

You Get What You Pay For: Result-Based Compensation for Health Care

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Methods of payment are [a] critical environmental force that must be aligned with the objective of improving quality. Current payment methods do not adequately encourage or support the provision of quality health care, and in some instances, they may actually impede local innovations and efforts to improve quality.¹

I. Introduction

In market-based economies, the customer is king.² Sellers of goods and services routinely condition their right to payment on customer satisfaction or offer money-back guarantees or warranties. Manufacturers and retail outlets willingly replace defective items and allow unhappy buyers to return purchases with "no questions asked." Providers of sophisticated commodities and services pledge to meet deadlines, quality standards, and other performance criteria, and they tie their right to compensation to these commitments. When goods or services fall short of purchasers' expectations, providers suffer financially.

1. INST. OF MED., CROSSING THE QUALITY CHASM: A NEW HEALTH SYSTEM FOR THE 21ST CENTURY 193 (Nat'l Acad. Press 2001).

2. France, as always, remains the exception that proves the rule. See Suzanne Daley, *A Spy's Advice to French Retailers: Politeness Pays*, N.Y. TIMES, Dec. 26, 2000, at A4 (noting routine failure of French retailers to provide prompt and polite service to customers).

This link between payment and performance, the hallmark of a result-based compensation arrangement (RBCA), encourages providers to perform well.

RBCAs prevail throughout the economy. Many lawyers of diverse types work on contingency, as do accountants who represent taxpayers before the Internal Revenue Service and local taxing authorities. Investment bankers, stockbrokers, real estate agents, auctioneers, department store clerks, insurance agents, advertising agencies, political consultants, and telemarketers work on commission, as do corporate officers, directors, and executives who receive stock options, partners who share in a firm's profits, employees who receive bonuses, and service personnel who receive tips. Salaried employees participate in RBCAs when their pension plans hold their employers' stock.

RBCAs are common because they effectively solve a variety of agency problems. From a principal's perspective, an RBCA reduces the need to monitor an agent's performance by aligning the interests of principal and agent as they have jointly defined them. From an agent's perspective, an RBCA means there will be less arguing over whether the agent accurately perceived the principal's objectives and acted accordingly. For both parties, an RBCA will result in an appropriate amount of effort by the agent at an appropriate cost to the principal. By encouraging agents to produce outcomes that principals want, RBCAs help such relationships work smoothly.

Given the prevalence of RBCAs throughout the economy, their rarity in the health care sector is striking. Health care providers almost never offer guarantees or tie their compensation to the quality of their work. As former Assistant Secretary of Health and Human Services Dr. Philip Lee observed, providers "get paid for what [they] do, not what [they] accomplish."³ The enormity of the health care sector makes the absence of RBCAs particularly significant: Americans spend approximately \$1.2 trillion annually on health care services, almost none of which are warranted to meet measurable standards of quality.⁴

The rarity of RBCAs would be unproblematic if purchasers invariably received value for their healthcare dollars. Unfortunately, the quality of American medicine varies widely. Many Americans receive high quality services, but many do not. Some services are over-utilized; others are under-utilized; utilization rates vary from place to place in unexplained ways; and few providers consistently deliver "evidence-based medicine."⁵ Americans also spend

3. DAVID A. KINDIG, *PURCHASING POPULATION HEALTH 1* (U. Mich. Press 1997); see also David A. Kindig, *Purchasing Population Health: Aligning Financial Incentives to Improve Health Outcomes*, 33 HEALTH SERVS. RES. 223, 223 (1998).

4. See *infra* Part V (detailing limited circumstances in which RBCAs are employed in health care).

5. See *infra* Part II (detailing shortcomings in quality of health care delivered in United States); see also David Classen & Peter Kilbridge, *Healthcare Quality and the Prevention of*

tens of billions of dollars annually on medical services whose value is questionable or nonexistent.⁶

Medical treatment also frequently results in injury to patients. One analysis estimated that injuries caused by physicians accounted for 180,000 deaths per year.⁷ The Institute of Medicine adopted a lower figure for deaths attributable to injury during a hospitalization – between 44,000 and 98,000 deaths per year – but even this figure makes medical errors the eighth leading cause of death in the United States.⁸ Every year, medical errors kill more people than motor vehicle accidents, breast cancer, and AIDS.⁹

Any other industry responsible for the deaths of 50,000 to 100,000 of its customers each year and for seriously injuring many more would be the target of aggressive criminal investigations and massive civil lawsuits. When tires manufactured by the Bridgestone/Firestone Company were found to be defective, Congress held hearings, prosecutors threatened criminal proceedings, and plaintiffs' attorneys filed several nationwide class actions. Yet Bridgestone/Firestone was, at worst, responsible for the loss of fewer than three hundred lives over a period of several years.¹⁰ Medical errors kill more people than this every day.

The logic of employing RBCAs to address medical mistakes and other deficiencies in health care services rests on a simple intuition: when providers are paid to deliver high quality care, they are more likely to do so. Because the health care sector is bereft of RBCAs, Americans receive services that range

Medical Errors 4 (June 2000) (report published by First Consulting Group) (on file with authors) ("The logic of evidence-based medicine is simple: the quality and safety of patient care are determined in large measure by the processes of diagnosis and treatment. When these processes are scientifically optimal, the patient's chances of having a good outcome are optimal. When they vary, outcomes vary. . . . Where it has been consistently applied, evidence-based medicine has yielded consistently superior patient outcomes."). Unfortunately, as the Institute of Medicine concluded in a recent report, "there is a great deal of variability in medical practice and, oftentimes, a lack of adherence to medical standards based on scientific evidence." INST. OF MED., *TO ERR IS HUMAN* 16 (1999).

6. See *infra* Part II (documenting inappropriate utilization).

7. Lucian Leape, *Error in Medicine*, 272 JAMA 1851, 1861 (1994).

8. See INST. OF MED., *supra* note 5, at 22 (documenting figures). These figures have been controversial; researchers have argued that many patients would have died anyway or that reviewer assessments are unreliable. See Rodney A. Hayward & Timothy P. Hofer, *Estimating Hospital Deaths Due to Medical Errors: Preventability Is in the Eye of the Reviewer*, 286 JAMA 415 (2001) (noting significant inter-rater variability in determination of whether particular death was preventable); Clement S. McDonald et al., *Deaths Due to Medical Errors Are Exaggerated in Institute of Medicine Report*, 284 JAMA 93 (2000). Those involved in the preparation of the Institute of Medicine report have defended these figures. See Lucian Leape, *Institute of Medicine Medical Error Figures Are Not Exaggerated*, 284 JAMA 95 (2000) (rebutting criticisms of IOM results).

9. INST. OF MED., *supra* note 5, at 1.

10. See Nat'l Highway Traffic Safety Admin., *Firestone Recalls* (Oct. 4, 2001), available at <http://www.nhtsa.dot.gov/hot/firestone/update.html> (totaling 271 fatalities).

in quality from extraordinarily good to extraordinarily bad with outcomes that vary accordingly. If Americans want higher quality, fewer errors, and better health, we should link compensation to results.

The Institute of Medicine (IOM) emphasized the need for quality-related incentives in *Crossing the Quality Chasm*, a report released in March of this year. According to the IOM, "current [compensation] methods provide little financial reward for improvements in the quality of health care delivery, and may even inadvertently pose barriers to innovation."¹¹ To encourage health care providers to employ "best practices" and to "achieve better patient outcomes," the IOM recommended that payment methods should "provide an opportunity for providers to share in the benefits of quality improvement [with] rewards . . . close to the level at which the reengineering and process redesign needed to improve quality are likely to take place."¹² In other words, the IOM recommended RBCAs.

This Article develops the case for health care RBCAs. Part II briefly surveys the literature that led the IOM and other prominent authorities to give health care providers low marks for quality. Part II then focuses on two areas – coronary artery bypass surgery and surgical anesthesia – in which quality has improved greatly in recent years, to demonstrate that poor quality is not inevitable if appropriate incentives are employed. Part III identifies the prevailing methods of compensating health providers and shows that none tie providers' financial prospects to patients' well-being. Part IV explains how RBCAs work, demonstrates their theoretical potential to enhance quality, and addresses some common objections to using them in connection with medical services. Part V identifies the small number of cutting-edge sectors of the health care market that already use RBCAs. It also discusses other areas in which health care RBCAs could be deployed. Part VI offers a brief conclusion.

II. *The Crisis of Quality in American Medicine*

[Q]uality problems . . . abound in American medicine. The majority of these problems are not rare, unpredictable, or inevitable concomitants of the delivery of complex, modern health care. Rather, they are frighteningly common, often predictable, and frequently preventable.¹³

Readers who are unfamiliar with the literature on health services may find it hard to believe that the quality of American medicine varies as greatly as we contend. The literature shows that serious quality problems afflict every aspect

11. INST. OF MED., *supra* note 1, at 19.

12. *Id.*

13. Mark R. Chassin, *Is Health Care Ready for Six Sigma Quality?*, 76 MILBANK Q. 565, 566 (1998); see also Thomas Bodenheimer, *The American Health Care System: The Movement for Improved Quality in Health Care*, 340 NEW ENG. J. MED. 488 (1999) (outlining history of quality improvement movement in United States).

of the American health care system, irrespective of insurance coverage and delivery arrangements. Part II.A presents a brief, general survey that demonstrates the extent of the need for quality improvement. Part II.B focuses on the highly developed literature detailing efforts to improve the quality of surgical anesthesia and coronary artery bypass grafting (CABG). In both areas, dramatic improvements in quality were realized shortly after the introduction of appropriate incentives.

A. *The Quality of Health Care in the United States*

The literature on health care quality is replete with statements that look like tabloid headlines: "one-fourth of hospital deaths may be preventable";¹⁴ "180,000 people may die" each year "partly as a result of iatrogenic injury";¹⁵ "one-third of some hospital procedures may expose patients to risk without improving their health."¹⁶ Unfortunately, these dire statements are actual research findings. As a 1998 literature review observed:

[the] dominant finding . . . is that there are large gaps between the care people should receive and the care they do receive. This is true for all three types of care – preventive, acute, and chronic – whether one goes for a check-up, a sore throat, or diabetic care. It is true whether one looks at overuse or underuse. It is true in different types of health care facilities and for different types of health insurance. It is true for all age groups, from children to the elderly. And it is true whether one is looking at the whole country or a single city. . . . A simple average of the findings of the preventive care studies shows that about 50% of people received recommended care. An average of 70% . . . received recommended acute care, and 30% received contraindicated acute care. For chronic conditions, 60% received recommended care and 20% received contraindicated care.¹⁷

Table 1¹⁸ presents a selection of the results that support this dismal conclusion. It shows that American health care providers routinely omit indicated procedures of known value, frequently perform treatments and surgeries that are unnecessary and inefficacious, and employ practice patterns that vary widely for no good reason.¹⁹ Adverse drug events and the use of unproven

14. Robert H. Brook et al., *Health System Reform and Quality*, 276 JAMA 476, 477 (1996).

15. Robert W. Dubois & Robert H. Brook, *Preventable Deaths: Who, How Often, and Why?*, 109 ANNALS INTERNAL MED. 582 (1988).

16. Stephen M. Shortell et al., *Assessing the Impact of Continuous Quality Improvement on Clinical Practice: What It Will Take to Accelerate Progress*, 76 MILBANK Q. 593, 593 (1998).

17. Mark A. Schuster et al., *How Good Is the Quality of Health Care in the United States?*, 76 MILBANK Q. 517, 520-21 (1998).

18. See *infra* Appendix, Table 1, at 1486.

19. See Chassin, *supra* note 13, at 570-78 (differentiating between overuse, underuse, and misuse); Schuster et al., *supra* note 17, at 518 (differentiating between too much care, too little care, and wrong care).

treatments also are distressingly common.²⁰ Although managed care dominates the recent public policy debate, "managed care is not the problem, quality is."²¹

Health care is also plagued by unacceptably high error rates. In a 1999 report, the IOM concluded that medical errors occur with extraordinary frequency, generate intolerable numbers of deaths and injuries, and entail staggering social costs.²² Table 2²³ summarizes some of the studies that led the IOM to this conclusion. These figures probably understate actual error rates, injuries, and costs because under-reporting of medical errors is rampant.²⁴

To put these problems into perspective, Table 3²⁵ compares the performance of the health care sector with other industries. At a defect rate of 20%, roughly the frequency with which doctors erroneously prescribe antibiotics for ambulatory patients, the credit card industry would botch nine million transactions a day and banks would deposit thirty-six million checks in the wrong accounts.²⁶ Yet, by health care standards, the appallingly high 20% defect rate for antibiotic prescriptions for ambulatory patients is low. Health care "frequently produces defects at rates as high as 500,000 per million – as exemplified in failures to recognize and treat clinical depression or control hypertension."²⁷

There are a number of reasons why quality varies widely, including the decentralized and fragmented nature of the health care delivery system, the

20. David W. Bates et al., *Incidence of Adverse Drug Events and Potential Adverse Drug Events: Implications for Prevention*, 274 JAMA 29 (1995); David C. Classen et al., *Adverse Drug Events in Hospitalized Patients: Excess Length of Stay, Extra Costs and Attributable Mortality*, 277 JAMA 301 (1997); Rainu Kaushal et al., *Medication Errors and Adverse Drug Events in Pediatric Inpatients*, 285 JAMA 2114 (2001); David P. Phillips et al., *Increase in U.S. Medication-Error Deaths between 1983 and 1993*, 351 LANCET 255 (1999);

21. Robert H. Brook, *Managed Care Is Not the Problem, Quality Is*, 278 JAMA 1612, 1612 (1997); see Schuster et al., *supra* note 17, at 556 ("Whether the care is preventive, acute, or chronic, it frequently does not meet professional standards.").

22. INST. OF MED., *supra* note 5, at 1. After this report was released, President Clinton commissioned a federal task force to devise a strategy for making health care safer. See QUALITY INTERAGENCY COORDINATION TASK FORCE, *DOING WHAT COUNTS FOR PATIENT SAFETY: FEDERAL ACTIONS TO REDUCE MEDICAL ERRORS AND THEIR IMPACT 1* (Feb. 2000), available at <http://www.quic.gov> (detailing governmental plans to enhance quality).

23. See *infra* Appendix, Table 2, at 1489.

24. See INST. OF MED., *supra* note 5, at 26 (noting under-reporting of medical errors). Under-reporting of medication errors in hospitals is especially dramatic. One study found that incident reports were filed for only three of fifty-four admitted patients who experienced adverse drug events. *Id.* at 29. This under-reporting occurs for a variety of reasons, including the failure to recognize the error and the liability concerns of the individuals involved.

25. See *infra* Appendix, Table 3, at 1490.

26. See Chassin, *supra* note 13, at 570.

27. *Id.* at 587.

dominance of third party payors who have historically cared more about costs than quality, the tradition of deference to the medical profession to handle issues of quality, the lack of visibility of the issue for consumers and politicians, the process through which providers are trained and socialized, the presence of multiple agency relationships, and the lack of competitive alternatives to existing coverage and delivery arrangements. However, the absence of direct financial incentives to deliver high quality services also contributes to the problem. Although many hospitals and physicians profess a commitment to providing high quality care, reality lags far behind the rhetoric. There is a desperate need for mechanisms to encourage providers to make better treatment decisions and to provide better care.

*B. Quality Can Improve: The Cases of Surgical Anesthesia and
Coronary Artery Bypass Grafting*

The results described in the preceding Part are not inevitable. Two examples demonstrate that providers can improve the quality of health care dramatically and quickly when given proper incentives.

1. Surgical Anesthesia

As Table 3 reflects, surgical anesthesia is one of the safest procedures in medicine, and the only medical procedure shown that approaches industrial standards of quality. Death rates from surgical anesthesia are in the neighborhood of five deaths per million encounters.²⁸

Surgical anesthesia was not always this safe. In the late 1800s and early 1900s, it was decidedly hazardous; patients routinely suffered significant morbidity and mortality. As safer anesthetic agents and better systems of screening and monitoring patients developed, death rates steadily declined. By the 1950s, death rates ranged between 1 and 10 per 10,000 encounters.²⁹ Anesthesia mortality stabilized at this rate for more than two decades.

Mortality and morbidity rates fell again after a 1978 article reframed the issue of anesthesia safety as one of human factor analysis.³⁰ In the mid-1980s,

28. *Id.* at 569.

29. *See, e.g., id.* at 569; Henry K. Beecher & Donald P. Todd, *A Study of the Deaths Associated with Anesthesia and Surgery*, 140 ANNALS SURGERY 2 (1954); Robert D. Dripps et al., *The Role of Anesthesia in Surgical Mortality*, 178 JAMA 261 (1961); Otto C. Phillips et al., *The Baltimore Anesthesia Study Committee*, 174 JAMA 2015 (1960); Ellison C. Pierce, *Analysis of Anesthetic Mishaps: Historical Perspectives*, 22 INT'L ANESTHESIOLOGY CLINICS 1, 5 (1984) (providing historical perspective on efforts to reduce anesthesia mortality).

30. *See* Jeffrey B. Cooper et al., *Preventable Anesthesia Mishaps: A Study of Human Factors*, 49 ANESTHESIOLOGY 399 (1978) (framing anesthesia morbidity and mortality in terms of human factors that contributed to outcome); *see also* Jeffrey B. Cooper et al., *An Analysis of Major Errors and Equipment Failures in Anesthesia Management: Considerations for Prevention and Detection*, 60 ANESTHESIOLOGY 34 (1984) (same). Much of the impetus for this initi-

the American Society of Anesthesiologists (ASA) promulgated standards of optimal anesthesia practice that relied heavily on systems-based approaches for preventing errors.³¹ Because patients frequently sued anesthesiologists when bad outcomes occurred and because deviations from the ASA guidelines made the imposition of liability much more likely, anesthesiologists had substantial incentives to comply. As individual providers adopted the specified practices, intra-operative deaths became increasingly rare.³² Anesthesiologists also developed improved monitoring techniques and other strategies to reduce morbidity and mortality.³³

Providers deserve great praise for enhancing the safety of anesthesia-related services to the point that it is one of the safest components of a hospitalization. However, we should consider why anesthesia mortality stabilized at a rate more than one hundred times higher than its current level for more than two decades. The problem was not lack of information. To the contrary, anesthesia safety was studied extensively during the period. A better hypothesis is that anesthesiologists grew accustomed to a mortality rate that was exemplary by health care standards, but that was still higher than it should have been. From a psychological perspective, this low frequency encouraged anesthesiologists to treat each bad outcome as a tragic but unforeseen and unpreventable event. Indeed, anesthesiologists likely viewed each individual bad outcome as the manifestation of an irreducible baseline rate of medical mishap.³⁴

Physicians' insistence on complete clinical autonomy reinforced the tendency to regard individual bad outcomes as inevitable. As long as anesthesiologists had comparable mortality rates, the occasional bad outcome could pass without much comment or be ascribed to bad luck. This complacency, and the associated excessive mortality, was disrupted only after providers adopted a systems-based, technology-assisted approach to the problem. Thus, given the right incentives, good information, and a systemic perspective, providers can play a major role in enhancing patient safety.

ative was attributable to the efforts of Dr. Ellison (Jeep) Pierce, a prominent anesthesiologist. See Atul Gawande, *When Doctors Make Mistakes*, NEW YORKER, Feb. 1, 1999, at 40, 51-53 (discussing impact of Dr. Ellison).

31. See Ellison C. Pierce, *The Development of Anesthesia Guidelines and Standards*, 16 QUALITY REV. BULL. 61 (1990) (documenting impact of anesthesia guidelines).

32. See Lucian L. Leape, *Unnecessary Surgery*, 13 ANN. REV. PUB. HEALTH 363, 379-80 (1992) ("[F]ollowing the 1987 universal adoption by Massachusetts anesthesiologists of the American Society of Anesthesiologists' 'Standards for Basic Intra-Operative Monitoring,' the number of deaths from hypoxia decreased to zero in the following year, and for the first time no lawsuits were filed for hypoxic damage.").

33. See Chassin, *supra* note 13, at 569 (detailing development of improved monitoring techniques).

34. Not surprisingly, prominent anesthesiologists reacted quite negatively to empirical studies of their bad outcomes. See J. Abajian et al., *Critique of "A Study of Deaths Associated with Anesthesia and Surgery,"* 142 ANNALS SURGERY 138 (1955) (criticizing one such study and defending quality of anesthesia).

Certainly, anesthesia may have been particularly well suited for quality improvement. Issues of causation were generally straightforward because typically there was only one anesthetist per procedure. Because surgical patients had no on-going relationships with their anesthetist, victims were particularly likely to sue. Damages also tended to be substantial because injuries attributable to anesthesia were often severe. Finally, although judgment is implicated in many aspects of anesthesiology, simple changes in design and monitoring prevented a substantial number of errors.

Other practice areas may lack certain of these attributes. Even so, systems-based approaches to quality and medical error have effectively prevented patient injuries in diverse contexts.³⁵ For example, computerized systems for dispensing and tracking prescription drugs have reduced the rate of medication errors in hospitals. After a V.A. hospital in Topeka, Kansas introduced a bar coding system, medication errors dropped 64.5%.³⁶ An academic medical center in Boston "credited its computer system with helping to reduce serious drug-related problems by 55%, saving \$500,000 a year [and] up to \$10 million [overall]."³⁷

Despite the demonstrated effectiveness of computerized prescription drug systems, many hospitals have been slow to adopt them and physicians resist using them. Other safety-enhancing innovations have met the same fate.³⁸ This

35. See Chassin, *supra* note 13, at 577 ("[S]ystematic analyses of preventable complications have . . . revealed that faulty systems of care are responsible for error more often than individuals."). This outcome should not be surprising; even though "[t]he sheer number of specific interventions that good care requires is beyond the ability of any unaided human being to recall and act on effectively . . . the dominant modes of practice still expect this impossible degree of accomplishment." *Id.* at 576. Indeed, one author described "the role of doctor as diagnostician," which involves "matching enormous streams of clinical data on patients to enormous bodies of scientific literature," as "the equivalent of having travel agents book flights from memory." Donald M. Berwick, *Crossing the Boundary: Changing Mental Models in the Service of Improvement*, 10 INT'L J. QUALITY HEALTH CARE 435, 438 (1998).

Unfortunately, the current system is based on individual perfection, rather than systems-based approaches to quality. This strategy is largely inconsistent with the available evidence on quality and performance, which strongly suggests that "the performance of a system – from the viewpoint of those served – depends far more crucially on how elements work together than on how each element, in its role, performs separately." *Id.*

36. Lauran Neergaard, *Admitting Mistakes: V.A. Hospitals Start New Plan to Combat Medical Errors* (Feb. 19, 2000), available at <http://www.abcnews.go.com/sections/living/DailyNews/medmistakes000219.html>.

37. Milt Freudenheim, *Corrective Medicine: New Technology Helps Health Care Avoid Mistakes*, N.Y. TIMES, Feb. 3, 2000, at C1, C26.

38. *Id.*; see INST. OF MED., *supra* note 5, at 12-13 ("A number of practices have been shown to reduce errors in the medication process. Several professional and collaborative organizations interested in patient safety have developed and published recommendations for safe medication practices, especially for hospitals. Although some of these recommendations have been implemented, none have been universally adopted and some are not yet implemented in a majority of hospitals.").

accounts for one of the IOM's most striking recommendations: that health care organizations should "implement proven medication safety practices."³⁹ In any other industry, failure to adopt "proven safety practices" would result in public outrage, governmental investigations, substantial fines, and automatic tort liability. Yet, in health care, this failing passes with little notice or concern.

2. Coronary Artery Bypass Grafting (CABG)

CABG is a surgical treatment for blocked coronary arteries commonly employed for patients suffering from angina (chest pain of cardiac origin). Approximately 600,000 Americans receive CABG annually, making it one of the most frequent surgical procedures.⁴⁰ To perform CABG, a hospital must have a dedicated surgical team and invest in specialized equipment and staff, including a heart-lung machine and an intensive care unit. At present, roughly 1,000 hospitals in the United States perform CABGs.

CABG was developed in the late 1960s. Shortly thereafter, the Inter-society Commission for Heart Disease Resources (ICHDR) issued guidelines for the procedure, including minimum caseload recommendations.⁴¹ These guidelines were non-binding; physicians and hospitals were free to offer CABG even if their expected volume fell below the recommended minimum.⁴² Attracted by the potential revenue stream, many hospitals began offering CABG and aggressively marketed their services to patients and referring physicians.

When studying the impact of CABG volume, health care researchers discovered that surgeons with high-volume CABG practices and hospitals with high-volume CABG units had significantly lower mortality rates. The difference in outcomes could be as much as a quadrupling of the risk of in-hospital mortality.⁴³ When surgeons changed hospitals, the mortality rates frequently changed along with them.⁴⁴

39. INST. OF MED., *supra* note 5, at 12 (recommendation 8.2).

40. See DEP'T OF HEALTH & HUMAN SERVS., THE CHALLENGE AND POTENTIAL FOR ASSURING QUALITY HEALTH CARE FOR THE 21ST CENTURY (June 17, 1998), available at <http://www.ahrq.gov/qual/21stcena.htm> (presenting statistics on CABG utilization) [hereinafter D.H.H.S., THE CHALLENGE].

41. See MICHAEL L. MILLENSON, DEMANDING MEDICAL EXCELLENCE 187 (U. Chi. Press 1997).

42. See *id.*

43. See *id.* at 192 (noting quadrupling of risk); Kevin Grumbach et al., *Regionalization of Cardiac Surgery in the United States and Canada*, 274 JAMA 1282 (1995) (reporting death rates following cardiac bypass surgery were twice as high at California hospitals performing fewer than 100 procedures per year than at hospitals performing 500 or more); Edward L. Hannan, *The Relation Between Volume and Outcome in Health Care*, 340 NEW ENG. J. MED. 1677, 1678 (1999) (noting in one study of 1989 data, "the risk-adjusted mortality rate for patients of surgeons who performed fewer than 50 [bypass operations] (7.94%) was more than twice the mortality rate for patients of surgeons who performed 150 or more procedures (3.57%)").

44. See MILLENSON, *supra* note 41, at 213.

Although the connection between CABG volume and outcome was widely known within medical circles, it did not influence referral patterns for CABGs. In 1995, one-third of the hospitals performing CABG, or 327 hospitals, failed to meet the ICHDR's recommended minimum volume, yet these hospitals continued to receive referrals.⁴⁵ Regulatory efforts to address this problem by regionalizing CABG surgery or by limiting the opening of new cardiac surgery units were largely unsuccessful because of the political power of providers and a generalized commitment to provider autonomy.

Dramatic improvements in quality occurred only when New York and Pennsylvania began collecting and publishing risk-adjusted "report cards" on doctors and hospitals that performed CABGs.⁴⁶ As it became clear that mortality rates for patients with similar risk factors differed widely across providers, many hospitals and physicians had to confront the reality that they were substandard performers. In response, hospitals that received poor grades reengineered their systems.⁴⁷ Some pressured physicians with low-volume practices to stop performing CABG.⁴⁸

Although the information seems to have had a greater effect on the supply side (hospital efforts at self-improvement) than on the demand-side (referral patterns), there was no arguing with the results.⁴⁹ In New York, the risk-adjusted death rate dropped by 40% after the report cards were issued.⁵⁰ In Pennsylvania, hospitals that performed poorly in the 1990 report had improved by the 1992 report, and the risk-adjusted mortality rate declined by almost 25% between 1990 and 1993.⁵¹

45. See *id.* at 187 (documenting failure of many hospitals to meet recommended minimum CABG volume).

46. See *id.* at 215 (describing introduction of report cards).

47. See *id.* at 193-94 (describing reengineering efforts). For example, one hospital discovered that the hardest cases were being routed to the least experienced surgeons because hospital protocol required the first available surgeon be used in an emergency, and "precisely because the high-volume surgeons were busy they were rarely available to handle emergencies." *Id.*; see also Jonathan A. Showstack et al., *Association of Volume with Outcome of Coronary Artery Bypass Graft Surgery*, 257 JAMA 785, 789 (1987) ("[T]he greater skills of surgical teams at higher-volume hospitals may be particularly necessary to care for patients undergoing nonscheduled CABG surgery.").

48. See MILLENSON, *supra* note 41, at 187, 201.

49. See Arnold M. Epstein, *Public Release of Performance Data: A Progress Report From the Front*, 283 JAMA 1884, 1885 (2000) (noting impact of report cards); Stephen F. Jencks, *Clinical Performance Measurement – A Hard Sell*, 283 JAMA 2015 (2000); Daniel R. Longo et al., *Consumer Reports in Health Care: Do They Make a Difference in Patient Care?*, 278 JAMA 1579 (1997); Eric C. Schneider & Arnold M. Epstein, *Influence of Cardiac-Surgery Performance Reports on Referral Practices and Access to Care: A Survey of Cardiovascular Specialists*, 335 NEW ENG. J. MED. 251 (1996).

50. See MILLENSON, *supra* note 41, at 194; Chassin, *supra* note 13, at 586.

51. See MILLENSON, *supra* note 41, at 224.

Private sector payors have spurred similar gains through selective contracting. When Anthem Blue Cross & Blue Shield (Anthem) studied cardiac surgery units in Ohio, it found a six-fold variation in risk-adjusted mortality rates.⁵² Anthem reacted by excluding under-performing hospitals from its network.⁵³ Once Anthem began steering its members to high-quality hospitals, rates of death and other adverse outcomes fell, as did Anthem's costs.⁵⁴ Some hospitals that were removed from Anthem's network also made dramatic turn-arounds. After Anthem excluded Ohio State University Medical Center (OSUMC) in 1995, OSUMC cut its risk-adjusted mortality in half and was readmitted to the network in 1997.⁵⁵

Anthem's experience shows that reputation is an unreliable predictor of quality. The cardiac surgery unit at OSUMC, a teaching hospital, had an excellent reputation, but Anthem's study showed that its performance was sub-par. Another hospital, St. Elizabeth Medical Center in Edgewood, Kentucky, was little known and had no particular reputation for quality of care. Yet, St. Elizabeth's placed first on Anthem's CABG chart with a mortality rate so low that officials at other hospitals initially refused to credit it. The finding was neither a mistake nor a fluke. St. Elizabeth came in first in every subsequent study. Until Anthem released its rankings, even St. Elizabeth's own personnel did not fully appreciate its excellence.

The improvements in cardiac surgery described above did not come about because providers spontaneously recognized that they were poor performers. Nor did it occur because providers committed themselves to continuous quality improvement (CQI). To the contrary, neither physicians nor hospitals made any serious effort to compare the quality of care they were delivering with the results being delivered by peer institutions. Nor did they adopt programs of the kind employed by other businesses that are committed to CQI. Instead, providers all believed they were above average performers. This "Lake Wobegon" effect was not dispelled until statistics showing enormous quality disparities became available.⁵⁶

52. See Thomas M. Burton, *HMO Rates Hospitals; Many Don't Like It, But They Get Better*, WALL ST. J., Apr. 22, 1999, at A1, A13 (recounting efforts of Anthem to rate and selectively contract with hospitals).

53. See *id.*

54. See *id.*

55. See *id.*

56. See Garrison Keillor, *A Prairie Home Companion Monologue Excerpt* (1997), available at http://prairiehome.org/activities/chats_1997/100197_children_hearts.shtml ("That's the news from Lake Wobegon, where all the women are strong, all the men are good-looking, and all the children are above average.").

Unfortunately, when providers learned the truth, the first instinct of many was to "shoot the messenger."⁵⁷ In New York, cardiac surgeons tried to stop the Department of Health from publishing risk-adjusted mortality rates. After *Newsday* used a freedom of information request to obtain and publish doctor-specific assessments, "[a]n angry Cardiac Advisory Committee promptly recommended that the state stop collecting information on individual doctors altogether," arguing that such report cards would encourage physicians to turn away the sickest patients.⁵⁸ The Medical Society of the State of New York tried a different approach, warning "that patients may suffer *psychologically* if they have to get treated by a surgeon with a higher than average mortality rate" – although the medical society provided no evidence to suggest the alleged psychological damage was more serious than the very real increase in the likelihood of physical harm resulting from having a surgeon with a higher than average mortality rate.⁵⁹ Similar criticisms were made of the Pennsylvania results.⁶⁰ When the New York Department of Public Health suggested performance-based compensation for cardiac surgery, physicians and hospitals pressured legislators to prohibit such arrangements.⁶¹ When Anthem tried to replicate its program in Kentucky, the Department of Insurance balked after the Kentucky Hospital Association and some legislators objected.⁶²

Providers also tried to sidestep the import of these "report cards," arguing that low scores were attributable to treating sicker patients and that risk adjustments made to compensate for differences between patients were imperfect.⁶³ Some providers even tried to "game" the system by reporting that their patients were sicker (and thus at greater risk of dying) than they actually were.⁶⁴

57. A similar process occurred with the *U.S. News and World Reports* ranking of law schools. See Jan Hoffman, *Judge Not, Law Schools Demand of a Magazine that Ranks Them*, N.Y. TIMES, Feb. 19, 1998, at A5 (reporting that group of law school deans were sending out letters to 93,000 law school applicants denouncing attempts to qualitatively rank law schools).

58. See MILLENSON, *supra* note 41, at 193-96.

59. See *id.* at 198 (emphasis added).

60. See *id.* at 214-15.

61. See *id.* at 196. The proposal is described in greater detail in Sarah Lyall, *Proposal Ties Hospital Reimbursement to the Quality of Care*, N.Y. TIMES, Dec. 25, 1992, at B1.

62. See Burton, *supra* note 52, at A13.

63. After Anthem made the results of its analysis available, every heart-surgery unit that did poorly argued that it had experienced higher mortality because its patients were sicker. Ohio thus manifested the first recorded instance of a "reverse-Lake Wobegon effect." Keillor, *supra* note 56.

64. See MILLENSON, *supra* note 41, at 201. At one hospital, the reported frequency of chronic obstructive pulmonary disease climbed from 1.8% to 52.98% after the public reports began, and at another hospital, the reported frequency of angina went from 1.9% to 20.8%. *Id.*; see also Joshua H. Barack et al., *Public Reporting of Surgical Mortality: A Survey of New York State Cardiothoracic Surgeons*, 68 ANNALS THORACIC SURGERY 1195, 1198 (1999) (documenting concern of cardiothoracic surgeons about "gaming" of reporting requirements).

Despite these reactionary measures, disclosure-oriented regulatory strategies triggered substantial quality improvements in New York and Pennsylvania, and Anthem's selective contracting efforts had the same effect in Ohio. Many states and employers are following this lead. They are experimenting with "provider report cards," entering into exclusive contracts with "centers of excellence," setting targets for selected preventive services, such as immunizations, pap smears, and retinal exams for diabetics, and taking other steps to measure quality.⁶⁵

These efforts are all to the good, but we do not believe they will sufficiently enhance the quality of care across the board. Volume-quality relationships exist for a wide variety of surgical interventions.⁶⁶ Experience from other economic sectors indicates that current strategies (including regulatory oversight, reporting of errors, selective contracting, and performance targets) should be supplemented with direct economic incentives tied to performance. In Part III, we briefly describe prevailing compensation arrangements in the medical sector and focus on their common shortcoming: the failure to link compensation to performance.

III. Existing Arrangements for Compensating Health Care Providers

The health care sector encompasses a wide array of products and services delivered by more than a million providers during billions of patient encounters. Although insurance coverage and delivery arrangements vary widely, the following four payment arrangements predominate: fee-for-service, flat-rate/prospective payment, salary, and capitation.⁶⁷ Under a fee-for-service (FFS)

65. See MILLENSON, *supra* note 41, at 222 ("By the end of 1996, thirty-seven states had medical data commissions, many of which were collecting and publishing some sort of quality of care information.").

66. See HAROLD S. LUFT ET AL., HOSPITAL VOLUME, PHYSICIAN VOLUME, AND PATIENT OUTCOMES: ASSESSING THE EVIDENCE 103 fig. 5.1 (Health Admin. Press Perspectives 1990) [hereinafter ASSESSING THE EVIDENCE]; Edward L. Hannan et al., *A Longitudinal Analysis of the Relationship between In-Hospital Mortality in New York State and the Volume of Abdominal Aortic Aneurysm Surgeries Performed*, 27 HEALTH SERV. RES. 517, 535-36 (1992); Herbert R. Karp et al., *Carotid Endarterectomy Among Medicare Beneficiaries: A Statewide Evaluation of Appropriateness and Outcome*, 29 STROKE 46, 48 (1998) (finding that "[t]he mortality and stroke rates [following carotid endarterectomies at] hospitals with a history of [10 or fewer surgeries] per year was 2.6-fold higher than that at hospitals performing [50 or more]"); Samuel O. Thier & Annetine C. Gelijns, *Improving Health: The Reason Performance Measurement Matters*, 17 HEALTH AFF. 26, 26-27 (1998).

One recent study sought to quantify the potential benefit of improved referral practices. The study determined that in California alone, more than 600 deaths in 1997 were attributable to the fact that patients with conditions for which there was a volume-quality relationship were treated at low volume hospitals. R. Adams Dudley et al., *Selective Referral to High-Volume Hospitals: Estimating Potentially Avoidable Deaths*, 283 JAMA 1159, 1163 (2000).

67. To be sure, various forms of global outcome-driven payment arrangements have been proposed by several commentators, but have made little headway. See generally KINDIG, *supra*

system of compensation, providers are paid a fee for every incremental service they provide. Until recently, this form of compensation prevailed throughout most of the health care economy. Under a flat-rate/prospective system of compensation, providers receive a set amount for each episode of care, regardless of the actual expenses incurred. Under a salary system of compensation, providers' pay is unrelated to the volume, cost, and profitability of the services they provide. Under a capitation system of compensation, providers receive a set amount per patient per month to provide all required services.

Each arrangement has predictable strengths and weaknesses. FFS compensation, which connects the amount paid to the nature and number of services performed, encourages providers to be exhaustive in their work-ups and treatments by providing them with income for every service they deliver. For the same reason, FFS also leads to "upcoding," "churning," and the delivery of services that, because they are inappropriate or unnecessary, wrongly expose patients to significant costs and risks.⁶⁸

Flat-rate/prospective payment, which gives a provider a set amount for all treatments relating to an illness or injury, discourages over-treatment during a defined episode of care. The more services a provider delivers, the greater the cost and the lower the profit. Unfortunately, flat-rate/prospective payment rewards providers for reducing costs without regard to quality, thus encouraging them to withhold services that patients truly need.

Salaries neither encourage providers to deliver services nor discourage them from doing so. However, fixed salaries discourage diligence and productivity, as physician management companies discovered to their dismay.⁶⁹

Capitation arrangements, which pay amounts tied to the number of patients who enroll with particular providers regardless of any individual pa-

note 3 (suggesting that provider compensation should be tied to various benchmarks of public health); Robin Hanson, *Buy Health, Not Health Care*, 14 CATO J. 135 (1994) (suggesting that patients buy life and disability insurance from their health care providers and contract with third party who will pay to be beneficiary).

Interestingly, some forms of outcome-based compensation are employed by health care providers in Cameroun. See KENNETH L. LEONARD, *AFRICAN TRADITIONAL HEALERS AND OUTCOME-CONTINGENT CONTRACTS IN HEALTH CARE* (2000), available at <http://www.columbia.edu/~kl206/research.html> (describing and modeling use of outcome-contingent contracts). Traditional Chinese physicians also were reported to enter into contracts with their patients so that they were paid only during months in which their patients were well. Interview with Greg Bloche, Professor, Georgetown University Law School.

68. See Kevin Grumbach et al., *Primary Care Physicians' Experience of Financial Incentives in Managed-Care Systems*, 339 NEW ENG. J. MED. 1516 (1998); Audrey C. Kao et al., *The Relationship Between Method of Physician Payment and Patient Trust*, 280 JAMA 1708 (1998); Stephen M. Shortell et al., *Physicians as Double Agents: Maintaining Trust in an Era of Multiple Accountabilities*, 280 JAMA 1102, 1103 (1998).

69. See Uwe E. Reinhardt, *The Rise and Fall of the Physician Practice Management Industry*, 19 HEALTH AFF. 42 (2000) (recounting catastrophic consequences of failing to address physician non-productivity once physicians are on fixed salaries).

tient's health care needs, promote a population-based perspective on health care. Unfortunately, they also generate a variety of problematic behaviors, including "red-lining" of patients with chronic illnesses and under-provision of routine services.

Hybrids of these compensation arrangements attempt to combine the best aspects of the pure types while minimizing the impact of the bad incentives, but their success remains to be seen.⁷⁰ Enthusiasts of any given compensation arrangement are quick to condemn the competing alternatives.⁷¹

For present purposes, the critical feature that all four arrangements share is the failure to tie compensation to quality of service or to patients' health. All four arrangements are quality- and outcome-independent. They link compensation to variables (e.g., the amount of time a provider spends with a patient, the number of patients a provider treats, the number and type of procedures a provider performs, the number of weeks a provider is employed, or the number of patients in a provider's practice) that neither correspond to nor correlate strongly with patients' desires.⁷² Consequently, current payment schemes fail to align the interests of patients and providers as closely as would result-based payment systems.

Compensation arrangements that link payments to process-based considerations that do not correlate with outcome, such as the number of non-pre-

70. See James C. Robinson, *Blended Payment Methods in Physician Organizations Under Managed Care*, 282 JAMA 1258 (1999) (describing use of blended payment strategies); Neil Schlackman, *Evolution of a Quality-Based Compensation Model: The Third Generation*, 8 MED. QUALITY 103 (1993) (describing evolution of quality-based compensation model).

71. See Mark D. Smith, *Managed Care and the Poor*, 5 J. HEALTH CARE POOR UNDERSERVED 147, 150 (1994) (stating that "nothing is worse than fee-for-service").

72. Indeed, the mechanism of payment can affirmatively frustrate patient preferences. For example, it appears that many women receive open surgical breast biopsies instead of core-needle biopsies, even though the latter is less traumatic and does not require general anesthesia, because physicians are better paid for the former. See Barbara Martinez, *How Insurance Payments Can Work Against Less-Invasive Biopsies*, WALL ST. J., Mar. 28, 2001, at B1 ("The way doctors are paid often encourages the use of older, more expensive and sometimes riskier medical procedures when better options exist. Medicare, for example, pays a physician about \$400 to do a surgical biopsy in a hospital, but only \$128 to do a core-needle biopsy."). Given this economic differential, it is not all that surprising that almost 80% of the 1.2 million Medicare beneficiaries who required breast biopsies underwent surgery. See *id.*

A similar situation may well apply to the incentive for an obstetrician to perform a Cesarean section, instead of allowing the women to deliver vaginally. See Jonathan Gruber & Maria Owings, *Physician Financial Incentives and Cesarean Section Delivery*, 27 RAND J. ECON. 99 (1996); Emmett B. Keeler & Mollyann Brodie, *Economic Incentives in the Choice Between Vaginal Delivery and Cesarean Section*, 71 MILBANK Q. 365 (1993) (suggesting higher payment for Cesarean section might provide incentives for physicians to provide more Cesarean sections). But see Emmett B. Keeler & Thomas Fok, *Equalizing Physician Fees Had Little Effect on Cesarean Rates*, 53 MED. CARE RES. & REV. 465 (1996) (finding very little effect on Cesarean section frequency from equalization of payment for Cesarean and vaginal deliveries).

ventative services delivered, can be particularly pernicious because they become increasingly counterproductive over time. As knowledge and technology change, these criteria become inaccurate signals of quality. Suppose that a third party payor offers a provider \$100 every time the provider performs procedure *X* and that it costs the provider \$80 in time and resources to provide *X*. Because the provider makes \$20 per procedure, he always has an incentive to deliver *X* (unless other procedures are even more profitable). Now suppose that new studies reveal that procedure *X*, once thought to help patients considerably, really has little value for them. The profit motive will still encourage the provider to deliver *X*. Suppose further that the provider learns that service *Y*, which also costs \$80 to perform but for which the payor is offering only \$85, is an effective substitute for *X*.⁷³ The provider will be better off delivering *X* despite the superiority of *Y*.⁷⁴

Because information and technology change rapidly in the health care business, it is important to give providers incentives to keep up with the medical literature and to make diagnoses and treatment decisions based on the best available evidence. Unfortunately, payors (i.e., health insurers, MCOs, employers, Medicaid, and Medicare) have adopted compensation arrangements that effectively pay providers the same amount, whether they deliver high quality care or not. No effort has been made to use economic incentives to give providers "in the trenches" appropriate micro-incentives. Indeed, existing compensation arrangements frequently create incentives that discourage the delivery of high quality care.⁷⁵

73. Strictly speaking, it is not necessary for our example that *Y* be superior to *X* in quality – merely that it be cheaper, while providing equivalent benefits.

74. See MILLENSON, *supra* note 41, at 274-75. For example, doctors can treat urinary tract infections (UTIs) in women by requiring office visits or by having nurses interview patients and prescribe antibiotics over the phone. The latter procedure works just as well and saves seventy percent of the cost. Yet, if compensation requires face-to-face contact with a physician, providers who offer such alternatives will suffer financially. *Id.* at 276. Doctors can treat viral upper respiratory infections, such as the common cold, with office visits and antibiotics or allow them to follow their natural course. The latter is far cheaper than the former but qualitatively no worse. Doctors can order MRI scans for back pain sufferers or send them home to rest. Most often, the pain will disappear by itself whichever option is chosen, but the cost differs greatly. The problem is pervasive – uncertainty about obtaining compensation has discouraged physicians from using e-mail to communicate with patients, despite substantial demand for this mode of interaction.

75. See INST. OF MED., *supra* note 1, at 191-93 (providing several examples of perverse incentives created by existing compensation arrangements); MILLENSON, *supra* note 41, at 274-81 (detailing adverse financial impact on providers of adopting cost-effective treatment patterns that better served their patients: "[T]he better the clinic got at practicing cost-efficient medicine, the emptier its waiting room became"); Regina Herzlinger, *A Better Way to Pay*, MODERN HEALTHCARE, Dec. 11, 2000, at 32 (outlining consequences of integrated program for treatment of congestive heart failure at Duke University Hospital: "Per patient costs declined by 28%,

These problems on the "delivery side" of the market are compounded by the institutional arrangements through which health care is financed. Insured patients pay for relatively few services out-of-pocket, and third-party payors have historically paid more attention to the cost of care than to its quality.⁷⁶ Employers who offer health care coverage have some incentive to ensure that the quality of care is sufficient to maintain employee productivity and minimize turn-over, but they are still less interested in quality than employees would rationally want them to be. Federal, state, and local governments, which account for 45% of total health care expenditures, face similar conflicts between the interests of taxpayers, program administrators, providers, and program beneficiaries.⁷⁷ In general, third-party payors neither capture the full benefits of high quality care nor suffer the full consequences of low quality care. They are accordingly less than perfect agents when it comes to balancing quality and cost.⁷⁸

Individual patients frequently have difficulty assessing quality of care. Patients may know whether providers make them wait too long before seeing them or returning their phone calls, but they have much more difficulty telling whether providers diagnose and treat their problems correctly. Patients' efforts to assess quality are also hampered by the dearth of information about providers' relative performance.⁷⁹ Because patients cannot easily detect quality

largely because improvements in health status reduced the need for costly hospital stays. But the Duke system took a financial hit. After all, insurers pay for hospital stays, not improving the cost-effectiveness of healthcare.").

76. See JACK MEYER ET AL., THEORY AND REALITY OF VALUE-BASED PURCHASING 4 (Nov. 1997), available at <http://www.ahrq.gov/qual/meyerrpt.htm> ("[T]he majority of employers around the country – particularly smaller firms – are mainly concerned with cost control. Their major emphasis is placed on obtaining assurances from health plans that their premium increases will be held to a minimum – or even that premiums will decline. How that is achieved is of little interest to these employers."); see also INST. OF MED., *supra* note 5, at 3 ("Group purchasers have made few demands for improvements in safety. Most third party payment systems provide little incentive for a health care organization to improve safety, nor do they recognize and reward safety or quality."); Jane E. Sisk, *Increased Competition and the Quality of Health Care*, 76 MILBANK Q. 687, 687 (1998) (observing that proponents of increased competition in medical sector are primarily concerned with costs).

77. See David A. Hyman, *What's Wrong with a Patient Bill of Rights*, 73 S. CAL. L. REV. 221, 235-36, 245-53 (1999) (detailing agency problems with purchasing and regulating health care coverage). This difficulty also applies when the government seeks to regulate the coverage market. Legislative opportunism is common, as most of the costs are off-budget, and mandates frequently have more to do with the political power of the affected groups and the saliency of the issue to the public than the cost-effectiveness of the specified treatments. See *id.*

78. See *id.*

79. Until New York and Pennsylvania started collecting and disseminating risk-adjusted mortality and morbidity rates for CABG, consumers had no way of telling which doctors and cardiac surgery units were the best performers. Consequently, patients could not have selected

differences between competing insurance plans, they shop on the basis of price. This motivates insurers and MCOs to set the cost-quality equilibrium at a different spot than patients would rationally demand were they perfectly informed. To summarize, the institutional arrangements through which health care is financed and delivered have made it more difficult for patients to obtain the quality of care they desire and for which they are willing to pay.

IV. The Case for RBCAs

In most sectors of the economy, RBCAs are routinely used to address agency problems, including issues relating to quality. However, in the medical marketplace, RBCAs are almost never employed. Instead, payors use other signals and mechanisms, including character, professional socialization, reputational interests, disclosure requirements, and legal liability, to motivate agents to perform well and to make desirable cost/quality tradeoffs. The anomalous reliance on mechanisms that do not tie compensation to results has failed to give patients what they want: high quality care that is reasonably priced.⁸⁰

a provider based on quality no matter how badly they wanted to. They had to rely on referring doctors to steer them to high quality providers. Patients could not readily discover that referring doctors were sending them to inferior specialists.

80. In principle, any system for imposing costs on providers who offer low quality care, such as malpractice liability or regulatory sanctions, could substitute for RBCAs. We note that the American health care system currently employs malpractice liability and regulatory sanctions, but, as outlined in Part II, the quality consequences are less than impressive. Indeed, because malpractice liability and regulatory sanctions rely on "shame and blame" strategies, they can be counter-productive in that they drive underground those with the information required to enhance quality. In addition, the absolute performance of the malpractice system is less than impressive. See generally PAUL WEILER ET AL., *A MEASURE OF MALPRACTICE* (Harv. U. Press 1990) (concluding that medical malpractice litigation infrequently compensates patients injured by medical negligence and rarely holds providers accountable for substandard care); A.R. Localio et al., *Relation Between Malpractice Claims and Adverse Events Due to Negligence: Results of the Harvard Medical Malpractice Study III*, 325 *NEW ENG. J. MED.* 245 (1991); David M. Studdert et al., *Negligent Care and Malpractice Claiming Behavior in Utah and Colorado*, 38 *MED. CARE* 250 (2000). To be fair, the number of injuries from medical treatment is so large (and the incidence of negligence is sufficiently modest) that even with quite effective screening criteria, many cases are likely to be pursued in which there was no negligence. See Michael J. Saks, *Do We Really Know Anything About the Behavior of the Tort Litigation System – And Why Not?* 140 *U. PA. L. REV.* 1147, 1193-96 (1992).

In theory, non-punitive mechanisms within the medical profession, such as continuing medical education and treatment guidelines, could also be an effective response to these problems. Unfortunately, empirical research studying the effectiveness of these interventions is not particularly encouraging. See David A. Davis et al., *Changing Physician Performance: A Systematic Review of the Effect of Continuing Medical Education Strategies*, 274 *JAMA* 700 (1995) (noting failure of widely used continuing medical education methods to influence practice); Jacqueline Kosecoff et al., *Effects of the National Institutes of Health Consensus Development Program on Physician Practice*, 258 *JAMA* 2708 (1987) (noting failure of NIH consensus conferences to influence treatment patterns).

Given the absence of result-based compensation, it is not surprising that the quality of health care varies greatly and is often unacceptably poor. Economists typically assume that people act out of self-interest. The assumption both exaggerates and oversimplifies, but it accurately predicts how most people facing economic incentives will act most of the time. When confronting risks, most people purchase insurance and diversify their investment portfolios. Most people prefer more income to less and seek to minimize their taxes. When a product is heavily taxed or outlawed, substitutes, smugglers, and black markets emerge.⁸¹

Economists also assume that health care providers, like everyone else, are influenced by self-interest. For this reason, they would expect compensation methods to influence providers' treatment recommendations and practice patterns. Empirical research generally confirms this prediction.⁸² For example, after Medicare abandoned cost-based per-diem reimbursement and moved to prospective payment based on discharge diagnosis, hospital lengths-of-stay declined precipitously.⁸³ In addition, physicians who own X-ray machines or possess financial stakes in clinical laboratories order many more X-rays and many more laboratory tests than other physicians.⁸⁴ On the other hand,

81. See ADAM SMITH, *THE WEALTH OF NATIONS* 362 (J.M. Dent & Sons 1930) (1776) ("The high duties which have been imposed upon the importation of many different sorts of foreign goods, in order to discourage their consumption in Great Britain, have in many cases served only to encourage smuggling; and in all cases have reduced the revenue of the customs below what more moderate duties would have afforded. The saying of Dr. Swift, that in the arithmetic of the customs two and two, instead of making four, make sometimes only one holds perfectly true with regard to such heavy duties.").

82. See generally Fred J. Hellinger, *The Impact of Financial Incentives on Physician Behavior in Managed Care Plans: A Review of the Evidence*, 53 *MED. CARE RES. & REV.* 294 (1996); Alan L. Hillman et al., *How Do Financial Incentives Affect Physicians' Clinical Decisions and The Financial Performance of Health Maintenance Organizations?*, 321 *NEW ENG. J. MED.* 86 (1989) (concluding that certain financial incentives influence behavior of physicians); James C. Robinson, *Theory and Practice in the Design of Physician Payment Incentives*, 79 *MILBANK Q.* 149 (2001) (examining impact of financial incentives on physician behavior); Peter R. Kongstvedt & Kathryn E. Martin, *A Review of the Past Decade's Research on the Effect of Financial Incentives on Physician Behavior in Managed Health Care* (unpublished manuscript, on file with authors) (summarizing research on effect of financial incentives on physician behavior). But see R. Adams Dudley et al., *The Impact of Financial Incentives on Quality of Health Care*, 76 *MILBANK Q.* 649, 654 (1998) ("Linking salaries and bonuses to performance on quality measures is common in other industries. In the health care industry, however, this practice has been rare until recently and has not been well studied.").

83. See Robert H. Brook et al., *Health System Reform and Quality*, 276 *JAMA* 476, 479 (1996) (noting immediate 25% decline in length of stay following introduction of prospective payment); David A. Hyman & Joel V. Williamson, *Fraud and Abuse: Regulatory Alternatives in a 'Competitive' Health Care Environment*, 19 *LOY. U. CHI. L.J.* 1133, 1139 n.41 (1988) (noting impact of prospective payment system on hospital length-of-stay).

84. See Chassin, *supra* note 13, at 570.

physicians whose compensation is inversely tied to the cost of the services they deliver are more parsimonious when it comes to hospitalizations and ancillary services and complain about budgetary pressures to limit referrals and see more patients.⁸⁵ Because economic considerations influence treatment patterns, it is important to give providers financial incentives to deliver high-quality care.

A. Patient Preferences and RBCAs

"Desirable health care outcomes depend on what patients desire."⁸⁶ What patients want is not always altogether clear because different people make different tradeoffs between quality, cost, and access. Yet, it is obvious that patients are rarely enthusiastic about "bad" health outcomes. At any given expenditure level, it is safe to assume that patients prefer better health to poorer health, and desirable outcomes to undesirable ones. It is also a safe assumption that although there is some uncertainty, patients tend to agree about which outcomes are good and which are bad.⁸⁷ Death, for example, is usually a valid indicator of an undesirable outcome.

In the current medical marketplace, patients attempt to satisfy the desire for better health mainly by searching for high quality providers. Diligent patients ask whether providers care about the same things they do, and use a variety of search criteria, including reputation, credentials, and personal rapport, to identify providers who are likely to perform well.⁸⁸ After a provider

85. See Hellinger, *supra* note 82, at 294 (reviewing impact of economic incentives on physician behavior); Robert Miller & Harold S. Luft, *Managed Care Plan Performance Since 1980*, 271 JAMA 1512 (1994) (comparing health care utilization, expenditure, quality of care, and satisfaction in managed care and indemnity plans since 1980). *But see* Brian Hutchison et al., *Do Physician-Payment Mechanisms Affect Hospital Utilization? A Study of Health Service Organizations in Ontario*, 154 CAN. MED. ASSOC. J. 653 (1996) (finding no impact on hospital utilization from introduction of capitation with incentive payment for low hospital utilization rate).

86. Thier & Gelijns, *supra* note 66, at 26-27; *see also* Paul D. Cleary & Susan Edman-Levitan, *Health Care Quality: Incorporating Consumer Perspectives*, 278 JAMA 1608 (1997) (addressing most important health care quality gaps and challenges from perspective of consumer).

87. The literature on shared decision-making in health care suggests that patient preferences must be factored into the assessment of desirable and undesirable outcomes. *See* Shared Decision Making, available at http://www.dartmouthatlas.org/shareddecisionmaking/sdm_1.php (last visited Jan. 11, 2002).

88. The requirement for "informed consent" encourages providers to disclose information and patients to participate in decision-making. Unfortunately, the empirical evidence is quite clear that the requirement for informed consent generally fails to ensure the provision of adequate information to patients. *See* Charles H. Braddock et al., *Informed Decision Making in Outpatient Practice: Time to Get Back to Basics*, 282 JAMA 2313 (1999) (detailing shortcomings in informed consent practices).

is chosen, a patient can encourage superior service mainly by monitoring, hoping, and, in an extreme case, threatening to sue. However, because many patients are unsophisticated and lack the data needed to search and monitor providers effectively, the current approach does not work particularly well.

In the rest of the economy, consumers who desire quality services supplement other techniques with RBCAs. Consider the market for legal services. Although injured claimants look for lawyers with good reputations and monitor them after engaging them, they also use standardized contingent fees to encourage plaintiffs' attorneys to perform well. Contingent fees prevail in this market for several reasons. First, injured claimants seek benefits that have the potential to vary, namely awards of cash or needed services. Structurally, these benefits resemble a stream of cooled air that is regulated by a thermostat. Clients care whether the system is running and what temperature is achieved. Contingent compensation encourages a lawyer to obtain the flow of benefits that a client wants by tying the lawyer's fee to a client's recovery, so that the more the client recovers, the more the lawyer earns. Obviously, this assumes that the quality and quantity of lawyers' exertions strongly influence the value of claims. When lawyers cannot affect either the likelihood of good outcomes or an outcomes' "goodness," contingent compensation is pointless because the result will be what it will be regardless of what the lawyer does. One might as well offer a weather forecaster a bonus tied to the number of sunny days.

The limited potential for benefits to vary explains why there is no contingent fee market for wills, trusts, securities filings, leases, title abstracts, or other standard products of lawyering. Clients pay for services like these by the hour or by the project.⁸⁹ The ABA's Model Code reinforces this pattern; in the absence of outcome-related risk, these rules prohibit a lawyer from charging a contingent fee when a client can afford to pay for services on another basis.⁹⁰

Second, personal injury clients cannot easily determine whether their attorneys are using good judgment or exerting optimal effort. Unlike liability insurance companies and other commercial entities that routinely deal with lawyers, these clients tend to be unsophisticated, one-shot purchasers of legal services. Consequently, they have little ability to determine whether lawyers are "diagnosing" and "treating" their legal problems correctly.

89. This is not to deny that the quality of standard products can and does vary. Some lawyers are better at drafting wills or contracts than others, and any lawyer can do a better job or a poorer one on a given assignment. The point is just that the present value of the potential variance in benefits is too small to justify contingent compensation. It is more efficiently dealt with in other ways, such as by careful choice of attorneys, by payment of higher prices for more talented lawyers with better reputations, and by use of malpractice remedies.

90. See MODEL CODE OF PROF'L RESPONSIBILITY EC 2-20 (1983); ABA COMM. ON ETHICS & PROF'L RESPONSIBILITY, FORMAL OP. 94-389 (1994) ("[A] lawyer generally should decline to accept employment on a contingent fee basis by one who is able to pay a reasonable fixed fee.").

RBCAs make clients' ignorance less of an issue by shifting part of the risk of failure to attorneys. By accepting a contingent fee, a lawyer sends a client two important messages: that the case has solid potential and that the lawyer can be trusted to handle it well. Were either message false, the lawyer would suffer financially. The lawyer also gains credibility by voluntarily incurring a penalty for exercising poor judgment or slacking. Neither message is sent when a lawyer's compensation is guaranteed. Why trust a lawyer's evaluation of a claim when the lawyer will be paid win or lose? Why trust a lawyer's recommendation to incur litigation-related expenses, such as to take a deposition, or to assume certain risks, such as proceeding to trial instead of settling, when the lawyer has nothing at stake? Why expect a lawyer to exert optimal effort when, regardless of the actual effort level, the lawyer is paid the same rate?

Sophisticated clients typically place little value on these messages, so they rarely offer lawyers straight contingent fees. For example, insurance carriers pay lawyers hourly rates, fixed fees, and salaries because they are good at assessing quality and monitoring effort levels and because they can use the possibility of withholding future business to encourage good performance.⁹¹ Consequently, sophisticated clients use RBCAs less often when dealing with lawyers, and when they do, they employ hybrids that combine guaranteed payments with small contingent bonuses instead of using straight contingent fees. Also, because commercial clients are sophisticated, the referral market on the defense side of personal injury cases is moribund while the market on the plaintiffs' side is robust. Insurance carriers do not need to pay lawyer-brokers to select specialists for them because they know excellent lawyers in every field.

Third, money is a signal that correlates reasonably well with the quality of legal services and that resists manipulation. Because money is a determinate commodity, injured clients and plaintiffs' attorneys can easily assess and verify the quality of the result. Moreover, because both clients and lawyers prefer more money to less, neither can easily manipulate the other strategically.

Lawyers and clients are hardly alone in using money as a proxy for quality of service. Employers measure results with the same yardstick when compensating salespeople who work on commission. High sales volumes yield high sales commissions. Shareholders gauge the performance of managers in the same terms. High stock prices mean that warrants and stock options given as compensation are worth more. Homeowners and real estate agents also tie

91. See Robert E. Litan & Steven C. Salop, *Reforming the Lawyer-Client Relationship Through Alternative Billing Methods*, 77 JUDICATURE 191 (1994) (discussing importance of billing arrangements to lawyer-client relationship); Charles Silver, *Flat Fees and Staff Attorneys: Unnecessary Casualties in the Continuing Battle over the Law Governing Insurance Defense Lawyers*, 4 CONN. INS. L.J. 205 (1997-1998) (describing relationships between insurers and defense lawyers).

performance to money. The absolute size of a real estate agent's commission depends not only on whether a home is sold, but also on the price at which it changes hands.

Money is often the most convenient determinant of whether an agent exerted a superior effort, but it is hardly the only one. Some markets have developed highly specialized signals of performance. An employer may tie a professional athlete's compensation to the number of minutes or games played, the number of points scored or rebounds collected, batting average, extra-base hits, error-free innings, completed passes, yards rushed, or unassisted tackles. In establishing a professor's raise, a law school may consider the number of articles published, the caliber of the journals in which the article appeared, or scores earned on student evaluations. Parents may base a child's allowance on the satisfactory performance of chores. A parent may keep paying college tuition only as long as their child's GPA exceeds a specified figure.

No measure of outcome tracks service quality precisely, because outcomes depend on many factors, only one of which is an agent's effort level. Thus, a lawyer can provide top-flight representation and still lose a case. A surgeon can use all the care and skill in the world, yet still lose a patient. A hard-working student may get sick during final exams or take a class with a professor who distributes grades randomly. A lazy student may get a lucky break and be tested on solely the small fraction of material he actually read.

Agents can also manipulate signals to make their effort levels look higher than they are. When money is the signal, agents may "cook the books" to make their performance seem better than it really was. Principals routinely insist on independent auditors to address this particular problem. When other signals are chosen, manipulation can still occur. Sportscasters accused Moses Malone, the center for the Philadelphia Seventy-Sixers, of missing easy put-backs intentionally so as to generate additional rebound opportunities and pad his numbers. Lazy students have been known to take easy classes to keep their grade point averages high. Principals routinely use signals that, although inexact, are the best tools available for giving agents incentive and that, despite their deficiencies, are good enough to make RCBA's better than other compensation arrangements.

Given the conditions under which RCBAs are useful, the health care sector appears to be a potentially fruitful field for their application. First, healthcare outcomes have enormous potential to vary. Risk-adjusted mortality rates for particular procedures vary hugely across providers, drug-related errors occur far more often in some hospitals than others, and vicious nosocomial infections beset some surgical patients but not others. To some extent, providers control these variations.⁹² Doctors and cardiac surgery units with higher

92. See, e.g., MILLENSON, *supra* note 41, at 188 ("A revealing study of intensive care units at thirteen sophisticated hospitals across the country illustrated the critical role played by

CABG volumes have lower mortality rates. Hospitals with fewer drug-related errors use computerized prescription tracking systems. Patients who avoid post-operative infections are protected by superior sanitary procedures and treated by hospital personnel who take extra precautions. Providers control many of the variables that determine how well patients fare.

Second, most patients cannot monitor providers' performance very well, for the same reasons that most claimants cannot evaluate the performance of personal injury lawyers. Providers receive lengthy educations, enjoy considerable on the job experience, and specialize in narrow practice areas. Patients have neither the training nor the data to monitor their conduct effectively. Patients cannot assess the accuracy of providers' diagnoses, the wisdom of providers' treatment recommendations, or make inter-provider comparisons to ensure that their treatment reflects the changing state of the art.

Third, many health outcomes can be measured objectively and in ways that resist manipulation by providers and patients. Tables 1 and 2 demonstrate that outcomes can be measured with morbidity and mortality rates. Death is particularly hard to fake and is generally viewed as undesirable. To be sure, the most serious practical impediment to the development and implementation of RBCAs is the identification of adequate performance indicators, either alone or in combination with other signals that are now employed. If suitable outcome indicators are developed and employed, the prospect of simultaneously enhancing quality, lowering cost, and broadening access—the holy grail (if not the holy trinity) of health care policy—will be within reach.⁹³

We will say far more about outcome measures below. For now, we wish to make a few general, analytical points. First, good outcome measures tied to rewards will automatically encourage providers to implement new knowledge for the benefit of patients. As the state of medical knowledge evolves to make it possible to offer higher quality at lower cost, RBCAs will encourage providers to adapt their practice patterns accordingly. Previously, we used an exam-

well-coordinated care. All the ICUs had similar technical capabilities, but there was a frightening difference in mortality rates. Patients at the best ICU had a 41% greater chance of surviving than would have been predicted, given how sick they were before treatment, while patients at the worst hospital had a 58% greater chance of dying than would be expected. What caused this yawning gap was not technology, but "the interaction and communication between physicians and nurses."); J. Chen et al., *Do "America's Best Hospitals" Perform Better for Acute Myocardial Infarction?*, 340 NEW ENG. J. MED. 286 (1999) (concluding that admission to hospital that is ranked high on list of America's best hospitals is associated with lower thirty-day mortality rate among elderly with myocardial infarction); Hannan, *supra* note 43, at 1677; D. R. Thiemann et al., *The Association Between Hospital Volume and Survival after Acute Myocardial Infarction in Elderly Patients*, 340 NEW ENG. J. MED. 1640 (1999) (determining that patients with acute myocardial infarction who are admitted directly to hospitals with more experience, measured by case volume, are more likely to survive).

93. This Article focuses on quality and, to a lesser extent, on cost. The issue of access lies beyond the scope of this piece, but we expect to address it in a future article.

ple involving procedure *X* to show that FFS compensation discourages efficient adaptations. When it was discovered that procedure *X* was not beneficial, FFS encouraged the doctor to keep providing it. When it was learned that procedure *Y* was a good substitute for *X*, FFS did not encourage the doctor to switch.

A well-designed RBCA would reduce the need for patients to monitor doctors by automatically rewarding doctors for using new information to patients' advantage. Continuing the example, suppose that instead of paying a flat fee for any particular service, a third party payor offered a \$20 profit on any service that cured a patient identified as having problem *Q*. Once it became clear that procedure *X* had little or no value for these patients, doctors would automatically stop providing it. They would neither earn a profit nor even recover their costs. When studies showed that procedure *Y* did help these patients, doctors would immediately switch. Doctors also would shift from *X* to *Y* if both procedures were equally effective but *Y* required less time to deliver. A \$20 profit earned in fifteen minutes is better than a \$20 profit earned in an hour.

Second, RBCAs cannot align the interests of principals and agents perfectly. No compensation formula that divides marginal returns on effort between a principal and an agent can accomplish this feat. Fortunately, RBCAs do not have to be perfect to be desirable. They just have to be better than the alternatives that are available in the real world. Because existing compensation arrangements are seriously deficient, there is every reason to experiment with RBCAs.

Third, the search for outcome measures should reflect the point just made. No outcome-based performance measure will signal quality and effort levels perfectly. Every proxy will have an associated error factor. Even money reflects effort imprecisely. However, insofar as principals and agents are concerned, money is good enough because tying compensation to money, be it the amount recovered on a claim or the value of items sold, is better than paying on some other basis. The same is true in the health care sector. All conceivable outcome measures signal quality of service and effort levels imprecisely. Consequently, patients will bear some risks that should rest with doctors, and doctors will bear some risks that should rest with patients. Even so, RBCAs will be preferable to existing compensation arrangements if providers are more strongly motivated to use their knowledge and abilities to help patients. In health care, as in so many other places, it is important to remember that the perfect can be the enemy of the good.

B. Provider Social Norms and RBCAs

The dismal findings described in Part II demonstrate that existing institutional arrangements for delivering health care create insufficient incentives for providers to monitor and improve quality levels. The flurry of safety initiatives

that followed on the heels of the 1999 IOM report, *To Err Is Human*,⁹⁴ was a salutary development, but nothing prevented health care providers from adopting these programs or from embracing CQI before the report came out. Nor does anything ensure that the new safety measures will be effective in the long run, that better measures will be implemented as technologies improve, or that providers will make a commitment to safety part of their institutional cultures. To the contrary, the history of initiatives to improve quality and eradicate medical errors should lead one to fear that the noted "cycle of inaction" will continue. The press of competing commitments and opposition from entrenched interests may well undermine the good intentions created by the IOM reports on quality.

Attacking quality problems requires commitment, hard work, and substantial resources. An enterprise must perceive a significant upside potential or a serious downside risk before it will "bite the bullet" and make needed investments in quality and patient safety. In most markets for goods and services, competition motivates producers to make cost-justified improvements. A "near-death" experience at the hands of competitors is a remarkably effective tool for disciplining producers who lose sight of consumers' needs.⁹⁵ Because competition on quality grounds in the health care sector is greatly attenuated, relatively few substandard providers suffer "near-death" experiences. Providers that experience financial troubles usually do so for reasons that have nothing to do with the quality of care. Skepticism about the ability of competitive forces to remedy quality deficiencies is so pervasive that one commentator even suggested using enterprise liability to create "near-death experiences" for providers that under-perform.⁹⁶

When providers do face up to quality problems, they frequently respond with cosmetic changes. Why put a whole hospital on CQI when replacing the head of an under-performing CABG unit will keep the press at bay? Even hospitals that have adopted CQI focus mainly on administrative areas, not clinical treatment.⁹⁷

94. LINDA T. KOHN ET AL., *TO ERR IS HUMAN: BUILDING A SAFER HEALTH SYSTEM* (Nat'l Acad. Press 2000).

95. See David Blumenthal & Charles M. Kilo, *A Report Card on Continuous Quality Improvement*, 76 MILBANK Q. 625, 638 (1998) (noting impact of near-death experiences on providers in other markets).

96. See Clark Havighurst, *Making Health Plans Accountable for the Quality of Care*, 31 GA. L. REV. 587-647 (1997). Not all commentators express this degree of skepticism. Some suggest that managed care organizations (MCOs) can encourage providers to improve by rewarding those who offer high quality care at reasonable prices. See, e.g., Charles R. Buck, Jr., *Health Care through a Six Sigma Lens*, 76 MILBANK Q. 749, 750 (1998) ("In today's health care industry, the closest equivalent to a near death experience may be for a provider or plan to see its customers shifting to another organization because of differences in quality."). In practice, however, most MCOs have emphasized cost, rather than quality, when assessing providers.

97. Blumenthal & Kilo, *supra* note 95, at 635 ("A survey of experts found that none could

There is broad agreement that quality will improve only when providers' attitudes and social norms change. "[T]oo few physicians and administrators believe that our clinical care is broadly deficient or that we need a fundamental reexamination of the infrastructure, organization, and processes of care."⁹⁸ The response of one CABG provider to Anthem's decision to stop sending it patients is typical. When Anthem communicated its decision, hospital administrators reportedly shot back, "Do you know how many articles we had published last year in the *New England Journal of Medicine*?"⁹⁹ The administrators and physicians obviously cared about quality; they just did not think about it in the same terms as their patients. Similarly, after New York and Pennsylvania issued CABG mortality reports, doctors continued to refer patients to low-quality providers.¹⁰⁰ At best, this bespeaks a fundamental disjunction between the standards referring physicians actually were employing and the standards they would have employed had they put themselves in their patients' shoes. At worst, it shows that referring doctors were indifferent to the quality of care delivered by surgeons performing CABG.

The strongest evidence of the severity of agency problems and the need for attitudinal changes is the persistence of both medical errors and widespread deviations from appropriate standards of care. If providers truly were committed to quality, they would have transformed their industry long ago, as anesthesiologists did in the 1980s and as some CABG providers did during the past ten years.

The problem of incentives to deliver care of poor quality is not limited to the contexts identified in Part III, but it also is manifested in providers' willingness to offer unproven treatments. Federal regulations require pharmaceutical companies to prove that their products are safe and effective before marketing them, but medical and surgical treatments are not subject to similar oversight. "New and improved treatments" can and do spread like wildfire because the medical profession frequently accepts innovations uncritically and

identify a health care organization that has fundamentally improved its performance through CQI (or any other means). There simply are no organization-wide success stories out there – no shining castles on the hill to serve as inspirations for a struggling industry The basic principles of CQI have yet to diffuse deeply through most health care organizations, and they have not usually made any inroads into the clinical side, where most physicians remain ignorant and/or skeptical of them."); Shortell et al., *supra* note 16, at 594 ("A national survey of U.S. hospitals in 1993 found that 69% had adopted and were beginning to implement some form of CQI program; of these, 75% had done so only within the previous two years. Most of these applications, however, have been in administrative areas, such as patient scheduling, record keeping, billing, and related management functions. Only in the past three or four years has there been any systematic application to clinical practice.").

98. Berwick, *supra* note 35; Molly Joel Coye & Don E. Detmer, *Quality at a Crossroads*, 76 MILBANK Q. 759, 762 (1998).

99. See Burton, *supra* note 52, at A1.

100. See Schneider & Epstein, *supra* note 49.

because individual providers have considerable discretion in their treatment decisions.¹⁰¹ Once a "new and improved" treatment becomes a widely used method of care, insurers are under tremendous pressure to pay for it, whether or not it really is better than pre-existing treatments and whether or not it is cost-justified.

Unproven medical treatments expose patients to a variety of risks, including but not limited to the risk that the treatment will not work. Consider a recent example: high dose chemotherapy followed by autologous bone marrow transplant (HDC-ABMT) as a treatment for metastatic breast cancer. HDC-ABMT is highly invasive, painful, dangerous, and expensive. After some preliminary studies suggested it might be an effective "last-resort" treatment for metastatic breast cancer, a significant number of oncologists began offering it. Although insurers argued that HDC-ABMT was an experimental treatment, prominent oncologists asserted that its effectiveness was proved and that it had become the accepted treatment. Courts routinely ordered insurers to pay for the procedure, and state legislatures enacted bills requiring coverage of it. In relatively short order, many insurers simply began covering HDC-ABMT, despite the lack of evidence supporting the treatment and the enormous expense.¹⁰²

In the 1990s, tens of thousands of women underwent HDC-ABMT. Further clinical research was difficult to conduct because many women would not participate in a randomized trial of HDC-ABMT after they learned it had become the standard of care. More than a decade later, it became clear that HDC-ABMT had no demonstrable medical value for women with metastatic breast cancer. The aggregate price tag for HDC-ABMT exceeded \$3 billion, and the social loss, including pain, loss of life, and dashed hopes was far greater. Inappropriate attitudes and incentives were major contributors to such debacles:

[P]hysicians and other purveyors of specific health services become passionate advocates for the services they provide, instead of objective caregivers, whose recommendations are governed strictly by scientific evidence of efficacy Enthusiasts believe they are doing good for patients, often despite considerable evidence and a consensus to the contrary. This misplaced zeal also partially explains why overuse is so resistant to information-based approaches to solution.¹⁰³

101. See David A. Grimes, *Technology Follies: The Uncritical Acceptance of Medical Innovation*, 269 JAMA 3030 (1993).

102. See GEN. ACCOUNTING OFFICE, HEALTH INSURANCE: COVERAGE OF AUTOLOGOUS BONE MARROW TRANSPLANTATION FOR BREAST CANCER (GAO/HEHS-96-83); Michelle M. Mello & Troyen A. Brennan, *The Controversy over High-Dose Chemotherapy with Autologous Bone Marrow Transplant for Breast Cancer*, 21 HEALTH AFFS. (forthcoming 2001); Gina Kolata & Kurt Eichenwald, *Business Thrives on Unproven Care, Leaving Science Behind*, N.Y. TIMES, Oct. 3, 1999, at A1.

103. Chassin, *supra* note 13, at 571.

Such "misplaced zeal" can persist for a very long time, particularly when providers suffer no adverse financial consequences – and may even profit – by delivering inefficacious treatments. However, few things are likely to bring "true believers" to their senses as quickly as the combination of clinical failures and unpaid fees. When compensation is tied to results, "passionate advocacy" for a treatment must confront the financial consequences of being wrong. When providers can only "do well by doing good," they will "do good" much more often and much more consistently than is currently the case. Stated less tendentiously, it is reasonable to expect that RBCAs will encourage providers to evaluate unproven treatments cautiously and objectively.¹⁰⁴ Better attitudes and social norms will protect patients from unproven treatments and save everyone money in the bargain.

Few health care providers knowingly harm patients or intentionally provide substandard services. Doctors who performed HDC-ABMT wanted to help women stricken with breast cancer, not to hurt them. They battled long and hard with insurance companies to obtain coverage for the procedure because they thought it offered terminally ill patients a chance. However, wanting to help is not enough. Wanting to help may even endanger patients by causing them to receive medical treatments that are inefficacious or excessively risky. In a system that is functioning optimally, providers will want to know whether and how well procedures work, to assess success rates dispassionately, and to consider the costs patients incur as well as the benefits they receive. By encouraging providers to develop more patient-oriented mindsets and discouraging them from turning into "true believers," RBCAs can encourage the development of a true culture of quality in the health care sector.

C. The Political and Policy Logic of RBCAs

RBCAs are contractual provisions. In recommending them, we deviate substantially from conventional proposals for improving quality and reducing error rates. Most researchers advocate "top-down" regulatory strategies, such as mandatory practice guidelines, mandatory reporting, consolidations of low-volume providers, and the like.¹⁰⁵ Although coercive regulatory strategies clearly have a role to play, they possess only limited value for handling many of the problems outlined in Part II. Efforts to regulate invariably trigger provider opposition, lobbying, and a full range of inefficiencies and unanticipated

104. See, e.g., Leape, *supra* note 32, at 377 ("Much has been made of economic motivation in recent years, but it is unlikely that many surgeons recommend useless operations solely because of greed. It seems probable, however, that in questionable cases, they are more likely to recommend a service they provide. As we have seen, there is evidence that doctors in [FFS] practice recommend more operations than doctors in prepaid plans.").

105. See Chassin, *supra* note 13, at 585 (enumerating these policy strategies).

consequences.¹⁰⁶ Moreover, and as public-choice theorists would predict, regulators frequently give the interests of health care professionals too much weight when developing rules.

RBCAs follow a different path, premised on the reality that providers have a number of comparative advantages over regulators in actually improving quality. Because they participate in the "retail" rendering of services every day, health care providers have access to the information and skills that are needed to ensure the consistent delivery of high quality care. The trick is to create incentives for providers to gather this information and to develop systems for assuring quality. Regulators have great difficulty in accomplishing this goal because they must gather information and monitor quality using top-down mechanisms. Worse, their preferred strategy (imposing sanctions against the worst offenders) does little or nothing to motivate non-sanctioned health care providers and actually can trigger a profession-wide backlash.¹⁰⁷

In contrast, RBCAs work from the bottom-up, by creating micro-level incentives for decision makers to collect, interpret, and act on information. Where regulators have to fight determined opponents every step of the way, RBCAs work automatically. They convert people who prefer secrecy into supporters of openness. In the medical sector, RBCAs should steadily improve, as new signals of patient health are devised and outcomes become more transparent. Doctors would suddenly have an interest in improving the accuracy and reliability of these signals. Better signals would mean more accurate tracking, and more accurate tracking would lead to more business and higher referral fees.

RBCAs also have one other feature that makes them particularly attractive from a policy perspective. They preserve providers' professional autonomy. The great indictment of managed care has been that it puts bureaucrats in charge of medical decisions. Payors spend hundreds of millions of dollars a year reviewing providers' recommendations because they know that over-treatment is a serious problem in American medicine.¹⁰⁸ By placing providers

106. See generally Troyen A. Brennan, *The Role of Regulation in Quality Improvement*, 76 MILBANK Q. 709, 713 (1998); Burton, *supra* note 52, at A1 (noting opposition of Kentucky Department of Insurance, at behest of Kentucky Hospital Association, to Anthem's CABG report cards).

107. This is precisely what has happened in connection with the government's crackdown on fraud in Medicare and Medicaid. See David A. Hyman, *Health Care Fraud and Abuse: Market Change, Social Norms, and 'the Trust Reposed in the Workmen,'* 30 J. LEGAL STUD. (forthcoming 2001).

108. Bob Jamieson, *HMO to Docs: You Decide*, available at <http://www.abcnews.go.com/sections/us/DailyNews/united991108.html> (last visited Sept. 17, 2001) (reporting that United Healthcare, nation's second-largest health insurer, spent \$100 million reviewing doctors assessments of medical necessity). United Health Care ultimately discontinued many of these oversight mechanisms because they concluded they were not cost-effective, and alienated both

who deliver poor outcomes at risk of losing money, RBCAs would reduce the need for MCOs to become involved in day-to-day decision-making. Why second-guess doctors or other providers who are backing their judgments and recommendations with their own dollars? RBCAs also would enable superior providers to attract larger numbers of patients by offering warranties.¹⁰⁹

By and large, health care providers are good people.¹¹⁰ Yet, good character and honorable intentions have failed to improve the quality of health care and to bring down medical error rates. We will not solve these problems until providers, patients, and payors "have a shared economic future, leading them to see that it is in their mutual, continuing best interest to overcome the difficult hurdles along the path of improvement toward the achievement of nearly error-free performance."¹¹¹ RBCAs can create the community of interest that is required.

D. Some Criticisms of RBCAs

Opposition to RBCAs has arisen from several sources. This Part addresses criticisms of the following three types: ethical, technical, and philosophical.

1. Ethical Objections to RBCAs

Many providers oppose RBCAs on ethical grounds. The American Medical Association's Code of Medical Ethics (Code) *prohibits* doctors from conditioning the right to payment on the success of a treatment or procedure.¹¹² The prohibition is a recent addition to the Code. Until 1994, Opinion 6.01 stated only that "a physician's fee for medical services should be based on the value of the service provided by the physician to the patient."¹¹³ In that year, a

patients and providers. *See id.* (noting that company "paid more money to scrutinize and deny questionable treatments than the practice saved").

109. *See HealthWeek No. 202* (P.B.S. television broadcast, May 7, 1998) (reporting that one vein removal clinic estimated that its guarantee "brought in ten to fifteen percent more patients").

110. To be sure, there are exceptions, if the number of providers who have been convicted of health care fraud is any guide. *See* David A. Hyman, *HIPAA and Health Care Fraud: Where's The Beef?*, 21 CATO J. (forthcoming 2002) (presenting data indicating that some hundred health care providers are criminally prosecuted every year and several thousand are excluded from federal health care programs for variety of forms of misconduct).

111. Charles R. Buck, *Health Care Through a Six Sigma Lens*, 76 MILBANK Q. 749, 751 (1998).

112. *See* AMA CODE OF MEDICAL ETHICS, OP. 6.01 (1994) (prohibiting RBCAs); David A. Hyman & Charles Silver, *Just What the Patient Ordered: The Case For Result-Based Compensation in Health Care*, 29 J. LAW MED. & ETHICS 170-73 (2001) (offering extended critique of AMA's position).

113. Hyman & Silver, *supra* note 112, at 170.

new paragraph was added to Opinion 6.01 stating that "a physician's fee should not be made contingent on the successful outcome of medical treatment."¹¹⁴ The stated ground for this attack on RCBA's was that these arrangements "imply that successful outcomes from treatment are guaranteed, thus creating unrealistic expectations of medicine and false promises to consumers."¹¹⁵

Although the Code frames the issue as an ethical principle, the amendment to Opinion 6.01 actually couples an empirical claim – that RCBA's imply guarantees of success – with a policy claim – that the best way of combating unrealistic expectations and false promises is by banning RCBA's. Both claims are demonstrably false. They also betray the AMA's fundamental misunderstanding of the nature, prevalence, and promise of result-based compensation.

Principals and agents use RCBA's when both understand that success is *not* guaranteed but depends instead on the quality and quantity of an agent's work. When success is certain or varies little with effort, principals do not use result-based arrangements because there is nothing, other than the delivery of the service itself, upon which to condition payment. The point of paying on the basis of results is to motivate optimal performance when the possibility of failure is real.

In contrast to the AMA's assertion, RCBA's actually make the risk of failure explicit. They tie an agent's right to payment to a chosen indicator of success, and they provide for the allocation of costs when the standard is not met. For the same reasons, RCBA's neither constitute false promises nor foster unreasonable expectations.

It is true that RCBA's lend credence to providers' judgments and recommendations. Both are more credible when they come from a provider who shares in the risk of failure than when a provider stands to make money win or lose. This, however, is all to the good. Unless one assumes that doctors are infallible – and there is good evidence that they are not – one must admit that patients need some basis for evaluating doctors' recommendations and services. Patients are, after all, the final arbiters of their own treatments. However, because patients are unsophisticated, it is hard for them to make independent assessments. They need the signals of reliability that RCBA's can provide.¹¹⁶

114. *Id.*

115. *Id.*

116. See Sanford J. Grossman, *The Informational Role of Warranties and Private Disclosure Product Quality*, 24 J.L. & ECON. 461, 471 (1981) ("A doctor may know that he is the best doctor in existence, but there is no way (at a reasonable cost) that he can prove this to a prospective patient. In situations in which a seller's information cannot be conveyed to a buyer, the seller's warranty can, in effect, transmit that information to the buyer. There is a sense in which the degree of warranty can be a sufficient statistic for the seller's information.").

If anything is likely to foster "unrealistic expectations and false promises," it is FFS medicine and other payment options that are not result-based. These methods fail to reflect the reality that a patient's chances of returning to good health depend greatly on a provider's care and skill. Moreover, these methods are also inconsistent with the long-standing imperative of Opinion 6.01, that "a physician's fee for medical services should be based on the value of the service provided by the physician to the patient."¹¹⁷ How is "the value of the service . . . to the patient" to be measured, if not in terms of the patient's health and welfare? Yet, only RBCAs explicitly connect providers' fees to what patients value.

Even if Opinion 6.01 were correct in that RBCAs did have the potential to mislead patients, it would still be wrong as a policy matter to prohibit them. A disclosure requirement would suffice and would have the added advantage of ensuring that patients receive better information about treatment risks. Providers are already expected to tell patients about these risks when obtaining consent for medical procedures. Mandated disclosure of the variability of outcomes associated with procedures paid for by RBCAs would fit comfortably within this model. In fact, lawyers who enter into contingent fee arrangements routinely disclose in their engagement letters that success is not and cannot be guaranteed. It is difficult to see how patients can have "unrealistic expectations" when disclosure statements tell them that medical procedures are risky.

The AMA often has used claims of professionalism to oppose measures that would make the medical marketplace more competitive.¹¹⁸ In 1977, the Federal Trade Commission obtained an injunction prohibiting the AMA from enforcing its ethical rules because they were being employed in an anti-competitive fashion.¹¹⁹ It is important to remember the AMA's tendency to protect doctors' financial interests when evaluating the merits of the 1994 amendment to Opinion 6.01. The amendment passed when RBCAs were first making inroads into the health care sector. The probability that the true aim of those who supported the amendment was to stifle economic innovation should not be dismissed.

Finally, because RBCAs are quality-enhancing measures, it is hard to see how any sort of ethical objection could be raised against them. The point of

117. AMA CODE OF MEDICAL ETHICS, OP. 6.01 (1994).

118. See PAUL FELDSTEIN, *THE POLITICS OF HEALTH LEGISLATION: AN ECONOMIC PERSPECTIVE* 77 (Health Admin. Press, 2d ed. 1996) ("Medical associations have frequently used alarmed references to 'ethical behavior' whenever a proposed action might result in price competition.").

119. See *Federal Trade Comm'n v. Am. Med. Ass'n*, 94 F.T.C. 701 (1979), *modified and enforced*, 638 F.2d 443 (2d Cir. 1980), *aff'd by an evenly divided court*, 455 U.S. 676 (1982).

paying providers for results is to motivate them to perform better. This is why principals use contingent fees when dealing with agents they cannot readily monitor. The desire to signal superior performance also explains why many professional agents, including doctors, commit themselves to ethical codes.¹²⁰ Because it is clear that doctors have specialized knowledge, are difficult to monitor, and often make mistakes, a quality-based case against RBCAs is difficult to make.

The ethical propriety of RBCAs becomes even clearer when one considers that providers currently employ highly imperfect signals of patient health. It must be evident to all that society does not pay providers on an FFS basis because it wants them to keep busy. Providers are paid for performing mammograms, x-rays, surgeries, and other procedures because the frequency with which they provide discrete services is thought to correlate with patient health. The more mammograms, x-rays, and surgeries they deliver, the healthier the population is supposed to be. In reality, frequency of service is a poor signal of quality. The evidence shows quite clearly that providers often deliver services that make patients worse off. Many medical procedures expose patients to health-related risks they need not incur.

The reason for having a code of ethics is to improve the quality of service that a profession supplies. If result-based indicators track quality more precisely than other signals and thereby motivate doctors to treat patients better, it would seem to be unethical *not* to use them. Consequently, there can be no *ethical* reason to perpetuate compensation arrangements that pay top-dollar for services that are second-rate.

2. *Technical Objections to RBCAs*

Opponents of RBCAs have raised the following five kinds of technical objections to their use: informational inadequacies; mismatches between compensation and quality; "cherry-picking"; improper substitution of medical procedures for non-medical procedures; and wrongful neglect of aspects of care where quality is not measured.

a. *Informational Preconditions*

For RBCAs to function well, it must be possible to distinguish good performance from bad performance. In 1971, A.J. Culyer ridiculed the notion of insurance tying a provider's payment to a patient's benefit because he believed the "costs of discovering whether [a] treatment had been 'success-

120. See MARK HALL, MAKING MEDICAL SPENDING DECISIONS 183 (Oxford U. Press 1997) (observing that agents routinely employ such "bonding" strategies to signal reliability).

ful” were “enormous.”¹²¹ In the intervening three decades, the science of quality measurement has made great strides.¹²² Quality measures now exist for the treatment of major depressive disorder, low back pain, breast cancer, high-risk behaviors (smoking, obesity, and alcohol use), and diabetes. “[I]n many instances, [these] measures have the same degree of accuracy as the majority of measures used in clinical medicine to make vital decisions about patient care.”¹²³ In addition, treatment guidelines and critical pathways have been developed for hundreds of conditions. Although report cards are not available for most surgical procedures, it is possible to gauge the performance of individual providers and groups.

Outcomes that are difficult to measure directly often can be evaluated indirectly with reasonable precision and at acceptable cost. For example, although it may be impossible to show that a treatment increased a specific patient’s life expectancy, changes in blood pressure, blood chemistry, body weight, heart rhythms, and other variables that correlate with longevity can be determined easily. Drug companies and academic researchers already use such indirect measures, called “surrogate endpoints,” to test the efficacy of pharmaceuticals and medical procedures.¹²⁴

121. A.J. Culyer, *The Nature of the Commodity ‘Health Care’ and Its Efficient Allocation*, 23 OXFORD ECON. PAPERS 189, 197 (1971).

122. See generally Thomas Bodenheimer, *The American Health Care System – The Movement for Improved Quality in Health Care*, 340 NEW ENG. J. MED. 488 (1999).

123. Mark R. Chassin & Robert W. Galvin, *The Urgent Need to Improve Health Care Quality*, 280 JAMA 1000, 1001 (1998); see AHCPR PUBLICATION NO. 96-N020, BREAST CANCER, available at <http://www.ahcpr.gov/qual/brcancer.htm> (last visited Sept. 26, 2001); AHCPR PUBLICATION NO. 96-N021, ASSESSMENT OF HEALTH RISK BEHAVIORS AMONG ADULTS, available at <http://www.ahcpr.gov/qual/hrisk.htm> (last visited Sept. 26, 2001); AHCPR PUBLICATION NO. 96-N022, DIABETES, available at <http://www.ahcpr.gov/qual/diabetes.htm> (last visited Sept. 26, 2001); AHCPR PUBLICATION NO. 96-N023, DEPRESSION, available at <http://www.ahcpr.gov/qual/depress.htm>; AHCPR PUBLICATION NO. 96-N024, MEASURING HEALTH CARE QUALITY: LOW BACK PAIN AND ASSOCIATED TREATMENT OPTIONS, available at <http://www.ahcpr.gov/qual/depress.htm> (last visited Sept. 26, 2001); EXPANSION OF QUALITY MEASURES (Q-SPAN), AGENCY FOR HEALTH CARE POLICY AND RESEARCH (Jan. 12, 1998), available at <http://www.ahrq.gov/qual/qspanovr.htm> (describing efforts to develop quality measures for dental care plans, asthma treatment, managed care, cardiovascular diseases, functionality in hip fracture victims, and other health care areas); QUALITY INDICATORS FROM THE HEALTHCARE COST AND UTILIZATION PROJECT (HCUP QLS), AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (Mar. 1999), available at <http://www.ahrq.gov/data/hcup/qifact.htm> (describing efforts to make quality measures developed by government agencies available to private purchasers); David Blumenthal, *Health Care Reform at the Close of the 20th Century*, 340 NEW ENG. J. MED. 1916 (1999).

124. See New Drug, Antibiotic and Biological Drug Product Regulations: Accelerated Approval, 57 Fed. Reg. 13,234, 13,235 (Apr. 15, 1992) (to be codified at 21 C.F.R. pts. 314, 601) (“A surrogate endpoint, or ‘marker,’ is a laboratory measurement or physical sign that is used in therapeutic trials as a substitute for a clinically meaningful endpoint that is a direct measure

A surrogate endpoint is a risk factor that can be measured precisely and that is thought to reliably signal changes in health. For example, high blood pressure, obesity, high blood cholesterol, and lipid levels are risk factors that pharmaceutical companies use as surrogate endpoints when testing medications intended to fight cardiovascular disease. Drug companies rarely assess changes in actual morbidity and mortality rates because full-blown clinical trials using these measures would be unduly costly and would delay the introduction of new medicines for years. Instead, companies do short-term studies on small populations and measure changes in risk factors. If a drug reduces lipid levels in the sample population, an inference is drawn that it is an effective tool for promoting good health by decreasing the risk of cardiovascular disease. Millions of Americans take medicines whose efficacy was demonstrated through the use of surrogate endpoints.

Doctors also rely on surrogate endpoints. They prescribe medications under circumstances that have not been clinically tested. They also follow treatment protocols and perform medical procedures that reduce risk factors without requiring a demonstration that any given patient's longevity is demonstrably improved. This is why doctors give vaccinations and provide other preventive services, treat patients for obesity, and tell patients to stop smoking. In reality, doctors already use outcome-based signals. Their compensation is loosely tied to these signals when they charge for such services on an FFS basis.

Given the availability of direct and indirect measures of quality and outcome, it is worth considering why providers have not introduced RBCAs on their own.¹²⁵ A number of explanations are plausible, including professional norms, path dependence, the newness of quality measures, and the cost of collecting and processing information. Many providers have primitive systems for analyzing data, and these inadequacies "place an inherent limit on the quality of today's performance measures."¹²⁶

of how a patient feels, functions, or survives and is expected to predict the effect of the therapy."). Pharmaceutical companies frequently use such surrogate endpoints to demonstrate the potential of their products to improve patients' health. See Bruce M. Psaty et al., *Surrogate End Points, Health Outcomes, and the Drug-Approval Process for the Treatment of Risk Factors for Cardiovascular Disease*, 282 JAMA 786 (1999); Robert Temple, *Are Surrogate Markers Adequate to Assess Cardiovascular Disease Drugs?*, 282 JAMA 790 (1999).

125. When an early version of this paper was presented, a skeptical commentator asked, "if RBCAs make so much sense, why aren't they being used already?" Although this observation forms the premise of a famous joke about economists ("if that was really a \$20 bill lying in the gutter, the market would have picked it up already"), the reality is that some providers are experimenting with RBCAs, and the prevalence of non-result based compensation arrangements is not an inevitable state of nature.

126. David M. Eddy, *Performance Measurement: Problems and Solutions*, 17 HEALTH AFFS. 8, 14 (1998).

Yet, these obstacles have been overcome by some providers and payors. Fertility clinics that offer in-vitro fertilization (IVF) closely monitor their success rates because they must. IVF services are expensive, invasive, emotionally demanding, and rarely covered by insurance. To attract patients, IVF clinics have to demonstrate their ability to deliver pregnancies. Payors and accrediting agencies have also succeeded in gathering performance-related information by demanding that providers supply it:

Five years ago, when NCQA [the National Council on Quality Assurance] released its first Health Plan Employer Data and Information Set (HEDIS), we knew nothing about the quality of health plans except what could be gleaned from voluntary systems review (through NCQA accreditation). Today consumers, health care purchasers, regulators, researchers, and health plan managers have unprecedented ability to evaluate and improve the care and services delivered to millions of Americans enrolled in managed care organizations.¹²⁷

Health care providers are not accustomed to collecting and analyzing performance data. Historically, their "job descriptions" have not required that they do this.¹²⁸ Yet, providers are willing to change when compensation is tied to measurable performance targets. Experience suggests that the profitability of measuring affects the tendency to measure. Health care providers can and will measure outcomes when they gain by doing so.¹²⁹

b. Compensation/Quality Mismatches

Another common objection to RBCAs is that they are impracticable because high quality care can lead to bad outcomes and low quality care can lead to good outcomes. Although this problem can certainly occur, the desire to prohibit RBCAs for this reason is a classic example of the "nirvana fallacy" at work.¹³⁰ A payment measure need not be perfect for it to beat the competition because all methods of paying agents are imperfect. The right question is whether, across all cases, an imperfect RBCA creates better incentives than

127. Cary Sennett, *Moving Ahead, Measure by Measure*, 17 HEALTH AFFS. 36, 36 (1998).

128. See Berwick, *supra* note 35, at 437.

129. In this regard, we differ substantially with Professor Jacobi. See John V. Jacobi, *Patients at a Loss: Protecting Health Care Consumers Through Data Driven Quality Assurance*, 45 KAN. L. REV. 705, 781 (1997) ("There is no question that valid, broad-based outcomes data are the most important indicators of quality. For reasons described above, however, this 'holy grail' is unlikely to be available in the near future.").

130. See Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. & ECON. 1, 1 (1969) ("The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing 'imperfect' institutional arrangement. This nirvana approach differs considerably from a comparative institution approach in which the relevant choice is between alternative real institutional arrangements.").

an imperfect non-performance based system of compensation. Considerable evidence from other sectors of the economy suggests that RBCAs have much to offer everyone involved in the health care market.

Similar difficulties apply to the suggestion that an RBCA tied to a process-based measure of quality is simply a form of FFS medicine, with all the distortions implied by that approach.¹³¹ Examples of process-based measures might be immunization rates for patient groups, rates of delivering other preventive or diagnostic services, or rates of following up on tests that reveal abnormal results. If RBCAs tied to process-based measures of quality induce providers to deliver more of these services, so much the better. Indeed, process-based measures of quality have certain advantages over outcome-based measures: they are "frequent, immediate, controllable, and rarely confounded by other factors – and if properly designed, can steer plans toward particular activities that are known to be effective."¹³²

c. Cherry Picking

Another common complaint about RBCAs is that they would encourage providers to "cherry pick" by treating patients with good success odds and excluding patients who, being seriously ill, are poor risks. The net result would be a reduction in global access to services. As cross-subsidies within the entire patient pool were progressively eliminated, some patients would become unable to find providers who were willing to help them at any price.¹³³

We agree that RBCAs would encourage providers to sort cases. This is one of the principal benefits of RBCAs, namely, their tendency to encourage agents to balance costs, risks, and benefits when assessing the desirability of possible actions. If asked to accept an RCBA for performing a CABG, a cardiac surgeon would rationally consider many factors, including the likelihood that the patient would die. If the patient's survival odds were dismal, the surgeon would reject the offer, sending a clear signal that the small likelihood of success failed to justify the investment of medical resources.¹³⁴

RBCAs thus frame in cold numerical terms the reality that some medical interventions are inefficient and should not be performed. In a world laden with RBCAs, doctors would get better and better at predicting outcomes. Con-

131. See William Sage, *Physicians as Advocates*, 35 HOUS. L. REV. 1529 (1999).

132. Eddy, *supra* note 126, at 17-18.

133. See *HealthWeek No. 202*, *supra* note 109 (stating that at Shady Grove fertility center in Gaithersburg, Maryland, "patients who have a poor prognosis are not offered [the refund] program").

134. See MILLENSON, *supra* note 41, at 190-91 (describing computerized program that gives probability of patient surviving surgery and leaving the hospital ("prob mort"), based on various clinical indicators).

sequently, they would more often send the message that the cost of health care exceeds the likely gain. This would be a radical departure from current practice, where a procedure that has even a small upside potential qualifies as "medically necessary" and is likely to be performed. Existing payment arrangements spare doctors and patients from having to confront this problem head on, but the consequences of this approach have been disastrous for society at large.

Consider one telling incident from New York's implementation of cardiac surgery report cards. One hospital objected to its low rating, arguing that because a particular patient was "near-death" at the time of the surgery, the hospital could not fairly be blamed for the morbid result. The regulators tartly responded that the hospital "shouldn't be operating on dead people."¹³⁵ This insight can be generalized. Across the entire market for health care, services are routinely provided without adequate consideration of their benefits and costs.

It may be useful to think about the likely sorting effect in the medical sector by examining the legal services marketplace, where RBCAs have long been used to regulate claimants' access to representation. Every day, lawyers working on contingency receive thousands of requests for representation. For obvious reasons, they reject most requests from would-be clients with weak cases. Although rejection rates are high across the board, lawyers who handle medical malpractice claims are especially selective because these cases are both risky and especially expensive to prepare.¹³⁶ Because potential plaintiffs who cannot convince lawyers to take their cases are left to their own devices, the market for legal services operates as a gatekeeper for access to the legal system.¹³⁷ By screening cases, plaintiffs' attorneys channel private and public resources toward good claims and away from bad ones. If RBCAs do not lead to unacceptable cherry picking in law, it is unclear why they would do so in health care. Sauce for the goose, anyone?

That said, it would nonetheless be possible to prevent or limit the extent of cherry picking in the health care sector if policy makers were unwilling to

135. See *id.* at 211.

136. See Herbert M. Kritzer, *Contingency Fee Lawyers as Gatekeepers in the American Civil Justice System*, 81 JUDICATURE 22 (1997) ("Lawyers are extremely cautious in accepting medical malpractice cases, and the lawyers I observed spent a lot of time explaining to these potential clients why their negative medical outcome did not constitute malpractice, or the difficulty in establishing that it did arise from malpractice, or that even if it was malpractice, the ultimate medical outcome was probably not affected by the error (and the interim consequences did not give rise to damages that made pursuing the matter financially attractive).").

137. See, e.g., *Merritt v. Faulkner*, 697 F.2d 761, 769 (7th Cir. 1983), *cert. denied*, 464 U.S. 986 (1983) (noting that inability of prisoner to obtain private lawyer to represent him in damages action indicated probable merits of case).

sanction it. Risk-adjusted RBCAs, which pay providers more for treating patients who are poorer risks, could offset any tendency to select against high-risk patients. By offering premiums to providers who handle sicker patients, risk-adjusted RBCAs would render them indifferent to patients' *ex ante* health status. Policy makers could even encourage providers to *prefer* sicker patients by offering disproportionately large bonuses for treating them.

Alternatively, if one were convinced that all patients should have access to all forms of medical care, no matter how expensive the procedure or how high the likelihood of failure, one could continue to make procedures available on an FFS basis for patients who are especially sick. Our proposal, which is to introduce RBCAs into the health care marketplace, does not require payors to abandon other forms of compensation. However, once RBCAs become available, the differentials between a straight RBCA, a risk-adjusted RBCA, and an FFS price will provide a highly salient signal of the true costs and risks of treatment.

The solutions we have offered to the problem of cherry picking are, of course, likely to create problems of their own. For example, risk-adjusted RBCAs would give providers opportunities to profit by "cooking the books;" that is, by reporting as "high risk" patients who actually were "low risk." Making FFS payment an option for high risk patients might encourage the worst providers to concentrate on patients who, arguably, need the best care. Again, our point is not that RBCAs are trouble-free. It is that they have significant untapped potential to encourage health care providers to do better, and that they are better than other forms of payment when sensibly used. More experience will make it possible to determine the magnitude of the problems RBCAs generate, but the early results show solid quality improvements when RBCAs are employed.

d. Substitution of Medical Services for Non-Medical Alternatives

A different but related objection to RBCAs is that they may create undesirable incentives to substitute medical services for non-medical alternatives. For example, an increasing number of IVF clinics offer RBCAs. Two scholars have contended that to turn a profit on this basis, IVF clinics must raise their success rates substantially.¹³⁸ The easiest way to accomplish this is for clinics to broaden their pool of patients to include couples whose odds of conceiving children naturally are far better than those of couples who currently purchase IVF.¹³⁹ If existing practices are used as the baseline, the

138. David C. Schmittlein & Donald G. Morrison, *A Live Baby or Your Money Back: The Marketing of In Vitro Fertilization Procedures 4* (Aug. 7, 1998) (unpublished manuscript) (on file with authors) (modeling economics of money-back guarantees).

139. *Id.* at 1.

RBCA provides a powerful economic incentive for such couples to opt-into IVF "too soon" instead of using it as the treatment of last resort – and an equally powerful incentive for physicians to talk them into doing so.¹⁴⁰

The difficulty with this argument is the implicit assumption that the patient mix is uniquely "right" under FFS. This is unlikely. Even under FFS, incentives to take advantage of IVF services, and therefore the patient mix, have changed over time. As the price of the procedure dropped and its reliability improved, IVF became attractive to more couples, including some whose prospects of conceiving children naturally were better than those previous users of the procedure. RBCAs may, and likely will, change the mix again, if only by bringing in couples that could not afford multiple rounds of this risky treatment. By itself, this fact has no ethical or normative force. One could just as easily start with the patient mix under an RBCA and contend that the different mix under FFS is unduly restrictive and wrongly limits the opportunities of marginally more fertile couples to receive IVF.

To make the "wrongful substitution" objection work, one must establish that there is something wrong with couples choosing IVF when their odds of natural conception exceed some threshold. As long as the decision to seek IVF is properly informed, we see no basis for this assessment.¹⁴¹ The decision to try IVF is a momentous one that couples usually make after much soul-searching and consultation. Few couples with good prospects for natural conception will lightly incur the substantial risks, costs, and personal burdens associated with IVF.

The "wrongful substitution" argument is really just a paternalistic claim masquerading as a technical objection.¹⁴² Any technological breakthrough

140. *Id.* at 6, 45.

141. Professors Schmittlein and Morrison appear to agree because they emphasize the importance of disclosure and of patients being aware whether they are in the "last resort" pool or the "less infertile/too early" pool. *Id.* at 41-44.

142. *Cf.* David Orentlicher, *Destructuring Disability: Rationing of Health Care and Unfair Discrimination Against The Sick*, 31 HARV. C.R.-C.L. L. REV. 49, 60 (1996) (noting treatment of contestable value judgments as technical/professional issues).

Generally, obstetricians offer amniocentesis to check for Down syndrome in pregnant women without a family history of Down syndrome only if the women are at least thirty-five years old. This general rule reflects, in part, the fact that when the woman is age thirty-five or over, the risk that the fetus will suffer from Down syndrome is equal to or greater than the risk that the amniocentesis will inadvertently abort the fetus. In other words, the medical community has concluded that women should be offered amniocentesis only when the risk of detecting a Down syndrome fetus equals or exceeds the risk of aborting a normal fetus. While this may be a reasonable balance to draw, it is also the case that many women may have very strong feelings about not having a Down syndrome child and may therefore wish to undergo amniocentesis unless the risk of an abortion is five, ten, or even twenty

that makes a medical procedure safer, more effective, or less expensive will change the patient mix. The same can be said for any significant economic change, such as an increase in the supply of doctors or hospitals that reduces prices, or an increase in wealth that stimulates demand. There is no reason why these changes should not influence patients' choices, as long as patients are properly informed. The notion that patients should select among health care options without regard to cost, safety, or effectiveness is absurd.

e. RBCAs and the Micro-Management of Quality

RBCAs also create the risk of a different kind of substitution. Providers who know that their compensation is tied to a particular measure of quality may focus on this measure to the exclusion of other important considerations. In other words, if compensation is tied to improvements in measured areas but deterioration in unmeasured areas is not considered, havoc can result.¹⁴³ Worse, if RBCAs attempt to counter this incentive by being exhaustive, they end up micro-managing the delivery of health care through bureaucratic rule-making, instead of taking advantage of the specialized knowledge of providers.¹⁴⁴

An example may help the reader appreciate this concern. Suppose we compensate doctors based on the time they spend with patients but ignore the time nurses spend with patients and the time patients spend in waiting rooms. Doctors will then have an incentive to see patients personally instead of sending them to nurses who can treat them less expensively but just as well. Doctors also will have an interest in spending more time than necessary with individual patients even if this means that other patients must wait.

This complaint is well-founded, but generic. Any guarantee or warranty that covers fewer than all properties of a good or service entails the identified risk. Yet, outside the health care sector, one encounters partial RBCAs at every turn. Real estate agents tie their compensation to the prices at which properties change hands, but they do not receive extra compensation for returning phone calls promptly nor do they guarantee that clients will like their personalities. Tire manufacturers warrant their products against tread wear and punctures, but they do not promise that tires will continue to look

times the risk of giving birth to a Down syndrome fetus. Reasonable people can differ on the appropriate place to draw the balance, and medical expertise does not help us settle the question.

Id.

143. See Lawrence P. Casalino, *The Unintended Consequences of Measuring Quality on the Quality of Medical Care*, 341 NEW ENG. J. MED. 1147 (1999).

144. See Eddy, *supra* note 126, at 17.

attractive or that drivers will enjoy a particular experience when cornering. RBCAs routinely omit many features of goods and services that may matter to principals.

For this criticism of health care RBCAs to be compelling, one must show that RBCAs create more problems than they solve. Continuing the example used above, one wants to know, for example, whether patients will wait a minute longer to see a physician or an hour longer, and whether nurses will see one percent fewer patients than they should or fifty percent fewer. These matters are not appropriate for armchair speculation. Solid evidence shows that existing health care delivery arrangements disserve many patients. Experiments with RBCAs also have yielded real improvements for patients. By itself, the generic complaint about the possible deterioration of unmeasured aspects of care does not warrant a prohibition on RBCAs. It merely warrants an attitude of caution and realism on the part of those designing and implementing health care RBCAs.

3. *Philosophical Objections*

Some providers oppose RBCAs on the ground that health care is too important to be left to the unthinking and unfeeling forces of supply and demand. Others suggest that, as a society, we should respect the professionalism of providers and simply trust their judgments. These philosophical beliefs help explain why the managed care revolution upset so many doctors and patients.¹⁴⁵ The change from FFS payment to capitation, preferred provider discounts, bonuses for cost reduction, and medical spending accounts was not just a matter of different mechanisms for purchasing widgets; patients' health and lives were at stake.

Yet, merely the fact that RBCAs employ rather than ignore market forces provides no *a priori* reason for opposing them. The evidence is clear that economic incentives do influence health care providers. RBCAs take advantage of this fact by enlisting providers' self-interest in the cause of helping patients. If the consequence is better health care, then that result should be celebrated and RBCAs should be employed more broadly. If the consequence is something else, then RBCAs should be opposed but on demonstrated empirical grounds.

The real cause of philosophical unease with RBCAs is their tendency to place front-and-center an issue that is difficult to face: whether it is reason-

145. One of the more pointed ironies of the managed care backlash is that it has caused doctors and lawyers, who otherwise rarely see eye-to-eye, to become temporary allies and to lobby for laws that would enable patients to sue managed care organizations (MCOs) for medical malpractice.

able to use scarce resources to treat patients whose chances of benefitting are poor. It is one thing to use computer programs like "prob mort" and APACHE, which evaluate patients' survival odds, to compare the success rates of CABG providers and ICUs, but many people believe that it is another thing entirely to use survival odds as a basis for allocating access to care. RBCAs generate a visceral reaction because people do not want to confront the reality that tens of billions of dollars are spent every year on medical services for people who will not live longer or get better, regardless of how well providers care for them. Once one starts measuring outcomes and focusing on results, it is hard not to question the rationality of existing practices, and it is hard to avoid thinking that resources should be transferred to services that deliver better returns.

E. Health Care's Economic Dimension

Sometimes, access to health care is a matter of life and death. However, ignoring the economic aspects of health care is hardly an effective response.¹⁴⁶ As a society, we can face reality and deal with the issue, or we can continue to pretend that it does not exist. For years, we have buried our heads in the sand. As a result, a record number of Americans are uninsured, the cost of health care is extraordinary, and quality varies tremendously and is often intolerably poor. Perhaps it is time to play the cards we have been dealt.

V. RBCAs in Action

To date, result-based compensation is relatively uncommon in health care. The most well-known example is the use of incentive-based performance targets in contracts between employers and HMOs.¹⁴⁷ In 1995, the Pacific Business Group on Health (PBGH), a consortium of employers who collectively spend more than \$3 billion annually on health care for nearly

146. See Jerome Kassirer, *Managed Care and the Morality of the Marketplace*, 333 NEW ENG. J. MED. 50 (1995) (offering paradigmatic example of "econo-phobic" approach).

147. See BUYER'S HEALTH CARE ACTION GROUP, OUR PHILOSOPHY, available at <http://www.bhcag.com/philosophy.asp> (last visited Sept. 21, 2001) (enumerating goals of Buyer's Health Care Action Group, including "restructuring financial incentives . . . to reward excellent treatment given to the sickest patients"); MEYER ET AL., *supra* note 76 (describing few employers that use financial incentives and other techniques to improve health care for employees as "pioneers," and noting that incentives include favorable pricing for health plans that participate in quality studies and improvement initiatives, and fee releases tied to provision of standardized information that helps employers compare quality of service across plans and providers); Helen Halpin Schaffler et al., *Raising the Bar: The Use of Performance Guarantees by the Pacific Business Group on Health*, 18 HEALTH AFFS. 134 (1999) (outlining use of performance contracts by Pacific Business Group on Health).

three million employees, decided to negotiate performance contracts with HMOs.¹⁴⁸ Unfortunately, none of the HMOs could report baseline rates for the frequency of the following three performance measures: prenatal care, cholesterol screenings, and diabetic retinal exams.¹⁴⁹ Only a few could report such baseline data on childhood immunization rates, another performance measure.¹⁵⁰ By 1996, PBGH's pressure caused the HMOs to gather the data needed to establish baseline rates and to negotiate performance targets for patient satisfaction and a variety of clinical procedures, such as prenatal care, mammographies, Pap smears, childhood immunizations, diabetic retinal exams, cholesterol screenings, and cesarean sections.¹⁵¹ Under the new contracts, HMOs that failed to meet the targets forfeited a small portion of their fees.¹⁵²

Of the \$420 million in HMO premiums paid to the thirteen participants, PBGH tied less than \$8.5 million, about 2% of the total, to performance.¹⁵³ Despite the small amount of money at stake, over half of the HMOs met their targets for patient satisfaction with health plan, and three of those that did not still showed improvement as compared to 1995.¹⁵⁴ Eight HMOs met their goals for satisfaction with physicians, and five more barely missed.¹⁵⁵

Real improvements also occurred in specific treatment areas. Five plans met their goals for increasing childhood immunizations.¹⁵⁶ Nine reduced their rates of cesarean sections sufficiently, and the remaining four HMOs missed their targets by only 0.7%.¹⁵⁷ Seven HMOs met their goals for mammographies and Pap smears.¹⁵⁸ Eight met their goals for prenatal care.¹⁵⁹ Again, in each area, HMOs that fell short of their targets often beat their 1995 marks. The possibility of having to rebate a mere 2% of collected premiums was enough to improve the quality of health care.¹⁶⁰

PBGH's success has led other provider groups to copy its strategy. The Massachusetts Health Care Purchasers Group now requires insurers who fail to deliver "quality breakthroughs" to rebate a specified portion of premi-

148. See Schauffler et al., *supra* note 147, at 135-38.

149. *See id.*

150. *See id.*

151. *See id.*

152. *See id.*

153. *See id.*

154. *See id.*

155. *See id.*

156. *See id.*

157. *See id.*

158. *See id.*

159. *See id.*

160. *See id.*

ums.¹⁶¹ The Central Florida Health Care coalition proposed a similar plan, which pays providers more if they deliver better outcomes.¹⁶² Other employer groups are deploying similar strategies.¹⁶³

A recent proposal to address medical errors through selective contracting also relies indirectly on RBCAs. The Leapfrog Group, a consortium of employers, pledged that its members will purchase health care services only from providers who make certain specified investments in error reduction.¹⁶⁴ Providers must adopt computerized systems for prescribing medicines, refer patients in need of complex procedures to hospitals with high survival rates, and staff intensive care units with critical care physicians.¹⁶⁵ Governmental programs such as Medicaid and the Children's Health Insurance Program are starting to include performance incentives in their contracts.¹⁶⁶ Several pharmaceutical companies have offered money-back guarantees on particular products.¹⁶⁷

Some health care providers have begun offering RBCAs as well. A small number of physicians and clinics offer money-back guarantees for vasectomy reversals, in-vitro fertilization, vein stripping, cavity prevention, and laser vision correction.¹⁶⁸ These examples occur in circumstances in which insur-

161. Personal communication with Professor Frances Miller, Boston University Law School.

162. Linda O. Prager, *Coalition Proposes Pay Based on Quality*, AM. MED. NEWS, June 19, 2000, at 81 (reporting that under plan, physicians would be categorized as platinum, gold, or silver based on outcome documented for ten conditions and could be reimbursed from 70% to 120% of current Medicare rate for treating more employees with chronic illnesses).

163. See generally Thomas Bodenheimer & Kip Sullivan, *How Large Employers Are Shaping the Health Care Marketplace* (Pts. 1 & 2), 338 NEW ENG. J. MED. 1003, 1084 (1998).

164. See Press Release, The Leapfrog Group, *The Business Roundtable Launches Effort to Help Reduce Medical Errors Through Purchasing Power Clout* (Nov. 15, 2000), available at <http://www.leapfroggroup.org/about.htm> (announcing purpose of program called "The Leapfrog Group").

165. See THE LEAPFROG GROUP, *PATIENT SAFETY*, available at <http://www.leapfroggroup.org/safety1.htm> (last visited Sept. 15, 2001) (describing methods to improve patient safety).

166. Kevin B. Piper & Jeremy J. Alberga, *Performance Incentives for Medicaid Health Plans*, SCHIP Programs, Health Care Policy Report (BNA) No. 8, at 1868 (Nov. 20, 2000).

167. See, e.g., Pauline Anderson, *Clozapine Comes with Money-Back Offer*, MED. POST 2, 43 (May 16, 1995), available at <http://www.mentalhealth.com/mag1/p51-cloz.html> (reporting that Sandoz Canada Inc. promised reimbursements if doctors had to remove "patients with treatment-resistant schizophrenia" from clozapine within six months, and that Merck-Frost has offered reimbursements if patients put on finasteride (Proscar) require surgery for benign prostatic hyperplasia after one year of medical therapy); WTNH-TV News Online Consumer Team, *Higher Strength Rogaine Available* (Sept. 18, 1998), available at <http://www.wtnh.com/news/health/health091898.html> (reporting that Upjohn "is so confident [that an extra strength version of Rogaine will work], it's offering a full money back guarantee on the product").

168. See e.g., A. Trafford, *Medicine's Money Back Warranty*, WASH. POST HEALTH, Aug. 5, 1997 (reporting that sixty or more in-vitro fertilization clinics offer refunds to patients);

ance is typically not available, and patients must pay for procedures themselves. All involve elective procedures. All have an endpoint that can be determined within a reasonable amount of time and at reasonable expense. The probability of the endpoint being attained is affected, at least in part, by the skill of the provider. The endpoint is not subject to manipulation by either the provider or the patient. An individual provider or a small group of providers whose economic interests coincide provide the identified services, simplifying the allocation of responsibility.

Finally, as noted previously, the Institute of Medicine recently recommended the use of RBCAs, which it described as "an opportunity for providers to share in the benefits of quality improvement," to address quality deficiencies and medical error rates.¹⁶⁹ These examples validate the analytical model of RBCAs contained in Part IV, and demonstrate that nothing inherent in health care precludes the adoption of RBCAs.

With the hope of encouraging more providers to offer RBCAs, we offer some preliminary thoughts on areas where they might be usefully employed:

A. Bonuses for Good Results with CABG

Having discussed CABG at length, it seems appropriate to start with an RBCA tailored to this context. In designing the payment structure, we must first make clear what we want providers of CABG to accomplish. For simplicity, we will assume that only the following objectives are important: performing the surgery correctly, discharging the patient alive, discharging the patient in fewer than ten days, keeping the patient free of iatrogenic injuries and nosocomial infections, and returning the patient to a defined functional status.

We also must decide how extensively we wish to micro-manage the arrangements that bear on these goals. For example, we could separately hire

Claudia Morian, *Money-Back Guarantees: Some Doctors Offer Them, But Are They Good Medicine?*, KANSAS CITY STAR, Mar. 15, 1999, at D1 (discussing refunds offered by fertility clinics and doctors who perform vasectomy reversals). Doctors in other fields also have begun to explore this terrain. See *Health Week Program No. 202*, *supra* note 109 ("At the Vein Clinics of America, a nationwide chain, doctors pledge to get rid of varicose veins, or your money back."). Some laser vision correction clinics also use RBCAs. See SMILE TEAM BENEFITS, available at <http://www.nyu.edu/Dental/smile/index/html> (last visited Mar. 27, 2001) (promising to treat cavities for free if they develop while child is enrolled in Smile program); VISUAL FREEDOM CENTER, PROMOTIONAL MATERIALS (1999) (promising 20/20 vision or your money back) (on file with authors).

Predictably enough, organized medicine has opposed these compensation arrangements. See *HealthWeek No. 202*, *supra* note 109 (quoting Dr. William Mahood, trustee of American Medical Association (AMA), saying that money-back guarantees "demean[] the [medical] profession" and involve "deceptive marketing," and reporting that AMA "has called shared-risk plans unethical").

169. INST. OF MED., *supra* note 5, at 195.

and incentivize the surgeon, the anesthesiologist, the hospital, the nurses, and all other providers. Or, we could engage a general contractor (GC), for example a cardiac surgeon or a hospital administrator in charge of a CABG unit, and let the GC assemble the team. If we were very knowledgeable, we would handle the arrangements on our own.

In fact, we are ignorant consumers. We do not know which doctor or cardiac surgery unit is best, and we do not possess the skills or the information to figure this out. We need an experienced GC to make the arrangements for us. An important purpose of an RBCA is to encourage such a person to obtain accurate, specialized information and to use it effectively for our benefit.

Our first problem is finding the right GC. For simplicity, we assume that we already have a primary care physician willing to make a referral. Can we trust our general practitioner to select the right GC? As noted previously, the referral market does not always select for quality. This is our first opportunity to employ a result-based incentive. Having identified our goals, we offer our primary care physician a bonus for selecting a GC who meets our objectives: \$500 if all five targets are met, \$300 if three are met, and so on.¹⁷⁰ Our general practitioner has an incentive to develop a relationship with a good GC, to give us the benefit of that relationship, and to monitor the GC's handling of our case after referral.

After our general practitioner routes us to a GC we can trust, we explain our goals and offer the following fee: (1) \$15,000 for the surgery itself; (2) another \$10,000 for being discharged alive; (3) another \$2,000 if the conditions (1) and (2) are met and discharge occurs within five days; (4) another \$3,000 if all other conditions are met without a secondary infection or other iatrogenic injury; and (5) another \$10,000 if all other conditions are met, and we attain the specified functional status within a certain period after discharge. If all conditions are met, the total payment for the surgery will be \$40,000. If the operation fails completely, we will pay only \$15,000.

In this example, the fee arrangement is only partly result-based. We guarantee the \$15,000 payment because the GC does not control all of the variables that affect the likelihood of achieving our goals. Nature also comes into play. We gain little by requiring the GC to shoulder all of the outcome-related risk, and forcing the GC to do so will greatly increase the price.

Although we set up this example as a first-party payment, this payment structure is not essential. A third-party payor could compensate both the primary care physician and the GC. As long as we tie the payment to the patient's well being, both providers will have the appropriate incentives to care for the patient properly. The source of the reward is immaterial.

170. Here and throughout this Article, we caution readers not to place too much emphasis on specific numbers and "goals." Our interest is in the structure of RBCAs, not the specifics.

A third-party payor might want to alter the proposed RBCA. For example, an HMO that pays for many CABG surgeries each year could bargain for a lower fixed component in return for a promise to refer a minimum number of patients. An HMO could also tie the GC's bonus to the mortality rate for a group of patients, thereby helping the doctor diversify the variance risk. The payor could also vary the premium for a short length of stay by offering \$1000 per day for every day under ten, instead of paying an all-or-nothing lump sum. An HMO might also want the GC's promise to help coordinate unscheduled, emergency operations or to find teams for all CABG patients with a positive probability of success.

By rewarding quality improvements, RBCAs would encourage CABG providers to create dedicated teams. CABG surgeons would suddenly find it economically advantageous to monitor nurses and other staffers who provide post-operative care as well as physical therapists that handle post-surgical rehabilitation.¹⁷¹ They might even assemble CABG clinics where they could control the entire process, from admission to final discharge.¹⁷²

B. Bonuses for Preventive Care

Even when insurance coverage is not an issue, too few patients receive vaccinations; screenings for cancer, mental illness, substance abuse, and high cholesterol; eye examinations; mammograms; and other preventive procedures.¹⁷³ Influenza is a leading cause of death in the United States and is particularly dangerous to the elderly, but "only 52% of people age 65 and over received the [flu] vaccine in 1993."¹⁷⁴

171. See Milt Freudenheim, *Corrective Medicine: New Technology Helps Health Care Avoid Mistakes*, N.Y. TIMES, Feb. 3, 2000, at C1, C26 (reporting that "[m]any hospitals have made big advances [in the area of safety] by changing procedures, like requiring both a nurse and a physician to be present when therapy begins with powerful cancer drugs").

172. Professor Sage suggests that RBCAs are impracticable because the ultimate outcome of any treatment is attributable to the efforts of many providers, and it will be difficult to obtain the necessary resources and contractual commitments to make the system work. See Sage, *supra* note 131, at 1623-24 ("[A]part from occasional expenses for expert witnesses and other consultants, a lawyer working on contingency is risking only his or her human capital. By contrast, physicians must recruit outside resources such as hospital beds, diagnostic equipment and therapeutic technology from a vast and costly array of institutions, manufacturers, and other professionals."). Although this concern is relevant, it is overstated. Indeed, we anticipate that the availability of RBCAs is likely to trigger a significant restructuring of the health care delivery system along functional lines, which will simplify the process of negotiating and funding RBCAs considerably. See Hyman & Silver, *supra* note 112, at 172.

173. See Chassin, *supra* note 13, at 574 ("Although the research literature is far from ideal, comparative studies of populations serviced by FFS arrangements and those enrolled in capitated health plans show about the same levels of underuse for a variety of therapeutic services. Although managed care plans may provide preventive services somewhat more often than their FFS counterparts, the level of underuse in both settings is considerable.").

174. D.H.H.S., THE CHALLENGE, *supra* note 40.

Presumably, much of the responsibility for under-utilization of medical care rests with patients. Some are ignorant of the potential benefits of prophylactic tests. Some understand that tests are beneficial but overly discount risks to their health. Some are too busy or too lazy to find time for medical care except when illnesses are acute. Some are disorganized – they make appointments but forget to show up. Part of the responsibility likely rests with providers as well. Some have telephone systems that frustrate patients. Some require patients to make appointments days or weeks in advance. Some impose long delays in waiting rooms instead of taking patients promptly at appointed times. Some do not have employees who are fluent in all the languages that their patients speak.

We do not know whether all of these causes are important, and we cannot assign them relative weights. Nor do we know how best to deal with these issues. However, we do know that businesses in other sectors of the economy find ways to transact with customers despite similar difficulties. Every day, fast food restaurants employing an army of teenagers prepare and serve hot food to millions of people who are uneducated, busy, lazy, and disorganized.¹⁷⁵ Gas stations, convenience stores, video rentals, grocery stores, coffee shops, and bakeries do the same thing. For ten bucks, one can phone a pizzeria on a whim, get through in seconds, and have a hot pie in less than one hour. Anyone with a computer and a credit card can see, read about, hear about, and order just about anything as fast as a phone line or cable connection can carry electrons.

By mimicking the methods of successful entrepreneurs, health care providers could deliver valuable preventive services more effectively.¹⁷⁶ Providers need only to have the will to learn the methods and to implement them. RBCAs can supply the needed motivation by rewarding entrepreneurial providers for bettering historic utilization rates. For example, a health plan with 200,000 children enrolled and a historical vaccination rate of 150,000 (75%) could offer an enterprising doctor a flat payment of \$30 per child in excess of this threshold and a \$5000 bonus for every thousand children served. The health plan would collect the names, addresses, and telephone numbers of unvaccinated children (and their parents) from other providers (and possibly other information as well), give these to the entrepreneurial doctor in electronic form, and let the doctor figure out how to reach the kids.

175. See REGINA HERZLINGER, MARKET DRIVEN HEALTH CARE 167-71 (1999) (describing, in loving detail, efforts McDonalds has made to ensure uniformity and quality of its french fries, despite fact that its retail operations are largely staffed by teenagers).

176. Over a three-year period, the Medicare Influenza Vaccine Demonstration project increased vaccination rates significantly by "distribut[ing] letters to Medicare beneficiaries, provid[ing] physician reminders, train[ing] nurses to recognize high-risk patients, and piggy-back[ing] vaccination messages on telephone company mailers." D.H.H.S., THE CHALLENGE, *supra* note 40.

An HMO might engage an entrepreneurial physician to perform a variety of preventive services for its entire enrolled population. Many of these services, such as colorectal screenings, blood pressure tests, and vaccinations, do not require office visits or the involvement of doctors. The only role that doctors' offices need to play is administrative. They need to know which of their patients are hitting thresholds that indicate the need for preventive care. They also may want to alert their patients in advance to expect a call from a physician-entrepreneur.

As in the case of vaccinations, an HMO would peg the entrepreneur's compensation to utilization rates. Presumably, compensation would increase at the margin rather than decline. If half of all seniors get flu shots already, there is no reason to pay an entrepreneur a premium for reaching half the population. However, moving from 50% to 75% is an accomplishment, and reaching the last 25% is much harder still. Payment should therefore increase with the magnitude of the achievement. A flat fee combined with a bonus that increases with the percentage of the served population would motivate an entrepreneur to reach everyone.

It may be possible to improve incentives further by tailoring bonuses to special, identifiable situations. If it is harder to reach rural populations than urban ones, bonuses may vary by region. If minority populations pose unusual difficulties, entrepreneurs may be paid extra for reaching them. It also may be possible to take advantage of economies of scale by combining populations that belong to different health plans. Individually, ten health plans with 50,000 children apiece may be unable to offer an entrepreneurial doctor a sufficient incentive to handle all vaccinations, but collectively they can present a package of 500,000 children that may be large enough to reduce the doctor's costs.

Unbundling of services is already occurring in many places. Large employers hold mass inoculation clinics at their workplaces so that all employees receive influenza vaccines. Plaintiffs' attorneys send mobile x-ray facilities to job sites and union halls to screen workers who may have asbestos-related diseases. Pharmacies give blood pressure tests. Eye doctors give exams at shopping malls. If preventive care is separated from acute care and chronic care and is delivered more aggressively and conveniently, under-utilization may cease to be a major concern.

Once providers receive significant compensation for meeting vaccination targets, for following up on positive tests, and for delivering other preventive services to patient-groups, they will develop ways to meet these goals. Providers will educate patients about the value of these services and become more user-friendly. In short, they will deliver preventive services to the public via the same marketing techniques that other sellers employ.

C. Nosocomial Infections

Hospitals are dangerous places. Many patients develop infections while in the hospital, and these infections often involve particularly nasty bacteria or fungi. Some of these infections are the inevitable result of gathering groups of immuno-compromised patients in one place. Others are attributable to poor surgical techniques.¹⁷⁷ Deficient sanitary procedures, including the failure of hospital workers to wash their hands when moving from one patient to the next, also contribute to the problem.¹⁷⁸

It is unclear what percentage of these infections are avoidable.¹⁷⁹ However, the most striking thing about hospital-acquired infections is that hospitals are able to bill for the services needed to treat them, even though hospital personnel control some of the variables that contribute to their frequency.¹⁸⁰ No rational system of payment rewards an agent for a behavior that makes a principal worse off. Accordingly, it seems logical to develop RBCAs that reward hospitals for keeping surgery patients free of secondary infections and that punish hospitals when these infections occur.

D. Medical Errors

We can employ RBCAs to address medical errors directly or indirectly. By tying compensation to the delivery of error-free services, an RBCA will create a direct incentive to eliminate errors. An indirect incentive to eliminate errors results when an RBCA encourages a group of independent providers to consolidate, thereby decreasing the odds that important information will "fall through the cracks." As the Institute of Medicine's (IOM) 1999 report noted:

The decentralized and fragmented nature of the health care delivery system (some would say "nonsystem") also contributes to unsafe conditions for

177. See Bruce F. Farber et al., *Relation between Surgical Volume and Incidence of Post-operative Wound Infection*, in *ASSESSING THE EVIDENCE*, *supra* note 66, at 184-85 (documenting significant inverse relation between rate of infection and number of procedures performed for appendectomy, cholecystectomy, herniorrhaphy, total abdominal hysterectomy, and colon resection).

178. See Pamela Nolan, *Unclean Hands: Holding Hospitals Responsible for Hospital-Acquired Infections*, 34 *COLUM. J. L. & SOC. PROBS.* 133 (2000) (noting that majority of nosocomial infections are transmitted by contact, primarily by hands of hospital workers).

179. See *id.* at 135 (noting common estimate that half of nosocomial infections could be prevented if health care workers followed infection control procedures).

180. See *id.* at 136 ("According to the CDC, the cost of hospital-acquired infections is \$4.5 billion annually. As more resistant bacteria develop, the cost is expected to rise even further. Cardiac patients, for example, have an average cost per stay of \$33,185, while cardiac patients who acquire nosocomial infections have an average cost per stay of \$78,151 – a 136% increase.") (footnotes omitted).

patients, and serves as an impediment to efforts to improve safety. Even within hospitals and large medical groups, there are rigidly-defined areas of specialization and influence. For example, when patients see multiple providers in different settings, none of whom have access to complete information, it is easier for something to go wrong than when care is better coordinated. At the same time, the provision of care to patients by a collection of loosely affiliated organizations and providers makes it difficult to implement improved clinical information systems capable of providing timely access to complete patient information. Unsafe care is one of the prices we pay for not having organized system of care with clear lines of accountability.¹⁸¹

Most scholars and regulators have responded to this state of affairs by proposing top-down solutions for organizing the system of care to prevent medical errors. However, regulators frequently lack the information required to design optimal systems, the incentive to create them, and the power to impose them. Even if regulators had these crucial components, their inability to make timely adjustments as circumstances change would still cripple them. Only informed and motivated providers can create and maintain error-reducing systems, and they will be more likely to do so when the systems advance their interests. RBCAs would encourage beneficial consolidations and other error-reducing innovations by rewarding providers for finding better ways of delivering care.

E. Health Disparities

Substantial health and health care disparities exist between majority and minority communities.¹⁸² Minorities experience higher rates of heart disease, stroke, hypertension, and diabetes.¹⁸³ They also receive fewer medical interventions, including both preventive and acute care. These disparities are pervasive and long-standing.¹⁸⁴ There are also similar disparities between the medical treatments received by men and women.¹⁸⁵

181. See INST. OF MED., *supra* note 5, at 3.

182. See Am. Med. Ass'n, Council on Ethical & Judicial Affairs, *Black-White Disparities in Health Care*, 263 JAMA 2344 (1990) (noting that persistent and substantial differences continue to exist in quality of health care among white and black Americans); Barbara A. Noah, *Racial Disparities in the Delivery of Health Care*, 35 SAN DIEGO L. REV. 135, 136 (1998) (observing that growing body of evidence suggests that race adversely affects quantity and quality of health care provided to minority patients); David Satcher, *Our Commitment to Eliminate Racial and Ethnic Health Disparities*, 1 YALE J. HEALTH POLICY, L. & ETHICS 1 (2001) (asserting that compelling evidence shows that race and ethnicity correlate with persistent health disparities in burden of illness and death).

183. See *id.*

184. See *id.*

185. See Am. Med. Ass'n, Council on Ethical & Judicial Affairs, *Gender Disparities in Clinical Decision Making*, 266 JAMA 559, 560 (1991) (noting studies that have examined

In 1998, President Clinton declared the intention of the United States government to eliminate health-related differences between majority and minority communities within a decade.¹⁸⁶ Unfortunately, the initiative said almost nothing as to how this might be done. RBCAs could bring the goal of equal access to basic services closer to reality.¹⁸⁷ As outlined in Part V.B, we could offer entrepreneurs bonuses for delivering preventive services to specific patient populations. Companies with large numbers of minority employees could receive favorable tax treatment on health care expenditures by documenting treatment levels for vaccinations, blood pressure screenings, and other preventive procedures. When reaching minority populations becomes especially profitable, health care services for minorities are bound to improve.

F. End-of-Life Care

End-of-life care has been a vexing subject in health policy, health law, and medical ethics for decades. Compelling evidence demonstrates that the end-of-life care patients receive is not what they want.¹⁸⁸ Often, this care fails to ensure adequate pain control, robs patients of their autonomy, and simply extends the dying process.¹⁸⁹ Scholars have identified durable powers of

gender as factor for receiving several major diagnostic or therapeutic interventions and suggesting that women have less access than men to these interventions).

186. See Press Release, U.S. Dep't of Health & Human Servs., President Clinton Announces New Racial and Ethnic Health Disparities Initiative (Feb. 21, 1998), available at <http://www.raceandhealth.hhs.gov/sidebars/sbinitpres.htm> (last visited Sept. 15, 2001) (announcing five-step plan that sets national goal of eliminating health disparities in six areas by year 2010).

187. To be sure, if medical providers are "overtreating" or "mistreating" the majority community, it is hardly a success to subject the minority community to the same treatments. See Schuster et al., *supra* note 17, at 518 (discussing quality problems associated with "overuse" and "misuse").

188. See James Lindgren, *Death by Default*, 56 LAW & CONTEMP. PROBS. 185, 197-99 (1993) (reviewing data showing patient preferences are quite different than current practice); David Orentlicher, *The Illusion of Patient Choice in End-of-Life Decisions*, 267 JAMA 2101, 2102 (1992) (noting study providing important evidence of dominant role of physician values at end-of-life decisions); Susan Gilbert, *Study Finds Doctors Refuse Patients' Requests on Death*, N.Y. TIMES, Nov. 22, 1995, at A1 (finding that doctors often misunderstand or ignore patients' requests and thus living wills offer virtually no protection for patient preferences).

189. See INST. OF MED., APPROACHING DEATH: IMPROVING CARE AT THE END OF LIFE (Marilyn J. Field & Christine K. Cassel eds., 1997) (recommending change of focus for end-of-life treatment from aggressive conventional care to palliative care). To be sure, the problem of inadequate palliative care is not limited to end-of-life care. See generally INST. OF MED., IMPROVING PALLIATIVE CARE FOR CANCER (Kathleen M. Foley & Hellen Gelband eds., 2000) (noting that Americans who get cancer are likely to be in pain and suffer from host of other symptoms because of inadequacies of available palliative); Susan Okie, *Doctor's Duty to Ease Pain at Issue in Calif. Lawsuit*, WASH. POST, May 7, 2001, at A3 ("Multiple studies in recent years have found that doctors frequently undertreat pain.").

attorney, living wills, malpractice liability, better training, and periodic disciplinary proceedings as means of addressing these problems, yet these approaches have so far enjoyed limited success.¹⁹⁰

RBCAs have some potential to improve end-of-life care by rewarding providers for giving terminally ill patients the services they desire. Many of these patients care greatly about the manner in which providers accommodate them in their last days. They want to be kept clean, dressed, free of bed sores, and properly medicated against pain. They also may want amenities such as televisions, radios, and easy access to visitors. It is not difficult to envision RBCAs that would tie providers' compensation levels to the fulfillment of these simple desires. By comparison to FFS compensation, it seems reasonable to expect RBCAs to improve end-of-life care by enabling terminally ill patients to obtain more of what they want.

G. Service Quality

Patients routinely complain that the quality of service they receive from health care providers is poor. Appointments are not available until several months in the future, personnel are rude or indifferent, bills are incomprehensible, records are not available to all involved providers so procedures are repeated, and waits of several hours are routine.¹⁹¹ RBCAs, if appropriately crafted, can create incentives for providers to see patients promptly and ensure the service quality of the care that is rendered. Some providers of "urgent care centers" already guarantee that patients will be seen within thirty minutes of arrival, and some "disease-specific providers," such as cancer care centers, are seeking to offer integrated services in a manner more convenient for patients.¹⁹²

190. See, e.g., Bernard Lo, *Improving Care Near the End of Life: Why Is It So Hard?*, 274 JAMA 1634 (1995); S. Elizabeth Wilborn Malloy, *Beyond Misguided Paternalism: Resuscitating the Right to Refuse Medical Treatment*, 33 WAKE FOREST L. REV. 1035, 1077-86 (1998); The SUPPORT Principal Investigators, *A Controlled Trial to Improve Care for Seriously Ill Hospitalized Patients: The Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments (SUPPORT)*, 274 JAMA 1591 (1995).

191. See John W. Kenagy et al., *Service Quality in Health Care*, 281 JAMA 661 (1999); Thom Mayer & Robert J. Cates, *Service Excellence in Health Care*, 282 JAMA 1281 (1999).

192. See HERZLINGER, *supra* note 175, at 36-44, 157-99 (describing convenience-enhancing health care ventures and re-sizing of health care sector); Press Release, Loyola University Health Services, Loyola University Health System Opening Immediate Care Center in Elmhurst: Facility to Serve Patients Seven Days a Week (Mar. 20, 1997), available at <http://www.luhs.org/happen/newsrel/mar97/elmhurst.htm> (announcing opening of immediate care center in Elmhurst, Illinois: "We guarantee that patients will be seen by a health care professional within 20 minutes after their arrival at the center.").

VI. Conclusion

In the health care sector, as in other parts of the economy, the observation that "you get what you pay for" has considerable truth. The way we pay health care providers influences the quality of care we receive. Historically, payors have used compensation methods that emphasized cost reductions and that failed to connect payments to outcomes. The quality of health care has suffered accordingly.

Important signs of change have recently appeared. Some large employer consortiums have begun to experiment with RBCAs. They have linked their obligation to pay to the delivery of services that actually restore health or that are reasonably expected to protect against illness. This development, which is still a fringe movement at best, is promising and must be encouraged. As long as human beings, rather than machines, deliver health care, micro-incentives will be important. Existing compensation arrangements encourage overuse, underuse, and misuse of resources. RBCAs have some potential, and possibly great potential, to correct these problems.

Result-based compensation is not a panacea for the agency and informational problems that plague the health care system.¹⁹³ It will never be possible to measure the quality of all services or to design perfect compensation arrangements. However, some areas of health care are well-suited to RBCAs, and it is reasonable to expect practitioners in these areas to improve when RBCAs are deployed. How well providers will do and how widely RBCAs can ultimately be used are not questions that we can answer on theoretical grounds. There is no substitute for real-world experimentation on these matters. It is hardly a response to the existing agency problems to argue that we should do nothing because RBCAs do not solve *all* the agency problems with health care delivery.

We do not expect RBCAs to wholly supplant FFS and other guaranteed payment arrangements. Lawyers have worked for contingent fees for longer than a century, but many attorneys still receive salaries, hourly rates, or fixed fees. Yet, even in the legal services sector, lawyers are still developing new contingent fee arrangements. RCBAs have untapped potential to improve the quality of service even after a century of experimentation.

193. As noted previously, in the commercial marketplace, companies routinely give express warranties on some products and not on other products. When they do provide warranties, it is common to see them only on certain aspects of products. For example, it is common for cars to have a warranty, but uncommon for the warranty to be indefinite, or tied to customer satisfaction. Similarly, manufacturers warrant tires for tread life, and not consequential damages from a blow-out. Given these patterns in the balance of the economy, it is unrealistic to expect RBCAs to become the only form of compensation for health care services, and unreasonable to criticize them for failing to do so.

RBCAs can foster improvements by encouraging providers to develop systems for delivering health care that are more reliable and more efficient. With better systems in place, more patients will enjoy first-rate care, and providers will deliver first-rate care at lower cost. Physicians will also regain a considerable amount of the discretionary authority they have ceded to managed care. From almost every perspective, RBCAs look like a "win-win" policy change.

In his seminal paper on the economics of health care, Kenneth Arrow observed that ideal insurance is "a system in which the payment to the physician is made in accordance with the degree of benefit" to the patient.¹⁹⁴ When ideal insurance is employed, "medical care will always be undertaken in any case in which the expected utility exceeds the expected medical cost."¹⁹⁵ Almost forty years later, the time may finally be ripe to put Arrow's insight into action.

194. Kenneth Arrow, *Uncertainty and the Welfare Economics of Health Care*, 53 AM. ECON. REV. 941, 964 (1963).

195. *Id.* at 665.

*Appendix**Table 1*

1. "An annual influenza vaccine is recommended as a preventive measure for all adults 65 years or older However, in 1993, [only] 52% of people in this age group in the United States received the vaccine; among people who had been to the doctor at least once that year, the percentage was slightly higher at 56%."¹⁹⁶
2. "Antibiotics are almost never an appropriate treatment for people with a common cold because almost all colds are caused by a virus, for which antibiotics are not effective. However, in a study of Medicaid beneficiaries diagnosed with a cold in Kentucky during a one-year period from 1993 to 1994, 60% filled a prescription for an antibiotic."¹⁹⁷ Similarly, studies have reported high prescription rates for pharyngitis and rhinitis, even though most of these conditions are viral; thus, antibiotics provide no benefit.¹⁹⁸
3. Although "antimicrobial drugs do not shorten the course of viral upper respiratory tract infection [or] prevent secondary bacterial infections," "16% of all antimicrobial drug prescriptions (an estimated 17,922,000 prescriptions nationally) were written for upper respiratory infections in 1992."¹⁹⁹
4. "Among hospitalized elderly patients with depression who were discharged on antidepressant medication, 33% were on a dose below the recommended level In a study of 634 patients with depression or depressive symptoms in Boston, Chicago, and Los Angeles, 19% were treated with minor tranquilizers and no antidepressants, despite the lack of evidence that tranquilizers work for depression and the risk that they will cause side effects or addiction."²⁰⁰
5. Diabetics should receive eye examinations annually or biannually, depending on whether or not they are insulin-dependent. Yet, "[i]n a national study in 1989, [only] 49% of adults with [] diabetes had undergone dilated eye examination in the past year (66% in the past two years), and 61% had undergone any type of eye exam in the past year (79% in the

196. Schuster et al., *supra* note 17, at 521, 527.

197. *Id.* at 527.

198. *Id.* at 528-29 tbl.2.

199. *Id.* at 528 tbl.2.

200. *Id.* at 527.

past two years). Twenty percent of diabetics had no eye exam in the past two years."²⁰¹

6. "A study of seven managed care organizations revealed that about 16% of hysterectomies performed during a one-year period from 1989 to 1990 were carried out for inappropriate reasons. An additional 25% were done for reasons of uncertain clinical benefit."²⁰²
7. "In a study of four hospitals, 43 percent of patients with a positive exercise stress test demonstrating the need for coronary angiography had received it within 3 months; 56% had received it within 12 months."²⁰³
8. A study published in 1995 found that 9.4% of hospital admissions for patients suffering pneumonia were inappropriate.²⁰⁴
9. A study published in 1994 determined that 27% of tube insertions for ear infections were inappropriate and 32% were equivocal.²⁰⁵
10. A 1994 study found from 5% to 35% of women treated at 6 HMOs did not receive all 7 recommended routine prenatal screening tests.²⁰⁶
11. A study published in 1991 concluded that only 41%-54% of patients with chronic uncomplicated hypertension had their hypertension controlled.²⁰⁷
12. A 1995 study found that among patients with major depression who received antidepressant medications, [only] 78% received dosages within the recommended ranges.²⁰⁸
13. From a random sample of patients at three hospitals, a 1998 study determined that 14% of CABG surgeries were inappropriate and 30% were equivocal.²⁰⁹
14. Although "[a]spirin therapy reduces short-term mortality in patients with suspected heart attack by 23%," a 1995 study of 7917 Medicare patients hospitalized with heart attack found that only 64% received aspirin with-

201. *Id.* at 527, 535.

202. *Id.* at 535.

203. *Id.*

204. *Id.* at 529 tbl.2.

205. *Id.* at 530 tbl.2.

206. *Id.* at 533 tbl.2.

207. *Id.* at 538 tbl.3.

208. *Id.* at 541 tbl.3.

209. *Id.* at 542 tbl.3.

in the first 2 days of hospitalization.²¹⁰ Likewise, a 1996 study found that although heart attack patients who receive aspirin therapy at discharge have a far lower 6-month mortality rate than those who do not (8.4% versus 17%), about one-quarter of discharged heart attack patients were discharged without instructions to take aspirin.²¹¹

15. Thrombolytics reduce post-heart attack mortality by as much as 25%, yet 1995 studies found that 30%-57% of patients who were candidates for treatment with thrombolytics did not receive them.²¹²
16. Although "[c]alcium channel blockers should not be given to [heart attack] patients with certain conditions," 21% of 785 [Medicare] patients in a 1995 study who were ineligible for calcium channel blockers received them.²¹³
17. Beta blocker therapy can reduce post-heart attack mortality by as much as 25%, yet a 1995 study found that of the 2,976 patients who were ideal candidates for treatment with beta blockers, only 45% received them prior to or at time of discharge.²¹⁴ Another 1997 study of 3,737 Medicare patients determined that only 21% received beta blockers within 90 days of discharge. The adjusted mortality rate for patients who received the treatment was 43% less than that of patients without the treatment.²¹⁵
18. A 1987 study of carotid endarterectomy surgery, which opens blocked carotid arteries, found that 32% of 1,302 procedures were inappropriate and 32% were equivocal.²¹⁶
19. A 1998 study of 182 patients who died in hospitals from stroke, pneumonia, or heart attack concluded that 14% of deaths resulted from inadequate diagnosis or treatment and could have been prevented.²¹⁷

210. *Id.* at 545 tbl.3.

211. *Id.*

212. *Id.* at 546-47 tbl.3.

213. *Id.* at 548 tbl.3.

214. *Id.* at 549 tbl.3.

215. *Id.*

216. *Id.* at 551 tbl.3.

217. *Id.* at 554 tbl.3.

Table 2

1. Between 44,000 and 98,000 Americans die each year as a result of medical errors committed in hospitals.²¹⁸ Even the lower estimate makes hospital-related errors the eighth leading cause of death, ahead of motor vehicle accidents (43,458), breast cancer (42,297), and AIDS (16,516).²¹⁹
2. Preventable medical errors that injure hospital patients generate from \$17 billion to \$29 billion in costs, including lost income, lost household production, disability, and additional health care expenses, which alone represent over one-half of the total.²²⁰
3. In 1993, medication-related errors caused approximately 7,000 deaths, 1,000 more deaths than those resulting from injuries sustained in the workplace that year.²²¹ Annually, medication errors account for one out of 131 outpatient deaths and one out of 854 inpatient deaths.²²²
4. A study of "two prestigious teaching hospitals" concluded that preventable adverse drug effects beset approximately two of every 100 patients admitted, "increas[ing] hospital costs by \$4,700 per admission or about \$2.8 million annually for a 700-bed teaching hospital. If these findings are generalizable, the increased hospital costs alone of preventable adverse drug events affecting inpatients are about \$2 billion for the nation as a whole."²²³
5. The Harvard Medical Practice Study found that adverse events occurred in 3.7% of all hospitalizations, that half of these errors were preventable, and that a quarter were caused by negligence.²²⁴ "13.6 percent [of the adverse events] resulted in death and 2.6 percent caused permanently disabling injuries."²²⁵ Studies of hospital admissions in Colorado and Utah yielded similar findings.²²⁶
6. A 1997 study of 1,047 patients treated by the intensive care and surgical units at a large teaching hospital found that in 480 cases (45.8%) "an in-

218. INST. OF MED., *supra* note 5, at 1.

219. *Id.*

220. *Id.*

221. *Id.*

222. *Id.*

223. *Id.* at 2.

224. *Id.* at 30.

225. *Id.*

226. *Id.*

appropriate decision was made when, at the time, an appropriate alternative could have been chosen."²²⁷

7. "In an [1997] analysis of 289,411 medication orders written during one year in a tertiary-care teaching hospital, the overall error rate was estimated to be 3.13 errors for each 1,000 orders written and the rate of significant errors to be 1.81 per 1,000 orders."²²⁸
8. "Children are at particular risk of medication errors In a study of 101,022 medication orders at two children's teaching hospitals, a total of 479 errant medication orders were identified, of which 27 represented potentially lethal prescribing errors. The frequency of errors was similar at the two institutions, 4.9 and 4.5 errors per 1,000 medication orders. . . . In a four-year prospective quality assurance study, 315 medication errors resulting in injury were reported among the 2,147 neonatal and pediatric intensive care admissions, an error rate of one per 6.8 admissions. The frequency of iatrogenic injury of any sort due to a medication error was 3.1% – one injury for each 33 intensive care admissions."²²⁹

Table 3²³⁰

Failure Rate of Industrial and Medical Procedures

<u>Type of Service</u>	<u>Frequency of Outcome (%)</u>
Deaths from Anesthesia During Surgery	0.0005
Airline – Fatality	0.002
Airline – Lost Baggage	0.06
Negligent Injury to Hospitalized Patient	1.0
Publishing – 8 misspelled words/page	7.0
Improper Use of Antibiotics in Ambulatory Patients	20
Inappropriate Diagnosis/Treatment of Depression	58
Failure to Use Beta Blockers After Heart Attack	80

227. *Id.*

228. *Id.* at 33.

229. *Id.* at 33-34.

230. Adapted from Chassin, *supra* note 13, at 568.