

The State of Quality Improvement Science in Health: What Do We Know About How to Provide Better Care?

Timely Analysis of Immediate Health Policy Issues

November 2011

Kelly J. Devers

Abstract

Given the well-documented problem of quality in the American health care system, in addition to the problems of coverage and affordability, public and private purchasers and providers increasingly view quality improvement (QI) as a promising and perhaps essential tool for transforming the system. However, what do we really know about whether QI approaches work in health care? How do we know if they have had the intended effects and are sustainable, so the benefits of QI initiatives outweigh the costs? Many assume that since QI works in other industries, it can or is working in health care as well. To what extent do research results support this assumption? This policy paper examines four fundamental questions about QI in health care:

1. *What is it and how has the field evolved over time?*
2. *What is the current evidence about QI's effectiveness, including strengths and limits?*
3. *What do we still need to learn about QI research and practice, and what are potentially promising directions in the field?*
4. *What might key stakeholders do to build QI capacity for research and practice?*

The best evidence currently available indicates that while QI alone is no magic bullet, it generally has modest, positive effects. However, the impact

of specific QI approaches and interventions varies tremendously and depends on the context in which they are implemented. Some might conclude that these modestly positive and highly variable results are disappointing and mean that perhaps we should not make major investments in QI. Others might conclude that these results to date are not surprising and that we need to make major investments in QI research and practice to achieve better results. The QI movement in health care is only several decades old and health care is more challenging than other industries. Aspects of health care that are different from other industries and that make QI even more difficult include the lack of strong incentives and supports for providers to improve; the complexity and uncertainty of medicine and health care delivery; the unique role of physicians and other professionals; and variation in patients' needs and preferences.

Some also argue that now more than ever, greater investment in QI is critical. As millions more Americans obtain health insurance coverage through the implementation of national health reform, we cannot afford the tremendous waste of resources that stem from quality and efficiency problems in the health care delivery system.

This policy paper identifies potential ways to build QI research and practice capacity and to learn more rapidly

from the QI initiatives underway. Together with provider payment, delivery system reform and efforts targeted to other key stakeholders (e.g., patients, families, and communities), QI may yield results that are even more positive and consistent in the future.

Introduction

Over the past decade, work by the Institute of Medicine (IOM) and others established that the United States health care system has serious quality problems,¹ in addition to the problems of coverage and affordability. For example, McGlynn et al² found that Americans receive about half (54.9 percent) of recommended care, and there was little difference in the proportion receiving recommended preventive care (54.9 percent), acute care (53.5 percent), and care for chronic conditions (56.1 percent). In addition, annual deaths due to medical errors (at least 44,000 and perhaps as many as 98,000) exceed the number attributable to motor vehicle accidents (43,458), breast cancer (42,297), or AIDS (16,516).³

As evidence grew about quality problems and recommendations by the IOM, there were rallying cries and a flurry of activity initiated by a wide range of groups to improve the health care system. For example, then-President Clinton created the Quality Interagency Coordination task force, charging it with coordinating quality

improvement efforts in key federal agencies, and expanded the mission and increased the budget for what is now the Agency for Healthcare Research and Quality (AHRQ). Congress, business groups, various types of health care organizations (health plans, providers, accreditation bodies like the Joint Commission, quality measurement and reporting organizations like the National Quality Forum), and patient advocacy groups also developed initiatives and undertook related activities in an effort to improve quality.⁴

The Institute of Medicine⁵ defined the quality of health care 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.” In addition, the IOM articulated six aims for the health care system: that it is safe, timely, effective, efficient, equitable and patient-centered.

The call for a higher-quality health care system continued during the recent national health reform debate. Despite disagreement about many other aspects of reform, there was substantial agreement that the quality of the U.S. health care system could and perhaps must be improved. If millions more Americans are going to have health insurance coverage, they also need access to a high-performing delivery system and the nation cannot afford the tremendous waste of resources that result from quality problems. A number of provisions in the Patient Protection and Affordable Care Act (ACA) passed in March 2010 are directly aimed at improving quality. Some examples of quality-focused provisions include strengthening quality measurement and reporting, improving value-based purchasing strategies, and changing

how care is paid for and delivered through patient-centered medical homes (PCMHs)⁶ and accountable care organizations (ACOs).⁷ Traditional provider organizations such as hospitals are also increasingly facing specific performance expectations tied to payment through initiatives aimed at reducing avoidable errors and inappropriate readmissions.

The establishment of the Center for Medicare and Medicaid Innovation (Innovation Center) through the ACA is another prominent example of federal policy-makers’ recognition of the need to find new ways to get a higher quality of care for the \$2.5 trillion our nation spends annually on health care services.⁸ The ultimate goal of the Innovation Center is to produce better health care experiences and outcomes for all Americans at a lower cost. To achieve these aims, the Innovation Center will test new methods of delivering and paying for care and attempt to more rapidly evaluate and scale them up if they achieve the intended results.

In addition to these federal efforts, a wider range of groups continue to develop and implement strategies to improve quality, as they did when the first IOM reports were released. For example, private purchasers are also seeking ways to hold providers accountable for their quality, as well as cost, performance.⁹ For example, some private employers utilize value-based purchasing approaches, and health plans have implemented a variety of pay-for-performance (P4P) programs that are designed to factor in quality as well as cost when negotiating with and paying health plans and providers.¹⁰ Commercial health plans are implementing PCMH initiatives, and a handful are now developing their own ACO efforts.¹¹

Because of national health reform efforts as well as public and private purchasing activities, providers increasingly have stronger incentives to improve quality. Historically, the business case for providers to improve quality was weak, nonexistent or, in some cases, negative (i.e., improving quality meant they were paid less) because of the payment models used.¹² However, the quality provisions in the ACA and related developments in the public and private purchasing sectors have increased pressure on providers to improve quality and reduce cost.

The desire and pressure to improve quality have also stimulated interest in QI approaches and the related research and practice infrastructure. Many view QI as a promising and perhaps essential tool for provider organizations that want to survive and thrive and for public and private policy-makers interested in transforming our nation’s health care delivery system.

The purpose of this policy paper is to address four fundamental questions about QI:

1. *What is it and how has the field evolved over time?*
2. *What is the current evidence about QI’s effectiveness, including strengths and limits?*
3. *What do we still need to learn about QI research and practice, and what are the new and potentially promising directions in the field?*
4. *What might key stakeholders do to build QI research and practice capacity so that policy-makers and providers can more rapidly learn from the innovations in care delivery and payment methods unleashed by the ACA?*

What Is Quality Improvement?

Origins and Evolution of the Field

There are many definitions of QI, illustrating the field's ambitious aims, diversity of approaches, and evolution over time. Generally, QI can be defined as a formal approach to the assessment of quality and systematic, data- and measurement-guided efforts to improve it.¹³ Many health care organizations also use informal approaches to QI, including less formal ways of analyzing quality and less systematic and data- and measurement-intensive efforts to improve. Some believe these are just as effective as formal approaches. In this policy paper, we only note informal approaches when discussing other key topics (e.g., strengths and limits of the evidence, new directions for the future) because there is no credible way to assess them.

Alternative definitions of QI from several prominent researchers illustrate the broad scope and scale of the field. For example, Batalden and Davidoff¹⁴ define QI as “the combined and unceasing efforts by everyone—health care professionals, patients and their families, researchers, payers, plans and educators—to make the changes that will lead to better patient outcomes (health), better system performance (care), and better professional development (learning).”

Some use the terms QI, quality assurance (QA), and performance improvement (PI) interchangeably. Others argue that they are not the same and represent important shifts in approach or areas of emphasis. Quality assurance was a commonly used term in health care particularly in the 1980s and early 1990s. Many now characterize QA as a relatively

reactive and retrospective approach focused on policing and punishment, which often involves determining who or what is at fault after something goes wrong.

In contrast, the QI approach involves prospective as well as retrospective reviews, and the focus is on improvement—measuring where you are and identifying ways to make things better. It specifically attempts to avoid attributing blame and to create systems that prevent problems from occurring in the first place. For example, the renaming of CMS' Peer Review Organizations to Quality Improvement Organizations in 2002 signaled an important attempt to shift these organizations' emphasis, role and relationship to providers from adversaries to partners.¹⁵

Lastly, performance improvement means a change in *system* performance. While some see PI as the same as QI, others view it as more focused on managerial or administrative systems and cost as well as quality, in contrast to QI, which is more focused on physicians and other front-line care providers and clinical care processes and quality. Throughout this policy paper, we primarily use the term QI unless otherwise noted, holding the view that QI can be used interchangeably with PI but not QA.

Various researchers have described the emergence of “stages” (or emphasis areas) of the QI field in the U.S. health care system over the past two to three decades, including how different stakeholders or participants utilize different QI strategies and critical assumptions underlying the field. For example, Shojania and Grimshaw¹⁶ identify four major stages of the QI field, particularly as they relate to researchers' efforts to disseminate evidence about effective

QI strategies and the efforts of physicians, other clinicians and provider organizations to translate that evidence into practice. These four stages of the QI field are:

- ***Passive diffusion.*** (“*If you publish it, they will come.*”) In this first phase, it was assumed that clinicians would naturally act upon new clinical research as it appeared. The only impediment to the flow of evidence in medical journals to the minds of physicians or other clinicians was the sheer volume of information and variation in its quality. To overcome these challenges, advocates of evidence-based medicine promoted the adoption of good reading habits, acquisition of basic skills to critique research articles and related efforts like journal clubs.
- ***Guidelines and systematic reviews.*** (“*If you synthesize it for them and develop guidelines, they will come.*”) In this second phase, it was recognized that a variety of factors prevented clinicians from acquiring evidence in a timely, reliable way. To overcome these challenges, systematic reviews and clinical practice guidelines were developed to identify and synthesize studies addressing important clinical decisions and provide graded recommendations for practitioners. However, systematic reviews and guidelines generally failed to change practice as much as the field hoped. Although further research is needed, a combination of factors may explain this outcome, including continued reliance on passive diffusion approaches, disagreement with the content of the guidelines, resistance to perceived infringements on

physician autonomy, and logistic or financial barriers to implementation.

- **Industrial-style quality improvement.** (“If you Total Quality Manage/Continuous Quality Improve it, they will come.”) This third stage introduced more active approaches to QI, best represented by the “plan-do-study-act” cycles of Total Quality Management (TQM) and Continuous Quality Improvement (CQI). In many ways, TQM and CQI are general approaches to improving quality rather than specific interventions. They also generally produced less positive results than anticipated. Some claim that these results in health care reflect inadequate commitment to the approaches’ principles or suboptimal implementation of their methods. In addition, they argue that evidence of success in other industries is not as robust as one might think, and that there are important differences between health care and other industries (e.g., lack of incentives, a higher degree of complexity and uncertainty, unique role of physicians, and patients’ unique needs and preferences) that make it harder to utilize these approaches.
- **Systems re-engineering.** (“If you completely rebuild it, they will come.”) This fourth stage seeks meaningful QI through a more radical redesign of existing systems that attempts to capture the optimal means of accomplishing key goals, instead of a hodgepodge of approaches and interventions that may conflict with one another. Lean, which is also sometimes referred to as Toyota Product System, and Six Sigma are two prominent

systems re-engineering approaches developed and used in manufacturing and increasingly in health care. Early literature suggests some promising results, but there are many problems with the study designs and a potential positive publication bias, so these results must be viewed with caution.¹⁷ It is also important to note that systems re-engineering efforts often have a major information technology (IT) component. Previous evaluations of electronic health record (EHR) and related IT efforts in health care showed a familiar pattern of prominent successes accompanied by some equally prominent failures, but more recent research and developments suggest greater potential for more successes.¹⁸ The major investment in EHRs and health information exchange, currently underway in health care through the Health Information Technology for Economic and Clinical Health Act enacted as part of the American Recovery and Reinvestment Act of 2009, will have an impact on EHR adoption, implementation and use, as well as information exchange. However, it will be some time before we know whether and to what extent they have been successful, and if accompanied by other work redesign elements, they will have a positive impact on QI capacity and, ultimately, quality.

Sometimes accompanying industrial-style QI and systems re-engineering is “social learning,” which builds on the notion that learning is inherently social. The idea is that a network of individuals or organizations can exchange approaches, ideas and insights through various means (e.g., websites, conferences, face-to-face

meetings, mentoring or coaching, etc.), and this will lead to more rapid and greater improvement. Other industries use these social learning approaches, and the health care sector is increasingly using them as well. One prominent example of this approach is the Institute for Healthcare Improvement’s Collaborative Model for Achieving Breakthrough Improvement. A recent systematic review of QI collaboratives¹⁹ concluded that their impact in health care has also been positive but modest to date.

There are four key points about the stages of the QI field’s evolution made by Shojania and Grimshaw and other experts in the field. First, although the approach and locus of activity change, these stages and the strategies that dominate them overlap and continue on to some degree. In addition, the simultaneous efforts potentially allow, if not facilitate, new QI interventions that are multilevel (i.e., involving different groups and mechanisms but affecting each other) and multipronged (i.e., combining several QI approaches in new ways).²⁰ For example, systematic reviews and guidelines are still done, and their implementation may be facilitated by a combination of other strategies like purchasing and related payment reforms, system re-engineering and related EHR efforts, as well as ongoing professional education. These complex QI interventions are promising but also very challenging to evaluate.²¹

Second, at each stage of the QI field’s development, there have been prominent successes but also some failures and disappointments. As we will discuss further (see “Is QI Effective?”), overall QI has had modest positive results, but the results for similar QI approaches and

interventions (e.g., use of guidelines, TQM, or tools emphasized in a certain phase of the field's development) vary widely.

Third, hypotheses about why various QI approaches and specific interventions succeed or fail are developed from research and experience, leading to new approaches or strategies to try in the future. This includes new areas for research like implementation science, which is the scientific study of methods to promote the uptake of research findings in routine yet diverse health care settings and contexts.²²

Finally, while private payers and other institutions like business schools may encourage health care organizations to use QI techniques common in other industries, some worry that management “fads and fashions” in other industries are being imported into health care without sufficient attention to evidence and context (e.g., working with patients is different than working with inanimate objects).²³

Regardless of the QI field's stage or emphasis areas, different stakeholders tend to utilize different QI strategies. Because of differences in education and training, as well as roles, responsibilities and experience, various groups tend to focus on different QI methods, as shown in Table 1.

The potential strength of stakeholders focusing on different QI strategies is that each group may be more motivated to use them, develop greater expertise in them, and have a unique role to play in the overall QI movement. However, key stakeholders may not understand the other QI strategies or groups utilizing them, how they might fit or work together, and the important role they

each play in achieving the ultimate aims of QI efforts. In fact, misunderstandings, if not outright conflict, over which QI strategies to use can become part of the much broader debate about who is defining quality and leading change (e.g., public and private payers, including employers; physicians, nurses, and other clinical professionals; patients/consumers) or how to balance potentially competing interests and approaches. For example, patients often prefer outcome and patient experience measures, providers often prefer structure and process measures because they have more control over them, and purchasers prefer a combination of these different types of quality measures (i.e., structure, process and outcome), given their own interests and practical considerations like administrative burden and cost.²⁴

The preceding discussion helps illustrate the point that there are a number of assumptions underlying the QI field that may not be as simple or well-grounded in evidence as anticipated. Five widely held assumptions²⁵ are that:

1. *There is consensus about how to define quality and/or which domains of quality are most important.*
2. *Quality can be measured validly.*
3. *Evidence about what works and does not work in medicine (or certain areas of medicine) and QI is strong enough to inform key decision-makers.*
4. *Benefits (financial and nonfinancial) of QI initiatives will outweigh the costs (financial and nonfinancial).*
5. *Not only is there a high potential for QI to work better and more consistently, but there is agreement about the kinds of QI*

approaches, strategies and interventions that should be tried and assessed.

The next two sections of this policy paper focus on evidence related to the third, fourth, and fifth assumptions. Others have written about the first two assumptions, finding there are different perspectives on the definition of quality such as which key domains are most important, and while progress has been made with quality measurement, significant challenges remain.²⁶

Is QI Effective?

QI is no magic bullet. However, there are many practical and methodological reasons why that is the case.

QI effects are positive but modest

Current evidence shows that in general there are modest, positive effects for some, if not most, QI strategies. Estimates of the “effect size,” or impact, of QI interventions in health care are up to 10 percent improvement.²⁷ Depending on the baseline and other aspects of the specific clinical area, such as prevalence of the condition and cost associated with poor quality care, this level of improvement could have a small or large impact overall. Various authors and articles have documented the range in effect sizes and overall benefits of various QI methods and strategies and related areas warranting greater attention and investment. A recent thematic issue of the journal *Health Affairs* provides rich profiles of some of the organizations and initiatives that have been successful and lessons learned from their experiences.²⁸

Table 1. Participants and the QI Methods on Which They Tend to Focus

Participants	Strategies and Methods
Policy-makers, payers	<ul style="list-style-type: none"> • Laws, regulations • Purchasing strategies, including payment policy/models • Collecting and reporting on indicators • Monitoring care • Feedback • Support QI and related research and practice
Practitioners: physicians, nurses and other clinical professionals	<ul style="list-style-type: none"> • Professional development • Continuous medical education and training, including QI-specific education and training • Recertification/licensing • Clinical leaders/“champions” for QI efforts and organizational change
Practitioners: managers	<ul style="list-style-type: none"> • Process improvement, TQM/CQI or industrial-style QI, and systems re-engineering • Organizational change and transformation, including culture • Managerial leaders/“champions” for QI efforts and change
Patients (and their representatives)	<ul style="list-style-type: none"> • Engagement and self-management • Shared decision-making • Patient rights • Complaint procedures or legal action (e.g., malpractice suits) • Use of comparative quality reports to select plans and providers
Others: for example, epidemiologists	<ul style="list-style-type: none"> • Systematic reviews • Evidence-based guidelines • Decision aids

Source: Adapted from Grol R. “Between Evidence-Based Practice and Total Quality Management: The Implementation of Cost-Effective Care.” *International Journal for Quality in Health Care*, 12(4): 297–304, 2000.

However, it is also important to note that there is more research on some QI approaches and related care settings than others, with some notable gaps in

our research and understanding. For example, there has been less research on some QI approaches (e.g., systems re-engineering), certain settings (e.g.,

outpatient rather than inpatient), or transitions from one setting to another (e.g., hospital or rehab facility to home). Studies are also conducted

over relatively short time frames, making it difficult or impossible to assess how QI effects change over time or related issues like sustainability. One consistent and troubling finding from longer studies is that the impact of QI interventions often fades over time, as the professionals and organizations using them fail to routinize new practices and move on to other areas or issues.

The results of QI studies also vary tremendously. As one researcher described it, a striking aspect of QI studies is the “consistent inconsistency” of QI.²⁹ It appears that the effectiveness of particular QI strategies depends not only on the content of the approach and specific intervention itself, but also the context in which it is being implemented, i.e., who does it, how it is done, and the conditions under which it is done.³⁰ (See Table 1.)

Given the variation in results within a single QI approach, as well as the practical challenges of QI research (described below), it is difficult to determine whether some general QI strategies are more effective than others. Two key examples are (1) whether relatively active approaches like industrial-style and system re-engineering are more effective than more passive ones like evidence-based medicine and guidelines and (2) whether multipronged strategies or interventions that combine several QI approaches or methods are more effective than single-pronged strategies, interventions, approaches and methods.

Evidence for the effects of QI interventions is not very strong

The evidence base regarding QI outcomes is not as strong as in some other areas of medicine or as strong as some would like, for many reasons.³¹

First, there are numerous challenges to conducting this type of research in the real world; consequently, the study designs and related methods are viewed by some as less rigorous. For example, randomized controlled trials (RCTs) are the gold standard in research and among clinicians. However, quasi-experimental and other research designs are most often used in QI and implementation science research because understanding why and how QI interventions work in diverse real-world settings is essential for spread and sustainability. There has been a significant debate in the QI field about the strengths and limits of RCTs versus alternative approaches and which approach is preferable and hence supported in a variety of ways.³²

Second, even the most rigorous quasi-experimental designs (e.g., pre-post comparisons with matched control groups) are also challenging to conduct in health care settings. Health care organizations, clinicians, and patients must volunteer to participate in QI studies, but many providers and patients feel they cannot participate due to the pressures of daily operation and practice and any additional burdens that participation may involve (e.g., time, money, some research infrastructure). Therefore, somewhat unique kinds of health care organizations, professionals, and patients tend to participate in such research (e.g., academic medical centers whose missions involve research and large integrated delivery systems, such as Geisinger Health System, Intermountain Healthcare, Kaiser Permanente, and Mayo Clinic). This makes the results of these studies less generalizable or relevant to the vast majority of organizations and professionals. An exception to this trend is the development of practice-

based research networks (PBRNs) of various kinds.³³

Third, available data is limited and time-consuming to collect. EHRs and other health IT that may ease data collection for QI purposes is not yet widely available or readily linked to other important data sources. Therefore, it is very difficult and expensive to collect the data needed to assess mechanisms of action and the intended and unintended impacts of QI interventions.

Fourth, QI approaches and strategies are classified differently, written up inconsistently, and costs (financial and nonfinancial) as well as benefits are often not considered, making it more difficult to build a strong evidence base. Consequently, there have been calls for some common conceptual framework or taxonomies to facilitate systematic reviews, and efforts are being made to develop guidelines for QI studies and their reporting so that aspects of interventions and their implementation that may explain why it may or may not work are consistently described.³⁴ In addition, further research on the business case for quality improvement and the best methods for conducting such studies are needed so in the future we can better assess whether the net benefits of QI initiatives outweigh the costs from various groups’ perspectives (e.g., medical groups, hospitals, health plans, purchasers).³⁵

Finally, there is relatively little federal funding for QI research, reflecting both (1) traditional funding priorities in basic science or bench research as opposed to the later stages of translational research and (2) some degree of debate about the appropriate role of the federal government in fostering innovation and supporting QI. Prior to the creation of CMS’

Innovation Center, the primary federal agency with the U.S. Department of Health and Human Services responsible for QI research was AHRQ, which has a budget only 1 percent the size of the National Institutes of Health's.³⁶ Some argue that health care professionals, organizations and the industry should be the major investors in and leaders of QI initiatives and research, not government, especially if providers have strong external incentives and intrinsic motivation and QI really is cost-effective. Therefore, the best thing for government to do is to unleash stronger market forces around quality and value and get out of the way.

Others argue that stronger external incentives are necessary but not sufficient to stimulate greater investment in QI initiatives, and the related research and the technical assistance necessary to accelerate changes in practice and ultimately performance. Quality improvement in health care is relatively new and challenging, so additional kinds of government supports and public-private partnerships are necessary and beneficial. Federal and state governments remain major purchasers of health care via Medicare and Medicaid and have broader public interests in mind, such as ensuring the long-term viability of public programs, the health of the economy, and improving the health of the population. Although the Innovation Center's budget is substantial and far more than AHRQ's at approximately \$1 billion per year, this is still a small portion of all health care spending which is around \$2.5 trillion per year and it will be very challenging for this new center within CMS and the broader federal bureaucracy to successfully stimulate innovation in the industry.

Where Is the QI Field Headed?

The evolution and current state of the field, and related lessons learned, suggest a number of future directions.³⁷ First, there is a need for more evaluation of new QI approaches and multilevel and multipronged QI strategies and interventions, in settings less frequently studied (e.g., outpatient as well as inpatient), and over longer periods, to address such important issues as sustainability. For example, systems re-engineering (e.g., Lean, Six Sigma) and social learning (e.g., collaborative) approaches are becoming more prevalent in health care today and are being used in combination with other QI strategies, but there is relatively little evidence about whether and under what conditions these techniques work, whether the benefits outweigh the costs, and over what period.³⁸

Second, greater effort must be made to understand the reasons for the variation and inconsistency in QI results and how to spread QI interventions that are successful. The field needs to understand what is inside the QI "black box," particularly how QI initiatives work, the contexts in which QI efforts are more or less successful, and how to effectively disseminate successful QI interventions.³⁹ As described, QI interventions are based on a set of potentially unwarranted assumptions and result from studies with a self-selected and hence unique set of health care organizations, clinicians, and patients. More research on these basic assumptions and conditions for effective implementation is needed. In fact, the terms "implementation research" and "knowledge exchange" began appearing in the literature about a decade ago, capturing and

emphasizing the notion that although a given practice may be supported by evidence, finding the best way to implement that practice in diverse contexts and settings and over time requires a research base of its own.

Related to these prior points is the need to engage more diverse health care organizations, professionals, and patients in QI research, even if they are participating as a usual care or control group. The QI research world has to move beyond studies of the innovators and leaders and pre-post quasi-experimental designs with no controls. By definition, the innovators or leaders are likely to have a number of unique characteristics (e.g., more resources including QI capacity, more employed physicians, relatively homogeneous and healthy patient population), and already be performing relatively well on quality metrics. The later adopters or laggards are likely to have different characteristics (e.g., fewer resources including QI capacity, private practice physicians or voluntary medical staff, relatively diverse and unhealthy patient population), and be relatively poor performers on quality.⁴⁰ In fact, some have suggested that provider payment reforms like P4P that are designed to reward quality may inadvertently widen the gap between have and have-not health care organizations and ultimately disparities in care.⁴¹ Consequently, one might argue that the public would get a larger overall return on its investment by learning more about how to work with and help these late adopters or laggards develop QI capacity and improve. Finally, learning how best to spread relatively successful QI approaches within a large organization or across diverse organizations is critical for accelerating progress. If every health care organization and professional has

to reinvent the wheel, health system transformation will indeed be very slow to come.

A number of suggestions have been made for strengthening QI research itself, within the constraints of this applied field. Four major suggestions in this area include:

1. *Increased attention to theoretical and conceptual development, drawing on the social sciences and related applied fields, so that there is a more robust set of concepts and hypotheses;*
2. *Greater discussion and consensus about ways to categorize QI strategies and approaches, so the field has a taxonomy or common framework and an apples-to-apples basis for comparing and contrasting different QI initiatives and related results;*
3. *Increased attention to methods for conducting and reporting research, so diverse and appropriate designs are used, research results and strength of evidence are more readily assessed, and syntheses are more readily performed; and*
4. *Addressing ethical and human subject issues about QI research that have been raised.*⁴²

Several recent developments—like an AHRQ and IOM forum and publications on these subjects—suggest that progress in these areas is underway. However, more progress is needed in these research areas, as well as with the practical issues noted above.

What Will It Take to Strengthen the Nation's QI Capacity?

Although attempts to innovate and improve quality in health care are arguably as old as the field of

medicine itself, most of these efforts have focused on new therapies and treatments, have been dominated by physicians, or have been on a small and informal scale. Only for the past few decades has the focus shifted to the systematic translation of medical discoveries into practice through formal professional, organizational and system-wide efforts to ensure that the best available evidence routinely gets put into practice.⁴³ Indeed, the QI field is only a few decades old in health care.

Some might conclude that the positive but modest and variable results to date suggest that greater investment in QI may not be warranted or fruitful. Others might conclude that it would be unwise, if not foolish, to abandon the QI field at this early stage. They believe that not addressing quality is professionally unpalatable and perhaps economically and politically unsustainable. Additionally, they argue that providers have not been given a strong enough incentive to invest in quality and the field has not been given sufficient time and resources to produce better results. The implementation of ACA quality-related provisions as well as other public and private purchaser, plan and professional efforts provide new energy and opportunity to strengthen the QI field through both “pull-and-push” and “carrot-and-stick” mechanisms. Development of stronger incentives to improve quality will stimulate interest and potentially greater investment in QI, along with the creation of a robust QI community and infrastructure. If now is the time to invest more heavily in QI, rather than abandon the field or continue to make relatively small investments, a number of steps should follow.

First, policy-makers and purchasers must provide strong financial and

nonfinancial incentives for health care organizations, physicians and other clinicians to improve quality. The environment or external context must provide greater incentives and support to engage in QI. (See Table 1.) If provider organizations and individual clinicians are not adequately rewarded for innovation and improvements in quality or, worse yet, are indirectly punished or harmed, we should not be surprised that QI is not a priority. As described above, implementation of ACA quality provisions and other public and private sector initiatives provide new opportunities to create a compelling, positive business case for quality including QI.

Second, we must pursue a variety of promising steps to build QI capacity at multiple levels (e.g., individual professionals, teams and organizations, and across organizations), encourage broader participation in QI activities, and strengthen the QI implementation and evaluation research infrastructure. Changing the financial and nonfinancial incentives helps, but some organizations and professionals, such as the late majority or laggards who most likely have relatively few resources, may need additional supports. This might include opportunities for QI education and training, technical assistance, ongoing mentoring or coaching, and perhaps direct financial support through grants or loans to support QI infrastructure development and related staff.⁴⁴

In addition, to the extent possible, we must foster more collaboration between researchers with expertise in QI and health care and non-health care organizations through existing or new practice-based research networks and other mechanisms. The competitive environment in health care often makes it difficult for

organizations operating in the same markets or in close geographic proximity to collaborate, and a lack of resources in some make it even more difficult to take advantage of activities outside their own market or geographic area. Consequently, neutral conveners may be needed to foster the exchange of information and ideas that otherwise may be viewed as undermining strategic position or as proprietary information.

Similarly, many medical and other clinical schools do not exchange ideas with other schools or departments (e.g., business or organizational behavior and management, engineering, and information technology) or industries. More effort should be made to build bridges between medicine, nursing, health care management and research, and other fields and industries. This includes drawing on alternative research approaches traditionally used in other fields, such as quasi-experimental design, multilevel research and related methods.

Third, we must develop greater QI knowledge and skills in all health care-related professions. Some education and training in QI is now required in medical schools, but it may not be sufficient. Additionally, other schools or departments like nursing and health management programs may not require a QI course at all or focus relatively little attention on QI specifically.⁴⁵ Even if these schools and programs do offer some QI education and training, they tend to focus more on the QI strategies most relevant to their own professions and less on the perspectives of other key stakeholders and the QI approaches they tend to utilize (as shown in Table

1). This means that most people currently working in health care organizations have relatively little knowledge of QI approaches and methods, and professional silos may prevent people from working effectively in multidisciplinary QI teams.

Fourth, as noted, the unparalleled investment in EHRs, other HIT and HIE hold the promise of more comprehensive and timely, as well as less costly, QI data collection, analysis and feedback. This is true for both individual organizations engaged in QI activities and research involving multiple organizations over time. However, continued investment and resolving many policy issues (e.g., privacy and security) and technical issues (e.g., unique provider and patient identifiers) are required to fully leverage the technology.

Fifth, public and private policy-makers must work to increase patients' and consumers' involvement in QI initiatives. If one of the six aims of the health care system is to be patient-centered, the need to solicit their perspective on how quality can be improved is obvious. Although challenging, there are many ways to engage patients and consumers in QI efforts that go beyond traditional approaches. (See Table 1.) For example, patients and consumers can provide input on national, state, or local health care organization QI priorities and specific QI initiatives through patient advisory boards or other forms of input. In addition, patients and consumers can strengthen the ability of purchasers, plans, and providers to improve quality through activities such as the use of evidence-based medicine or comparative

effectiveness research when considering treatment options and quality reports when selecting health plans and providers (e.g., hospitals, doctors or medical groups, nursing homes).⁴⁶

Finally, federal agencies, foundations, private purchasers, and professional associations and industry groups must work together to improve QI research and practice to accelerate the pace of innovation, implementation, research and evaluation, and related learning. Previous research has shown that it takes 17 years for the best evidence to become routine in practice in health care, so there is substantial opportunity to speed up and improve that process.⁴⁷ AHRQ's primary care PBRN and ACTION II networks are examples of how this goal might be accomplished, as they seek to forge stronger partnerships between diverse real-world medical groups, health systems and researchers, and facilitate shorter cycles for research funding, conduct, and dissemination of results.⁴⁸ The Robert Wood Johnson Foundation's *Aligning Forces for Quality* initiative is another example of how to support and evaluate QI efforts in local communities throughout the country.⁴⁹ Finally, publications from the IOM and others provide strong guidance regarding ways to improve QI research and practice. The time is right and a strong foundation is in place to strengthen the nation's QI infrastructure so we can learn even more about how to improve quality more effectively and quickly and ultimately transform our nation's health care system.

The views expressed are those of the author and should not be attributed to the Robert Wood Johnson Foundation, or the Urban Institute, its trustees, or its funders.

About the Author and Acknowledgments

Kelly J. Devers, PhD, is a senior fellow at the Urban Institute. The author thanks Robert Berenson, Brian Mittman, Michael Painter, and Shoshanna Sofaer for providing insightful comments and suggestions on this policy paper. This research was funded by the Robert Wood Johnson Foundation.

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