DELIVERY SYSTEM MODELS FOR COMPREHENSIVE HEALTHCARE REFORM

DRAFT FOR REVIEW COMMENTS ONLY

Stephen M. Shortell, PhD, M.P.H

Blue Cross of California Distinguished Professor of Health Policy and Management

Dean, School of Public Health,

UC-Berkeley

Lawrence Casalino, MD, PHD

Associate Professor

Department of Health Studies

Biological Sciences Division

University of Chicago

Prepared for a workshop on "Organization and Delivery of Care and Payment to Providers"

Center for Advanced Study in the Behavioral Sciences, Stanford University

March 1 and 2, 2007

Proposals to reform the US Healthcare System are more likely to succeed if they focus not only on the financing of care but also on the delivery of care – and on the interactions between the two. Policy changes in financing, payment, benefit design, technology assessment, and public reporting all must work through one final common pathway: the delivery system – the hospitals, physician practices, and other entities that provide care to patients.

We may do little good and potentially much harm to expand insurance coverage to all Americans without changing the delivery system's ability to deliver high quality care at the lowest possible cost. Policy changes and the delivery system should be considered together. The key word is alignment. All six elements of comprehensive health care reform – financing, payment, benefit design, technology assessment, public reporting, and delivery system organization - must reinforce each other for sustainable improvement to occur.

Given the above, we face a major public policy conundrum. While we can design benefit packages to provide first dollar coverage for preventive services; develop payment systems to reward more coordinated care; implement financial incentives to reward overall higher quality and lower cost providers; and encourage reporting of quality and cost data to increase accountability and inform choice; we currently have a delivery system that, for the most part, is not well-suited to these changes. Essentially we have a 19th century craft-oriented system trying to operate 21st century medical science and technology. The "architecture" of health care reform must somehow, build a foundation of brick or stone out of the gravel that constitutes the current delivery system.

If comprehensive health care reform is to succeed, the U.S. will need accountable care system (ACSs). By "accountable care system," we mean an entity that is able and willing to do two things: first, implement organized processes for improving the quality and controlling the costs of medical care; second, accept payment that is based at least in part on the quality and costs of care for its patients.

In this paper we discuss seven capabilities that accountable care systems (ACS) should have to improve quality and control costs. We suggest the resources that systems can use to create these capabilities. We describe five different models of ACS's and their advantages and disadvantages relative to achieving these capabilities. We focus on models of physician organization, but include models that involve affiliation between the physician organization and hospitals and/or health insurance plans. We consider how well-suited the different delivery system models are to differences in methods of payment and how well they might be expected to deal with different types of medical conditions. We discuss barriers to change, and provide some recommendations on how comprehensive healthcare reform might be designed to deal with these barriers.

DESIRED CAPABILITIES

Regardless of specific organizational form or model, what must a delivery system be able to do to improve current performance? The Institute of Medicine, in Crossing the Quality Chasm,(1) states that health care organizations should have the capability to:

1. redesign care processes
2. make effective use of information technologies
3. manage clinical knowledge and skills

4. develop effective teams

5. coordinate care across patient conditions, services, and settings over time and

6. incorporate performance and outcome measurements for improvements and accountability.

We add a seventh capability which is the ability to adapt to change. Each of these capabilities is briefly highlighted below

Ability to Redesign Care Processes

Simply put, redesigning care processes means examining the processes an organization uses to provide care and changing them to provide higher quality care at the same or a lower cost. Even a solo physician practice could engage in such practice redesign, but Crossing the Quality Chasm recommends a relatively sophisticated approach using principles from engineering and from organizational theory as applied both in other industries and in health care. For example, a medical group might try to design certain processes to increase safety, which would include designing organized processes to prevent errors, processes to make errors visible when they do occur, and processes that can mitigate the resulting harm to patients. More specifically, a group might use organized care management processes (CMPs) such as maintaining registries listing patients with certain chronic diseases, providing reminders of needed services to physicians at the point of care, providing data-based feedback to physicians, providing self-management education to patients with chronic diseases, and providing a nurse care manager for the sickest and most vulnerable patients.(2)

Ability to Effectively Use Information Technologies

Clinical information technologies such as electronic medical records, electronic interchange of information among physicians, hospitals, laboratories, and pharmacies, e-mail between patients and physicians and medical group staff, and Web-based tools to assist patients in self-management can provide a useful infrastructure to facilitate the use of CMPs and can provide data useful for measuring and improving quality. Effective use requires a well-designed electronic medical record, the ability to communicate electronically across sites of care, and staff with the training and time to make the technology work in a technical sense, to devise processes to use it to improve quality, and to make good use of the data the technology provides.

Ability to Manage Clinical Knowledge and Skills

An organization should proactively work to match the skills of its staff to the things it needs to do to provide high quality care and to help staff to learn new skills when necessary. In addition, because the flood of new information is too great to be managed adequately by individual clinicians, the organization should find ways to make this information available to physicians in a usable way – e.g. in the forms of guidelines and reminders - where and when it is needed. Further, as better practices are identified they should be readily shared with others.

Ability to Work in Teams

It has long been obvious that inpatient care is provided by teams of physicians and other staff, though these teams have not necessarily functioned effectively or even thought of themselves as teams. Outpatient care has been dominated by the "visit model," in which medical care is taken to be whatever happens between an individual

patient and physician during the patient's visit. This model is not ideal for making sure that patients receive all indicated preventive care, for helping patients with chronic diseases learn to manage their illness, or providing assistance to paitents between office visits. The team or "micro-system" - the *organizing* principle for the delivery of healthcare in the 20th century – can serve as the tool for implementing organized care processes to improve care that go far beyond the patient visit model.[3,4] There is a growing evidence based management literature on the characteristics of effective teams.[5,6,7] This includes the importance of providing necessary information for teams to do their work; allowing them the freedom to experiment; selecting members to manage the task (e.g. greater diversity of member skills and background if innovative ideas are desired vs. more homogeneity of background and skills if the emphasis is on implementing an agreed upon task); and providing ongoing feedback on performance.

Ability to coordinate care across patient conditions, services, and settings over time

As the percentage of Americans with chronic illness and multiple chronic illnesses grows, the need for the delivery system to manage patient care across multiple settings and providers over time increases. The central function missing is that the information and knowledge about the patient's condition is not shared among those caring for the patient. Relevant information is frequently incomplete, late or missing altogether resulting in delays in care, repetition of tests and procedures, and overall waste and inconvenience. Implementation of Electronic Health Records (EHR'S) and Electronic Medical Records (EMR's), in physician practices is a necessary but insufficient condition for care coordination. Also needed are informed "receptors" of the information; that is, healthcare teams that know how to use the information as part of an

overall organized system of care for the patient. In addition, effective partnerships are necessary with other provider organizations who may become involved in the patient's care.

Ability to incorporate performance and outcome measurements for improvements and accountability

Provider organizations should be "learning organizations"[8] that measure their performance, experiment with ways to improve, and modify their processes based on their experience. Small-scale, rapid cycle testing, modifying, and retesting can be effectively used in large and small provider organizations (9). The ability to improve does require the ability to measure performance as well as leaders and staff with skills and time to manage improvement efforts.

There is growing demand that the evidence of improvement be made public and transparent. ACS's will be expected to be accountable for the care of the population of patients for which they are responsible and to provide reliable and valid information on quality and cost of care to be used for the purposes of public reporting to inform choice as well as a basis for differential payment based on performance. In addition, an accountable system must have enough patients for the medical process or outcome being measured so that statistically reliable and valid evaluation of the data can be done.

Adapt to Change

In addition to the above there is great need for the delivery organization to develop the ability to adapt to change. There is a vast literature both inside and outside of the health sector on managing change with emphasis on the importance of leadership and culture.[10] They are particularly relevant in a highly decentralized system such as the U.S. where the

ability to provide more cost/effective care (i.e. high value) depends on the leadership of thousands of individuals and organizations and a culture that emphasizes teamwork over individual autonomy, admits and learns from mistakes, is data driven, is willing to be held accountable, and values working in partnership with others. The seven core capabilities are shown in Figure 1.

RESOURCES

Organizations have different resources that they can use to build capabilities. In addition to the important role that leadership and culture play, access to capital, the ability to create economies of scale and scope and the ability to align incentives among physicians, hospitals and health plans are important in building the needed capabilities.. Capital is important for purchasing and operating information systems and for supporting well-trained physician and staff leaders who are given adequate time to devote to developing and maintaining the organization's capabilities. Economies of scale can provide many benefits, including providing a patient base large enough to make it economically feasible to have nurse care managers assist severely chronically ill patients. . Economies of scope refer to potential synergies among different parts of an organization – for example, the informal consultation that can occur when physicians from multiple specialties practice in the same location. Alignment of incentives among physicians, hospitals, and health plans fosters coordination of care, proactive planning to allocate resources to areas in which they can be most effective, physician cooperation with hospitals in improving in-patient care, and attention to the overall costs of medical care for the organization's patients.

Different types of organization are likely to differ in the extent to which they have these core resources and therefore in the extent to which they can develop capabilities.

In the next section we describe five different models of delivery systems and discuss the resources each is likely to be able to bring to bear and their comparative ability to develop the core capabilities.

DELIVERY SYSTEM MODELS

One way to provide greater value in healthcare delivery would be for all physicians, hospitals and other care-giving entities to be part of Accountable Care Systems (ACS) that are responsible for the entire continuum of care – outpatient, in-patient, home health, rehabilitation, and long-term care. The ACS is an umbrella concept under which a number of specific models might prove viable. We discuss five such models – the Multi-Specialty Group Practice (MSGP); the Hospital Medical Staff Organization (HMSO); the Physician-Hospital Organization (PHO); The Health Plan Provider Organization or Network (HPPO/HPPN); and the Interdependent Physician Organization (IPO).

Two important caveats should be noted before we discuss the five possible ACS models. First, most physicians work in very small practices that would likely not have the resources to develop the capabilities to be an ACS. In an ACS-based health care system, these small practices would either be merged into large (new or already existing) multispecialty group practices, or would participate in an ACS that facilitates clinical integration among small practices without merging them into a single group. We recognize that small practices may have specific advantages – e.g. deep mutual knowledge and trust among practice staff and physicians and their patients – and are not

suggesting that in a reformed system such practices would necessarily disappear. In a system in which ACSs compete based on the quality and cost of their care, " the market would decide" whether "virtually integrated" systems including small physicians practices could succeed in competition with systems in which physicians are merged into large group practices. Second, specialist physicians are increasingly creating medium-sized and even quite large single specialty groups. A single specialty group obviously could not serve as an ACS taking accountability for the full spectrum of patients' care, but could be important components of an ACS or, alternatively, could be important sources of care to which an ACS would frequently refer.

We will assess the advantages and disadvantages of each ACS model in regard to the capabilities outlined above and also in regard to specific forms of payment and ability to treat different types of medical conditions.

The Multi-Specialty Group Practice (MSGP)

The potential advantages of the MSGP model was recognized as early as 1932 when it was suggested by the Commission on the Cost of Medical Care.[11] They vary in size and form ranging from independent MSGP's that work with several hospitals and health plans in a given area to those that have an exclusive relationship with a hospital system but may still accept patients from multiple health plans (e.g. The Henry Ford Medical Group, the Mayo Clinic, Intermountain Healthcare, and the Geisinger Clinic) to those that are exclusive with both hospitals and a health plan such as Kaiser-Permanente. A multi-specialty group that is linked to a hospital/health system that also owns a health plan is commonly referred to as an integrated or organized delivery system[12] MSGP's have the potential to add value because of the opportunity they have to deliver

coordinated care to a defined group of patients. They typically have the resources to redesign care processes, take advantage of economies of scale to implement electronic medical records, form healthcare teams, obtain data based feedback on performance gaps, and make the changes needed to improve care.[13,14] There is a small but growing body of evidence that MSGP's do make greater use of recommended care management processes and electronic information technology[15,16]; and provide higher quality of care on selected preventive and process measures involving recommended screening tests and diabetes and asthma management than smaller, looser forms of practice[17,18] The MSGP would appear to have particular advantages in caring for patients that require care over time and for payment based on entire episodes of illness, related bundled payment arrangements, and capitation.

MSGP's also have some potential disadvantages. Their size and bureaucracy can make them difficult for patients to negotiate and can make it difficult for patients and staff to feel that their environment is "human scale."[19,20] They are very difficult and expensive to create. Though they can afford to employ highly skilled leadership, their governance may be complex and time-consuming due to their size and to possible conflict among multiple specialties and parts of the organization. With financial incentives and the demand for greater external accountability it is likely that the MSGP model will grow to some extent as existing small practice units aggregate into larger groups. But it is unrealistic to expect that this will reach a scale sufficient to have a marked impact. Instead the relevant question becomes how some of the valued characteristics and capabilites of MSGP's – use of teams, ability to generate data on

performance etc. – can be adapted for use by other practice models? In brief, how might other models "mimic" MSGP's? We suggest four possibilities below.

Hospital Medical Staff Organization (HMSO)

Much has been written about the hospital medical staff organization.[21, 22] The"voluntary" Hospital Medical Staff Organization has been based on an exchange relationship in which in return for privileges, physicians agree to serve on hospital committees and review the quality of care provided through the creation of a self governing medical staff organization structure. This arrangement has been fraught with conflict and challenges because of divergent cultures and incentives among hospitals and physicians.. Many physicians and hospitals view each other as competitors particularly with the growth of specialty hospitals.[23] In addition, most physicians have historically viewed the hospital as their "workshop"[24-26] and have a general disdain for becoming involved in such a large bureaucratic organization. Nevertheless, outside of the local county medical society, the hospital medical staff is the one setting in which largely fee-for-service physicians come together, exchange information, and form referral relationships. Recent data suggest that most physicians have primary relationships with a single hospital thus making it possible to form a stronger partnership entity between physicians and their primary admitting hospital.[27] Further, hospitals have the capital to support adoption of EMR's and EHR's, generate performance and accountability data, and assist with providing quality improvement support. Thus, if payment policies were implemented based on bundled payments for specific medical conditions (e.g. CABG, Stroke, Diabetic care, Asthma care) for given episodes of illness that included both inpatient care and outpatient care, there would be incentives for hospitals and physicians

to work together. The accountable entity for payment would be the hospital medical staff organization. Others have previously proposed this but for inpatient care only.[28] If annual Medicare payment updates were based on Medicare costs for the patients of physicians on their primary hospital medical staff, rather than on national Medicare costs, the medical staff would have an incentive to work together.

This model would have potential advantages for both chronic illnesses with acute episodic "flare ups" as well as acute episodes of hospitalization that require some degree of follow-up care before the patients return to health. However, the HMSO faces challenges including reconciling the diverse interests of physicians who seldom speak with a common voice; a long standing conflicting relationship between many hospitals and their physicians; and legal obstacles to gainsharing that would need to be addressed. Even if the "aligned" payment mechanisms were in place, this model would make heavy demands on the persuasive powers and conflict management skills of hospital and physician leaders.

The Physician Hospital Organization (PHO)

A variation of the MSGP model is the PHO. A number of them already exist created in the 1990's primarily as contracting entities for hospitals and physicians to negotiate with health plans in the era of managed care,. Most typically these arrangements involve only a subset of the hospital medical staff – those whose economic interests are most aligned with the hospital's; who can provide the hospital with the needed geographic network coverage and who are more cost-effective providers. Under comprehensive healthcare reform, we suggest that the "contracting" PHO model could evolve into an entity that would actually mange the quality and cost of care.[29] Hospitals

would establish cost and quality criteria as standards of eligibility for membership and evaluate performance for continued membership on an annual basis. Payment would flow to the PHO based on its collective performance. This model has the advantage of not needing to have all physicians involved and also creates incentives for those physicians not eligible one year to become eligible in future years as they improve their performance In effect this represents an "internal tiering" of the delivery system but exercised by hospital and doctors themselves rather than by health plans and purchasers. It merits further attention .

However, PHO's face many of the same challenges as the HSMO described above. Many of the first generation PHO's have failed. Further, state or federal "any willing provider" laws would pose challenges to the PHO model. Also, PHOs must be significantly clinically integrated to avoid running afoul of anti-trust law. The FTC has successfully conducted numerous cases against PHOs that did not appear to be clinically integrated yet were attempting to negotiate contracts with health plans that did not involve the physicians and the hospital sharing financial risk.

Health Plan-Provider Organization / Network (HPPO/HPPN)

The fourth model is based on partnerships between health plans and physician practices. Historically, health plans have restricted their activities to underwriting of benefit packages, marketing their products, and claims processing. But, purchasers, policy makers, and providers alike have come to realize that insurance plans have accumulated considerable cost, quality, and utilization data on millions of patients over many years. As a result, they have the incentive to bring pressure from employers to analyze the data not only for developing insurance products but to encourage more cost

effective healthcare delivery on the part of their provider networks. Indeed, the over 100 current private sector pay-for-performance demonstrations are based largely on health plan use of administrative claims data even with all of its limitations. In addition, health plans such as United Health Care, Wellpoint-Anthem, Aetna, and Cigna have developed capabilities in disease management, electronic information technology implementation, and quality improvement systems that could potentially be used effectively in collaboration with providers. Also, some health plans have even "deeper pockets" than many hospitals. As a result, some physicians and physician practices may partner with health plans rather than their local hospital in assuming risks under various payment mechanisms and external reporting requirements. Thus, we can envision health plans as "aggregators" of smaller physician practices and being the unit of accountability for performance.

However, while health plans can marshal data and provide technical assistance to providers they cannot actually manage the care or make the necessary organizational changes in physician practices needed to improve performance. The necessary leadership is not likely to be provided by the health plan's medical directors located at the central headquarters, or even regional offices. So the likely success of this model will depend on local physician leadership within the small practices which is likely to be highly variable. Nonetheless, it is a model that may be viable in some areas of the country.

The Interdependent Practice Organization (IPO)

A fifth model is proposed for those physicians who for whatever reasons do not wish or are not able to partner with hospitals or health plans or otherwise aggregate into multi-specialty groups. We call this model the *Interdependent* Practice Organization to

distinguish it from the *Independent* Practice Associations (IPA) that exist today. Most of the existing IPAs are in California and have formed to bear risk under commercial capitation contracts. They formed to gain negotiating leverage with health plans and also to try to achieve economies of scale in practice management support, information technology adoption, data analysis and reporting, and use of care management processes. Existing evidence, however, suggests that IPAs use less information technology and fewer recommended care management processes than medical groups.[30] This may be due to the fact that most IPAs are still loosely organized collections of relatively small physician practices.

The proposed IPO model would have strong leadership, a governance structure that givers sufficient authority to the leadership, and enough patients to support investments in the seven capabilities discussed above. The IPO model might be particularly attractive to physicians who do not want to join a large multispecialty group or to work closely with a hospital or health plan and to physican practices in rual areas. Given sufficient incentives, some existing IPAs might become IPOs by strengthening their governance structure, developing a stronger shared culture and leadership, and working to creat the capabilities described above. These are difficult goals, however, for organizations composed of many small practices in which, as noted by a respondent in a piror study: "There does not seem to be one culture but rather an amalgam of the individual cultures of the various groups making up the system. Physician leaders tend to be focused on getting what is best for their individual clicnics (even for the individual physician) rather than pursuing mutual system goals."[31]

Delivery System Models and Capabilities – A Summary

Table 1 provides a subjective assessment (although informed by empirical evidence where available) of each of the five Accountable Care System models in relation to the seven core capabilities required of delivery systems under comprehensive health care reform. As shown, the MSGP model rates highly on all criteria except for change management. Here it is designated as "medium". The reason is that while MSGP generally have the information technology, leadership, and resources needed to manage change, their large size and the different perspectives of different specialists can make change difficult. They tend not to be "nimble" organizations.

The HMSO and PHO models rate medium to high in regard to the first four capabilities but low to medium in regard to information technology, clinical knowledge management, and change management. The HMSO model, in particular, is likely to have problems in reacting to technological, economic, and related public policy changes due to the inherently bureaucratic features of hospitals and the length of time needed to process changes that involve both the medical staff and hospital components of the HMSO.

The HPPO/HPPN and the IPO models rate low to medium on most of the capabilities. While they represent potentially viable entities for bringing physicians together to meet the challenges of comprehensive healthcare reform, they are very dependent on the quality of the leadership involved and the ongoing ability to satisfy the interests of the diverse parties. An underlying challenge of all models, except perhaps the

MSGP, is well expressed by the following question: "Can physicians form organizations that challenge doctors to look at the bigger picture than just their immediate professional needs and excite them about working in teams to improve quality and face the issue of re-structuring?"[32]

Delivery System Models and Payment Methods

Table 2 provides a summary of the extent to which the Accountable Care System models align with various payment methods – episode-based payment, capitation, and fee-or-service. With regard to episode-based payment the key factor is the degree of physician hospital alignment. In this respect, the HMSO and PHO models have an inherent advantage over the other three – the MSGP, HPPO/HPPN and IPO – with these three varying as a function of their relationship with local hospitals. As shown, all models can potentially do well under capitated payment provided there is hospital acceptance of the hospital portion of the capitated payment under the MSGP, HPPO/HPPN and IPO models. Again, the HMSO and the PHO models serve as an integrated entity that can negotiate with purchasers and plans to determine the capitated payment rate. This, of course, is also true for the MSGP's that are a part of organized delivery systems. Finally, as shown, FFS payment creates incentives for greater utilization under all models assuming that fees in the aggregate across all services cover marginal cost. It is of interest to know that under FFS the HPPO/HPPN model is particularly conflicted between the demands of purchasers for lower cost and the desire of the provider network for greater revenue. In effect, the HPPO/HPPN model negates the historical purchaser/provider split without going so far as becoming the fully

integrated health plan delivery system model such as represented by Kaiser-Permanente. In the latter case, internal differences between the health plans' strategy with purchasers and the medical groups' plans can be resolved under the umbrella of the Kaiser-Permanente integrated system. In the HPPO/HPPN model there is less direct control over the various practice entities.

Delivery System Models and Different Medical Conditions

Table 3 provides a summary of each model's likely ability to treat six major categories of medical conditions – single chronic illness, multiple chronic illness, major acute illness, minor acute illness, preventive care, and palliative care. As shown, the MSGP model has the ability to deal well with all six condition categories and, we suggest, under any of the payment arrangements shown in Table 2. However, this may also depend on the size of the MSGP with large MSGP's better able to deal with patients with multiple chronic illnesses than smaller MSGP's. The HMSO and PHO are hospital oriented models, and therefore, are likely to do very well in treating major acute and minor acute illnesses. Their ability to provide cost/effective chronic illness care is likely to depend on the existence of episode-based or capitated payment as shown in Table 2. These will be needed to create the necessary incentives for hospitals and physician entities to coordinate care across the entire continuum particularly for patients with multiple chronic illnesses. As shown, the HMSO and PHO models are generally less likely to emphasize preventive and palliative care although would have more incentive to do so under capitated payment. The HPPO/HPPN and IPO models are likely to do well in preventive care and dealing with major and minor acute illness but less well in treating

chronic illness which places greater demands in the capabilities of these models to provide longitudinal care. They may also do less well in providing palliative care depending on their linkages with local hospital-based and community hospices. Again, however, this can be influenced by the payment methods. Episode-based payment and capitation could create the necessary incentives for these models to also perform well in treating chronically ill patients, although managing patients with multiple chronic illness would remain challenging.

BARRIERS AND RECOMMENDATIONS

Accountable Care Systems of whatever form need three things to succeed: 1) the ability to generate data and/or to use data on their performance compared against standards and benchmarks; 2) the capabilities to act on the data; and 3) the incentives to do so. From the delivery system perspective, comprehensive healthcare reform must address the barriers to these three requirements and go beyond them to create "facilitators" for their achievement.

Among the most important and prevalent current barriers to the formation of Accountable Care Systems are: 1) a payment system that does not reward results based on the value of care delivered; 2) lack of a reasonably comprehensive standardized quality and cost performance measurement system; 3) lack of incentives for adopting and implementing EMR's on a wide scale; 4) lack of transparency and visibility of information; 5) under-use of evidence based medicine and evidence based management (i.e. knowledge management capability); and 6) the deeply ingrained culture of individual physician autonomy. For comprehensive healthcare reform to succeed, it must

incorporate features that will address these delivery system barriers. We provide some specific recommendations to address each of these barriers below.

Payment Reform

Consistent with the recent MEDPAC testimony to Congress we recommend that Medicare make fundamental changes in payment to reward providers based on the value (outcomes achieved / cost) of care delivered.[33] Whether or not overall expenditure targets are set for the sustainable growth rate (SGR), CMS should be given the authority to reward providers differently based on the results achieved. Under budget neutrality, money would be initially redistributed from those doing less well to those doing better. But future payment should also allow for *improvement in performance* such that those who do less well initially still have opportunities to be rewarded for improving their results. The conditions for which such payments would be made need to be carefully selected to include those where reliable, valid, risk adjusted measures exist. As progress in outcome and risk adjustment measurement grows, the list of condition for result based payment should also increase.

In addition to changes in overall payment that rewards greater value, we recommend experimentation with bundled payments for hospital and physician services for selected conditions (e.g. CABG, hip and knee replacements) which require inputs from both physicians and hospitals, and for which outcomes are visible, well measured, and risk adjusted. Bundled payment will create incentives for hospitals and physicians to work together more closely and encourage the development of ACS's such as the HMSO and PHO models. Higher bundled payments should go to those hospitals and physicians

treating more severely ill patients; as indicated by the existence of comorbidities and related risk adjusters.

In recent years, the private sector has taken the lead in developing various pay for performance initiatives to reward providers for achieving higher quality of care.[34, 35] To date, these programs have had relatively mixed and modest impact and are only beginning to address issues of efficiency and care coordination within overall episodes of illness.[36] We believe that Medicare needs to take the lead in fundamental payment reform that rewards results and that, , as in the past, the private health insurance plans will follow with similar initiatives. We also encourage employers and health plans to create incentives for consumers to select the highest value added ACS's for care based on available data. For example, consumers might have no co-insurance or deductibles for selecting providers in the top tier across cost and quality performance metrics; moderate deductibles and co-insurance for those in the middle; and higher deductibles and co-insurance for those in the lowest third. Alternatively, premium rates could be adjusted to take into account the selection of higher value added ACS's.

Changes in Medicare and private sector payment will need to take into account different aggregation of physicians from those already organized into various types of groups to those that remain free standing solo practitioners. Bundled payments for selected conditions and episodes of illness is probably best done at the ACS level as those conditions (e.g. CABG, hip and knee replacement) require the coordinated network of physicians and hospitals and an adequate volume of cases to assure reliable measurement. Other payment, however, could be made at the individual physician level depending on how well quality and costs can be measured for individual physicians in most specialities.

Many physicians, however will see the advantages of becoming part of some form of organization that can provide them with the technical assistance and information technology support to improve care along with the opportunities for learning that comes from interaction with colleagues.

Performance Measurement

Consistent with the recent recommendations of the Institute of Medicine, we recommend the creation of a national performance measurement system encompassing a portfolio of quality and cost measures that cover the continuum of care.[37] CMS and other payers would use this measurement system in developing their value-based payment system. Such a system could be overseen by the Agency for Health Research and Quality (AHRQ), the National Quality Forum or a newly and separately created entity. Table 4 shows examples of such a measurement set. These measures would be used for both public reporting of quality and cost data and for payment based on performance at a given point in time and for improvement over time. The measurement set would be updated periodically consistent with the advances in quality and cost measurement and the development of new technology and treatment modalities.

Widespread Adoption and Use of EMRs

It is estimated that 25% of physician office practices have some components of the electronic medical record or electronic health record and that about 9% of hospitals have computerized patient order entry of drugs.[38] Comprehensive healthcare reform proposals could include incentives for electronic information technology adoption through either direct grants and/or low interest loans. For example, in return for physicians becoming members of one of the five ACS's they would become eligible for

financial assistance (if needed) to adopt and implement electronic information technology. This, however, could be difficult to implement. For example, how would the government distinguish between a genuine ACS and one established solely for purposes of accepting IT assistance? Also, does it make sense for the government to provide funds to an ACS in which a health plan or hospital system is involved which, arguably, has the resources to provide such support? An alternative to providing grants or loans would be to provide technical assistance through the CMS Quality Improvement Organizations (QIO's); take the lead in making interoperatiblity a reality, which would make EMR adoption more desirable for physicians; and take money that would otherwise have been used as subsidies for purchasing IT and use it to enrich the pay for performance pool. If IT helps improve performance, this would be an incentive for physicians to purchase it. This approach could speed IT adoption without the political and administrative problems of making direct grants and loans. .

Further, CMS and other payers should consider directly rewarding providers for using electronic information technology in caring for their patients and in public reporting. For example, following California's Pay for Performance program, a set percentage of the overall quality bonus (e.g. 20%) could go to providers based on their documented use of electronic information technology in regard to accessing lab results and medication profiling or using diagnostic and treatment data at the direct point of care. As electronic information technology spreads throughout the system, such an incentive could be removed as its impact should be reflected in higher clinical quality scores for which additional payment would be made.[39]

Reporting and Transparency

CMS should build on its current initiatives in reporting hospital and nursing home quality data by expanding to reporting quality and cost data for physician practices. This could be phased in over time moving from voluntary reporting to eventual mandatory reporting as use of EMR spreads throughout the physician practice community. Common standardized reporting definitions and formats and measures must be implemented to make this feasible. Over time, private plans should follow CMS's data reporting methodology. The independent entity noted above should ensure the accuracy and reliability of the data. It should then oversee the development of an annual National Value Scorecard (NVS) with regional and local disaggregated scores for hospitals, physician practices, nursing homes and home health agencies. The impact of the previously discussed payment reforms and incentives is likely to be stronger when combined with external reporting of quality and cost performance data.[40] Development of such a scorecard will create incentives for solo physicians and those in small partnerships and small groups to come together to share the cost of data collection and reporting. They will also need to come together in order to have a sufficient number of cases to ensure reliable measurement.. While MSGP's, HMSO, and PHO have more of this capability today, health plans can extend their capabilities to other looser forms of providers as in the HPPO/HPPN ACS model. IPO's can form out of IPA's to get the economies of scale needed for the required data reporting and making it more cost effective for QIOs to provide technical assistance.

Knowledge Management Capability--Under-use of Evidence-Based Medicine and Management

We recommend creation of a National Center for Evidence-based Medicine and Management that provides the best available evidence on clinical and managerial practices to create expanding knowledge management capabilities to improve quality and cost performance.[41, 42] AHRQ or similar organization would conduct and disseminate on a quarterly basis meta analyses and synthesis reports on both the EBM and EBMgt literatures for use by ACS's. This would be an extension of AHRQ's current Evidence-based Practice Center reports. At the same time, as recommended by the National Academy of Engineering / Institute of Medicine report on "Building a Better Delivery System", Congress should provide funding to create a network of evidence-based medicine / management centers. These centers would bring together a multidisciplinary group of clinicians, engineers, researchers, and managers to continually identify better practices that improve value and rapidly spread these to ACS's throughout the country.[43]

While these two recommendations will help in the short run to improve knowledge capability we also recommend an investment in the future by creating incentives for health professional schools to incorporate required content in systems engineering, process improvement methods, communication and conflict management skills, leadership development, change management, and teamwork. Brief, focused experiential modules can be implemented in the clinical years of medical and other health professional education and then reinforced in the residency experiences. We recommend that CMS provide payment incentives for schools to incorporate such content into their curriculum and field experiences and, alternatively, withhold a portion of payment for those who do not. The reformed value-added 21st century health delivery system will

require a very different type of clinical and managerial leadership to succeed. We need to start investing in that leadership now.

Physician Autonomy

Any professional must be able to form and act upon their own best judgment. But the demands of practicing medicine and making patients well in the 21st century require increased use of tools that assist the human mind to arrive at best judgment based on the burgeoning evidence. These tools are also needed be effective in working with other professionals to treat the "whole patient" across a very fragmented healthcare delivery landscape. The decision to choose how best to do this should be left to the practicing professional. We have developed five different models of ACS's that, each in their own way, balance the need for autonomy with the need for teamwork and collaboration. Physicians and other healthcare professions as well as patients can pick the model that best suits their preferences. But their choices and their potential consequences would be better informed by implementing the recommendations regarding payment reform, performance measurement, incentives for electronic information technology implementation, reporting transparency, and increasing knowledge management capability that we have proposed.

CONCLUSION

Any proposals for comprehensive healthcare reform must deal with the ability of the delivery system to respond to changes in insurance coverage, financing, payment, technology assessment, and public reporting. The current delivery system foundation is inadequate to the task. The gravel must be turned into bricks and mortar.

We have suggested seven core capabilities that delivery systems must possess – redesign of core processes involved in delivering care, ability to work in teams, ability to coordinate care and manage patients across sites over time, ability to generate performance data for accountability and improvement purposes, use of information technology, knowledge management capability and the ability to adapt to and manage change. We have proposed the idea of reorganizing the delivery system around Accountable Care Systems (ACS) and have suggested five different models of such systems – MSGP, HMSO, PHO, HPPO/HPPN, and the IPO. We have discussed some of the relative advantages and disadvantages of each in relation to the development of the desired core capabilities, different payment arrangements, and fitness for treating different types of medical conditions. We have highlighted some of the major barriers to forming ACS's and offered some specific recommendations for dealing with the barriers. Given the current fragmented nature of physician practice we realize that those changes will not occur quickly. But we foresee a co-evolution in which payment systems that move away from fee-for-service toward rewarding improved value for populations of patients will encourage the development of ACS's which, in turn, will be better positioned to accept results-based payment to the benefit of all involved.

The diagnosis of what is wrong with the U.S. health system has been known for decades. It is chronic fragmentation. We have also assumed for decades that this condition is treatable; that it is reversible; and is not a terminal illness. But we have yet to come up with a treatment plan. In this paper we have suggested some key elements of such a treatment plan. The question is whether the patient (i.e. U.S. Health System) is sick enough to take the medicine?

Figure 1: Delivery System Core Capabilities

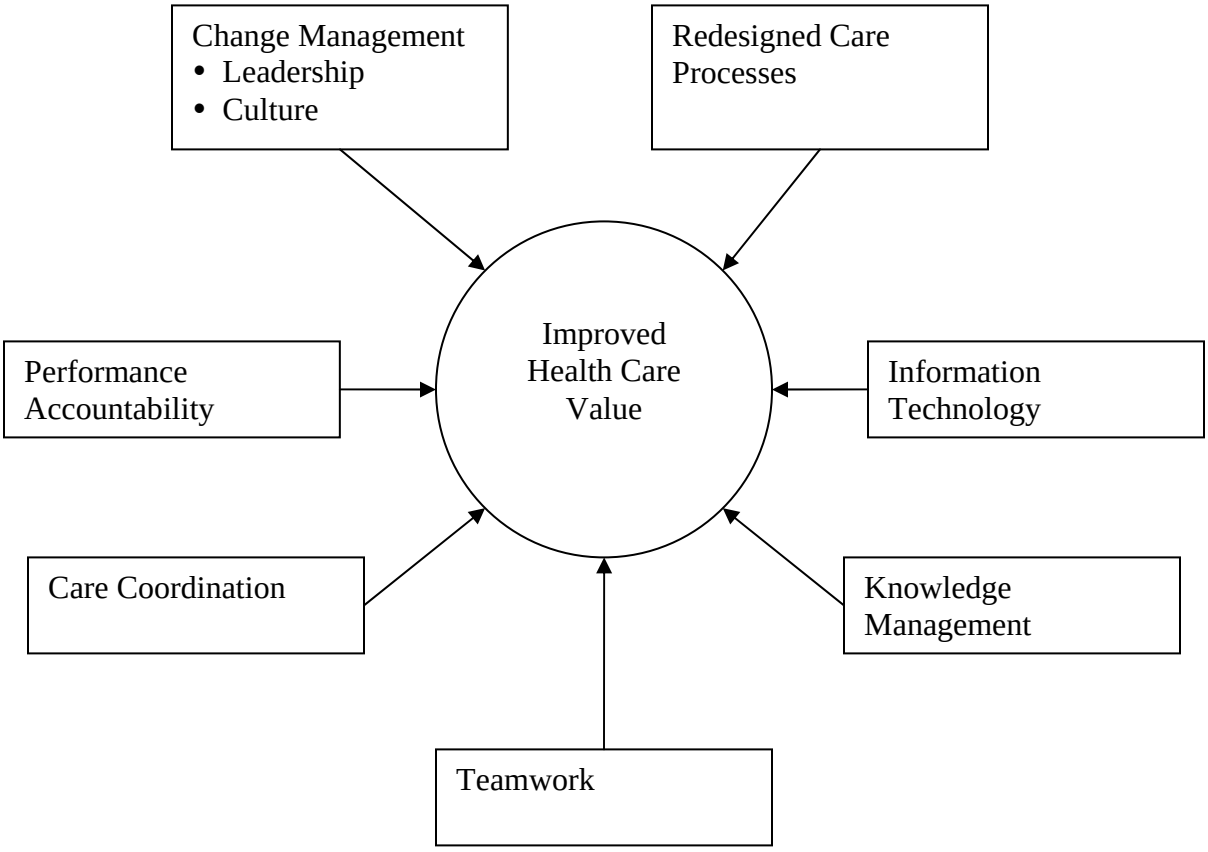

Table 1. Delivery System Models and Core Capabilities

Delivery System Models	Core Capabilities: Redesign Care Processes	Teamwork	Care Coordination	Performance Accountability	Information Technology	Knowledge Management	Change Management
(1) Multi-Specialty Group Practice (MSGP)	High	High	High	High	High	High	Medium
(2) Hospital Medical Staff Organization (HMSO)	Medium	Medium	High	High	Low to Medium	Low to Medium	Low to Medium
(3) Physician Hospital Organization (PHO)	Medium	Medium	Medium	High	Medium	Medium	Medium
(4) Health Plan Provider Organization / Network (HPPO/HPPN)	Medium	Low to Medium	Low to Medium	Medium to High	Low to Medium	Low to Medium	Low to Medium
(5) Interdependent Provider Organization (IPO)	Medium	Low to Medium	Low to Medium	Low to Medium	Low	Low	Low to Medium

Table 2. Delivery System Models and Alignment with Method of Payment to the System to Encourage Cost/Effective Care

Delivery System Models	Payment Methods: Episode-Based Payment	Capitation	FFS
(1) Multi-Specialty Group Practice (MSGP)	Aligned if there is close relationship with a hospital	Potentially Aligned	Encourages greater use of specialty care within the MSGP
(2) Hospital Medical Staff Organization (HMSO)	Highly Aligned	Highly Aligned	Encourages greater use assuming fees cover marginal cost
(3) Physician Hospital Organization (PHO)	High Aligned	Highly Aligned	Encourages greater use assuming fees cover marginal cost
(4) Health Plan Provider Organization / Network (HPPO/HPPN)	Aligned if there is close relationship with a hospital	Potentially Aligned[1]	Creates conflict between purchaser who wants lower costs and provider network that wants more revenue
(5) Interdependent Provider Organization (IPO)	Depends on the linkages to hospitals	Potentially Aligned[1]	Encourages Greater Use Assuming Fees Cover Marginal Cost

[1] Depending on hospital acceptance of the capitated payment

Table 3. Ability of Delivery System Model to Treat Six Major Types of Medical Conditions

Delivery System Models	Medical Conditions					
	Single Chronic Illness	Multiple Chronic Illness	Major Acute	Minor Acute	Preventive Care	Palliative Care
(1) Multi-Specialty Group Practice (MSGP)	High	High	High	High	High	High
(2) Hospital Medical Staff Organization (HMSO)	Medium	Low to Medium	High	High	Low to Medium	Low to Medium
(3) Physician Hospital Organization (PHO)	Medium	Low to Medium	High	High	Low to Medium	Low to Medium
(4) Health Plan Provider Organization / Network (HPPO/HPPN)	Low to Medium	Low	High	High	High	Low
(5) Interdependent Provider Organization (IPO)	Low to Medium	Low	Medium	High	High	Low

Table 4-1 Quality Indicators for Ambulatory Care from the 2005 Version of the Health Plan Employer Data and Information Set (HEDIS)

	Measure
Screening	
Colorectal cancer	Percentage of adults 51 to 80 years old who had appropriate colorectal cancer screening
Breast cancer	Percentage of women aged 52 to 69 years old who had a mammogram within the last 2 years
Cervical cancer	Percentage of women aged 21 to 64 years old who had a Pap smear within the last 3 years
Chlamydia	Percentage of sexually active women aged 16 to 35 years old who had chlamydia testing within the last year
Glaucoma	Percentage of adults 65 years or older who received glaucoma screening in the past 2 years
Chronic Disease Management	
Hypertension	Percentage of patients with adequate blood pressure control (systolic <140 and diastolic <90)
Heart attack	1. Percentage of adults (35 years or older) discharged after heart attack with a beta-blocker 2. Percentage of adults (35 years or older) after heart attack still on a beta-blocker at 6 months
Diabetes	Percentage of patients age 18 through 75 with diabetes (type 1 or type 2) who met each of the recommended measures during the previous year (presented as 7 different measures): 1. HbA_1c checked 2. HbA_1c under control (<9.0%) 3. Lipid profile performed 4. Lipids controlled: LDL <130 5. Lipids controlled: LDL <100 6. Dilated retinal exam 7. Renal function checked
Depression	Appropriate antidepressant medication management for depression patients 18 or older: 1. Percentage of patients with 3 follow-up contacts during the 12-week Acute Treatment Phase 2. Percentage of patients on anti-depressant medication for the entire 12-week Acute Treatment Phase 3. Percentage of patients who remained on treatment for a full 6-month trial

Table 4-1 continued

	Measure
Smoking cessation	Percentage of smokers 18 or older who received smoking cessation advice
Overall summary	Medicare Health Outcomes Survey
Access to Care	
Preventative / ambulatory services	Percentage of adults who received a preventative / ambulatory visit during the past 3 years
Primary care	1. Percentage of children aged 1 year to 6 years with a visit during the past year 2. Percentage of children aged 7 to 19 with a visit during the past 2 years.
Prenatal and postpartum care	1. Percentage of women who received a prenatal visit during the first trimester 2. Percentage of women who received a postpartum visit within 21 to 56 days
Satisfaction with the Experience of Care	
Adult satisfaction	Consumer Assessment of Health Plans (CAHPS®) 3.0H Adult Survey
Child satisfaction	Consumer Assessment of Health Plans (CAHPS®) 3.0H Child Survey

Source: Institute of Medicine. Performance Measurement: Accelerating Improvement. , Appendix F. (Washington, DC: National Academies Press, 2006)

TABLE 4-2 Performance Measures for Hospital-Based Care

	Endorser		Current Users		
	NQF	AHRQ	JCAHO	CMS	Leapfrog
Independent of Specific Diagnosis					
Any surgical procedure					
Appropriate antibiotic prophylaxis (correct choice; given 1 hour preoperatively; discontinued within 24 hours)	X		X	X	
Medical Diagnoses					
Acute myocardial infarction					
Smoking cessation counseling	X		X	X	
Aspirin at arrival (within 24 hours)	X		X	X	
Aspirin at discharge	X		X	X	
Beta-blocker at arrival and discharge	X		X	X	
Thrombolytic agent (within 30 minutes)	X		X	X	
ACE inhibitor at discharge for patients with low left ventricular function	X		X	X	
Hip fracture					
Risk-adjusted mortality rates		X			
Asthma					
Use of relievers (<18 years)	X				
Systemic steroids (<18 years)	X				
Acute stroke					
Risk-adjusted mortality rates		X			
Surgical Procedures					
Esophageal resection for cancer					
Hospital volume		X			X
Risk-adjusted mortality rates		X			
Coronary artery bypass grafting					
Hospital volume	X	X			X
Risk-adjusted mortality rates	X	X			X
Internal mammary artery use	X				X
Hip replacement					
Risk-adjusted mortality rates		X			

JCAHO = Joint Commission on Accreditation of Healthcare Organizations; CMS = Center for Medicare and Medicaid Services; NQF = National Quality Forum; AHRQ = Agency for Healthcare Research and Quality; Leapfrog = The Business Roundtable's Leapfrog Group.

Source: Institute of Medicine. Performance Measurement: Accelerating Improvement. , Appendix F. (Washington, DC: National Academies Press, 2006)

REFERENCES

1. Institute of Medicine. Crossing the Quality Chasm. Washington, DC, National Academy Press, 2001.
2. L Casalino, RR Gillies, SM Shortell, et al. "External Incentives, Information Technology, and Organized Processes to Improve Healthcare Quality for Patients with Chronic Diseases" *Journal of the American Medical Association*, 289,(2003):434-441.
3. EC Nelson, et al. "Microsystems in Healthcare: Part 1. Learning from High Performing – Clinical Units", *Joined Commission Journal on Quality Improvement*, 28, 9(2002):472-493.
4. SM Shortell and J Schmittdiel. "Prepaid Groups and Organized Delivery Systems: Promise, Performance and Potential", in A 21st Century Health System: The Contribution and Promise of Prepaid Group Practice, Ed. A Enthoven and L Tollen (San Francisco: Jossey-Bass, 2004):6-13.
5. SM Shortell, JA Marsteller, M Lin, et al. "The Role of Perceived Team Effectiveness in Improving Chronic Illness Care", *Medical Care*, 42, (November, 2004):1040-1048.
6. BJ Fried, S Topping, AC Edmondson. "Groups and Teams" in Healthcare Management Organization Design and Behavior, 5th edition, Ed. SM Shortell and AD Kalunzny (New York: Delmar Press, 2006):174-211.
7. L Lemieux-Charles, WL McGuire. "What Do We Know About Healthcare Team Effectiveness? A Review of the Literature", *Medical Care Research and Review*, 63, 3, (June, 2006):263-300.
8. Institute of Medicine. Crossing the Quality Chasm. Ibid, p. 144.
9. Institute of Medicine, Crossing the Quality Chasm, Ibid, p. 145.
10. BJ Weiner, CD Helfrich, SR Hernandez, "Organizational Learning, Innovation, and Change and Ed. SM Shortell, AD Kalunzny, *Healthcare Management*: Organizational Design and Behavior, 5th ed. (New York: Delmar Press, 2006):382-414.
11. Committee on the Cost of Medical Care, *Medical Care for the American People*, (Chicago: University of Chicago Press, 1932).

12. SM Shortell, RR Gillies, DA Anderson, et al. Remaking Health Care In America: the Evolution of Organized Delivery Systems. San Francisco: Jossey-Bass, 2nd Edition, 2000.
13. SM Shortell and J Schmittdiel, ibid, 6-13
14. FJ Crosson. "The Delivery System Matters", *Health Affairs*, 24, 6(November/December, 2005):1543-1548.
15. D Rittenhouse, et al. "Physician Organizations and Care Management in California: From Cottage to Kaiser", *Health Affairs*, 23, 6(2004):51-62.
16. RR Gillies, et al. "The Impact of Health Delivery System Organization on Clinical Quality and Patient Satisfaction", *Health Services Research*, 41, 4(August, 2006 Part 1):1181-1199.
17. A Mehrotra, et al. "Do Integrated Medical Groups Provide Higher Quality Medical Quality than Individual Practices Associations", *Annals of Internal Medicine*, 145(2006):826-833.
18. KH Chuang, et al, "The Clinical and Economic Performance of Prepaid Group Practice", and for the 21st Century Health System: The Contributions and Promise of Prepaid Group Practice, ed. AC Enthoven and LA Tollen, (John Riley and Sons, San Francisco, 2004):45-60.
19. L Casalino, et al, "Benefits of and Barriers to Large Medical Practice in the United States", *Archives of Internal Medicine*, 163, 16(2003):1958-1964.
20. JC Robinson. *The Corporate Practice of Medicine: Competition and Innovation in Healthcare*, (Berkeley: University of California Press, 1999).
21. SM Shortell. "The Medical Staff of the Future: Replanting the Garden," *Frontiers of Health Services Management*, 1, 3(February 1985):3-48. Also reprinted in Health Services Management: Readings and Commentary, Third Edition, AR Kovner and D Neuhauser. (Health Administration Press: Ann Arbor, Michigan, 1987):248-276.
22. E Freidson. *The Profession of Medicine*, (New York, 1970).
23. RA Berenson, PB Ginsburg, and JH May. " Hospital-Physician Relations: Cooperation, Competition, or Separation?" *Health Affairs*, (December, 2006); W31-W43.

24. MV Pauly and M Redisch. “The Not-for-Profit Hospital as a Physicians Cooperative”, *American Economic Review*, 63, 1, (1973):87-99.
25. P Starr. The Social Transformation of American Medicine, New York: Basic Books (1982).
26. R Stevens. In Sickness and in Wealth; American Hospitals in the Twentieth Century, New York, Basic Books (1989).
27. ES Fisher, et al. “Creating Accountable Care Organizations: The Extended Medical Staff”, *Health Affairs*, online, (December 5, 2006).
28. WP Welch and ME Miller. “Proposals to Control high-Cost Hospital Medical Staffs”, *Health Affairs*, 13, 4, (1994): 42-57.
29. D Cortese and R Smoldt. “Taking Steps Towards Integration”, *Health Affairs*, (December 5, 2006): W68-W7
30. RR Gillies, SM Shortell, L Casalino, JC Robinson, and TG Rundall. “How Different is California? A Comparison of U.S. Physician Organizations.” *Health Affairs*, October 15, 2003. Web exclusive: http://content.healthaffairs.org/cgi/reprint/hlthaff.w3.492v1.pdf?ck=nck (Last accessed December 14, 2004).
31. SM Shortell, et al. *Remaking Healthcare in America: the Evolution of Organized Delivery Systems*, ibid: p.86.
32. R Galvin. “What Do Employers Mean By Value?” Integrated Health Care Report. (October, 1998): p.10.
33. G M Hackbarth. Assessing Alternatives to the Sustainable Growth Rate System. Committee on Finance, U.S. Senate. Washington, DC. March 1, 2007.
34. MB Rosenthal, RG Frank, Z Li, et al. “Early Experience with Pay For Performance: From Concept of Practice.” *JAMA*, 2005;294:1788-1792.
35. MB Rosenthal, RA Dudley. “Pay For Performance: Will the Latest Payment Tread Improve Care?”, *JAMA*, February 21, 2007;297:740-744.
36. MB Rosenthal, RG Frank, “What is the Empirical Basis For Paying For Quality in Healthcare?”, *Medical Care Research and Review*. 2006;63:135-157.
37. Institute of Medicine, *Performance Measurement*, (National Academy Press, Washington DC, 2006).

38. AK Jha, T Ferris, and K Donelan et al. " How Common Are Electronic Health Records in the U.S? A Summary of the Evidence", *Health Affairs*, 6, 25 (2006): W496-507.
39. Integrated Health Association, California's Pay For Performance Demonstration. San Ramon, California, 2006.
40. JH Hibbard, JJ Jewett. "Will Quality Report Cards Help Consumers?", *Health Affairs*, 16, 3(1997):218-228.
41. Kovner, TG Rundall. "The Promise of Evidence Based Management: From Guess Work to Best Work." *Frontiers of Health Services Management*, 22, 3(2006):3-22.
42. SM Shortell, TG Rundall, and J Hsu. "We Know Better Why Don't We Do Better: Marrying Evidence Based Medicine with Evidence Based Management", Working Paper, 2007.
43. National Academy of Engineering and Institute of Medicine, *Building A Better Delivery System: A New Engineering/Healthcare Partnership*. (National Academy Press, Washington DC, 2005).