



CALIFORNIA
HEALTHCARE
FOUNDATION



It Takes a Region: Creating a Framework to Improve Chronic Disease Care

November 2006

It Takes a Region: Creating a Framework to Improve Chronic Disease Care

Prepared for:

CALIFORNIA HEALTHCARE FOUNDATION

Prepared by:

Ed Wagner, Brian Austin, and Catherine Coleman
MacColl Institute for Healthcare Innovation

November 2006

About the Authors

Ed Wagner, M.D., M.P.H., is director of the MacColl Institute for Healthcare Innovation at Group Health's Center for Health Studies. He also directs Improving Chronic Illness Care (ICIC), a national program of The Robert Wood Johnson Foundation.

Brian Austin is associate director of the MacColl Institute, and deputy director of ICIC.

Catherine Coleman, M.S.P.H., is a research associate at the MacColl Institute.

About the Foundation

The **California HealthCare Foundation**, based in Oakland, is an independent philanthropy committed to improving California's health care delivery and financing systems. Formed in 1996, our goal is to ensure that all Californians have access to affordable, quality health care.

For more information about CHCF, visit us online at www.chcf.org.

ISBN 1-933795-15-8

Copyright © 2006 California HealthCare Foundation

Contents

4	I. Executive Summary	
8	II. Background	
11	III. Building a Regional Health Care System	Leadership and Shared Mission
14	IV. Four Strategies for Regional Quality Improvement	Strategy 1: Data-Sharing for Performance Measurement Strategy 2: Engaging Consumers Strategy 3: Improving Health Care Delivery Strategy 4: Aligning Benefits and Finances
24	V. Leveraging the Strategies for Transformation	
25	VI. Getting Started	Question 1: How Far Are You Prepared To Go? Question 2: Are You Organized for Success?
28	VII. Conclusion	
30	Endnotes	

I. Executive Summary

IN MANY COMMUNITIES AND REGIONS ACROSS the United States, public and private stakeholders are collaborating to improve health care for their local populations. Their goals include better quality and reduced costs. This report examines the organization, strategies, and potential for success of these regional efforts, with illustrations from nine prominent initiatives. Based on the findings from a literature review and interviews with coalition leaders, the MacColl Institute for Healthcare Innovation is proposing a “Framework for Creating a Regional Health Care System” that combines the strategies that successful initiatives have in common. Experience suggests that to a far greater degree than is possible for any of them separately, the strategies create the environment and provide the critical paths for transforming regional care. The report also calls for more research and sharing of experience, so local and regional stakeholders will know with greater certainty what actions and structures have the greatest impact on maximizing improvement across a geographic area.

Background

Most Americans are deeply worried about the escalating cost, fragmentation, and mediocre quality of health care in this country, especially for the more than 100 million with chronic illnesses. The Institute of Medicine report, *Crossing the Quality Chasm*, urged a national commitment to transforming care delivery to bridge the gulf between care as it is and care as it can and should be. With no national reform effort on the horizon to create an organized system of care and promote innovation, local communities and regions appear to be the only environment where this can begin to happen.

The small, independent practices that typify health care in most communities can learn from the experience of large health care organizations, such as the Veterans Health Administration, that have significantly improved their patients’ health outcomes. Studies show that strong leadership, shared vision, routine measurement and monitoring, evidence-based guidelines, and supportive information technology are among the predictors of success.

The Foundation for a Regional System

Community health, political, and business leaders are increasingly coming together to improve local care. There are many examples—including the ones profiled in this report—to show that such initiatives can and do work. An essential feature of successful efforts is collaboration across stakeholder groups. Change will not happen on the scale needed unless purchasers, plans, providers, patients, politicians, and public health officials are willing to participate. The collaboration must have strong and trusted leadership to convene the stakeholders, help them reach agreement on a mission and strategies, and mobilize the resources for a sustained effort.

Four Strategies for Regional Quality Improvement

Despite wide agreement on the need for transformational change, debate and experimentation continue about what to change, and how. Regional coalitions develop quite different strategies based on their view of what is most significant. Generally, these efforts pursue one or more of the four strategies outlined below—measuring performance, engaging consumers, supporting delivery system improvement, and aligning benefits and finances.

As noted, there is not yet enough evidence to know what elements are critical and how they can be used and combined for greatest impact. The best of the current regional efforts can be viewed as critical natural experiments that provide valuable intelligence to guide future reform efforts, both regional and national. Some

of them are the source of the limited evidence base that does exist. Current evidence suggests that for genuine change to occur, regional improvement efforts will need to systematically coordinate actions across multiple strategy areas.

Strategy 1: Data-Sharing for Performance Measurement

Performance measurement is a common plank of quality improvement platforms. In a typical community, the fragmentation of relevant data and the competition that works against sharing are major challenges. Coalitions that want to improve care for local populations must overcome these barriers to enable data sharing for performance measurement. It is important to help smaller practices participate. Coalitions also must agree on the details and intended uses of measurement, with attention to these questions:

- Is the main purpose of data-sharing performance measurement or clinical data exchange?
- What should be measured from among the standard areas of outcomes, process, structure, patient experience, and cost or efficiency?
- Which clinical topics should be included?
- Where will the data come from?

Strategy 2: Engaging Consumers

The goal of this strategy is to produce informed, motivated consumers who will understand, demand, and choose higher quality health care. Coalitions wanting to include this strategy in their improvement efforts must decide how to approach the issue of public disclosure and devise ways to educate patients to be effective consumers and self-advocates.

Although publicly disclosed performance information is viewed as an appropriate and potentially powerful technique, evidence to date suggests that consumers rarely act on such information about their providers. Providers do respond, either with sincere efforts to improve quality—or by excluding risky patients or manipulating their data. They may try to undermine collaborative efforts if they fear adverse publicity. Experience shows that performance measures should have the full support of all stakeholders and not be publicly disclosed until they are locally trusted. In addition, it is important to educate patients so they can evaluate how well their care responds to their needs and act on the results.

Strategy 3: Improving Health Care Delivery

The goal of this strategy is to motivate and help providers redesign their care systems to provide more cost-effective care. System redesign efforts tend to fall into three general categories:

- Providing tools for quality improvement, including evidence-based guidelines, useful information technology, decision support tools, and nurse care management services;

- Sponsoring quality improvement activities to equip participants with useful models and strategies, connect practices with faculty or coaches, and enable other stakeholders (e.g., health plans) to collaborate on practice improvement; and
- Helping create provider organizations or networks, guided by the knowledge that social networks are important vehicles for disseminating innovations and that small, independent practices may benefit from sharing ideas and resources with colleagues.

Strategy 4: Aligning Benefits and Finances

The goal of this strategy is to create incentives for consumers to seek, and providers to deliver, the most cost-effective care by devising supportive health insurance benefits for consumers and payment mechanisms for providers. The most constructive financial incentives for consumers are those that encourage them to make choices that benefit their health. Otherwise, experience shows that indiscriminately increasing the percentage of costs borne by consumers will reduce all services, whether they are effective or wasteful.

Despite mixed past experience, most experts believe that well-designed incentives to providers can improve care. New lessons about linking performance measures with financial rewards show the importance of having a trusted convener, establishing agreement among all stakeholders on guiding principles, and testing to ensure feasibility and trust, among other factors.

The Framework

This report proposes the MacColl Institute’s “Framework for Creating a Regional Health Care System” that combines the key components of successful regional quality improvement efforts. Collectively, America’s disparate and dysfunctional health care entities are informally called “the health care system.” But whatever the quality of individual providers, the aggregate has none of the attributes of a true system as a dictionary would define it. This report takes seriously the principle of a system and the need for systemic and systematic approaches to health care. Regional collaboratives will need to create functioning systems to bring about lasting improvements in the health of their communities.

The Future of Regional Quality Improvement

In the absence of substantial national health care reform, regional quality improvement efforts appear to offer the best hope for transforming American health care. Extending quality improvement and cost reduction to reach the full population requires a systematic approach based on collaboration and cooperation among multiple stakeholders. Regional efforts to improve quality and reduce costs are beginning to demonstrate this approach. There is not enough evidence at present to say precisely what features are essential to an effective regional quality improvement program. Better evidence about what works and what doesn’t and more sharing of experience among coalition leaders will make it possible to build a stronger foundation for future regional initiatives.

II. Background

HEALTH CARE HAS ONCE AGAIN ASSUMED A prominent place on the American political agenda. A large population of uninsured, relentless cost inflation, and an uneven quality of care characterize American health care and threaten its citizens' health and pocketbooks. The high costs and lackluster quality of the nation's health care require nothing less than a massive commitment to redesigning care delivery and overhauling the medical payment system.^{1,2}

A majority of American citizens, physicians, and policymakers are worried about cumulative effects from this broken system, especially for the 100 million or more people with one or more chronic illnesses. A recent national survey queried practicing physicians, policymakers, and random Americans age 50 and above. All of these groups expressed serious concerns about the quality and affordability of care for people with chronic illness, as illustrated in Table 1.³

The Institute of Medicine (IOM) made clear in its influential report, *Crossing the Quality Chasm*, that nothing short of major transformation of America's health care delivery systems will close the gap between care as usual and best practice.¹ Tinkering around the edges won't do it. In the absence of a national health care strategy or an organized system of care for most of the population, local innovation and action appear to be the only feasible approach.

**Table 1. Adequacy of American Medical Care:
Percent Agreeing with the Following Statements**

	Public	Physicians	Policymakers
People with chronic conditions usually receive adequate medical care.	48%	45%	22%
Government programs are adequate to meet the needs of people with chronic conditions.	38%	20%	16%
Health insurance pays for most of the services chronically ill people need.	37%	28%	23%

Source: Anderson GF. "Physician, Public, and Policy-Maker Perspectives on Chronic Conditions." *Archives of Internal Medicine* 2003; 163(4): 437-42.

Local efforts can learn from recent improvements made by large health systems, where the evidence indicates that some Americans are benefitting from better care. Large organizations such as the Veterans Health Administration (VA) and Kaiser Permanente have significantly improved the quality of care for their patients. The Translating Research Into Action for Diabetes (TRIAD) study compared diabetes quality indicators in five VA Health Systems with commercial managed care plans in their geographic area. As seen in Table 2, diabetes care was significantly better in the VA.⁴

How did the VA do it? And more importantly, is their experience relevant to the rest of American medical care? A clinical practice in the VA system has the advantage of being part of a single, larger organization that has shared values, mission, leadership, and resources. Within this organized system, the clinical practice has the capacity to implement changes that can benefit the health of an individual veteran. In contrast, the typical practice in most American communities has very limited resources and relates to several insurance companies and other organizations whose goals and approaches may conflict with each other.

Table 2. Comparisons of Quality Indicators for Diabetes Care: VA vs. Commercial Managed Care

	VA	Commercial
Annual Eye Exam	91%	75%
Annual Foot Exam	98%	84%
HbA1c <8.5%	83%	65%
LDL cholesterol <100 mg/dl	52%	36%

Source: Kerr EA, Gerzoff RB, Krein SL *et al.* "Diabetes Care Quality in the Veterans Affairs Health Care System and Commercial Managed Care: The TRIAD study." *Annals of Internal Medicine* 2004; 141(4): 272-81.

Clinical improvement in this context is difficult and depends mostly on the ingenuity and energy of the practice.

Studies of high-performing health systems such as the VA tend to agree on the following predictors of success in improving health outcomes:^{5,6}

- Strong leadership committed to quality improvement;
- Shared vision among clinicians and administrators;
- Routine measurement and monitoring of the quality and costs of care;
- Emphasis on primary care and its integration with specialty care;
- Evidence-based guidelines integrated into performance measurement and clinical decision making;
- Information technology that facilitates performance measurement and provides support for clinical care; and
- Organized quality improvement activities.

For the large numbers of independent practices in the United States to improve, they too will need committed leadership, a shared vision, and sufficient resources. Absent major health care reform, such a system must be developed locally or regionally. To be successful, local initiatives must build organizations and strategies capable of transforming care. This requires bringing all key stakeholders together to create an environment that will support the kind of system changes, behaviors, and outcomes that come more easily to large health systems.

Increasingly, community health, political, and business leaders are coming together for this purpose, motivated by their shared concerns about the quality and costs of health care. Their goals are to improve the quality of care and outcomes across a defined population and to reduce the costs of care. Experience suggests that local and regional initiatives can and do work. Regional initiatives such as the Pittsburgh Regional Healthcare Initiative (see sidebar) have measurably improved care. The question, then, is how more communities can create successful initiatives to improve health care for local populations.

This report describes the strategies employed to date by the more successful community coalitions, with illustrations from nine programs. It is based on a review of the literature and interviews with leaders of regional improvement initiatives. To guide future efforts, MacColl Institute is proposing a “Framework for Creating a Regional Health Care System.” The framework brings together six key factors that many initiatives have in common and that have the potential to work synergistically to transform regional health care. At this point, the framework is descriptive, not evidence-based. Much more research is needed to evaluate the relative contributions of each component and the overall effects of regional quality improvement initiatives on health outcomes and costs.

A Systematic Approach to Reducing Infection at the Pittsburgh Regional Healthcare Initiative (PRHI)

PRHI, a multi-stakeholder collaborative serving southwestern Pennsylvania, attempted to reduce central venous catheter-induced bloodstream infections (BSIs). The Centers for Disease Control estimates that 250,000 such infections occur annually in American hospitals, causing a 12-25 percent increase in mortality and a \$25,000 increase in costs. Beginning in 2001, PRHI set bold goals and adapted industrial quality improvement methods to reduce BSIs. Through measurement, analysis of causes of infections, and sharing of experience and insights across hospitals, the rate of infections fell 63 percent between 2001 and the end of 2005.

III. Building a Regional Health Care System

COMMUNITY COLLABORATIVE ACTION HAS BEEN a common reaction to collective problems throughout American history. This has been the case with health problems, as well. Estimates are that hundreds of coalitions have formed to tackle health issues over the past 50 years.⁷ The driving force behind the creation of these coalitions varies: a tragic medical error, a grant opportunity, a dynamic business consortium, or a visionary politician or health care leader. Improving the quality and efficiency of health care in a community is a complex, messy undertaking. Most collaborations have had limited success, so it is vital to examine the differences between those that failed and those with some degree of success.

One essential feature of successful regional initiatives is collaboration across different stakeholder groups.⁸

The groups most often involved are:

- Purchasers (commercial, government);
- Plans (insurers, managed care organizations);
- Providers (medical groups, hospitals, professional organizations);
- Patients (consumers, advocacy groups);
- Politicians (elected or appointed officials); and
- Public Health (local or state).

Each of these groups has an important role to play in bringing about the desired changes.

Purchasers (private or governmental) have the largest financial stake in change and have been the major funders of regional improvement efforts. All stakeholders want to speak directly to purchasers, including providers who would like their concerns heard directly by those paying the bills. In addition, purchasers have the power to make decisions about health insurance choices and benefits that directly affect their employees or beneficiaries. Health plans can collaborate to

reduce unnecessary variation in guidelines and performance measures and improve administrative efficiency. Provider engagement is also essential; quality won't improve and costs won't moderate without provider behavior change. Consumer or patient input can help keep the enterprise focused on its goals. Political leaders can convene groups and galvanize action, though their futures are uncertain and their attention can be difficult to hold. True collaboration generally requires an influential yet trusted convener. Elected officials or public health agencies have often played this role.

An important message of this report is that the strategies for regional improvement presented here require a coordinated set of behavior changes on the part of providers, insurers, and payers. Providers are less likely to invest in the system changes necessary to improve quality of care without supportive changes by insurers and purchasers.⁹ Conversely, while the involvement and leadership of purchasers has been instrumental in many successful collaborations, purchaser-driven initiatives have sometimes struggled when they lacked provider involvement. A major reason for broad stakeholder participation is that it has proven difficult to influence the behavior of an important stakeholder group if it is not part of the process and decision making.

Leadership and Shared Mission

Convening a coalition of stakeholders is necessary, but it is hardly sufficient to ensure the success of a collaborative effort. Concerted action to improve care and reduce costs will not automatically follow from gathering different stakeholder groups around the same table. Leadership also must be in place to develop and sustain a shared vision and mission among organizations that may be business competitors. The competition in American health care, so valued by some and vilified by others, will fracture coalitions that don't agree on their direction or are weakly led. For example, regional improvement initiatives will not last long if providers share performance measures for practice improvement and health plans then use them to prune provider networks. A shared vision and mission must extend beyond such global goals as "better quality" to include agreement on the strategies to be employed. The questions and checklist at the end of this report (Chapter VI, pages 25-27) can help organizers assess whether a strong enough foundation is in place for moving ahead on a joint initiative.

The Community Care Network program funded 25 established community public-private partnerships in 1995 with goals that included health promotion, quality improvement, and health care cost reduction.¹⁰ Program evaluators identified three key components in the leadership of successful partnerships:

- Core leadership that assures action and organizational management;
- An organizational driver that provides stability and legitimacy; and
- Leadership for specific programs by those closest to the problem.

Core leaders are those who do the day-to-day work, raise the money, and convene the groups. The organizational driver is generally a respected community entity that spans boundaries and is viewed as unbiased, such as a health department. Leadership for specific programs should include those key stakeholder groups closest to the issue. The Puget Sound Health Alliance (see sidebar) illustrates how these three components interact in an effective coalition.

Puget Sound Health Alliance (PSHA)

The Puget Sound Health Alliance, formed in late 2004, is off to a promising start. It has added new members; raised new funds; and developed strategies to improve care for diabetes, heart disease, back pain, and depression, as well as reduce prescription drug costs. Its progress to date is due in no small part to strong leadership from an active, multi-stakeholder board of directors and an effective executive director and staff. The organizational driver is the local county government (King County) led by its county executive, who chairs PSHA's board of directors. Committees composed of subject-matter experts drawn from member organizations and other local institutions design the PSHA's programs and strategic initiatives.

IV. Four Strategies for Regional Quality Improvement

MOST REGIONAL INITIATIVES AGREE THAT transformational change must occur, but they debate how and what needs changing. In fact, regional collaboratives develop very different change strategies, depending on their view of what drives improvement in the health care marketplace. Many are convinced that developing information about the relative performance of community providers is an essential first step, regardless of whether its purpose is to motivate providers, educate consumers, pay for performance, or simply monitor improvement. Some believe that a lack of information technology explains much of American medicine's ineffectiveness and inefficiency. Others see disincentives in provider reimbursement and health insurance benefits as major barriers to improvement, thus favoring innovations in these areas. The absence of a strong consumer voice troubles many observers of the health care marketplace. They advocate strategies to make consumers a more potent force in the marketplace.

Regional efforts to improve the quality and affordability of health care generally employ one or more of the following strategies:

- They use information technology to measure performance and increase the availability of relevant clinical information wherever patients seek care;
- They engage and educate the public to be more discriminating consumers, as well as more informed and motivated patients;
- They help providers improve their care delivery; and
- They align provider payment and patient benefits so that they support higher quality and more efficient care.

Earlier regional improvement programs tended to focus on one or two of these strategies, most commonly performance measurement and feedback to providers and consumers. More recently, quality improvement efforts and financial incentives to providers based on good performance have been added to this mix. A very different group of regional efforts, Regional Health Information Organizations, or RHIOs, have started to focus on developing the community's health information technology resources and interoperability.¹¹

These very different strategies do share a common feature: They all presume that providers, whether large hospitals or small practices, can improve the quality and efficiency of their care if they have incentives to change and information to help them do so. Yet for many health care organizations, information and incentives may not be enough. Compelling evidence indicates that the quality and efficiency of medical care are largely functions of the design of the care system.¹

The sections that follow examine all four of the strategies listed above, assessing the evidence and experience to date. For true transformation to occur, it is likely that improvement efforts will need to coordinate action across multiple strategies.

Strategy 1: Data-Sharing for Performance Measurement

As noted, many are looking to information and information technology (IT) to solve the problems in health care. At present, data on performance are fragmented for both providers and purchasers because of the fragmentation of health care financing. This barrier can be overcome by data-sharing across the region. In addition, the coalition must agree on a number of questions about the uses of measurement and the details of the process.

Performance Measurement or Clinical Data Exchange?

Expectations vary widely as to how to use clinical data and IT, and for what purpose. For coalitions focused on quality improvement and cost reduction, community-wide performance measurement is the primary goal. At the same time, much of the national interest in health IT now revolves around data exchange so that clinical data on individual patients are available wherever the patients seek care. Since the political and technical challenges related to performance measurement are so different from those related to clinical data exchange, regional initiatives must decide which is their immediate goal.

All stakeholder groups want performance data. For example, consumer advocates want the information to help people and purchasers choose high-quality providers, and providers want it to improve their care and to be eligible for financial incentive programs. And all stakeholders have major concerns about the quality and completeness of performance data. It is important to the providers of care that any measurement and feedback reflect performance across their entire patient population. The value of performance measurement can be lost when providers receive separate reports on segments of their practice population from different payers. In addition, health plans and self-insured employers want comprehensive data on their providers to guide decision making about benefit design or network management. Improvement is difficult without measures to assess current performance, motivate organizations to change their behavior, and guide them as they make the changes.

What Should We Measure?

While most agree that measurement is desirable, consensus on what to measure, and how, is a different story. In general, five aspects of health care can be assessed: outcomes, process, structure, patient experience, and cost or efficiency. The best measurement systems have indicators in all five categories. The recently published Institute of Medicine report, *Performance Measurement: Accelerating Improvement*, provides a “starter kit” of widely accepted measures in all five.¹²

- **Process** improvement, such as receipt of preventive services or effective drugs, is the easiest to measure since data are available from billing or other managerial systems.
- **Outcome** improvement, such as reduced symptoms, fewer hospitalizations, or better control of diabetes or hypertension, is the ultimate goal, but measurement often requires patient self-reports or laboratory results that may be difficult to obtain.
- There is growing interest in measuring care-system **structure** to assess whether a practice is designed and organized to meet the needs of patients. Such measures may be useful in helping practices understand the need to change practice and the nature of the changes to be made. One prominent structural measure is the PPC (Physician Practice Connections) assessment,¹³ a key part of the Bridges to Excellence financial incentive program. Interested practices complete a self-assessment that covers clinical information systems, support for patient self-management, performance measurement, quality improvement, and the management of complex patients.

- The quality of a **patient’s experience** in receiving care is increasingly recognized as a distinct and vitally important perspective on health system performance. Did patients receive the information and support they sought? Were they shown respect? Were they encouraged to take a more active role in their care and related decisions? The IOM Measurement Starter Kit¹² includes the best-tested, most widely used questionnaires.
- Finally, **efficiency** measures attempt to assess whether care is wasteful or unnecessarily expensive, but much more needs to be learned about their validity and utility.¹⁴

Clinical Focus

Besides choosing from among the five general measurement areas, improvement initiatives must decide which clinical topics to include. The Wisconsin Collaborative for Healthcare Quality¹⁵ (see sidebar, page 17) demonstrates how one thoughtful regional effort implemented performance measurement in all five areas and systematically increased the number of clinical areas monitored.

As noted, the choice of measures is often dictated by data availability. The best-known measures, e.g., the Health Plan and Employer Data Information Set (HEDIS) indicators, often require drawing samples of patients and reviewing their charts. Not surprisingly, smaller practices find this a daunting barrier. Insurance billing (i.e., claims) data may be the only information available from small practices without new data collection resources. But reliance on claims data neglects information on drug prescribing and patient experience as well as outcome indicators based on chart review (e.g., blood pressure or symptom reduction) or laboratory results (e.g., HbA1c). Because of these additional data

Wisconsin Collaborative for Healthcare Quality (WCHQ)

WCHQ is a non-profit consortium of Wisconsin businesses, providers, and health plans committed to improving the quality of care by:

- Developing or adapting shared definitions of healthcare quality measures and standards; and
- Promoting quality health care for patients and communities through uniform measurement and public reporting of outcomes.

WCHQ seeks to provide a comprehensive and accurate view of health care quality for consumers, purchasers, and providers in Wisconsin to guide their decision making. The coalition solicits ideas for new clinical topics from member organizations and by monitoring national developments in performance measurement. WCHQ desires a “balanced scorecard” that covers the clinical spectrum as well as the six IOM aims for health care quality: safety, effectiveness, timeliness, efficiency, equity, and patient-centeredness.¹

The measures include many adapted from major national measurement efforts such as HEDIS, Joint Commission on Accreditation of Healthcare Organizations (JCAHO), Leapfrog, and Consumer Assessment of Healthcare Providers and Systems (CAHPS), plus several developed locally. Participating provider organizations agree to collect data in a standardized manner. The quality of

data collection and data validity are assessed by MedStar, Wisconsin’s Quality Improvement Organization.

WCHQ’s measures extend beyond the usual clinical process and outcome measures to include indicators of attainment of the IOM *Quality Chasm* report’s aims.

IOM Aim	Sample Measure
Timeliness	Average time to “third next available” appointment
Safety	Use of computerized physician drug prescribing in hospitals
Patient-centeredness	Percent of patients rating their doctor 8 or higher on a 1–10 scale
Efficiency	Severity-adjusted hospital charges for Acute Myocardial Infarction combined with a composite quality of care measure

At the time this report was published, WCHQ’s publicly available reports included more than half the physicians in the state. The rapid growth in membership is evidence that WCHQ has achieved its initial goal of providing trusted, standardized measures of performance. Next steps include efforts to link the performance measures to provider payment.

collection requirements, regional programs tend to include hospitals and larger practice organizations. Enabling smaller practices to measure and report quality of care will remain a significant challenge until and unless practices wisely purchase and implement electronic record software.

The Humboldt-Del Norte Diabetes Project (see sidebar, page 18) illustrates the way one regional effort enabled a network of small practices to successfully improve the care of the diabetic population and its measurement by using an electronic registry.

The Humboldt-Del Norte Independent Practice Association (IPA)

The Humboldt-Del Norte IPA includes a large number of small practices in two rural Northern California counties. To enable these physicians to participate in a diabetes improvement project, 26 offices were supplied with a computer, high-speed Internet access, and a printer. This enabled practices to enter patient data into a diabetes registry supported by the IPA's website and to use it to guide clinical care. To prepare for a visit with a diabetic patient, staff log on to the website, click on their patient list, find the scheduled patient, upload any recent clinical data, and print a "registry work sheet." The work sheet has key patient data and serves as the progress note for that visit, a reminder of needed services, and the data entry form for updating the registry. In addition to supporting high quality clinical care, this system enables individual practices and the IPA to assess diabetes quality of care over time.

The particular appeal of the Humboldt-Del Norte approach is that it provided practices with a registry to support patient care as well as a measurement capability.

A shortage of information technology to support performance measurement is not the only barrier to the involvement of smaller practices in regional measurement efforts. Most regional efforts typically involve larger medical groups and report measures at the aggregate level, thus protecting the individual practitioner from potential embarrassment or worse. Small numbers of patients make quality estimates imprecise and highly variable over time. As a result, measurement at the level of the individual provider or small practice requires trusted measures and thoughtful handling and reporting of the data. For these reasons, most regional initiatives only report data for groups.

Where to Get the Data?

Once the coalition decides what to measure about performance, they must decide where to get the data. Hospital discharge and mortality data may be available from state or other reporting systems, and actuarial or other local firms may have comprehensive claims data. But such data are limited in scope, especially with respect to ambulatory care, and they afford little perspective on patient experience or outcomes. Still, most coalitions have made the sensible decision to use and improve available data resources rather than waiting to construct a more ideal measurement program.

Strategy 2: Engaging Consumers

The goal of this strategy is to produce informed, activated consumers who will understand, demand, and choose higher quality health care. Although this strategy has the least robust evidence base at this point, some coalitions are making consumer engagement an important plank in their improvement efforts.

Public Disclosure of Performance Information

Many believe that consumers and institutional purchasers should have more information about the quality of care in their communities and what they can do to influence it. This is regarded not only as the right thing to do, but also as a potentially powerful driver of care improvement. In fact, most current programs include a plan to measure and publicly report provider performance.

Although the intent is certainly laudable, coalitions should look carefully at past experience when deciding how to approach this issue. The assumption is that informed consumers, whether individuals or institutional purchasers, will use comparative performance data to select

high-quality providers or demand improvements in care. However, the limited evidence to date does not confirm this hypothesis. Several studies have shown that performance information did not influence individual consumer choice of health plan or provider.^{16, 17} It is unclear why consumers do not act on this information. The way relative performance data are presented may have a significant impact on the weight consumers give to the findings. For example, consumers appear influenced by data that highlight higher performers with stars or other symbols, order the data from best to worst, and show trends over time.¹⁸

Indeed, the experience of Cleveland Health Quality Choice (see sidebar) suggests that institutional purchasers may not use performance data to the extent expected, either.

Even though individual consumers and institutional purchasers may not act on publicly disclosed performance data, providers often do. Their actions may take the form of constructive attempts to improve care, or they may try to undermine the collaboration. For example, providers and health plans have stalled or threatened collaborative efforts for fear of adverse publicity from data that may be unreliable or at least difficult to interpret. The Cleveland experience is an example.

Public reporting actually can be harmful to patients. Public disclosure of cardiac surgery mortality rates has been the most studied. While such efforts in New York and Pennsylvania had positive effects in the form of quality improvement initiatives or the departure of high-risk and low-volume surgeons, there were negative consequences, as well.¹⁹⁻²¹ Of greatest concern, evaluators found evidence that eligible high-risk patients were being denied surgery for fear of their effect on mortality rates.

Cleveland Health Quality Choice

Ten CEOs of Cleveland's largest businesses formed a coalition in 1990 to address the high cost of health care in their community. They chose to focus on hospital care, and to base purchasing decisions on performance measurement using government data as an incentive to improve health care in Cleveland. After initial resistance, the area's 31 hospitals joined the effort to assure that the measures were appropriate and accurate. After three years of measurement review and development, the first public report was released. Larger hospitals tended to look bad and began a drumbeat of criticism. Nevertheless, consensus was achieved and measurement and public reporting continued over the next five years. Despite all the angst and effort, it became apparent to the hospitals that businesses were not shifting to high-performing hospitals. The hospitals left CHQC, leading to its discontinuation.

The following approaches have been recommended to reduce the possibility of such unintended effects:

- Collaboratively design measures and public accountability systems, involving providers, consumers, and purchasers;
- Acknowledge the limitations of performance measures based on claims data, and use a multi-dimensional approach to reporting on quality;
- Report physician quality and efficiency at the group level, at least initially; and
- Be cautious about the use of performance measures to position providers in insurance products that favor some providers over others.

Massachusetts Health Quality Partners (MHQP)

MHQP is a broad, multi-stakeholder coalition committed to improving the quality of care across their state. They are pioneers in their efforts to collect and report publicly data on patient experiences with primary care. Given the sensitivity of this information, MHQP approached the issue carefully and thoughtfully. From focus groups with consumers, they learned that consumers desired performance information but needed help understanding the indicators. Consumers wanted data at the doctor level, not about larger groups or health plans, and they wanted clear visual indicators that would distinguish better from weaker practices. Physicians were, as expected, loathe to see doctor-specific measures. A compromise was reached. Measures are reported at the

practice-site level (3 to 25 providers). Based on the consumer focus group input, consumers can go to the MHQP website, type in the name of a doctor or medical group, or their Zip Code, and see the results of administering the Ambulatory Care Experiences Survey (ACES) to random samples of health plan enrollees. The results are presented on MHQP's website for practice sites of 3 to 25 providers provided they have a sufficient number of responses (e.g., at least 90 completed surveys for practice with three clinicians). The results are presented as one to five stars, with the number of stars reflecting the percentile ranking of the practice site. The Web site provides consumers with information about each measure, what it means, and how it might be interpreted.

Consumer Education

Health care consumers have been very tolerant of poor quality, even when they recognize care as inadequate. Obviously, this passivity limits their ability to influence care. In response, efforts have emerged to encourage and educate patients so they can evaluate how well their care responds to their needs and then act on the results. The Massachusetts Health Quality Partners (see sidebar) have creatively addressed this problem.

Strategy 3: Improving Health Care Delivery

The goal of this strategy is to motivate and help providers redesign their care systems so they can provide cost-effective healthcare.

Although some regional initiatives limit their involvement with health care providers to measuring and reporting their performance, recent regional efforts want to more directly address quality of care. Their efforts tend to fall into

three general categories: providing tools for quality improvement, sponsoring quality improvement activities, and helping create provider organizations or networks.

Tools for Quality Improvement

Several regional improvement initiatives began as efforts to create and disseminate evidence-based guidelines. The Institute for Clinical Systems Improvement²² in Minnesota and the Colorado Clinical Guidelines Coalition²³ are two notable examples. Reaching consensus on common guidelines continues to be a focus for regional initiatives. Meanwhile, a growing understanding of the importance of integrating guidelines into the flow of patient care redesign has encouraged some regional programs to help practices gain access to resources that are crucial to using guidelines to improve the care of their chronically ill patients. These resources include information technology, decision support tools, and nurse care management services.

The Humboldt-Del Norte program described in Strategy 1 provided computers and printers to practices so that they could develop and use registries and other decision aids. Growing evidence attests to the value of patient registries in improving preventive and chronic illness care. Stand-alone registries are inexpensive; in fact, some are in the public domain and run on most personal computers.²⁴

Even if practices have software, they may not have the technical staff to make it work effectively. The Indiana Chronic Disease Program (see sidebar) distributed and supported Web-based patient registries to Medicaid providers and populated the registries with data on their Medicaid patients. To ensure successful implementation, the Indiana Medicaid program also provided computer support to help medical practices install and implement registries.

Patients with complex cases of chronic illness often benefit from more intensive management during high-risk periods. Nurse care managers generally play this role. Of course, most small practices don't have access to care managers. Some regional improvement efforts have recognized this need and addressed it. The Indiana program is one approach. Indiana Medicaid contracted with two community-based organizations to hire, train, and deploy nurse care managers throughout the state. The nurses worked collaboratively with high-risk chronically ill patients and their doctors.

The Indiana Chronic Disease Program

The Indiana legislature created the program to improve care and reduce costs for Medicaid patients with diabetes, CHF, and asthma. The program encouraged Medicaid providers to participate in quality improvement collaboratives held across the state.

The Medicaid program expanded the scope of its call center so that it could regularly contact Medicaid beneficiaries with the three diseases to assess their risk. Medicaid paid nurse care managers in every community to link with a participating practices and follow up with each high-risk patient. In addition, practices without registries were offered one free of charge, along with assistance in implementing it. Evaluation data suggest that the program improved care and reduced costs for Medicaid patients with heart failure.

Sponsoring Quality Improvement Activities

Successful large organizations such as the VA mount quality improvement activities with the potential to reach essentially all practices within the system. To achieve similar levels of improvement, regional initiatives should try to do the same thing, either by working with organizations that contract with physicians or by working directly with physicians. The goals of such quality improvement activities are to:

- Equip participants with proven quality improvement models and strategies, such as the Chronic Care Model and rapid cycle change methods;
- Provide a vehicle for bringing front-line practices together with faculty or coaches to share ideas for improving care; and
- Provide opportunities for other stakeholders (e.g., health plans) to collaborate on practice improvement.

The most commonly employed and evaluated strategy is the Breakthrough Series collaborative, developed by the Institute for Healthcare Improvement.²⁵

It takes real motivation for a small practice to close the office and participate in improvement activities. Most practices cannot change without technical or other kinds of support such as financial aid or incentives. Some health plans and other funders have subsidized practice involvement in collaboratives. In other cases, they have focused on building improvement capability within the organizations that supports the practice. The Institute for Healthcare Improvement offers a Breakthrough Series College for those interested in this approach.

Several research teams have tested multi-component quality improvement interventions for small practices involving feedback and practice coaches or facilitators, with positive results.^{26, 27} Although the evidence base underlying these interventions is still limited, wide-scale practice redesign seems unlikely without just such a concerted quality improvement support program.

Helping Create Provider Organizations or Networks

Studies of the spread of improvements in health care have emphasized the importance of social networks as a vehicle for dissemination. As noted, the majority of Americans receive care in small, independent practices that are not part of integrated group practices or IPAs. These practices lack the resources of a large organization, and they may have more limited opportunities to share ideas with colleagues. North Carolina Access,²⁸ a state program for low-income residents, offers Medicaid providers financial incentives to participate in local physician networks whose primary goal is quality improvement.

In addition to supporting performance measurement and continuing education, the networks make resources such as nurse care managers available to participating practices. In several countries, the government has recognized this problem and sponsored the formation of primary care organizations or networks.

Strategy 4: Aligning Benefits and Finances

The goal of this strategy is to encourage supportive health insurance benefits and provider payment mechanisms that create incentives for consumers to seek, and providers to deliver, the most cost-effective care.

Supportive Benefits for Consumers

Shifting the rising costs of health care to consumers is a common response to escalating health care costs. Yet recent experience with general increases in consumer cost-sharing confirms the more than 20-year-old finding of the RAND Health Insurance Experiment that indiscriminately increasing the percentage of costs borne by the consumer will reduce all services, be they effective or wasteful. In contrast, benefit packages that encourage greater use of preventive services such as cancer screening or effective generic drugs have been shown to be cost-effective. The most constructive health insurance features are those that encourage consumers to make choices that have health benefits.

Supportive Payment Mechanisms

Financial incentives linked to performance measures are proposed as saviors of American health care as frequently as electronic health records. However, review articles suggest that these incentives have had minimal impact on improving quality. Instead, they reward providers that have always been high performers.^{29, 30} Still, most experts believe that well-designed incentives can improve care. Well-established Pay for Performance (P4P) programs such as the California Integrated Healthcare Association (IHA, see sidebar) or Bridges to Excellence are promising, and supply valuable lessons.

In a recent report, IHA listed a number of valuable lessons learned about linking performance measures with financial incentives:³¹

- A neutral convener who involves all key stakeholders and operates transparently increases trust.
- All stakeholders should agree on a set of guiding principles—e.g., should we reward improvement or high performance, or both?
- Measures must be broadly discussed and tested to ensure feasibility and trust.
- Measure, reward, and report at the organizational rather than individual provider level.
- Money isn't the only incentive; the motivational power of public and peer recognition is underestimated.

California Integrated Healthcare Association

IHA is a multi-stakeholder California initiative that measures and rewards the performance of participating medical groups in three areas:

- Clinical indicators—e.g., immunizations, cancer and chlamydia screening, and HbA1c levels;
- Patient experience—e.g., patient reports of access, communication, and care coordination; and
- Implementation of information technology—e.g., registries, and decision support.

Payments are modest, representing less than 2 percent of a physician's income, yet the majority of participating medical groups exhibited modest improvements in clinical and patient experience measures. Future plans include expanding the measure set and increasing the incentive payments.

V. Leveraging the Strategies for Transformation

THE FOUR STRATEGIES DESCRIBED ABOVE— performance measurement, engaging customers, supporting delivery system improvement, and aligning benefits and finances—can reinforce each other to create the conditions for transforming regional health care. When used by broad-based coalitions of stakeholders with strong leadership and a common vision, these strategies have the potential to improve health care quality and reduce costs. Figure 1 brings these elements together in a “Framework for Creating a Regional Health Care System.”

To succeed, do regional improvement efforts need activities in all of the specified areas, or just a few? While the elements and strategies described appear to be complementary, there is not yet enough evidence to even begin to answer this question. Nonetheless, the interviews conducted for this report suggest that successful coalitions are using multiple strategies.

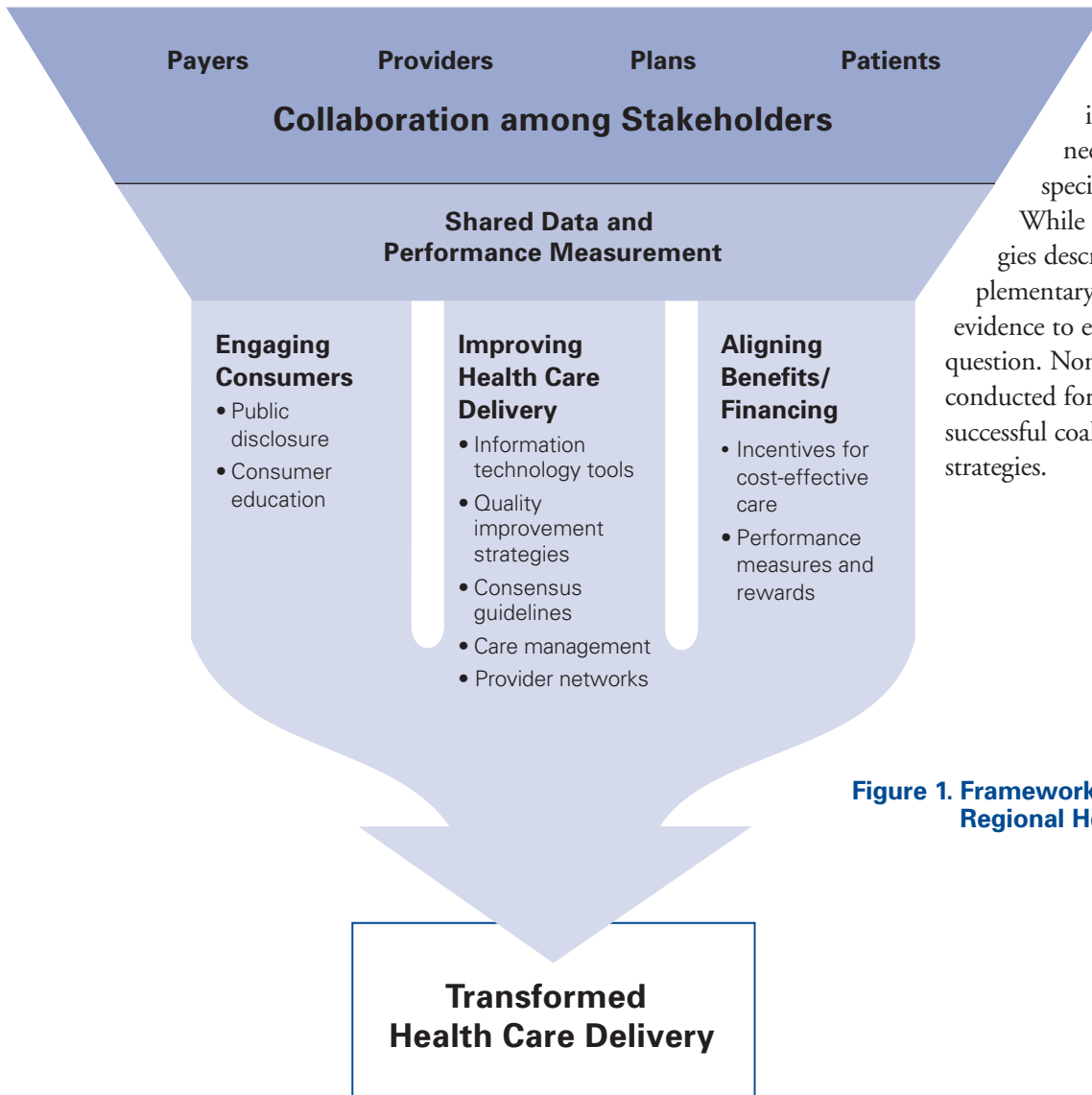


Figure 1. Framework for Creating a Regional Health Care System

© MacColl Institute at Group Health

VI. Getting Started

IN MANY COMMUNITIES AROUND THE COUNTRY, groups have convened to try to do something about the problems in health care. History suggests that the vast majority, despite their best intentions, will fail.

Evaluations of earlier coalitions have helped to identify predictors of success. Fledgling regional efforts are advised to ask themselves two questions early in their formation process. The questions come from the work of the Health Research and Educational Trust (HRET), which extensively evaluated earlier regional improvement efforts. HRET produced a very useful self-assessment and planning tool, *The Collaboration Primer*.³² It argues that the participants in successful regional coalitions developed trust in each other and the coalition, invested their time and resources, and spent less of their time and energy on protecting their business turf. The primer focuses on what it takes to develop a sustainable, productive organization by posing two large questions:

Question 1: How Far Are You Prepared To Go?

Specifically, are the participants individually and collectively willing to do the following?

Exchange Information — *Network*

+

Harmonize Activities — *Coordinate*

+

Share Resources — *Cooperate*

+

Enhance Partner's Capacity — *Collaborate*

Coalitions whose members are unwilling even to exchange information such as performance measures are headed for early demise. Coalitions that can harmonize activities such as guideline development or performance measurement have an opportunity to build relationships and trust, although without sufficient resources they cannot affect the desired outcomes. Sharing resources is essential to creating a sustainable organization, as reliance on external funds is not a long-term strategy.

On the final component, the primer says that “collaborating recognizes that some partners have special expertise or unique capability in certain services or among certain populations and is characterized by an openness and willingness to *enhance this capacity for mutual benefit*. It also means possibly giving up one area of business in return for another.” While this may appear to naïvely disregard marketplace realities, trade-offs of this sort do happen regularly in health care; they just don’t normally occur in an organized or systematic way. Hospitals provide educational and other resources to primary care practices, and the practices steer patients needing inpatient care or specialty services to hospitals. Health plans subsidize IT capability in their networks and receive richer performance data in return. Nearly everyone benefits if more community services are provided by high-quality, efficient providers. Coalitions can take systematic steps to ensure that this happens.

New York Cardiac Surgery Reporting System

In 1989, the New York State Department of Health initiated a program of collecting and publicly reporting mortality rates from coronary artery bypass graft surgery. Over the first four years of the program, the mortality rate declined 41 percent statewide to the lowest rate in the nation, and continued to decline about 10 percent per year throughout the 1990s. What accounted for the decline? There is some evidence that higher-risk patients were less likely to receive surgery or were going out of state for care. There is also evidence that high-volume hospitals and surgeons were doing better. But the largest factor in improvement was the reduction in surgery by low-volume surgeons and hospitals. Surgeons performing fewer than 50 operations per year had mortality rates significantly higher than the state average. In the first years of the program, nearly 30 low-volume surgeons stopped performing CABG. The mortality rate for these surgeons in their final year of practice was 11.9 percent, as compared with a statewide average of 3.1 percent.

The goal of regional quality improvement and cost reduction is probably not reachable without collaboration of this kind. Jack Wennberg, Elliot Fisher, and their colleagues have convincingly demonstrated that the cost and quality of care in a community are strongly related to the resources and practice style in that community.^{33,34} As discussed above, patterns of care will have to change if outcomes are to change. The impact of measurement and public reporting on mortality rates for cardiac bypass graft surgery in New York³⁵ (see sidebar) provides a persuasive example.

Question 2: Are You Organized for Success?

The HRET primer provides a very useful “checklist for collaborating” which nascent coalitions would be wise to administer to all their participants. It assesses perceptions of organizational readiness and the extent to which they are shared across the coalition. The checklist asks respondents questions, such as:

- Is there a robust organization with the leadership, governance structure, staff, and organization that can get the work done?
- Are the right participants involved, or are key stakeholder groups and expertise underrepresented?
- Is there a shared vision among coalition partners and between the coalition and its home organization (if there is one)?
- Do partner organizations know what is expected of them in terms of responsibilities, funding, time commitment, and extent of collaboration?
- Does the coalition have an approach and resources to identify and share best practices to avoid reinventing square wheels?
- Is there a sustainable funding stream?
- Does the coalition have a sound communications plan for reaching all its key constituent groups?

Any “no” answers should be resolved quickly. Failure to do so will at best slow progress, and more likely undermine the entire effort.

VII. Conclusion

IN THE ABSENCE OF SUBSTANTIAL NATIONAL health care reform, there are very few promising therapies for our broken health care system other than collaborative quality improvement efforts at the regional level. Dissatisfaction with coverage and quality appears to be moving up on the political agenda, but the long wait for national change should not be allowed to limit the investment in regional public-private efforts to improve health care. Regional structures and programs play an important role in the national health systems of other countries; they will undoubtedly do so in the complex U.S. health system, regardless of its form.

As noted, there is not enough evidence at present to say precisely what features are essential to an effective regional quality improvement program. To build a stronger foundation for future regional efforts of this kind, better evidence is needed about what works and what doesn't, along with more sharing of experience among coalition leaders. The best evaluations will be integral parts of program design, not afterthoughts.

There is an enormous amount of qualitative information about regional improvement activities, but relatively little quantitative information about program impact. Recent reviews indicate that very little is known about the impacts on patient health outcomes of financial incentives, information interoperability, public disclosure, or other recommended strategies. This state of affairs must change—and change quickly—in order to increase the likelihood of success.

Many assume that rigorous evaluations are not possible in the community context, but there are many examples to the contrary. The rigorous evaluation of the New York Cardiac Surgery Reporting System clarified the positive and negative impacts of public reporting. Investigators at the Regenstrief Institute at the University of Indiana successfully conducted a randomized trial within the Indiana Chronic Disease Program.³⁶ Until a stronger evidence base is established, regional initiatives must be viewed as essential natural experiments.

While external evaluations and syntheses of the experience of coalitions have been helpful, bringing coalition leaders together to share experiences and lessons learned may help accelerate progress.

Health care, like politics, is local. Trust and collaboration among the various stakeholders in a community are essential features of any successful health system, even a federal one. The ambitious goals set for the nation in the IOM *Quality Chasm* report will not be achieved without major redesign of our current care delivery systems, small and large. Extending quality improvement and cost reduction to reach the full population, and not just the patients of a few highly motivated health care organizations, requires a systematic approach involving multiple stakeholders. Regional efforts to improve quality and reduce costs are beginning to demonstrate just this kind of systemic approach. If well supported and ably evaluated, they should provide vital intelligence for designing the health systems of the future.

Endnotes

1. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington DC: National Academies Press, 2001.
2. Institute of Medicine. *The First Annual Crossing the Quality Chasm Summit: A Focus on Communities*. Washington, DC: National Academies Press, 2004.
3. Anderson GF. "Physician, Public, and Policymaker Perspectives on Chronic Conditions." *Arch Intern Med* 2003; 163(4); 437-42.
4. Kerr EA, Gerzoff RB, Krein SL, et al. "Diabetes Care Quality in the Veterans Affairs Health Care System and Commercial Managed Care: The TRIAD Study." *Ann Intern Med* 2004; 141(4);272-81.
5. Dixon J, Lewis R, Rosen R, Finlayson B, and Gray D. "Can the NHS Learn from US Managed Care Organisations?" *BMJ* 2004; 328(7433); 223-5.
6. Lewis R, Dixon J. "Rethinking Management of Chronic Diseases." *BMJ* 2004; 328(7433); 220-2.
7. Lasker RD and the Committee on Medicine and Public Health. *Medicine and Public Health: The Power of Collaboration*. New York: New York Academy of Medicine, 1997.
8. Mosser G, Karp M, and Rabson BG, Network for Regional Healthcare Improvement. *Regional Coalitions for Healthcare Improvement: Definition, Lessons and Prospects*. 2006.
9. Casalino L.. "External Incentives, Information Technology, and Organized Processes to Improve Health Care Quality for Patients with Chronic Diseases." *JAMA* 2003; 289(4); 434-41.
10. Bazzoli GJ, Casey E, Alexander JA, et al. "Collaborative Initiatives: Where the Rubber Meets the Road in Community Partnerships." *Med Care Res Rev* 2003; 60(4 Suppl); 63-94.
11. Anderson H. *So You Want To Be a RHIO: Considerations for an Organizational Model That Will Work in Your Neighborhood*. 2004.
12. Institute of Medicine Committee on Redesigning Health Insurance Performance Measures., *Performance Measurement: Accelerating Improvement*. Washington, D.C.: National Academies Press, 2006.
13. Physician Practice Connections (www.ncqa.org/ppc/index.htm).
14. Milstein A and Burney R. "The Efficiency Equation. Determining How To Measure Healthcare Performance—and Other First Steps." *Mod Healthc* 2006; 36(11); 24.
15. Wisconsin Collaborative for Healthcare Quality (www.wiqualitycollaborative.org).
16. Marshall MN, Shekelle PG, Leatherman S, and Brook RH. "The Public Release of Performance Data: What Do We Expect To Gain? A Review of the Evidence." *JAMA* 2000; 283(14); 1866-74.
17. Hibbard JH, Stockard J, and Tusler M. "Hospital Performance Reports: Impact on Quality, Market Share, and Reputation." *Health Aff*(Millwood) 2005; 24(4); 1150-60.
18. Hibbard JH, Slovic P, Peters E, and Finucane ML. "Strategies for Reporting Health Plan Performance Information to Consumers: Evidence from Controlled Studies." *Health Serv Res* 2002; 37 (2); 291-313.
19. Turi ZG. "The Big Chill: The Deleterious Effects of Public Reporting on Access to Health Care for the Sickest Patients." *J Am Coll Cardiol* 2005; 45(11); 1766-8.
20. Moscucci M, Eagle KA, Share D, et al. "Public Reporting and Case Selection for Percutaneous Coronary Interventions: An Analysis from Two Large Multicenter Percutaneous Coronary Intervention Databases." *J Am Coll Cardiol* 2005; 45(11); 1759-65.
21. Chassin MR, Hannan EL, and DeBuono BA. "Benefits and Hazards of Reporting Medical Outcomes Publicly." *N Engl J Med* 1996; 334(6); 394-8.
22. Institute for Clinical Systems Improvement (www.icsi.org/index.asp).
23. Colorado Clinical Guidelines Collaborative (www.coloradoguidelines.org).
24. Chronic Disease Electronic Management System information & user discussion (www.cdems.com).
25. Kilo C, Berwick DM, and Nolan TW. "Introducing the Breakthrough Series Reports and a Model for Improvement." 1997. Submitted to *JAMA*.
26. Feifer C, Ornstein SM. "Strategies for Increasing Adherence to Clinical Guidelines and Improving Patient Outcomes in Small Primary Care Practices." *Jt Comm J Qual Saf* 2004; 30(8); 432-41.
27. Cohen D, McDaniel RR Jr, Crabtree BF, et al. "A Practice Change Model for Quality Improvement in Primary Care Practice." *J Healthc Manag* 2004; 49(3); 155-68; discussion 169-70.
28. Managed Care—North Carolina Division of Medical Assistance (www.dhhs.state.nc.us/dma/mangcare/who.html).

29. Epstein AM, Lee TH, and Hamel MB. "Paying Physicians for High-Quality Care." *N Engl J Med* 2004; 350(4); 406-10.
30. Rosenthal MB, Frank RG, Li Z, and Epstein AM. "Early Experience with Pay-for-Performance: From Concept to Practice." *JAMA* 2005; 294(14); 1788-93.
31. Damberg CL, Raube K, Williams T, and Shortell SM. "Paying for Performance: Implementing a Statewide Project in California." *Qual Manag Health Care* 2005; 14(2); 66-79.
32. Williams Torres G, Margolin FS, and Health Research and Educational Trust. *The Collaboration Primer: Proven Strategies, Considerations, and Tools to Get You Started*. 2003.
33. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, and Pinder EL. "The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality, and Accessibility of Care." *Ann Intern Med* 2003; 138(4); 273-87.
34. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, and Pinder EL. "The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care." *Ann Intern Med* 2003; 138(4); 288-98.
35. Burack JH, Impellizzeri P, Homel P, and Cunningham JN Jr. "Public Reporting Of Surgical Mortality: A Survey of New York State Cardiothoracic Surgeons." *Ann Thorac Surg* 1999; 68(4); 1195-200; discussion 1201-2.
36. Rosenman MB, Holmes AM, Ackermann RT, et al. "The Indiana Chronic Disease Management Program." *Milbank Q* 2006; 84(1); 135-63.