Pay for Performance: Quality- and Value-Based Reimbursement

Norman (Chip) Harbaugh, Jr., MD[a,b,c,d,e,f,*]

KEYWORDS

- Quality-driven health care • Quality initiatives
- Health care quality • Health care reform
- Performance incentives • Physician initiatives
- Physician payment

The quality of current health care is of vital concern nationally, and the structural arrangements of health care have been evolving rapidly to respond to increasing financial pressures and demands to ensure quality. The United States spends more on health care than any other nation—nearly $2.3 trillion annually.[1] This amount is 16.7% of the gross domestic product (GDP) and is expected to grow to 20% of GDP by 2015.[1] The United States can provide its citizens with a first-class health care system for less. As much as $700 billion per year in health care services are delivered in the United States that do not improve health outcomes.[2] With health care costs spiraling out of control despite suboptimal quality of care, it is imperative that all stakeholders involved in health care (physicians, patients, payers, and purchasers) collaborate to explore new models of health care delivery and reimbursement to address some of these challenges. This article reviews the past, present, and possible future models of physician payment for health care delivery.

Current physician payment systems are not designed to promote quality outcomes. The Institute of Medicine has recognized the need to reform physician payment. In its report entitled "Crossing the Quality Chasm,"[3] it recommended that fair payment should be given for good clinical management. Physicians should share in the benefits of quality improvements. Purchasers should have the opportunity to recognize quality

[a] Children's Medical Group, 1875 Century Boulevard, Suite 150, Atlanta, GA 30345, USA
[b] Kid's First Independent Practice Association, GA, USA
[c] Steering Committee on Quality Improvement and Management, American Academy of Pediatrics, USA
[d] Section on Administration and Practice Management, Executive Board, American Academy of Pediatrics, USA
[e] Child Healthcare Financing Committee, American Academy of Pediatrics, USA
[f] United Healthcare Physician Advisory Committee
* Children's Medical Group, 1875 Century Boulevard, Suite 150, Atlanta, GA 30345.
E-mail address: chipharb@comcast.net

Pediatr Clin N Am 56 (2009) 997–1007
doi:10.1016/j.pcl.2009.05.006 **pediatric.theclinics.com**
0031-3955/09/$ – see front matter

differences between health care providers. Financial incentives should align with implementation of care processes based on best practice and better coordination of care leading to better patient outcomes.

EVOLUTION OF PHYSICIAN PAYMENT MODELS

Fee for service, the traditional physician payment system, essentially pays for production and rewards volume and intensity rather than value.[4] In the early 1990s, the spread of capitation, with its incentive to reduce patient access to health care services and thereby reduce costs, raised concerns about its effect on quality of care.[5] These concerns led to the development of multiple quality measures that are common today because capitation does not align compensation with outcomes. New methods of paying physicians are needed so that doctors are rewarded for providing high quality care at the best value.

Pay for performance (P4P) is arguably the most striking change in the US health care system since the inception of managed care. P4P is the use of incentives to encourage health care delivery processes (eg, the use of evidence-based practices) that promote better outcomes as efficiently as possible.[6] P4P is not an all-encompassing solution but one method among many that are targeted at different levels of the health care system.

Although the adoption of P4P has been rapid, there remains considerable uncertainty about how best to design and implement it.[7] The report entitled ''Rewarding Provider Performance''[8] released by the Institute of Medicine concluded that early experience with P4P has been promising, yet its effectiveness has received mixed reviews. Some physicians argue that P4P data are not perfect and should not be released to the public or used for evaluation. Nevertheless, public and private purchasers, frustrated by lackluster physician leadership, are not willing to let ''the perfect stand in the way of the good.''[9] The need for reform is so great that the Institute of Medicine panel has cautiously endorsed moving forward with P4P initiatives.

CONTROVERSIES ABOUT PAY FOR PERFORMANCE

Health outcomes are not the result of medical care alone but of many other determinants. Factors such as the social environment (education, income, and occupation), physical environment (air and water quality), individual behavior, and genetics affect outcomes; therefore, the physician community cannot be held wholly accountable for broad health outcomes.[10] Attempts at aligning physician payment with outcomes need to be multifaceted and require collaboration among the four main stakeholders—physicians, patients, purchasers, and payers.

THE STAKEHOLDERS IN PAY FOR PERFORMANCE

Physicians

Physicians have been reluctant to embrace P4P as a method of public accountability for quality and efficiency for many reasons. On any given report card issued, a physician can appear better than, on par with, or worse than his or her peers; however, most patients believe that their doctors and hospitals are better than average. With report cards, the risk of losing patients' confidence is higher than average.[11] Insurance companies also mine and post data on quality, which doctors allege are produced from poor quality claims data as well as inadequate risk adjustment; health plans subsequently use these data to reward or penalize physicians. Because of these concerns, Congress desires to see more physician involvement in quality reporting

before committing to major payment reform,[12] and developing adequate levels of buy-in from physicians and their organizations will be critical to the long-term viability of the P4P program.[13]

Many physicians argue that the only reliable source of information for patients is their doctor; however, providers need to recognize that patients have a right to review and compare the clinical aspects of their medical care. Physicians should acknowledge that information, flawed as it is, is not inherently bad and is dangerous only if improperly used. Doctors need to partner with payers to improve the quality of the tools used in evaluating them. Health care providers would be well served by giving up the role of critic for that of coauthor.[11]

Patients

Employers and payers have focused their efforts on profiling physicians and subsequently publicly reporting their performance data with the hope that professionalism and organizational pride will drive quality improvement. Payers also hope that patients will "vote with their feet and select the highest quality physician."[14] Public disclosure of a physician's rating sends the public a positive message that doctors are willing to be accountable for their performance;[15] however, despite advances in quality measurement and reporting, studies of patients' choices of health care providers continue to show that patients fail to use available information on quality to make informed choices, even when quality measures appear to be highly salient.[16–19] This observation notwithstanding, patients deserve clear and complete explanations about the quality of their care; increasing experience with public reporting of quality metrics will enable patients to make more appropriate decisions.[11] Recently, employers have also begun tying financial incentives for patients to preferential use of providers with higher quality ratings. An example of this is varying a patient's health plan contributions or copayments according to the provider's quality ratings.[14]

From the perspective of physicians, public reporting sometimes seems counterintuitive.[11] Most adults in the United States read at the eighth grade level,[20] and many patients have difficulty understanding comparative information and using it to make informed health care decisions. Many health care plans have dropped patient satisfaction measurements because of consistently high scores with lack of variation across providers, and the expense of collecting patient survey data has been burdensome.[14] Improving comprehension of quality information presented may help patients make better choices.[21]

An important but sometimes under recognized factor in improving health care outcomes is patient responsibility for their own health. While P4P attempts to change physician behavior, encouraging patient self-management via individual and societal education about health and medical care would go a long way toward engaging the consumer of health care services as an active partner.

Purchasers

Employers have been reluctant to participate in health care solutions, and many offer health care coverage simply because their competitors do.[22] They remain skeptical that their corporate interests will be served by solutions arising from the physician, the payer, or the government.[23] Employers are alarmed at the pace of rising health care insurance premiums and are motivated to develop solutions for cost control.[23] It is intuitive that healthier employees spend less money on health care and are more productive. Their goal is to receive the highest level of health care at the lowest cost. Above all, purchasers want predictability and control of their bottom lines as it relates to health care expenditures.[23]

After the suboptimal experience of managed care, which gave a one-time savings, employers expressed interest in getting out of sponsoring health benefits but were reluctant to stop for fear of public backlash. Surveys show that the majority of people with employer-sponsored health care are satisfied with their coverage.[24] Their fate thus sealed, purchasers believe that patient (employee/consumer) choice is an essential lynchpin in improving quality and controlling cost.

Payers

Health plans occupy a unique place within the health care system in having access to a variety of clinical and financial data that can be used in quality improvement activities. Health plans manage care in three ways: (1) through selective contracting and credentialing processes, (2) by developing programs that support care and are made available to associated physicians, and (3) by implementing rules and structures that affect the provision and use of services.[25] Health plans also manage information, most importantly by claims processing. The information obtained becomes a source for physician profiling and feedback. Use review requires information flow from physician to health plan and back to physician; such information can provide physicians with new perspectives on treatment processes.[25]

Health plans manage the cost and quality of care in a difficult environment, facing multiple and sometimes even conflicting objectives. Most plans wish to provide appropriate care[26] and to satisfy patients (employees) who value access and quality more than cost. They also try to satisfy the purchasers (employers), who may care greatly about cost and demand documentation of value and quality.[25] Health plans implement care management and P4P programs to help them achieve these sometimes conflicting objectives; if incorrectly designed or overzealously applied, they can be detrimental.

High quality health plans can create high quality health care.[27] The Institute of Medicine defines this as ''the degree to which health services for individuals and populations increase the likelihood of positive health outcomes and are consistent with current professional knowledge.''[27] Physicians can provide unique and important information on health plan quality as they observe the effect of health plan practices.[25] Investments in quality improvement by one plan can accrue benefits to other health plans because of overlapping networks. One plan alone may have minimal effect on quality because inadequate data sample size and insufficient incentives may not excite all involved stakeholders. A consortium of plans in a community that cooperates on the design and implementation of P4P is more likely to affect a large enough share of physician income to produce real change.

MEASUREMENT FOR PAY FOR PERFORMANCE

Most P4P measurement is performed by health plans that determine what outcome measures are monitored, such as intermediate and long-term results of health care and changes in health status, functional status, and well-being.[28] Although improving patient outcomes is the most important goal of health care, physicians have voiced concerns about being held accountable for health changes for which their intervention has little direct effect.[28] Determining outcomes accurately is the greatest challenge. Many measures require patient reports and surveys, whereas others rely on laboratory results and clinical measures as well as claims data[28] and may incur significant data collection costs. The health care industry must realize that these outcome measures are nascent programs; without proper scrutiny, the measures may result in increased instead of lowered health care costs.[29]

Currently, the most ubiquitous and least expensive data collection process in the US health care system is the billing process.[29] Hundreds of billions of claims are processed each year and can yield valuable information;[29] however, claims data are created for paying bills and not for research into health care services. Studies of the accuracy of medical claims are discouraging.[30] If claims data are often inaccurate, but randomly so, analyses based on them are biased toward the null hypothesis, which would tend to make excellent physicians and sub par physicians drift into the middle of the pack.[11]

Claims for billing are based on diagnosis codes (International Classification of Diseases, North Revision ICD-9) or procedures (Current Procedural Terminology [CPT]). Research has shown that coding of chronic diseases and coexisting conditions as secondary diagnoses is highly variable, leading to counterintuitive findings.[31] ICD-9 contains diagnosis codes yet fails to differentiate variation within a code. CPT designation allows little to no specificity among multiple codes. Category II CPT codes have been issued that allow coding of clinical values and facilitate performance measures through coding, but these have yet to be widely adopted.[29]

The alternative to using claims-based data is using the clinical data in medical records; however, abstraction of paper records consumes time and resources, and electronic health records have been adopted by only 15% to 20% of office-based physicians.

Analysis of commonly used physician quality measures has revealed that only a handful have significant clinical and financial utility; these measures are not routinely found in claims data. This observation questions the validity of large claims-based data aggregations when compared with clinical medical record data.[29] Despite the many reasons why measurement for P4P is imperfect, physicians should not let "the perfect stand in the way of the good."[10]

Use of Guidelines for Pay for Performance

Clinical practice guidelines (CPGs) are based on clinical evidence and expert consensus to help decision making about treating specific diseases.[32] They help define the standard of care and focus efforts on improving quality. Because most CPGs address single diseases in accordance with medicine's focus on disease pathophysiology, difficulty arises in patients with multiple diseases.[32] Compliance with CPGs has been used for P4P; however, limitations of single-disease CPGs may be highlighted by the growth of P4P initiatives which reward physicians for specific elements of care. This approach may create incentives for ignoring the multidimensional approach required for patients with multiple chronic diseases and also dissuade physicians from caring for sicker or more complex patients. Quality of care standards based solely on these CPGs may also lead to unfair and inaccurate judgments of physicians caring for this sicker population.[32] An additional problem with using CPGs for P4P is that patients do not randomly distribute themselves to their physicians. There needs to be an adjustment for differences in patient mix to minimize the effects of risk selection that may be unfair to patients and physicians. In some reports, the use of risk adjustment for patient health status increased by nearly 50% the number of physicians who felt positively about the usefulness of incentives.[33]

TYPES OF INCENTIVES FOR PAY FOR PERFORMANCE

Various incentive models have been used for P4P. These models include financial incentives such as bonuses or increased fee schedules and nonfinancial incentives

such as performance profiling, public reporting, and reduction in administrative requirements.

Financial Incentives

In programs that use financial rewards, some provide true bonuses (ie, additional new money), whereas others redistribute a percentage of payments that were withheld by the payer.[33] In the early phases of P4P, programs based on positive, rather than negative, financial incentives may be more useful to develop adequate levels of physician buy-in to the process to ensure the program's success.[15]

Bonus programs may be competitive or noncompetitive. This structure determines how rewards are allocated across physicians. In competitive programs, doctors compete for bonuses and there are winners and losers, whereas in noncompetitive programs bonuses are based on meeting targets or improving on previous performance. Competitive bonus programs are thought to provide a stronger incentive to improve performance because even those with high baseline performance face the threat of not being rewarded if other physicians have higher relative improvement in performance. Noncompetitive programs, in which all physicians have the opportunity to reach a fixed target to obtain a share of the reward pool, may provide less of an incentive to improve quality. Targets based on improvement over baseline, rather than meeting a specified goal, provide greater incentive for those with very low baseline quality.[14]

Nonfinancial Incentives

Nonfinancial incentive models include performance profiling, public reporting of performance, and reducing administrative requirements. Some health plans offer incentives by ranking physicians into tiers based on cost or quality criteria. Each tier has its own level of physician compensation, copayments and deductibles for the patient, or both. For example, higher performing physicians have lower copayments for patients to encourage patients to use them.[28]

Performance data for profiling and public reporting may relate to access to care, clinical quality, patient satisfaction, patient safety, and patient outcomes. Performance profiling should be across similar groups of physicians, taking into account any significant differences in volume and characteristics of patient populations. Results of internal performance comparisons are presented to physicians for educational purposes, whereas in public reporting data on physician performance is disclosed to the public. Both methods aim to motivate physicians to improve their performance.[33] Public recognition for quality of care may be a stronger incentive than bonus payments, which in the past have been too small to garner much attention from physicians. Such transparency also promotes accountability to the public.[28]

Although public reporting has gained some momentum, current P4P programs are experimental, and public reporting has its limitations regarding data accuracy. The measurement of performance remains narrow in scope and methodologically imperfect, and there are important differences between measures developed for internal improvement and those intended for public release. Public display of results may not be appropriate for programs with unstable measures, inadequate sample size, or an insufficient provider-exception reporting processes. It might also be advisable to establish an adequate duration of provider comment period so that physicians can comment on measures and make initial adjustments before making the results public.[20]

UNINTENDED CONSEQUENCES OF PAY FOR PERFORMANCE

Assigning a monetary value to every aspect of a physician's time and effort may actually reduce productivity, impair the quality of performance, and even increase costs. Some studies have shown that even the suggestion of money promotes behavior marked by selfishness and lack of collegiality.[34] In one such study, primed subjects were consistently less willing to extend themselves to those in need of assistance when money was at stake.[35]

One way to possibly restore the balance between communal and market exchange in health care may lie in the ''patient centered medical home.'' The term suggests an emphasis on social as opposed to economic models in a ''compassionate partnership in which the primary care physician coordinates care for the patient's ongoing problems and increases attention to prevention.'' Health care payers reward the physician with a set fee for each patient cared for in the medical home to provide the most optimal outcomes. This payment accommodates for the time spent on wellness and preventive care that is currently nonreimbursed time. Experts suggest that substantial cost savings are likely to result from such coordination of care.[35]

Health care payers should use great caution as they develop P4P models. Both quality and efficiency measures should be included. Payers need to engage practicing physicians as well as specialty societies in measure development and implementation of their P4P programs. Collaboration among all stakeholders is important in the development of systems of public reporting and accountability. These investments of resources and time can truly improve health care if the various stakeholders do not view each other as adversaries.

EXAMPLES OF CURRENT PAY FOR PERFORMANCE PROGRAMS

Health care quality yardsticks are being developed everyday. There are public, federal, private, or payer-funded programs. In an ideal world there would be one agreed source of quality measures and one place to send data with one set of reports. The following sections describe some examples of ongoing P4P programs.

Centers for Medicare and Medicaid Services

Although the United States does not have a single national health care system, Medicare and Medicaid are by far the single biggest payers for health care services. The Centers for Medicare and Medicaid have several quality measurement projects. The Physician Quality Reporting Initiative is a P4P experiment that involves physicians submitting quality-of-care indicators along with their claims forms. For 2008, there were 119 possible measures that could be submitted; a practice submitting a minimum of three measures for at least 80% of relevant situations could receive a 1.5% increase in reimbursement. This program is basically a ''pay for reporting'' initiative and is currently voluntary.

National Committee on Quality Assurance

The National Committee on Quality Assurance (NCQA) has two major quality metrics. The Health Effectiveness Data and Information Set (HEDIS) is used by 90% of US health plans to measure performance. Physician Practice Connections, which addresses the effective use of clinical information systems, and the Patient Centered Medical Home are NCQA's recognition programs. In areas where insurers offer P4P, NCQA recognition can lead to higher reimbursement. NCQA certification is a prerequisite for participating in the Bridges to Excellence (BTE) program. BTE is a program in which employers pay physicians a premium for providing superior care in one or more

of three areas: diabetes, cardiac, or spine care. BTE is not active everywhere but is one of the few existing P4P programs in which the rewards—up to 10% of the physician's income—are worth the efforts. BTE borrows most of its standards from the physician recognition programs of NCQA.[36]

Integrated Health Care Association

The largest P4P sponsor today is the California-based Integrated Health Care Association (IHA). IHA's collaboration among all stakeholders has allowed it to gain a relevant market share of 60% of practices,[14] and because IHA's members are concentrated in one state, the effective leverage of each program is higher. This model best addresses both efficiency and quality. Measurement areas include clinical performance, patient satisfaction, and investment in information technology. The clinical measures are similar to HEDIS criteria. Patient satisfaction measures include communication with the physician, timely access to care, specialty care, and overall rating. Measures of technology investment include population management as well as clinical decision support via electronic connection with the pharmacy.[37]

These prototypical examples of P4P provide a context for future projections of health care delivery models where quality and efficiency peacefully coexist.

APPROACH TO FUTURE PAY FOR PERFORMANCE MODELS

The effectiveness of existing P4P programs has been evaluated in several studies, and the conclusions regarding its impact have been mixed. The need for payment reform is so great that the medical community continues to seek better answers.

An ideal P4P program of the future would include features of the various models described previously. Community-wide participation has the best potential to transform health care within a geographic region. A consortium of plans associated with physician organizations that have an ongoing open dialogue with purchasers and patient groups might create the right mix to catalyze this process. The emergence of regional physician organizations to manage health information exchange holds the promise of automating clinical data collection and aggregation.[38] Communities of medical specialties such as pediatrics should consider developing common data pools that aggregate information across payers, purchasers, and physicians to have a uniform method for assessing and reporting performance. A common set of national pediatric metrics and their implementation would enable communities to coordinate their efforts across organizations. Without community- or specialty-wide participation, P4P faces a higher risk of failure due to the large burden placed on physicians and their practices.

Physician organizations are more likely than individual practices to alter the infrastructure of the practice milieu in ways that promote better care delivery. Improved information technology that enables organizations to sample patients crossing many practices will increase statistical and clinical significance of performance data. Another benefit of community-wide or regional organizations as the accountable entity would be that physicians tend to respond better to peer-to-peer reputation incentives rather than external payer pressure. Physician organizations will be more likely to take community-based measures and develop internal implementation guidelines that are ideally suited to the local market. Because enforcement is delegated to the physician organization, it is physician to physician. This approach is more likely to promote a shared sense of accountability for a given patient population. It also allows for a closer alignment between local physician preferences and program design. In

such a program, it would be more logical to disburse P4P payments to physician organizations rather than individual physicians.

INTERNATIONAL PAY FOR PERFORMANCE EFFORTS

Other societies are experiencing health care quality issues similar to the United States and have P4P models comparable to the US health care system. For example, the UK's Quality and Outcomes Framework (QOF) is one of the world's most ambitious P4P programs to date.[39] The UK's National Health Service (NHS) began in 1948. Its problems included long waiting times as well as gaps in performance between the best and worst physicians. Political pressure led to the new "patient led NHS" resulting in the formation of the QOF in 2004. This change was to be "self improving, in which performance was driven by patients' choice, money following the patient, and competition among physicians."[40] The UK P4P trends toward more active monitoring of physician performance rather than placing implicit trust in health care professionals.[41] Primary Care Trusts, statutory bodies responsible for local health care delivery, were later added to provide financial incentives to motivate behavior change. These Primary Care Trusts organized physician practices to help design quality measures, collect data, and implement procedures and guidelines to ensure better outcomes. In the United States, providers (both hospitals and physicians) can organize themselves in a similar way to achieve these goals in a proactive manner.

Studies from the United Kingdom, consistent with previous work, show that financial incentives can change physician behavior,[42] and that patients receive higher quality care in geographic areas where performance measures and monitoring have been established.[43] The UK's QOF models competition, patient choice, and payment for results. Its basic premise is that interaction between these three elements will produce the dynamics required for greater efficiency and quality. Shifting of care into the community via PCTs substantiates the principles of consortium and community-wide participation. The United Kingdom seems to be ahead of the United States in the adoption of financial incentives to improve the quality of health care.

SUMMARY

There is urgent need for change in the US health care delivery and payment system. P4P is still in its infancy; it will follow its natural progression into some future delivery model. Collaboration among all stakeholders as well as investment of capital, both financial and intellectual, can significantly increase the odds of success of P4P programs. Promoting the emergence of regional physician organizations or trusts to help develop measures, aggregate data, implement quality improvement initiatives, and police their enforcement will allow us to better achieve quality improvement and efficiency. The final solution should be physician driven, patient centered, employer sponsored, and payer administered, with the primary goal of improving the quality of care.

REFERENCES

1. New England Healthcare Institute. Waste in health care: a $700 billion opportunity. Available at: www.nehi.net. Accessed January 9, 2009.
2. Aaron HJ. Waste, we know you are out there. N Engl J Med 2008;359(18):1865–7.
3. Institute of Medicine. Crossing the quality chasm: a new health system for the twenty first century. Washington (DC): National Academies Press; 2001.

4. Rosenthal M. Beyond pay for performance: emerging models of providers—payment reform. N Engl J Med 2008;359(12):1197–200.
5. Berenson R. Capitation and conflict of interest. Health Aff (Millwood) 1986;5(1): 141–6.
6. Casalino L, Gilles RR, Shortell SM. External incentives, information technology, and organizational processes to improve health care quality for patients with chronic diseases. J Am Med Assoc 2003;289:434–41.
7. Leapfrog Group. Incentive and reward compendium guide and glossary 2005. Available at: http://www.leapfroggroup.org/leapfrog_compendium. Accessed July 31, 2007.
8. Institute of Medicine. Rewarding provider performance: aligning incentives in Medicare. Washington (DC): National Academics Press; 2007.
9. Galvin R, Milstein A. Large employers' new strategies in health care. N Engl J Med 2002;347:939–41.
10. Kindig D. A pay-for-population health performance system. JAMA 2006;296: 2611–6.
11. Lee T, Meyer G, Brennan T. A middle ground on public accountability. N Engl J Med 2004;350:2409–12.
12. Glendinning D. Medicare eases quality reporting, warns of annual battles over pay. American Medical News 2006;49(3):1–2.
13. Glendinning D. Pay for performance benefits are unproven, panel says. American Medical News 2006;5:7.
14. Rosenthal M, Fernandopalle R, Song H, et al. Pay for quality: providers' incentives for quality improvement. Health Aff 2004;23(2):127–41.
15. Forrest C, Villagra V, Pope J. Managing the metric vs managing the patient: the physician's view of pay for performance. Am J Manag Care 2006;12(2):83–5.
16. Schneider EC, Epstein AM. Use of public performance reports: a survey of cardiac surgery patients. JAMA 1998;279(20):1638–42.
17. Beaulieu ND. Quality information and consumer health plan choice. J Health Econ 2002;21(1):143–63.
18. Scanlon DP, Chernew M, Sheffler S, et al. Health plan report cards: exploring differences in plan ratings. Jt Comm J Qual Improv 1998;24(1):5–20.
19. Chernew M, Scanlon DP. Health plan report cards and insurance choice. Inquiry 1998;35(1):9–22.
20. Baker G, Delbanco S. Pay for performance: national perspective. 2006 Longitudinal survey results with 2007 market updates. Presentation for Medvantage and Leapfrog Group, December 2007.
21. Greene J, Peters E, Mertz CK, et al. Comprehension and choice of a consumer-directed health plan: an experimental study. Am J Manag Care 2008;14(6): 369–75.
22. Blumenthal D. Employer-sponsored health insurance in the United States: origins and implications. N Engl J Med 2006;355:82–8.
23. Galvin R. Still in the game—harnessing employer inventiveness in US health care system. N Engl J Med 2008;359(14):1421–3.
24. Fronstin P, Collins SR. The 2nd Annual EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2006: early experience with high-deductible and consumer-driven health plans. New York: Commonwealth Fund; 2006.
25. Whaley D, Christianson J, Finch M, et al. Evaluating health plan quality 1: a conceptual model. Am J Manag Care 2003;9(2):S53–64.
26. Kenagy JW, Berwick DM, Shane MF. Service quality in health care. JAMA 1999; 281:661–5.

27. Campbell SM, Roland MO, Buetow SA. Defining quality of care. Soc Sci Med 2000;51:1611–25.
28. Outcomes-based compensation: pay for performance design principles. Presented at the 4th Annual Disease Management Outcomes Summit, Rancho Mirage, California, November 11-14, 2004.
29. De Brantes F, Wickland P, Williams J. The value of ambulatory care measures: a review of clinical and financial impact from an employer/payer perspective. Am J Manag Care 2008;14(6):360–8.
30. Iezzoni LI, Burnside S, Sickles L, et al. Coding of acute myocardial infarction: clinical and policy implications. Ann Intern Med 1988;109(9):745–51.
31. Iezzoni LI, Foley SM, Daley J. Comorbidities, complications, and coding bias: does the number of diagnosis codes matter in predicting in-hospital mortality? JAMA 1992;267:2197–203.
32. Boyd C, Darer J, Boult C, et al. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases. JAMA 2005;294(6):716–24.
33. American Medical Association. How physician incentives are used to impact medical practice. Chicago: American Medical Association Press; 2003.
34. Vohs KD, Mead NL, Goode MR. The psychological consequences of money. Science 2006;314:1154–6.
35. Hartzband P, Groopman J. Money and the changing culture of medicine. N Engl J Med 2009;360(2):101–3.
36. Rosenthal M, De Brantes F, Senaiko A, et al. Bridges to Excellence—recognizing high quality care: analysis of physician quality and resource use. Am J Manag Care 2008;14(10):670–7.
37. Integrated Healthcare Association. Available at: http://www.iha.org/. Accessed January 9, 2009.
38. De Brantes F, Emery DW, Overhage JM, et al. The potential of HIE as intermediaries. J Healthc Inf Manag 2007;21(1):69–75.
39. Galvin R. Pay for performance: too much of a good thing? A conversation with Martin Roland. Lessons learned from the UK experience with pay for performance. Health Aff 2006;25(5):w12–9.
40. Klein R. The troubled transformation of Britain's National Health Service. N Engl J Med 2006;355(4):409–15.
41. Campbell S, Reeves D, Kontopanletis E, et al. Quality of primary care in England with the introduction of pay for performance. N Engl J Med 2007;357(2):181–90.
42. Gosden T, Forland F, Kristiansen IS, et al. Impact of payment system on behaviour of primary care physicians: a systematic review. J Health Serv Res Policy 2001;6:44–55.
43. Asch SM, McGlynn EA, Hogan MM, et al. Comparison of quality of care for patients in the Veterans Health Administration and patients in a national sample. Ann Intern Med 2004;141:938–45.