EDITORIAL

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The Language of Quality Improvement: Therapy Classes

As we approach the 6th year since the Institute of Medicine's *Crossing the Quality Chasm* offered a new vision for the American health care system, we still have a marked mismatch between the demand for health care quality and the supply of know-how to deliver it. What the field of quality improvement (QI) still needs is merely this: QI practitioners in every care setting, a working vocabulary, a predictive framework for the mechanisms of reliable care, and rational "therapies" rigorously studied.[1–3] Fortunately, the field of QI has attracted enough empiricists—working in the "lab" of the hospital and other care settings—to lurch forward. But few would argue that we still have far less insight into the delivery of quality care than into the delivery of myocardial blood flow.

For ischemic heart disease we have classes of therapies, each of which is grounded in basic and clinical science: antiplatelets, beta-blockers, vasodilators, lipid-lowering agents. For care delivery we have the makings of analogous therapy classes, derived and introduced rather recently in a large review, *Closing the Quality Gap: A Critical Analysis of the Quality Improvement Literature*.[4,5] To facilitate their review of the evidence, the authors, including 2 prominent hospitalists, developed a new taxonomy of QI strategies (see Table 1). Though their effect size, relative efficacy, and "interactions" are not yet clear, many of these strategies can be applied to the inpatient setting, perhaps no less rationally than a well-constructed antianginal regimen.

Where in the pathophysiology of a hospital do these QI therapies act? A plurality target the level of the provider: provider education, provider reminders, audit-and-feedback of provider performance, and facilitated relay of clinical data to providers. Remaining strategies target the patient (patient education, promotion of self-management, and patient reminders), the immediate system within which care is delivered (organizational change), and the methodology of problem solving (continuous quality improvement). Only one strategy (financial incentives, regulation, and policy) fails to act directly at the level of the patient or provider, arguably the only level at which care actually can be improved.[6]

The value of the *Quality Gap* taxonomy is still largely untapped. If QI researchers and practitioners were to adopt its language as a standard, we could ramp up the power with which we communicate, interpret, and ultimately conduct improvement initiatives. In this issue of the *Journal of Hospital Medicine*, Cohn and colleagues profile a quality improvement initiative that achieved an impressive new level of performance. For an inpatient metric with a baseline institutional performance of 47%—and an international benchmark of 39%—the investigators executed a QI

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TABLE 1
Taxonomy of Quality Improvement Strategies

QI Strategies	Examples
Provider education	• Conferences and workshops
	• Educational outreach visits (eg, academic detailing)
	• Distributed educational materials
Provider reminder systems	• Reminders in charts for providers
	• Computer-based reminders for providers
	• Computer-based decision support
Facilitated relay of clinical data to providers	• Transmission of clinical data from data source to hospital physician by means other than medical record, eg, page, e-mail, phone call to hospitalist about clinically significant findings in postdischarge period
Audit and feedback of performance to providers	• Feedback of performance to individual providers
	• Quality indicators and reports
	• National/state quality report cards
	• Publicly released performance data
	• Benchmarking—provision of outcomes data from top performers for comparison with provider's own data
Patient education	• Classes
	• Parent and family education
	• Patient pamphlets
	• Intensive education strategies promoting self-management of chronic conditions
Promotion of self-management	• Materials and devices promoting self-management, eg, diabetes educator, pharmacist-facilitated teaching of discharge medications
Patient reminder systems	• Postcards or calls to patients
Organizational or team change	• Case management, disease management
	• Multidisciplinary teams
	• Change from paper to computer-based records
	• Increased staffing
	• Skill mix changes
Continuous quality improvement	• Interventions using an iterative process for assessing quality problems, developing solutions, testing their impacts, and then reassessing the need for further action, eg, Plan–Do–Study–Act
Financial incentives, regulation, and policy	Provider directed:
	• Financial incentives based on achievement of performance goals
	• Alternative reimbursement systems (eg, fee-for-service, capitated payments)
	• Licensure requirements
	Health system directed:
	• Initiatives by accreditation bodies (eg, residency work hour limits)
	• Changes in reimbursement schemes (eg, capitation, prospective payment, salaried providers)

Source: adapted from Shojania KG, et al. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies.* Volume 1, *Series Overview and Methodology*, 2004. Available at: http://www.ahrq.gov/downloads/pub/evidence/pdf/qualgap1/qualgap1.pdf

initiative that appears to have raised the rate of VTE prophylaxis to 85%.[7] Despite a study design that weakens validity (before–after without controls) and a setting that diminishes applicability (medical patients in a single academic center), the authors have made a solid contribution to the QI literature simply by using the *Quality Gap* taxonomy. The authors specifically name and profile at least 3 distinct classes of QI strategies: provider education, a provider reminder element (ie, decision support), and an audit-and-feedback layer.

Even though provider education is unlikely to be sufficient as a lone QI strategy—a large review showed consistent but only modest benefits—it is often necessary.[8] The provider education executed by Cohn and colleagues was frequent and regular. In the beginning of each month the chief resident oriented incoming house staff about venous thromboembolism (VTE) risk factors and the need for prophylaxis. They were given decision support pocket cards. Posters on display in nurse and physician work areas highlighted VTE risk factors. The provider education element also included discussions with the division chief about the topic. As robust as it was, however, the provider education was just a single component of the larger QI effort.

The second element, decision support, included VTE risk factor pocket cards with prophylaxis options listed. Introduced initially with the provider education, the pocket cards were handed

out monthly by the chief resident. It is critical to recognize this decision support layer as a distinct core QI strategy—and that it may even be fundamental to the success of the other strategies. Placed into the clinical workflow as a durable item, the decision support pocket card has the power to overcome provider uncertainty at moments of medical decision making. Generally speaking, a decision support layer, whether a pocket card, computer alert, or algorithm on a preprinted order form, can function as a "shared baseline." Shared baselines or protocols reduce unnecessary variation in practice, a common source of poor quality care. Any mechanism that encourages groups of providers to deliver the same recommended care to groups of similarly at-risk patients, while allowing customization of the protocol to meet the special needs of any individual patient, will have the net effect of raising overall quality of care.

This QI initiative may have achieved its greatest performance gains—as well as its greatest loss in terms of applicability to other settings—from its third facet, the audit-and-feedback layer. As a QI strategy audit-and-feedback has been defined as "a summary of clinical performance for health care providers or institutions, performed for a specific period of time and reported either publicly or confidentially."[1] It has demonstrated small to moderate benefits, with variations in effect most likely related to the format.[9] As profiled in this study, it is hard to imagine a more powerful audit-and-feedback arrangement. The division chief of General Internal Medicine not only performed the audits, but also directly delivered the feedback to the house staff. In a deliberate, systematic, and successful way the investigators constructively used an existing authority gradient to leverage the Hawthorne effect, a change in worker behavior triggered by knowledge of being observed. Although it contributed to the impressive new VTE prophylaxis rates, this component did diminish generalizability and sustainability. Nonacademic centers may struggle to replicate these results, a point the authors dutifully point out. But even other academic centers might struggle in the absence of an authority figure with comparable influence and dedication to VTE prophylaxis. At the study hospital itself, similar rates of improvement would not be expected in patient populations outside the purview of the division chief.

Several alternatives to the before-after study design could have produced richer information. Simultaneous data on VTE prophylaxis rates in a non-intervention population in the same or a similar hospital could have controlled for background or secular effects. An interrupted time series design may even have been feasible and could have provided more confidence in causality and more information on effect size. For example, what would be the effect on performance, if any, with removal of the decision support pocket card at 10 or 15 months? How much would performance rebound after its reintroduction? What could we have learned had the authors chosen instead to measure performance after sequentially introducing each component?

Using the language of the *Quality Gap* taxonomy, what conclusions can we draw from this improvement initiative? The introduction of a portable *provider reminder* (the decision support pocket card), when preceded by a program of *provider education* and followed by high-intensity *audit-and-feedback* within an existing provider hierarchy, may have the power to raise VTE prophylaxis rates to 85% over an 18-month period. With the large effect size somewhat mitigating the design flaws that weaken causality, we might risk an inference that these 3 classes of QI strategies can be reasonably successful in combination. But would we introduce them in our own medical centers? Using the clarity afforded by the taxonomy, we can identify several potential limitations, all attributable to the specifics of the audit-and-feedback arrangement: stringent preconditions of the practice setting, guaranteed inability to spread the initiative to other patient populations within the same medical center, limited scalability to include other QI projects, and reliance on the role of a single individual. Although clopidogrel 300 mg daily in the last week of every month is one way to pursue antiplatelet activity, other schedules or alternative agents may be preferable for the vast majority of patients.

The taxonomy can be used to compare, contrast, and more fully understand other QI studies. For example, among acutely ill medical inpatients not receiving VTE prophylaxis, Kucher and colleagues found that an "electronic alert" nearly doubled prophylaxis rates compared to those in a control group.[10] Before trying to emulate their experience, a similarly equipped hospital would do well to recognize that the electronic alert was deployed as a composite of *provider education, provider reminder,* and *facilitated relay of clinical in-*

formation strategies, increasing prophylaxis rates for high risk patients from a baseline of 85% to 88%.

On the 21st-century side of the quality chasm there is still something to be learned from QI research that falls short of recently proposed standards.[3] This may be true as long as the key question remains: what are the mechanisms of reliable and sustainable performance improvement? We have not yet reached the day where a predictive framework, the clarity of our inquiry, the rigor of our study design, and the strength of our evidence churn out coherent answers. But we do have insights from a wealth of ongoing QI activity triggered by such forces as the Institute for Healthcare Improvement's 100,000 Lives Campaign and the advent of mandatory public reporting of hospital performance measures. By adding to this primordial mix the taxonomy offered by *Closing the Quality Gap* and its uptake into our vernacular by reports such as the one by Cohn in this issue of the *Journal of Hospital Medicine*, we are acquiring the language and experience to conduct intelligent and *intelligible* QI research.

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