processes of care and outcomes, identify gaps in care and explore change ideas, and propose a practicum,” she says. “The second year is spent in leading an inter-professional group in improving care for that population.” One recent practicum resulted in an 80 percent reduction in the time that lapsed between ordering antibiotics on an inpatient medicine unit and administering them. In another, a resident developed a tool for documenting and improving the discussion around advance directives among frail elders; the tool has since been adopted by all primary care practices in one community. A third resident’s practicum resulted in an eightfold increase in compliance with hand hygiene in a low-performing unit, with continued progress after the practicum ended.

[Beth Israel Deaconess Medical Center](#), in Boston, launched a quality improvement elective for its medical residents in 2000, in conjunction with the Stoneman Center for Quality Improvement, the hospital’s quality improvement research institution.⁷ In 2006, the course became mandatory. During the three-week rotation, residents investigate a recent medical error or complaint, perform a root-cause analysis, and propose solutions. In addition, they choose from a predetermined list and work through the Plan-Do-Study-Act cycle to try to improve a particular care process. Anjala Tess, M.D., associate program director for the residency program, cites several processes that were changed as a result of this work, including a new heparin dosing regimen and systems for patient handoffs and discharge. Other clinicians have come to view the residents as a resource, and often suggest improvement projects for them to pursue. Given that quality improvement is a team sport, many programs seek to build collaborations among trainee physicians, nurses, pharmacists, and other

health professionals. In work supported by the Josiah Macy, Jr. Foundation and the Institute for Healthcare Improvement, the [University of Missouri School of Medicine in Columbia](#) partnered with the School of Nursing to have undergraduate medical and nursing students work together to reduce falls among hospitalized patients. The students do risk assessments, provide patient education, and make recommendations on how to decrease the number of falls. In addition, first-year medical students take a four-week course with nursing, respiratory therapy, pharmacy, and health management students in which they analyze an adverse event and propose improvements. [Johns Hopkins University](#) offers a program in which residents partner with nurses on a quality improvement project during a three-month course.

Some schools seek to involve students in the community, thereby helping them understand the broader health care system and the social and environmental factors that play a role in health. At [Hofstra North Shore–L.I.J. School of Medicine](#), which will begin its inaugural academic year in 2011, first-year medical students will serve as emergency medical technicians as a way to give them early experience with patient care and in collaborating with other health professionals. At the [Herbert Wertheim College of Medicine at Florida International University](#), medical students make home visits in care teams. In a trial program, medical students at the [University of Connecticut School of Medicine](#) conducted improvement projects at 24 primary care practices that resulted in improved care processes and better disease control for diabetes patients.⁸

One of the longest-running programs, the [V.A. National Quality Scholars Fellowship Program](#), offers two-year post-residency fellowships aimed at creating quality improvement leaders who will teach others and perform research to expand the knowledge base. The distance learning program is led by The Dartmouth Institute for Health Policy and Clinical Practice and has six training sites around the country; fellows participate in interactive video sessions and team-based improvement projects. Mark Splaine, M.D., M.S., director of the program, says that the program “takes advantage of the V.A.’s deep commitment to improving quality and measuring data.” Since 1999, 69 fellows have completed the program, of

which some 60 percent pursue work in academia and about a third stay in the V.A. system.

In 2008, the Institute for Healthcare Improvement launched the [Open School](#) to supplement the education of health professional students and faculty whose own academic institutions might not be moving quickly enough to include improvement skills into their curricula. “Things have changed a lot over the past decade,” says Jonathan Finkelstein, M.D., M.P.H., a senior advisor to the Open School. “Most places have quality improvement on their radar screen, and some schools—albeit the minority—are doing sophisticated and extensive teaching in this area.”

In addition to providing free resources and Web-based courses in quality improvement, patient safety, and leadership, the Open School encourages local action. There are some 250 Open School chapters based in universities and hospitals around the world that use IHI’s support to kick-start improvement activities. For example, as part of their chapter efforts, Duke University medical students worked with faculty to plan a patient safety clinical class, and Fort Duncan Regional Medical Center participants implemented a program to reduce falls associated with medication.

Teaching Quality Improvement: Challenges Remain

Quality improvement training is still evolving, with innovative medical school and residency programs helping to lead the way. It’s encouraging that even beginning medical students have proven they can contribute to clinical improvement efforts.⁹ Further work needs to be done to set clear learning objectives and integrate improvement techniques and approaches into core learning—not “special” coursework taught on the side. Such training must take place through the continuum of practice, from undergraduate to residency and continuing medical education.

In a review of quality improvement training programs, Romsai T. Boonyasai, M.D., M.P.H., assistant professor of medicine at Johns Hopkins School of Medicine, and colleagues found that most published curricula apply sound adult learning principles and demonstrate improvement in learners’ knowledge or confidence. Still, the researchers found little evidence that current

educational methods have clinical benefits.¹⁰ Training programs need to set clear educational goals and establish benchmarks to evaluate their success.

Other experts say that quality improvement training should emphasize approaches and strategies, rather than facts. “Medical students are used to learning lessons and skills that will serve them well from one patient to another in any setting—medicine is based on the premise that we’re all built very similarly,” Finkelstein says. “But quality improvement is very context-based. Making surgery safer in a particular hospital is a very different problem than improving follow-up of chronic conditions in a community clinic. As with their biomedical skills, students can and should learn how to use performance data, systems thinking, and proven improvement techniques that will apply across problems and settings.”

One such example is a program at St. Vincent’s Hospital, a teaching hospital affiliated with New York Medical College. The hospital engaged house staff at different levels in evaluating the delivery of care to patients with unexpected admission to the medical intensive care unit. Fellows critiqued the care of junior house staff, as well as themselves and their peers. Through this process, they gained exposure into root cause analysis. House staff also gained exposure to structured self-evaluation and case-specific clinical decision-making through a focused Morbidity and Mortality conference. This work led to development of new policies and procedures to address the frequency and documentation of vital signs in unstable patients and the criteria for escalation of care. As a result, the percentage of calls for patients who met the criteria for medical emergency response/critical care consult increased from 53 percent to 73 percent. The number of cardiac arrests on the general medical floor decreased from 3.1 per 1,000 discharges to .6 per 1,000 and the deaths on the medicine service decreased from 34 per 1,000 discharges to 24 per 1,000.¹¹

Experts agree that trainees need to learn by doing, and that the substance of their hands-on experiences matters. This means that medical trainees need to be carefully supervised in selecting and carrying out improvement projects. “As teachers, there are two ways we can approach the challenge of identifying QI opportunities that are doable while still important enough to be worthwhile,” says Boonyasai. “One is to find the Goldilocks project (not

QUALITY IMPROVEMENT TRAINING RESOURCES

[Institute for Healthcare Improvement Open School](#) - An interprofessional educational community offering online courses, resources, and networking for those interested in acquiring skills in patient safety, quality improvement, teamwork, patient-centered care, and leadership.

[Tufts Health Care Institute](#) - Provides educational and training programs about improving and managing care to faculty, students, trainees, and practicing clinicians.

[American Association of Medical Colleges, Integrating Quality Resources](#) - Provides background on quality improvement theories, selected articles, and links to organizations and initiatives.

[Academy for Healthcare Improvement](#) - The Academy offers educational resources, including the Personal Continual Quality Improvement workbook, which can be used by health professional students to apply quality improvement tools to improve some process in their life.

[Achieving Competency Today](#) - Funded by the Robert Wood Johnson Foundation, this curriculum offers training to residents, graduate nursing students, and others in health care systems and quality improvement.

[World Alliance for Patient Safety](#) - This arm of the World Health Organization distributes the Guide to Developing a Patient Safety Curriculum in Medical Schools.

too big, nor too small); the other is to provide students with off-the-shelf tools (such as clinician-friendly data or a catalog of ready-to-use process change tools) and access to QI consultants so that they can spend their time implementing and testing change instead of re-inventing the wheel.”

Tess, of Beth Israel, adds that residents need to feel ownership in their improvement projects and sense that their work is valued by their institutions.

“There has to be real engagement with real improvement efforts for the program to work, and it takes time,” says Foster of Dartmouth-Hitchcock Medical Center. “These are skills that can’t simply be taught in a course, but that must be practiced and refined over time. As faculty, we don’t necessarily know the ‘right answer’; instead, we need to journey with the residents as they work to find solutions.”

Finally, experts say, quality improvement training must become part of trainee physicians’ professional behavior. Rosalie Phillips, M.P.H., executive director of the [Tufts Health Care Institute](#), says that physician training should cultivate performance improvement skills as a “habit of mind”—an ingrained disposition that guides their daily decision-making. “One habit of mind needs to be, when you encounter a problem, you think: ‘What in the system might be causing it?’ and be ready to work through a root cause analysis and a Plan-Do-Study-Act process to address it.”

Ultimately, it may require the “pull” of market demand for physicians who are versed in quality improvement techniques to encourage medical students and residents to seek out serious quality improvement training opportunities.

“Performance improvement should be part of the job description for physicians,” says Headrick of the University of Missouri–Columbia School of Medicine. “It’s a core professional value: we measure what we do, look at feedback, and try to improve. Quality improvement training gives you the tools to do that.”

Notes

- ¹ D. G. Kirsch, [The Flexnerian Legacy in the 21st Century](#), *Academic Medicine*, 2010 85:190–92; M. Cooke, D. M. Irby, and B. C. O'Brien, [Calls for Reform of Medical Education by the Carnegie Foundation for the Advancement of Teaching, 1910 and 2010](#), *Academic Medicine*, 2010 85:220–27; P. Batalden, [Report V: Contemporary Issues in Medicine: Quality of Care](#) (Washington, D.C.: Association of American Medical Colleges, 2001).
- ² The American Board of Medical Specialties also adopted the six general competencies in 1999. Its 24 member boards now require physicians who wish to maintain their certification to demonstrate they are practicing according to the new competencies.
- ³ L. A. Headrick, T. Speroff, H. I. Pelecanos et al., [Efforts to Improve Compliance with the National Cholesterol Education Program Guidelines: Results of a Randomized Controlled Trial](#), *Archives of Internal Medicine*, Dec. 1992 152:2490–96.
- ⁴ D. M. Berwick and J. A. Finkelstein, [Preparing Medical Students for the Continual Improvement of Health and Health Care: Abraham Flexner and the New 'Public Interest'](#), *Academic Medicine*, Sept. 2010, suppl. 85(9):s56–s65.
- ⁵ Educational reform over the past decade has focused on the training of nurses, pharmacists, and other health care professionals, in addition to physicians. This article focuses on physicians' training.
- ⁶ M. B. Anderson and S. L. Kanter, [Medical Education in the United States and Canada, 2010](#), *Academic Medicine* 85(9):s2–s18.
- ⁷ S. N. Weingart, A. Tess, J. Driver et al., [Creating a Quality Improvement Elective for Medical House Officers](#), *Journal of General Internal Medicine*, 2004 19:861–67.
- ⁸ B. E. Gould, M. R. Grey, C. G. Huntingdon et al., [Improving Patient Care Outcomes by Teaching Quality Improvement to Medical Students in Community-Based Practices](#), *Academic Medicine*, Oct. 2002 77(10):1011–18.
- ⁹ G. Ogrinc, L. A. Headrick, S. Mutha et al., [A Framework for Teaching Medical Students and Residents About Practice-Based Learning and Improvement, Synthesized from a Literature Review](#), *Academic Medicine*, July 2003 78(7):748–56.
- ¹⁰ R. T. Boonyasai, D. M. Windish, C. Chakraborti et al., [Effectiveness of Teaching Quality Improvement to Clinicians](#), *Journal of the American Medical Association*, Sept. 2007 298(9):1023–37.
- ¹¹ L. Kirschenbaum, S. Kurtz, and M. Astiz, [Improved Clinical Outcomes Combining House Staff Self-Assessment with an Audit-Based Quality Improvement Program](#), *Journal of General Internal Medicine*, Oct. 2010 23(10):1078–82.

Case Study: The Housestaff Quality Council at New York-Presbyterian Hospital/Weill Cornell Medical Center

Residents at a New York hospital established a quality and patient safety organization with the support of hospital administration to help engage their peers in identifying and solving issues related to medication reconciliation, communication between administration and residents, and other safety concerns. The organization has made significant strides in addressing these issues, especially by improving communication among residents.

By Sarah Klein

Issue

Residents play a key role in patient care at academic medical centers. As trainees, they spend many hours in the hospital and have unique insights into problems that occur there. Yet, as the junior-most members of the medical team, they are not optimally involved in efforts to improve care. More frequently, hospital administrators, nurses, and attending physicians study the outcomes of care, assess root causes when adverse events occur, and develop corrective action plans as necessary. Resident input may not always be included in policy changes and as a result, residents may not be engaged in adopting these policy changes. To address these issues, the Accreditation Council for Graduate Medical Education and American Board of Medical Specialties have recommended that institutions engage residents more fully in quality improvement activities.

Objective

The Housestaff Quality Council (HQC) at the New York-Presbyterian Hospital/Weill Cornell Medical Center aims to improve patient care and safety by engaging residents in a culture of quality improvement and by enhancing communication between hospital administrators and clinical departments. The HQC also provides a vehicle to survey house staff attitudes and behaviors related to patient safety and to encourage best practices. Its mission statement is to “improve patient care and safety at New York-Presbyterian Hospital by creating a culture that promotes greater house staff participation.”

Setting

New York-Presbyterian Hospital (NYPH) is a large academic medical center that consists of five main facilities, including two campuses with more than 2,298 beds. The medical center is affiliated with two medical schools: Weill Medical College of Cornell University and Columbia University College of Physicians and Surgeons. The campuses share a common electronic health record system, which has been customized to meet the needs of patient populations at NYPH’s clinical sites.

NYPH has two house staff quality councils: one at New York-Presbyterian Hospital/Weill Cornell Medical Center and the other at NYPH’s uptown campus, which is affiliated with Columbia University College of Physicians and Surgeons. This case study focuses solely on the HQC on the Weill Cornell campus.

Leadership

The Housestaff Quality Council on the Cornell campus was founded in December 2007 by Peter M. Fleischut, M.D., and Adam S. Evans, M.D., M.B.A., two residents working in close collaboration with Gregory E. Kerr, M.D., M.B.A, the medical director of the cardiothoracic intensive care unit at the Weill Cornell campus, who came up with the idea for the council and continues to serve as its faculty advisor.

Its membership includes approximately 30 residents, representing each clinical department on the Weill Cornell campus. Departments with large numbers of residents, such as medicine, nominate more than one representative.

The leadership of the organization changes from year to year, as residents graduate. Each year, one resident serves as chair of the organization and another as vice-chair, with the expectation that the vice-chair will succeed the chair—a system that ensures the sustainability of the organization and continuity of programming as residents graduate and pursue other employment.

The HQC receives guidance and support from both Weill Cornell Medical College and the New York-Presbyterian Hospital. Its faculty advisor, who is employed by the medical school, provides guidance and mentoring, while the quality and patient safety administrator in the department of anesthesiology, Susan L.

Faggiani, R.N., C.P.H.Q., serves as the quality and patient safety liaison to the Council. The hospital provides financial and administrative support (such as maintaining a listserv, creating flyers, and sending e-mails), as well as guidance. NYPH's division of quality and patient safety, which provides oversight of the organization, pays the HQC chair an annual stipend of \$5,000 to compensate for his/her time and effort.

Origin and Development of the Council

In 2007, Fleischut and Evans, then residents in the anesthesiology program, approached Kerr about working on a project to improve the quality of care in the cardiothoracic intensive care unit based upon quality and patient safety trends they observed in the unit. The residents suggested using information technology such as the creation of dashboard to monitor trends. "I said we need something more basic. We need to change the culture of this place and the culture of the house staff – to engage them in quality improvement," says Kerr, who suggested the two form a council that would bring together representatives from every department to address hospital-wide problems.

The founders of the HQC liked the idea and presented a proposal to form such an organization to senior administrators of the hospital in December 2007, suggesting that the group could help engage residents in quality improvement, information dissemination, and enforcement of policy changes. The organization was quickly approved by NYPH. By April 2008, its leaders had developed a strategic plan and held the group's first meeting. The HQC continues to meet monthly for one-hour meetings.

The HQC began to focus on solving problems that had broad appeal to residents from a wide range of departments. To ensure ongoing interest in the group, its leaders also felt it would be important to select projects with a reasonable chance of success. Our goal is "showing it's really possible to make change," Fleischut says.

In less than two years, the group had developed educational programs targeting safety priorities, and made progress increasing rates of medication reconciliation for hospital patients and reducing use of paper-based laboratory orders,

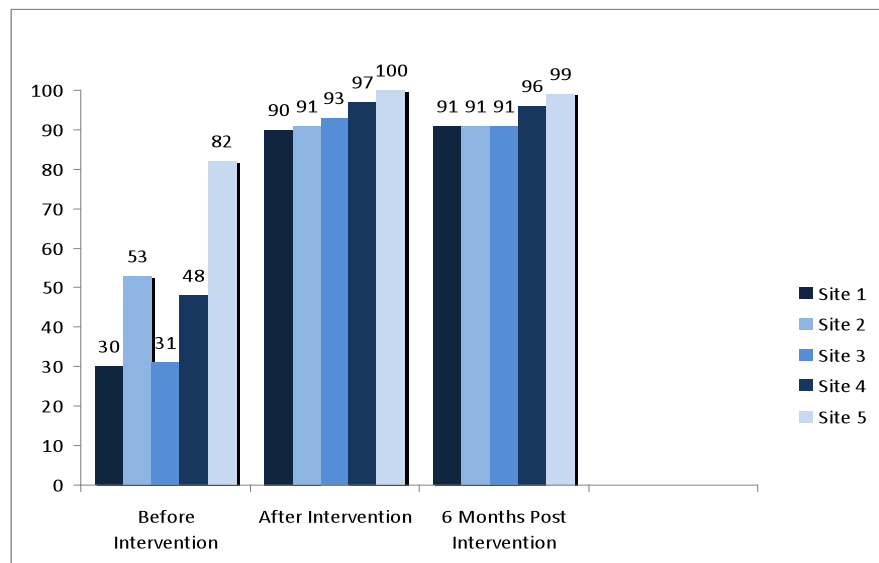
To develop and implement solutions to these problems, members of the HQC worked closely with liaisons from the hospital, including representatives from quality and patient safety, communications, infection control, and information technology, as well as performance improvement specialists employed by the hospital, often suggesting unique approaches to problems that have resisted other solutions. The residents "have come up with some incredibly creative solutions to some safety concerns we have," says Eliot J. Lazar, M.D., M.B.A., senior vice-president and chief quality and patient safety officer of NYPH. "They also serve as an extraordinarily good conduit for sharing information with house staff more broadly," he says.

Finding methods of getting the attention and input of busy residents is a key feature of the group's strategy. Residents who serve on the council are expected to relay the details of the council's initiatives to colleagues within their own departments, and distribute materials the HQC has developed to inform residents of pressing issues. The group also relies on alphanumeric paging, poster boards, and a once-a-month e-mail alert, which succinctly summarize key issues for residents. By using this multi-modal peer-to-peer approach to communication, the group has been able to convey messages effectively and efficiently. HQC's medication reconciliation project—its first project—is a good example.

Improvements Made

NYPH sought input from the resident's group to improve the rate of medication reconciliation. The rate of medication reconciliation at the Weill Cornell campus was then below target for patients who were hospitalized. The HQC recommended that the NYPH's electronic health record system be modified to provide residents with a series of reminders of the need to perform medication reconciliation, beginning six hours after a patient's admission. If the reconciliation did not occur within 18 hours of admission, the residents suggested that the hospital's system institute a "hard stop," which would prevent a physician from writing another order until the reconciliation was performed. The hospital's paging system would notify house staff carrying pagers of the creation of the hard stop and the importance of complying with medication reconciliation.

Exhibit 1. On-Admission Medication Reconciliation, New York–Presbyterian Hospital



Source: New York–Presbyterian Hospital

Because the residents had suggested the change and communicated its importance to other residents, the introduction of a hard stop generated little to no resistance. “If you tell them there are these significant events, here’s the data, and this is why we are working on this, they are much more likely to buy-in and disseminate that to their peers,” Fleischut says.

Within two months of the intervention, the rate of medication reconciliation at the Weill Cornell campus was 97 percent, up from a baseline rate of 48 percent (Exhibit 1).[1] At six months, the rate remained at 96 percent. “That was our first big win in terms of being able to demonstrate a measurable change within a quick period of time,” Fleischut says.

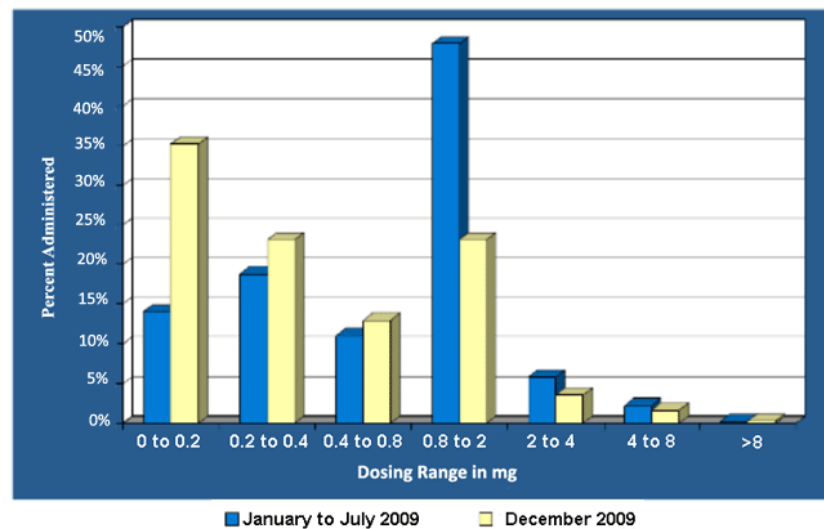
The success of the medication reconciliation initiative impressed the administration as well. “We might have come up with the same thing, but I think they embraced it and therefore it happened much more quickly than if we had suggested it,” Lazar says.

The organization then turned its focus to dosing of narcotics—at the recommendation of residents of the anesthesiology department. They began with a review of Dilaudid (hydromorphone) prescriptions by residents

and found that lower dosing ranges (e.g. 0.2 -0.8 mg) were prescribed less frequently than doses of 1 and 2 mg, doses that are more typical for morphine, a drug that is less potent than Dilaudid.

The HQC then recommended employing an information campaign to educate residents about the differences between the two drugs and explain that while a dose of 1-2 mg of Dilaudid might be indicated under certain circumstances (i.e. in the care of patients with sickle cell anemia), smaller doses were often effective for other types of pain. The residents also encouraged the hospital to add an alert to the electronic health record system about the drugs and change doses available for each drug to avoid confusion. Finally, the council highlighted the issue in a monthly e-mail, which was sent to inform residents about these new recommendations. With this campaign, the rate of 0.8-2 mg doses dropped by 50 percent and the rate of 0-0.2 mg doses increased by 50 percent (Exhibit 2).

Exhibit 2 Combining notices of quality and patient safety issues in a single, monthly e-mail was critical to the organization’s success, Fleischut says. “We said once a month we are going to send one e-mail and that e-mail will have some key information you need to know, such

Exhibit 2**Changes in Hydromorphone Prescribing**

Source: New York-Presbyterian Hospital

as central line checklist information, access to rapid response teams, and vaccination information.”

In February 2009 the HQC, partnering with the departments of pathology and nursing, sought to reduce the use of paper-based laboratory orders after discovering that 700,000 paper-based requisitions were generated each year for laboratory work. The paper-based requests were handwritten, cost more to execute, and delayed performance of tests because they required a staff person to input the order into the electronic health records so that it could be processed. To gain the attention of residents, the HQC conveyed to residents that electronic laboratory orders benefit everyone—including residents. “No one wants to change their workflow, but if you can show them how it works to everyone’s benefit...if you explain to them you can get your labs back faster...” they will stop doing it. Indeed, within eight months, the rate of paper-based orders from the intensive care unit dropped by 75 percent.

To generate interest in the group and awareness of its efforts, the council hosts an annual event to welcome new residents. At that event, the group launched a patient safety awareness campaign that focused on 10 potential medical errors that new house staff need to avoid. Members of the council attached their names to

fictionalized descriptions of these errors, which helped to draw attention to them. “They ...are fictionalized, but frankly the kind of situation that every house officer could find themselves in,” Lazar says.

In many ways the HQC’s first projects represent low-hanging fruit. That was purposeful. The projects served as a means of demonstrating the potential effectiveness of the group to solve problems, says Evans, the council’s co-founder. The discipline of the group, and its willingness to measure its results and hold itself accountable to those results, increased the willingness of the institution to support the group. “It was a very organized, data-driven, professional approach that was bent on demonstrating improvement, collegiality, and teamwork,” Evans says.

As result, the group forged relationships with staff in departments across the hospital. “There’s a lot more collaboration between the house staff and various clinical departments,” Fleischut says. For example, the HQC worked with the information technology department to change order sets. “The leadership of the council now knows how to get those done and expedited,” he says. The group’s ties to the hospital’s quality improvement department are even stronger. The chair of the HQC at the Weill Cornell campus and the chair of the HQC at

the Columbia campus now are welcome to attend weekly meetings of NYPH's quality and patient safety officers. In fact, the hospital has established the position of resident quality & patient safety officer, which is given to the HQC chair from each campus. "They have an equal seat at the table," Lazar says. "We respect their opinion. They have a tremendous amount to offer."

Key Measures

The HQC monitors the impact of its initiatives in multiple ways. It tests not only whether the intervention addresses the identified problem, as noted above, but it also measures to what extent residents absorb the message. When e-mail alerts are sent to residents, it monitors the percentage of residents in each department who read the alert and this information is trended.

To gauge the impact of this program on residents' attitudes and behavior, the organization is using a Safety Attitudes Survey developed by J. Bryan Sexton, Ph.D., at the Duke University Health System. "We wanted to try and find out...if we are reaching out to everyone," Fleischut says. "The initial responses...basically showed that the house staff was really neutral in regards to quality and patient safety and weren't very engaged in the process, which we were kind of expecting. That was our baseline," Fleischut says. Data are collected in 9-month intervals. "We hope to see an improvement in the attitudes of house staff in relation to quality and patient safety matters," he says.

Implications

The HQC at the NYPH demonstrates the effectiveness of harnessing the untapped resource of medical residents and the validity of the approach. Giving residents a proactive role in quality improvement has the potential to improve care and engage residents in quality improvement even after their residencies are complete.

The HQC has highlighted the important role of residents play in quality and patient safety among the leaders of NYPH. Not only do administrators value their input, they compete to present to the group at meetings.

Achieving this culture required significant institutional support, which was critical to persuading residents that hospital leadership took their concerns and suggestions seriously. Anyone considering replicating this program in a hospital must ensure the hospital "gives it the appropriate recognition and gravitas within the institution," Lazar says. At NYPH, the HQC reports annually to the quality and performance improvement committee of the board of trustees, which enhances its credibility and increases accountability, Evans says.

Success also requires institutions to ensure they identify and encourage residents interested in quality improvement. Given the natural turnover in residency programs, finding residents with a high level of interest and motivation is essential to launching and sustaining such efforts. Some residents may be drawn to the opportunity to publish the results of their work. Others may desire the benefit of quality improvement training. For residents who choose to engage in quality improvement programs, it can be professionally rewarding. Serving as the vice-chair and chair of HQC amounted to an apprenticeship in leadership and quality improvement for Fleischut, who has finished his residency and is now a deputy quality & patient safety officer for NYPH's division of quality and patient safety, as well as an attending physician.

Fleischut believes there's no shortage of residents like him. "We have people coming to the institution with master's in public health, public policy, and M.B.A.s. I think it provides an opportunity and a venue for people to utilize those degrees," Fleischut says.

For Further Information

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Note

¹ A. S. Evans, E. J. Lazar, V. L. Tiase et al., *The Role of Housestaff in Implementing Medication Reconciliation on Admission at an Academic Medical Center*, *American Journal of Medical Quality*, published online May 25, 2010.

News Briefs

Web-Based Tool Helps Doctors Improve Care

According to two independent studies, a [Web-based tool](#) developed by Kaiser Permanente helps physicians provide better care for patients with diabetes and heart disease, and also helps them provide better preventive care to all patients. The Panel Support Tool extracts information from electronic health records for individuals and groups of patients, and then compares the care patients are receiving to recommended care based on national guidelines.

One study of the Web-based tool, published October 4 in the *American Journal of Managed Care*, followed 204 primary care teams using the tool for three years. It found that the percentage of recommended care delivered each month increased from 67.9 percent to 72.6 percent from 2005 to 2007 among patients with heart disease, and from 63.5 percent to 70.6 percent among patients with diabetes. The second study, published October 1 in *Population Health Management*, found that recommended preventive care (based on 13 indicators) improved from 72.9 percent to 80 percent among 207 primary care teams using the tool over 20 months.

The tool could encourage more proactive use of electronic health records. Many experts agree that having such records will not on its own lead to improvements in the quality of care; providers must use the tools to analyze their patient panels and pinpoint gaps in needed care.

IoM Report Says Nurses Could Lead Performance Improvements

A [report](#) published this month by the Institute of Medicine (IoM) called for nurses to pursue higher levels of education and training to play greater roles in strengthening the health care system. With more than 3 million in their ranks, nurses are the largest segment of the health care workforce. Public and private organizations need to provide incentives and support for nurses to pursue advanced degrees and training—in particular to fill the faculty and advanced practice roles that are currently experiencing a shortage of qualified individuals.

For example, nursing schools should ensure that at least 10 percent of their graduates enter a master's or doctor program within five years. In addition, the report recommends that “scope of practice” barriers imposed by states, federal agencies, and health care organizations be removed to enable nurses to practice to the full extent of their training. Nurses should also contribute to management teams and boards that help shape health care delivery systems, the report says.

Joint Commission Report: “Encouraging” Improvements in Hospital Care

There have been major gains in the quality of care delivered in U.S. hospitals, according to the Joint Commission's latest [report](#) on quality and safety released in September. The analysis is based on data from 3,000 hospitals accredited by the organization. It found steady improvement over eight years on evidence-based measures of care processes for heart attack, pneumonia, surgery, and children's asthma. For example, overall performance on recommended heart attack care improved from 88.6 percent in 2002 to 97.7 percent in 2009. Recommended surgical care was delivered 77.4 percent of the time in 2004, but 95.8 percent of the time in 2009, based on a composite of eight recommended care processes. The report pointed to certain areas still in need of improvement, including provision of fibrinolytic therapy to heart attack patients within 30 minutes of arrival to the hospital. In the report, the Joint Commission announced plans to explore integrating performance measures into their accreditation standards.

Study: CMS Surgical Care Measures Not Linked to Outcomes, Complications

A [study](#) published in the latest issue of the *Archives of Surgery* found no strong correlation between compliance with surgical process-of-care measures reported on the Centers for Medicare and Medicaid Services (CMS) Web site, Hospital Compare, and a hospital's risk-adjusted mortality and surgical complication rates. Moreover, hospitals that had worse compliance with the process-of-care measures had fewer patients with complications, while those with higher compliance levels had higher complication rates. The study used data from 2005 to 2006 from some 2,189 U.S. hospitals. The surgical

process-of-care measures assess how often hospitals provide recommended care, such as providing antibiotics when necessary. In 2008, CMS began adding data on outcomes, including mortality and readmission rates. The authors conclude that currently available information on Hospital Compare will not help patients identify hospitals with better outcomes for high-risk surgery, and suggest that CMS needs “to identify higher leverage process measures and devote greater attention to profiling hospitals based on outcomes to improve public reporting and pay-for-performance efforts.”

Maimonides Residents to Receive Bonuses for Efficiency

According to a Nov. 9 [article](#) in *Crain's New York* (subscription required), medical residents at the Maimonides Medical Center in Brooklyn recently reached agreement on a new three-year contract that includes bonus payments to physicians who improve efficiency and patient care. The bonus payments will come from a pool of \$750,000 and are based on measures to be negotiated between management and the hospital's 450 residents. The measures are likely to assess such factors as waiting times for the clinic, overuse of laboratory tests, and patient safety. Patterned after a similar incentive program in place for residents at the University of California San Francisco Medical Center, it is thought to be the first in the nation to be negotiated as part of collective bargaining agreement with a residents' union.

Publications of Note

EHR Initially Impairs Performance on Quality Measures, Health Center Finds

In a letter to the editor, two physicians from a community health center in South Dakota noted that electronic health record (EHR) implementation was associated with a decrease in quality improvement performance in the first year. Performance on measures of diabetes control and hypertension control declined among the clinic's providers, as did rates of pediatric immunizations and Pap smears. These declines occurred despite the fact that a quality improvement implementation and tracking system had been in place and was widely accepted by clinical and administrative staff. The authors suggested the decline might have been the result of user or system inefficiencies, increasing insensitivity to electronic reminders, and/or distraction of personnel during the implementation phase. M. Huntington and C. W. Shafer, [EHR Implementation Adversely Affects Performance on Process Quality Measures in a Community Health Center](#), *American Journal of Medical Quality*, September/October 2010 25(5):404–5.

Financial Incentives Didn't Harm Hospitals Caring for the Poor

Studying how financial incentives affected quality performance at hospitals with high and low levels of poor patients, researchers found no evidence indicating that financial incentives widened the gap in performance between hospitals that serve poor patients and other hospitals, as some critics of pay-for-performance programs have feared. The study compared changes in performance on quality measures for care of acute myocardial infarction, congestive heart failure, and pneumonia at hospitals that participated in the Premier Hospital Quality Incentive Demonstration program and those that did not. Hospitals that participated in the program and serve a greater number of poor patients had lower baseline performance than other hospitals, but demonstrated greater improvements in performance for acute myocardial infarction and pneumonia, but not congestive heart failure. The gains were greater among hospitals that received financial incentives than among a national sample. A. K. Jha, E. J. Orav, and A. M. Epstein, [The Effect of Financial Incentives on Hospitals That Serve Poor Patients](#), *Annals of Internal Medicine*, September 2010 153(5):299–306.

Auto-Assignment Incentive Has Limited Effect on Quality

A study designed to assess the impact of a pay-for-performance program on quality outcomes in California's Medicaid plans found comparable outcomes in plans that benefited from the program and those that did not. The pay-for-performance program automatically assigned new enrollees to better-performing Medicaid plans. The authors found the plans changed the focus of their quality improvement programs to match those that were prioritized by Medicaid, whether or not they received the benefit of the program, but did not invest new resources in quality improvement. Discussions with plan leaders suggested the incentive might not be large or transparent enough to change plan behavior significantly. B. Guthrie, G. Auerback, and A. B. Bindman, [Health Plan Competition for Medicaid Enrollees Based on Performance Does Not Improve Quality of Care](#), *Health Affairs*, Sept. 2010 29(8):1507–16.

Physician Performance Rankings Reduced by Patient Panel Characteristics

A study linking patient panel characteristics to clinical performance rankings of primary care physicians practicing in a large academic health care system found physicians whose patient panels had greater proportions of underinsured, minority, and non-English-speaking patients had lower quality rankings. The study also found patients of primary care physicians in the top third of quality performance were older, had a higher number of co-morbidities, and made more frequent primary care visits. The primary care physicians in the top third of rankings also had fewer minority patients, patients with Medicaid coverage, or without insurance. The authors adjusted rankings for patient panel factors, which resulted in a relative mean change in physician rankings of 7.6 percentage points; such changes in physician rankings have important consequences for performance incentive programs and quality reporting. These findings may complicate efforts by health systems to reward physicians for higher measured quality of care; they must find a way to adjust for patient panel characteristics without removing incentives for improvement, the authors conclude. For the analysis, researchers ranked physicians according to a composite of commonly used Healthcare Effectiveness Data and Information Set (HEDIS) measures. C. S. Hong, S. J. Atlas, Y. Chang et al., [Relationship Between Patient Panel Characteristics and Primary Care Physician Clinical Performance Rankings](#), *Journal of the American Medical Association*, Sept. 2010 304(10):1107–13.

More Rigorous Approach to Community Health Worker Evaluations Needed, Study Finds

A systematic review of studies published on outcomes and costs of community health worker interventions between 1980 and 2008 found community health workers can improve outcomes for some health conditions such as back pain; however, other results were mixed. Some studies suggested that community health worker interventions could result in greater improvements in participant behavior and health outcomes, while others found no statistically different results than alternative approaches. The reviewers suggest more research is required to address methodological limitations of prior studies. Cost-effectiveness analyses should also be conducted to determine the interventions' impact on urgent care utilization and quality-adjusted life years. M. Viswanathan, J. L. Kraschnewski, B. Nishikawa et al., [Outcomes and Costs of Community Health Worker Interventions: A Systematic Review](#), *Medical Care*, Sept. 2010 48(9):792–808.

Community Health Centers Make Progress, But Need Funding to Support Improvement

A review of literature on Health Disparities Collaboratives (HDCs), quality improvement collaboratives designed to improve care in 900 community health centers in the U.S., found the HDCs improve clinical processes of care over a short-term period (1–2 years) and clinical processes and outcomes over a longer period (2–4 years) and that most participants perceive the HDCs to be successful and worthwhile. Analysis of the Diabetes Collaborative found it was cost-effective, but that consistent revenue streams were not available to sustain it. Policy reforms are necessary to address this. The author notes priorities for funding include money for direct patient services, data entry, and staff time. Low-cost methods to increase staff morale and prevent burnout include personal recognition, skills development opportunities, and fair distribution of work, the author found. M. Chin, [Quality Improvement Implementation and Disparities: The Case of the Health Disparities Collaboratives](#), *Medical Care*, Aug. 2010 48(8):668–75.

V.H.A. Finds Providers Explain Some System-Level Variation in Quality and Patient Satisfaction

A study that sought to determine the amounts of variation in technical quality and patient satisfaction attributable to patients, providers, clinical teams, or medical centers at the Veterans Health Administration (VHA) found that providers accounted for the largest percent of variance in the delivery system for all technical quality domains (ranging from 46.5 percent to 71.9 percent). The study also found that medical centers, teams, and providers account for roughly the same level of system-level variance in the measure for patient satisfaction. For the doctor/patient interaction scale, providers explained 59.9 percent of system-level variance, more than twice that of teams and medical centers. K. L. Stolzmann, M. Meterko, M. Shwartz et al., *Accounting for Variation in Technical Quality and Patient Satisfaction: The Contribution of Patient, Provider, Team, and Medical Center*, *Medical Care*, Aug. 2010 48(8):676–82.

Quality of Colonoscopies Performed by Primary Care Physicians Comparable to Specialists

A study of primary care physician–performed colonoscopies found that performance quality indicators and lesion detection rates were comparable to documented rates for experienced gastroenterologists. The study, which collected data on 10,958 consecutive colonoscopies performed by 51 physicians who worked with a trained technician and had standby specialist support, suggests that primary care physicians may be used to improve the nation's colonoscopy screening rate. In 2002, primary care physicians provided only 2 percent of colonoscopies nationwide. S. Xirasagar, T. G. Hurley, L. Sros et al., *Quality and Safety of Screening Colonoscopies Performed by Primary Care Physicians with Standby Specialist Support*, *Medical Care*, Aug. 2010 48(8):703–9.

Changes in Practice Guidelines Produced Marked Shift in Indicated Procedures for PCIs

A study designed to determine whether changes to clinical practice guidelines affected whether a procedure was indicated found that a guideline change related to percutaneous coronary interventions (PCIs) produced a marked shift in whether PCI that took place in 2003–4 were considered indicated. The percentage for which there was evidence and/or general agreement that the procedure would be effective declined from 47.9 percent when applying 2001 guidelines to 25.1 percent when applying 2005 guidelines. The authors concluded that changes to guideline-based performance measures should be evaluated carefully before implementation to avoid incorrect assessments of quality of care. G. A. Lin, R. F. Redberg, H. V. Anderson et al., *Impact of Changes in Clinical Practice Guidelines on Assessment of Quality of Care*, *Medical Care*, Aug. 2010 48(8):733–8.

Health Plan Quality Measures Are a Function of Physician Practice Patterns, Study Finds

A study designed to determine the extent to which health plan quality measures reflect physician practice patterns rather than plan characteristics found that the gaps in scores between plans disappear when they share common physician panels. This suggests that standard health plan performance measures capture physician practice patterns rather than plans' efforts to improve quality. The authors urge patients to use caution in rating health plans using Healthcare Effectiveness Data Set scores and Consumer Assessment of Healthcare Providers and Systems data, as those scores are likely to reflect provider practice style and behavior in instances where there is a high degree of physician overlap between plans. Because health plans may invest less in quality improvement programs when their providers networks overlap, the authors also suggest that in the presence of increasingly overlapping provider networks, quality improvement initiatives would be more productive if sponsored by the community rather than individual health plans. D. D. Maeng, D. P. Scanlon, M. E. Chernew et al., *The Relationship Between Health Plan Performance Measures and Physician Network Overlap: Implications for Measuring Plan Quality*, *Health Services Research*, August 2010 45(4):1005–23.

Treatment of Hepatitis C Virus Suboptimal

A study of 10,385 patients with hepatitis C virus (HCV) infection found fewer than 20 percent received all of the care recommended by the performance guidelines attached to Medicare's 2009 Physician Quality Reporting initiative. Performance was lowest for vaccination (21.5 percent) and highest for pre-treatment HCV genotype testing (79 percent). Older age and presence of co-morbid conditions were associated with lower quality, whereas elevated liver enzyme levels, cirrhosis, and HIV infection were associated with higher quality. The researchers found patients who saw both generalists and specialists were most likely to receive any recommended care process. F. Kanwal, M. S. Schnitzler, B. R. Bacon et al., [Quality of Care in Patients with Chronic Hepatitis C Virus Infection](#), *Annals of Internal Medicine*, August 2010 153(4):231–9.

Interruptions and Multitasking Implicated in Clinical Inefficiency and Error

A study of emergency department physicians in a teaching hospital found physicians reduced the amount of time they spent on clinical tasks when they were interrupted. The authors suggest the task-shortening may occur as physicians attempt to catch up for lost time. The study also found the physicians delayed or failed to return to a significant portion of interrupted tasks. In all, the doctors failed to return to 18.5 percent of interrupted tasks. J. I. Westbrook E. Coiera, W. T. M. Dunsuir et al., [The Impact of Interruptions on Clinical Task Completion](#), *Quality and Safety in Health Care*, Aug. 2010 19(4):284–9.

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Special thanks to Editorial Advisory Board members Gordon Mosser and Michael Rothman for their guidance with this issue.

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