



YOU GET WHAT YOU PAY FOR: RESULT-BASED COMPENSATION FOR HEALTH CARE

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That any sane nation, having observed that you could provide for the supply of bread by giving bakers a pecuniary interest in baking for you, should go on to give a surgeon a pecuniary interest in cutting off your leg is enough to make one despair of political humanity.¹

Methods of payment are another 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.²

I. INTRODUCTION

In market-based economies, the customer is king.³ 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. This linkage between payment and performance, the hallmark of a result-based compensation arrangement (“RBCA”), encourages providers to perform well.

RBCAs prevail throughout the economy. Lawyers of diverse types work on contingency, as do many accountants who represent taxpayers before the Internal Revenue Service and local taxing authorities. Investment bankers, stockbrokers, real

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¹ George Bernard Shaw, *The Doctor’s Dilemma*, Preface on Doctors (1909).

² Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the 21st Century* (2001) [hereinafter *Quality Chasm*]

³ 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.

estate agents, auctioneers, department store clerks, insurance agents, advertising agencies, political consultants, and telemarketers work on commission. So 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. Even 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 that 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 many economic 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 we do, not what we accomplish."⁴ The enormous size of the health care sector makes the absence of RBCAs particularly deserving of note. Americans spend approximately \$1.2 trillion annually on health care services, almost none of which are warranted to meet measurable standards of quality.

The rarity of RBCAs would be unproblematic if purchasers were invariably receiving value for their health care 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 tens of billions of dollars annually on medical services whose value is questionable or nonexistent.

Patients are also frequently injured as a result of medical treatment. One study estimated that injuries caused by physicians accounted for 180,000 deaths per year.⁶

⁴ David A. Kindig, *Purchasing Population Health* (1998). See also David A. Kindig, *Purchasing Population Health: Aligning Financial Incentives to Improve Health Outcomes*, 33 *Health Services Research* 223, 223 (1988).

⁵ See Section II, *infra*. See also David Classen and Peter Kilbridge, *Healthcare Quality and the Prevention of Medical Errors*, 3 (June 2000) (report published by First Consulting Group) <<http://www.fcg.com/webfiles/NewsRelease/20000814.asp>> ("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." Institute of Medicine, *To Err Is Human* 16 (1999) [hereinafter *To Err*].

⁶ Thomas Bodenheimer, *The American Health Care System—The Movement for Improved Quality*

The Institute of Medicine adopted a lower figure—between 50,000 and 100,000 deaths per year—but it nonetheless called medical errors “a national problem of epidemic proportion.”⁷ The description is apt. The numbers make medical errors the eighth leading cause of death in the United States. Every year, medical errors kill more people than motor vehicle accidents, breast cancer, and AIDS.⁸

Any other industry that caused the deaths of 50,000 to 100,000 of its customers each year and that seriously injured 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, the U.S. Congress held hearings, criminal proceedings were threatened, and several nationwide class actions were filed. Yet Bridgestone/Firestone was, at worst, responsible for the loss of fewer than two hundred lives over a period of several years. 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 deliver it. Because the health care sector is bereft of RBCAs, Americans receive services that range in quality from extraordinarily good to extraordinarily bad, with outcomes that vary accordingly. If we 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.”⁹ To encourage health care providers to employ “best practices” and to “achieve[] better patient outcomes,” the IOM recommended that “whenever possible, 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.” In other words, the IOM recommended RBCAs.

This Article will develop the case for health care RBCAs as follows. Part II will briefly survey the literature that led the IOM and other prominent authorities to give health care providers low marks for quality. It also will focus on two areas—coronary artery bypass surgery and surgical anesthesia—where quality has improved enormously in recent years, to demonstrate that poor quality is not inevitable if the right incentives are employed. Part III will identify the prevailing methods of compensating health providers and show that none ties providers’ financial prospects to patients’ well-being.

in Health Care, 340 New England J. Med. (1999) (citing study).

⁷ IOM, *To Err*, *supra* note 5, at 22.

⁸ *Id.* at **.

⁹ IOM, *Quality Chasm*, *supra* note 2, at 19.

Part IV will explain how RBCAs work, demonstrate their theoretical potential to enhance quality, and address some common objections to using them in connection with medical services. Part V will identify the small number of cutting-edge sectors of the health care market that already use RBCAs. It also will discuss other areas in which health care RBCAs could be deployed. Part VI will offer a brief conclusion.

II. THE CRISIS OF QUALITY IN AMERICAN MEDICINE

“Quality 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.”¹⁰

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 of the American health care system, irrespective of insurance coverage and delivery arrangements. Section II.A. presents a brief, general survey that demonstrates the extent of the need for quality improvement. Section II.B. focuses on the highly developed literatures on efforts to improve the quality of surgical anesthesia and coronary artery bypass graft surgery (CABG). In both areas, dramatic improvements in quality were accomplished in very little time after appropriate incentives were introduced.

A. The Quality of Health Care in the U.S.

The literature on health care quality is replete with statements that look like tabloid headlines, not research findings: “one-fourth of hospital deaths may be preventable;”¹¹ “180,000 people may die” every year “partly as a result of iatrogenic injury;”¹² “one-third of some hospital procedures may expose patients to risk without improving their health.”¹³ Unfortunately, these dire statements are actual findings. According to a 1998 literature review entitled *How Good is The Quality of Health Care in the United States*, 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

¹⁰ Mark R. Chassin, *Is Health Care Ready for Six Sigma Quality?* 76 *Milbank Quarterly* 565, 566 (1998)

¹¹ Robert H. Brook et al., *Health System Reform and Quality*, 276 *JAMA* 476 (1996).

¹² R.W. Dubois & Robert H. Brook, *Preventable Deaths: Who, How Often, and Why?* 109 *Annals Internal Med.* 582 (1988).

¹³ Stephen M. Shortell, Charles L. Bennett, and Gayle R. Byck, *Assessing the Impact of Continuous Quality Improvement on Clinical Practice: What It Will Take to Accelerate Progress*, 76 *Milbank Quarterly* 593, 593 (1998).

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 percent of people received recommended care. An average of 70 percent . . . received recommended acute care, and 30 percent received contraindicated acute care. For chronic conditions, 60 percent received recommended care and 20 percent received contraindicated care.¹⁴

Table 1 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 and for no good reason. Adverse drug events and the use of unproven treatments also are distressingly common.¹⁵ Although managed care has dominated the public policy debate in recent years, “managed care is not the problem, quality is.”¹⁶

Health care also is dogged 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.¹⁷ Table 2 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.¹⁸

To put these problems into perspective, Table 3 compares the health care sector to other industries. At a defect rate of 20 percent, roughly the frequency with which doctors erroneously prescribe antibiotics for ambulatory patients, the credit card

¹⁴ Mark A. Schuster, Elizabeth A. McGlynn, and Robert H. Brook, *How Good Is the Quality of Health Care in the United States?* 76 *Milbank Quarterly* 517, 520-21 (1998).

¹⁵ David P. Phillips et al, *Increase in U.S. Medication-Error Deaths between 1983 and 1993*, 351 *Lancet* 255 (1999); David C. Classen et al., *Adverse Drug Events in Hospitalized Patients: Excess Length of Stay, Extra Costs and Attributable Mortality*, 277 *JAMA* 301 (1997); David W. Bates et al., *Incidence of Adverse Drug Events and Potential Adverse Drug Events: Implications for Prevention*, 274 *JAMA* 29 (1995).

¹⁶ Robert H. Brook, *Managed Care is Not the Problem, Quality Is*, 278 *JAMA* 1612 (1997). See also Schuster et. al., *supra* note 14, at 556 (“Whether the care is preventive, acute, or chronic, it frequently does not meet professional standards.”)

¹⁷ IOM, *To Err, supra* note 5, at **. After this report was released, President Clinton commissioned a federal task force to devise a strategy for making health care safer. See Report of the Quality Interagency Coordination Task Force, *Doing What Counts for Patient Safety: Federal Actions to Reduce Medical Errors and Their Impact 1* (Feb. 2000) <www.quic.gov>

¹⁸ See IOM, *To Err, supra* note 5, at 26. Underreporting of medication errors in hospitals is especially dramatic. One study found that incident reports were filed for only 3 of 54 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.

industry would botch nine million transactions a day and banks would deposit thirty six million checks in the wrong accounts.¹⁹ Yet, by health care standards, the appallingly high 20 percent 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.”²⁰

There are a number of reasons why quality is so variable, including the decentralized and fragmented nature of the health care delivery system, the dominance of third party payers 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, the reality lags far behind the rhetoric. There is a crying 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 Graft Surgery (“CABG”)

The results described in the preceding section are not inevitable. Two examples demonstrate that providers can improve the quality of health care dramatically and quickly when they have a mind to.

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 5 deaths per million encounters.

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 were developed, death rates steadily declined. By the 1950s, death rates ranged between 1 and 10 per 10,000 encounters.²¹ Anesthesia mortality stabilized at this rate for more than two decades.

¹⁹ See Chassin, *supra* note 10, at 570.

²⁰ See *id.* at 587.

²¹ See Chassin, , *supra* note 10, at 569; Henry K. Beecher & ** Todd, *A study of the deaths associated with anesthesia and surgery*, 140 Ann. Surgery 2 (1954); ** Dripps, A Lamont, JE Eckenhoff, *The role of anesthesia in surgical mortality*, 178 JAMA 261 (1961); OC Phillips *et al.*, *The Baltimore anesthesia study committee*, 174 JAMA 2015 (1960).

Mortality and morbidity rates started falling again a 1978 article reframed the issue of anesthesia safety as one of human factor analysis.²² By the mid-1980s, the American Society of Anesthesiologists (“ASA”) had promulgated standards of optimal anesthesia practice that relied heavily on systems-based approaches for preventing errors.²³ Individual providers had substantial incentives to comply with these guidelines. Anesthetists were frequently sued when bad outcomes occurred, and deviations from the ASA guidelines made the imposition of liability much more likely. As individual providers adopted the specified practices, intra-operative deaths became increasingly rare.²⁴ Anesthetists also developed improved monitoring techniques and other strategies to reduce morbidity and mortality.²⁵

Providers deserve great praise for enhancing the safety of anesthesia-related services. They have made anesthesia one of the safest components of a hospitalization. At the same time, it is worth considering why, for longer than two decades, anesthesia mortality stabilized at a rate more than one hundred times higher than its current level. The problem was not lack of information. To the contrary, anesthesia safety was studied extensively during the period. A better hypothesis is that anesthetists 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 anesthetists to treat each bad outcome as a tragic, but unforeseen and unpreventable event. Indeed, each individual bad outcome was likely viewed as the manifestation of an irreducible baseline rate of medical mishap.²⁶

Physicians’ insistence on complete clinical autonomy reinforced this tendency to regard bad outcomes as inevitable. So long as anesthetists had comparable mortality rates, the occasional bad outcome could pass without much comment or be ascribed to bad luck. Only when providers adopted a systems-based, technology-assisted approach did self-satisfaction disappear and anesthesia mortality plummet to its current low level. Thus, given the right incentives, information, and a systemic perspective, providers can play a major role in enhancing patient safety.

²² See Jeffrey B. Cooper *et al.*, *Preventable anesthesia mishaps: a study of human factors*, 49 *Anesthesiology* 399 (1978). 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).

²³ See E.C. Pierce, *The development of anesthesia guidelines and standards*, 16 *QRB* 61 (1990).

²⁴ Lucian L. Leape, *Unnecessary Surgery*, 13 *Ann. Rev. Pub. Health* 363, 379-80 (1992) (“Following the 1987 universal adoption by Massachusetts anesthetists 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.”)

²⁵ See Chassin, *supra* note 10, at 569.

²⁶ 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).

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 ongoing 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.²⁷ For example, computerized systems for dispensing and tracking prescription drugs have brought down rates of medication errors in hospitals. After a VA hospital in Topeka, Kansas introduced a bar coding system, medication errors dropped 64.5 percent.²⁸ An academic medical center in Boston “credited its computer system with helping to reduce serious drug-related problems by 55 percent, saving \$500,000 a year [and] up to \$10 million [overall].”²⁹

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.³⁰ This accounts for one of the IOM’s most striking recommendations: that health care organizations should “implement proven medication safety practices.”³¹ 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

²⁷ See Chassin, *supra* note 10, 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. for Quality in 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.*

²⁸ Lauran Neergaard, *Admitting Mistakes: V.A. Hospitals Start New Plan to Combat Medical Errors*, <http://www.abcnews.go.com/sections/living/DailyNews/medmistakes000219.html> (visited Feb. 19, 2000).

²⁹ Milt Freudenheim, *Corrective Medicine: New Technology Helps Health Care Avoid Mistakes*, N.Y.T., Feb. 3, 2000, C1.

³⁰ *Id.* See also IOM, *To Err*, *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”

³¹ IOM, *To Err*, *supra* note 5, at **.

failing passes with little notice or concern.

2. Coronary Artery Bypass Grafting (“CABG”)

CABG is a surgical treatment for blocked coronary arteries, which is 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.³² 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 Intersociety Commission for Heart Disease Resources (“ICHDR”) issued guidelines for the procedure, including minimum caseload recommendations. These guidelines were non-binding. Physicians and hospitals were free to offer CABG even if their expected volume fell below the recommended minimum. 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 on outcome, health care researchers discovered that surgeons with high-volume CABG practices and hospitals with high-volume CABG units had significantly lower mortality. The difference in outcomes could be as much as a quadrupling of the risk of in-hospital mortality.³³ When surgeons changed hospitals, the mortality rates frequently changed along with them.³⁴

Although the connection between CABG volume and outcome was widely known within medical circles, it did not influence referral patterns for CABGs. In 1995, fully 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.³⁵ 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.

³² See Dept. of Health and Human Services, *The Challenge and Potential for Assuring Quality Health Care for the 21st Century*, Publication No. OM 98-0009 (June 17, 1998) (available on the internet at <http://www.ahrq.gov/qual/21stcena.htm>) (visited Sept. 25, 2000).

³³ See Edward L. Hannan, *The Relation between Volume and Outcome in Health Care*, 340 *New England J. Med.* 1677 (1999) (noting that in one study of 1989 data, “the risk-adjusted mortality rate for patients of surgeons who performed fewer than 50 [bypass operations] (7.94 percent) was more than twice the mortality rate for patients of surgeons who performed 150 or more procedures (3.57 percent); K. Grumbach, et al., *Regionalization of Cardiac Surgery in the United States and Canada*, 274 *J.A.M.A.* 1282 (1995) (reporting that death rates following cardiac bypass surgery were twice as high at California hospitals that performed fewer than 100 procedures per year than at hospitals that performed 500 or more); Michael L. Milleson, *Demanding Medical Excellence* 192 (1997) (noting quadrupling of risk).

³⁴ See *id.* at **.

³⁵ See *id.* at **.

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.³⁶ 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.³⁷ Some pressured physicians with low-volume practices to stop performing CABG.³⁸

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.³⁹ In New York, the risk-adjusted death rate dropped by forty percent after the report cards were issued.⁴⁰ 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 percent between 1990 and 1993.⁴¹

Private sector payers have spurred similar gains through selective contracting. When Anthem Blue Cross & Blue Shield (“Anthem”) studied cardiac surgery units in Ohio, it found six-fold variation in risk-adjusted mortality rates.⁴² Anthem reacted by excluding under-performing hospitals from its network. Once Anthem began steering its members to high-quality hospitals, rates of death and other adverse outcomes fell, as did Anthem’s costs. Some hospitals that were removed from Anthem’s network also made dramatic turnarounds. After Ohio State University Medical Center (“OSUMC”) was de-listed in 1995, it cut its risk-adjusted mortality in half and was readmitted to the network in 1997.

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

³⁶ See *id.* at 215.

³⁷ See *id.* at 194. 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.” See also Jonathan A. Showstack et al., Association of Volume with Outcome of Coronary Artery Bypass Graft Surgery, 257 J.A.M.A. 785 (1987) (“[T]he greater skills of surgical teams at higher-volume hospitals may be particularly necessary to care for patients undergoing nonscheduled CABG surgery.”)

³⁸ See Millenson, *supra* note 33, at **.

³⁹ See Arnold M. Epstein, *Public Release of Performance Data: A Progress Report From the Front*, 283 JAMA 1884 (2000); 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).

⁴⁰ See Millenson, *supra* note 33, at 194; Chassin, *supra* note 10, at 586.

⁴¹ See Millenson, *supra* note 33, at 224.

⁴² See Thomas M. Burton, *HMO Rates Hospitals; Many Don’t Like It, But They Get Better*, Wall St. J., Apr. 22, 1999, at A1.

in first in every subsequent study. Until Anthem's rankings came out, St. Elizabeth's excellence was not fully appreciated even by its own personnel.

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. Only when states and private payers published statistics showing enormous quality disparities was this "Lake Wobegone" effect dispelled.⁴³

Worse, when providers learned the truth, the first instinct of many was to "shoot the messenger." 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.⁴⁴ The Medical Society of the State of New York tried a different gambit, warning "that patients may suffer *psychologically* if they have to get treated by a surgeon with a higher than average mortality rate."⁴⁵ Similar criticisms were made of the Pennsylvania results.⁴⁶ When the New York Department of Public Health suggested performance-based compensation for cardiac surgery, physicians and hospitals pressured legislators to prohibit such arrangements.⁴⁷ When Anthem tried to replicate its program in Kentucky, the Department of Insurance balked after the Kentucky Hospital Association and some legislators objected.

Providers also tried to sidestep the import of these "report cards," arguing that low scores were attributable to treating sicker patients and risk adjustments made to compensate for differences between patients were imperfect.⁴⁸ 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.⁴⁹

⁴³ See Garrison Keillor, ** ("In Lake Wobegone, ... all the children are above average.")

⁴⁴ See Millenson, *supra* note 33, at 193-196.

⁴⁵ See *id.* at 198 (emphasis added). The medical society provided no evidence to suggest the alleged psychological damage was more serious than the documented physical harm associated with having a surgeon with a higher than average mortality rate involved.

⁴⁶ See *id.* at **.

⁴⁷ See *id.* at **.

⁴⁸ 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 Wobegone effect." See *supra* note 43.

⁴⁹ See Millenson, *supra* note 33, at 201. At one hospital, the reported frequency of chronic obstructive pulmonary disease climbed from 1.8 percent to 52.98 percent after the public reports began,

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 (e.g., immunizations, pap smears, and retinal exams for diabetics), and taking other steps to measure quality.⁵⁰

These efforts are all to the good, but we do not believe they will be sufficient to the task of enhancing the quality of care across the board. Volume-quality relationships currently exist for a wide variety of surgical interventions.⁵¹ Experience from other economic sectors indicates current strategies (including, *inter alia*, 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.⁵² Although insurance coverage and delivery arrangements vary widely, four payment arrangements predominate: fee-for-service, flat-rate/prospective payment, salary, and capitation.⁵³

Each arrangement has predictable strengths and weaknesses. Fee-for-service

and at another hospital, the reported frequency of angina went from 1.9 percent to 20.8 percent. *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).

⁵⁰ *See, e.g.*, Millenson, *supra* note 33, 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.")

⁵¹ *See* Harold S. Luft *et al.*, *Hospital Volume, Physician Volume, and Patient Outcomes: Assessing the Evidence* 103, Figure 5.1 (1990); Samuel O. Thier and Annetine C. Gelijns, *Improving Health: The Reason Performance Measurement Matters*, 17 *Health Affairs* 26, 26-27 (1998); Herbert R. Karp *et al.*, *Carotid Endarterectomy Among Medicare Beneficiaries: A Statewide Evaluation of Appropriateness and Outcome*, 29 *Stroke* 46 (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]"); E. 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 Services Research* 517, 535-536 (1992).

⁵² *See* Hyman, *supra* note * at **.

⁵³ Under a fee-for-service 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 capitation system of compensation, providers receive a set amount per patient per month to provide all required services.

compensation (FFS), 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.⁵⁴

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, i.e., fixed fees tied to employment periods, 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.

Capitation arrangements, which pay amounts tied to the number of patients who enroll with particular providers regardless of any individual patient’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.⁵⁵ Enthusiasts of any given compensation arrangement are quick to condemn the competing alternatives.⁵⁶

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 corresponds to nor correlates strongly with patients’ desires. Consequently, none aligns the interests of patients and providers as closely as result-

⁵⁴ See Stephen M. Shortell et al., *Physicians as Double Agents: Maintaining Trust in an Era of Multiple Accountabilities*, 280 JAMA 1102, 1103 (1998); AC Kao et al., *The Relationship Between Method of Physician Payment and Patient Trust*, 280 JAMA 1708 (1998); Kevin Grumbach et al., *Primary care physician’s experience of financial incentives in managed-care systems*, 339 New Engl. J. Med. 1516 (1998).

⁵⁵ See James C. Robinson, *Blended Payment Methods in Physician Organizations Under Managed Care*, 282 JAMA 1258 (1999); Neil Schlackman, *Evolution of a Quality-Based Compensation Model: The Third Generation*, 8 Med Quality 103 (1993).

⁵⁶ See M.D. Smith, *Managed Care and the Poor*, 5 J. HEALTH CARE POOR UNDERSERVED 147 (1994) (“nothing is worse than fee-for-service”).

based payment systems would.

Compensation arrangements that link payments to process-based considerations that do not correlate with outcome (e.g., the number of non-preventative services delivered) can be particularly pernicious because they may become counterproductive over time. As knowledge and technology change, these criteria become inaccurate signals of quality. Suppose that a third party payer 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 payer is offering only \$85, is an effective substitute for X.⁵⁷ The provider will be better off delivering X despite the superiority of Y.⁵⁸

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 make diagnoses and treatment decisions based on the best available evidence. Unfortunately, payers (*i.e.*, health insurers, MCOs, employers, Medicaid, and Medicare) have adopted compensation arrangements that effectively pay providers the same amount, whether or not they deliver high quality care. No effort has been made to use economic incentives to give providers “in the trenches” appropriate micro-incentives.

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 payers have historically paid more attention to the cost of care than to its quality.⁵⁹ Employers who offer health care

⁵⁷ 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. However, can be superior.

⁵⁸ See Millenson, *supra* note 33, at 274-275. 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 70 percent of the cost. Yet, if compensation requires face-to-face contact with a physician, providers who offer such alternatives will suffer financial. *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.

⁵⁹ See Jack Meyer et al., *Theory and Reality of Value-Based Purchasing*, AHCPR Publication No. 98-0004, 4, (Nov. 1997) <<http://www.ahrq.gov/qual/meyerrpt.htm>> (visited Sept. 25, 2000) (“[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 IOM, *To Err*, *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 Quarterly* 687, 687 (1998) (observing that proponents of increased competition in the medical sector are concerned mainly

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, who account for 45% of total health care expenditures, face similar conflicts between the interests of taxpayers, program administrators, providers, and program beneficiaries.⁶⁰ In general, third-party payers 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.⁶¹

Individual patients frequently find it difficult to assess 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.⁶² Because patients cannot easily detect quality 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 are willing to pay for.

IV. THE CASE FOR RBCAS

In most sectors of the economy, RBCAs are routinely used to address agency problems, including issues relating to quality. In the medical marketplace, RBCAs are almost never employed. Instead, payers employ 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.⁶³

about costs).

⁶⁰ See David A. Hyman, *What's Wrong With A Patient Bill of Rights*, 73 S. Cal. L. Rev. 221 (1999). 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 medical necessity for the covered treatments. *See id.*

⁶¹ *See id.*

⁶² 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 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. That referring doctors were sending them to inferior specialists was something else patients did not know and could not readily discover.

⁶³ In principle, any system for imposing costs on providers who offer low quality care, such as

Given the absence of result-based compensation, it is unsurprising that the quality of health care varies greatly and often is unacceptably poor. Economists typically assume that people act out of self-interest. The assumption is both an exaggeration and an oversimplification, 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.⁶⁴

Economists also would assume that health care providers 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.⁶⁵ After Medicare abandoned cost-based per-diem reimbursement and moved to prospective payment based on discharge diagnosis, hospital lengths-of-stay declined precipitously.⁶⁶ 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.⁶⁷ 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.⁶⁸ Economic considerations influence the course of treatment; consequently, it is important to give providers incentives to

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 the quality consequences are less than impressive, as outlined in Part II. 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 Troyen A. Brennan *et al.*, *Incidence of Adverse Events and Negligence in Hospitalized Patients: Results of the Harvard Medical Malpractice Study*, 324 *New Engl. J. Med.* 370 (1991); Paul Weiler *et al.*, *A Measure of Malpractice* (1990).

⁶⁴ See Adam Smith, *The Wealth of Nations*, Book V, Chapter II, Article 4 ("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.")

⁶⁵ See 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); James C. Robinson, *Theory and Practice in the Design of Physician Payment Incentives* (unpublished manuscript). But see R. Adams Dudley *et al.*, *The Impact of Financial Incentives on Quality of Health Care*, 76 *Milbank Quarterly* 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.")

⁶⁶ See Robert H. Brook *et al.*, *Health System Reform and Quality*, 276 *JAMA* 476, 479 (1996) (noting immediate twenty-five percent decline in length of stay following introduction of prospective payment); David A. Hyman and 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).

⁶⁷ See Chassin, *supra* note 10, at 570.

⁶⁸ See H. Miller & * Luft, **.

deliver high-quality care.

A. Patient Preferences and RBCAs

“Desirable health care outcomes depend on what patients desire.”⁶⁹ Sometimes, what patients want is not altogether clear. 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 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, there also is considerable agreement as to which outcomes are good and which are bad. Death, for example, is a valid indicator of an undesirable outcome most of the time.

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 of variety of search criteria, including reputation, credentials, and personal rapport, to identify providers who are likely to perform well.⁷⁰ After choosing a provider, however, a patient can encourage superior service mainly by monitoring, hoping, and, in an extreme case, threatening to sue. Because many patients are unsophisticated and lack the data needed to search and monitor effectively, the current approach does not work especially 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 segment 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 conditioned air that is regulated by a thermostat. To a client, it matters both 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. 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 outcomes’ “goodness,” contingent compensation is pointless

⁶⁹ Their and Gelijns, *supra* note 51, at 26-27. See also Paul D. Cleary & Susan Edman-Levitan *Health Care Quality: Incorporating Consumer Perspectives*, 278 JAMA 1608 (1997).

⁷⁰ 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 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).

because the result will be what it will be regardless of what the lawyer does. One might as well offer a weatherman 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.⁷¹ The rules of professional responsibility reinforce 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.⁷²

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 deal with lawyers routinely, 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.

RBCAs make clients’ ignorance less of an issue by shifting part of the failure risk 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. By voluntarily incurring a penalty for exercising poor judgment and for slacking, a lawyer gains credibility. 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 (e.g., take a deposition) or to assume certain risks (e.g., proceed 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 do not value these messages sufficiently to offer lawyers straight contingent fees. 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.⁷³ Consequently, sophisticated clients less often use RBCAs 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.

⁷¹ 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 potential variance in benefits is too small to justify contingent compensation. It is more efficiently dealt with in other ways, e.g., by choosing lawyers carefully, by paying higher prices for more talented lawyers with better reputations, by using malpractice remedies, etc.

⁷² See ABA Model Rules of Professional Responsibility ** (19**).

⁷³ See 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); Robert E. Litan & Steven C. Salop, Reforming the Lawyer- Client Relationship Through Alternative Billing Methods, 77 Judicature 191 (1994).

Insurance carriers do not need to pay lawyer-brokers to select specialists for them. 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, it is easy for an injured client and a plaintiffs' attorney to assess and verify the quality of the result. Moreover, because clients and lawyers both prefer more money to less, neither will find it easy to manipulate the other strategically.

In using money as a proxy for quality of service, lawyers and clients are hardly alone. 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 performance to money. The absolute size of a real estate agent's commission depends not just on whether a home is sold, but also on the price at which it changes hands.

Money often is the most convenient way of determining whether an agent exerted a superior effort, but it is hardly the only one. Some markets have developed highly specialized signals of performance. A professional athlete's compensation may be tied 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. A law professor's raise may reflect the number of articles published, the caliber of the journals the articles appeared in, or scores earned on student evaluations. A child's allowance may be based on the performance of chores to his or her parents' satisfaction. A parent's decision to keep paying college tuition may depend on a student's ability to achieve grades above a C.

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 also can 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 often 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 incentivizing agents and that, despite their deficiencies, are good enough to make RCBAAs better than

other compensation arrangements.

Given the conditions under which RBCAs are useful, it is apparent that the health care sector is a potentially fruitful field for their application. First, health care outcomes have enormous potential to vary. Risk-adjusted morality rates for particular procedures vary hugely across providers. Drug-related errors occur far more often in some hospitals than others. Vicious nosocomial infections beset some surgical patients but not others. To some extent, providers control these variations.⁷⁴ Doctors and cardiac surgery units with lower CAGB mortality and morbidity rates are more skilled and use superior procedures. 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 both particularly unwanted and hard to fake. At present, though, it cannot be denied that 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 now are employed. If suitable outcome indicators can be 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.⁷⁵

We will have far more to say about outcome measures below. For now, we wish

⁷⁴ See, e.g. Hannan, *supra* note 33, at 1677; D. R. Thiemann et al., *The Association between Hospital Volume and Survival after Acute Myocardial Infarction in Elderly Patients*, 340 *New England J. Med.* 1640 (1999); J. Chen et al., *Do "America's Best Hospitals" Perform Better for Acute Myocardial Infarction?*, 340 *New England J. Med.* 286 (1999); Millenson, *supra* note 33, at 188 ("A revealing study of intensive care units at thirteen sophisticated hospitals across the country illustrated the critical role played by 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 percent 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 percent greater chance of dying that would be expected. What caused this yawning gap was not technology, but 'the interaction and communication between physicians and nurses'").

⁷⁵ We are indebted to Mark Pauly for his observation that outcome-based compensation is the holy grail of reimbursement. See **. 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.

to make a few general, analytical points. First, good outcome measures tied to rewards will automatically encourage providers to implement new knowledge for patients' benefit. 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 example 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 payer 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 15 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, as already explained. But, 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 will be true in the health care sector. All conceivable outcome measures will 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 they more strongly motivate providers, including doctors, hospital administrators, and even benefit managers, 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 or improve quality levels. The flurry of safety initiatives that followed on the heels of the 1999 IOM report, *To Err is Human*, was a salutary development, but nothing prevented health care providers from adopting these programs or embracing CQI before the report came out. Nor does anything ensure that safety measures deployed recently 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.⁷⁶ Because competition 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.⁷⁷

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.⁷⁸

⁷⁶ See David Blumenthal and Charles M. Kilo, *A Report Card on Continuous Quality Improvement*, 76 *Milbank Quarterly* 625, 638 (1998).

⁷⁷ See Clark Havighurst, ** *Ga. L. Rev.* ** 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 Quarterly* 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, MCOs have emphasized relative cost, not relative quality, when assessing providers.

⁷⁸ Shortell et al., *supra* note 13, at 594. (“A national survey of U.S. hospitals in 1993 found that 69 percent had adopted and were beginning to implement some form of CQI program; of these, 75 percent 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.”); Blumenthal & Kilo, *supra* note 76, 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."⁷⁹ 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*?"⁸⁰ The administrators and physicians obviously cared about quality; they just did not think about it in the same terms as their patients. Further evidence of cloudy thinking was discovered in New York and Pennsylvania. After these states issued CABG mortality reports, doctors continued to refer patients to low-quality providers. At best, this bespeaks a fundamental disjunction between the standards referring physicians were actually employing and the standards they would have employed had they put themselves in patients' shoes. At worst, it shows that referring doctors were indifferent to the quality of care that surgeons performing CABG delivered.

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 anesthetists 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. It also is reflected in providers' willingness to offer unproven treatments to patients. 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 because individual providers have considerable discretion in their treatment decisions.⁸¹ Once a "new and improved" treatment becomes a widely used method of care, insurers typically 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 case, in which high dose chemotherapy followed by autologous bone marrow transplant ("HDC-

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.")

⁷⁹ Molly Joel Coye and Don E. Detmer, *Quality at a Crossroads*, 76 *Milbank Quarterly* 759, 762 (1998); Berwick, *supra* note 27, at **.

⁸⁰ See Burton, *supra* note 42, at A1.

⁸¹ See David A. Grimes, *Technology Follies: The Uncritical Acceptance of Medical Innovation*, 269 *JAMA* 3030 (1993).

ABMT”) was suggested as a treatment for metastatic breast cancer. HDC-ABMT is highly invasive, painful, dangerous, and expensive. After a single study suggested that 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.⁸²

In the 1990s, tens of thousands of women underwent HDC-ABMT. Further clinical research was difficult to conduct, because many women were unwilling to 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. Remarkably enough, a subsequent investigation revealed that the study supporting the promising nature of the procedure was fraudulent.⁸³ The aggregate price tag HDC-ABMT exceeded \$3 billion, and the social loss, including pain, loss of life, and dashed hopes of the patients, was far greater.

Inappropriate attitudes and incentives contribute 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.⁸⁴

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 hope that RBCAs will encourage providers to evaluate unproven treatments cautiously and objectively.⁸⁵

⁸² General Accounting Office, Health Insurance: Coverage of Autologous Bone Marrow Transplantation for Breast Cancer (GAO/HEHS-96-83); Gina Kolata and Kurt Eichenwald, *Business Thrives on Unproven Care, Leaving Science Behind*, N.Y. Times, Oct. 3, 1999, at A1.

⁸³ Thomas H. Maugh II, Breast Cancer Study A Fraud: Doctor Admits He Misrepresented Results of Sought-After Bone Marrow Therapy, *Austin American-Statesman* (Mar. 11, 2000), A1; **

⁸⁴ See Chassin, *supra* note 10, at 571.

⁸⁵ See, e.g., Leape, *supra* note * 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

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 they 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.⁸⁶ 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 consequences.⁸⁷ 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 understanding 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

provide. As we have seen, there is evidence that doctors in [FFS] practice recommend more operations than doctors in prepaid plans.”)

⁸⁶ See Chassin, *supra* note 10, at 585.

⁸⁷ See generally Troyen A. Brennan, *The Role of Regulation in Quality Improvement*, 76 *Milbank Quarterly* 709, 713 (1998); Burton, *supra* note 42, at A1 (noting opposition of Kentucky department of insurance, at the behest of Kentucky Hospital Association, to Anthem’s CABG report cards).

health care providers, and can actually trigger a profession-wide backlash.

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 have an interest in improving the accuracy and reliability of signals as well, for reasons already explained. Better signals would mean more accurate tracking, and more accurate tracking would mean 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. Some payers spend hundreds of millions of dollars a year reviewing providers' recommendations because they know that over-treatment is a serious problem in American medicine.⁸⁸ By placing providers 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.⁸⁹

Health care providers are good people. Yet, good character and honorable intentions have failed to improve the quality of health care and to bring down medical error rates. Evidently, these problems will not be solved until providers, patients, and payers "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."⁹⁰ RBCAs can create the community of interest that is required.

D. Some Criticisms of RBCAs

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

⁸⁸ Phil Galewitz, *Doctors to Have Final Say?*, <http://www.abcnews.go.com/sections/us/DailyNews/united991108.html> (visited Nov. 8, 1999) (reporting that United Healthcare, the 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 patients and providers. *See id.* (noting that the company "paid more money to scrutinize and deny questionable treatments than the practice saved.")

⁸⁹ See HealthWeek No. 202 (reporting that one vein removal clinic estimated that its guarantee "brought in ten to fifteen percent more patients").

⁹⁰ See Charles R. Buck, *Health Care Through a Six Sigma Lens*, 76 *Milbank Q.* 749, 751 (1998).

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.⁹¹ 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." In that year, a 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." The stated ground for this attack on RCBAs was that these arrangements "imply that successful outcomes from treatment are guaranteed, thus creating unrealistic expectations of medicine and false promises to consumers."

Although the Code frames the issue as an ethical principle, the amendment to Opinion 6.01 actually couples an empirical claim—that RBCAs imply guarantees of success—with a policy claim—that the best way of combating unrealistic expectations and false promises is by banning RBCAs. 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 RBCAs 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, RBCAs 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, RBCAs neither constitute false promises nor foster unreasonable expectations.

It is true, as we previously stated, that RBCAs 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 RBCAs can provide.⁹²

⁹¹ Council on Ethical and Judicial Affairs, American Medical Association, Code of Medical Ethics, rule 6.1 (1994).

⁹² 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

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 also are inconsistent with the long-standing imperative of Opinion 6.01, which is that “a physician’s fee for medical services should be based on the value of the service provided by the physician to the patient.” 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 the value that patients’ truly care about. FFS, capitation, and other payment arrangements are value-independent.

Even if RBCAs did have the potential to mislead patients, as the amendment to Opinion 6.01 contends, it would still be wrong as a policy matter to prohibit them. A disclosure requirement would suffice, and it would have the added advantage of ensuring that patients received 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 guaranteed and cannot be. It is difficult to see how patients can have “unrealistic expectations” when disclosure statements tell them that medical procedures are risky.

The AMA has often used claims of professionalism to oppose measures that would make the medical marketplace more competitive.⁹³ 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.⁹⁴ 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 came in when RBCAs were first making in-roads into the health care sector, in practice areas we identify below. 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 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 is why many professional agents, including doctors, commit themselves to ethical codes.⁹⁵ Because it is clear that doctors have specialized

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.”)

⁹³ See Paul Feldstein, ** 42 (1994) (“Medical associations have frequently used alarmed references to ‘ethical behavior’ whenever a proposed action might result in price competition.”)

⁹⁴ See *Federal Trade Commission v. American Medical Association*, ** F.2d ** (1975), aff’d by an evenly divided court, ** U.S. ** (19**).

⁹⁵ Agents’ routinely employ such “bonding” strategies to signal reliability. See Mark Hall, *Making Medical Spending Decisions* 183 (1997).

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 a fee-for-service 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 clearly that providers often deliver services that make patients worse off. Many medical procedures expose patients to health-related risks they need not have incurred.

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 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 the quality of which 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 ‘successful’” were “enormous.”⁹⁶ In the intervening three decades, the science of quality measurement has made great strides.⁹⁷ 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.”⁹⁸ In addition, treatment guidelines and critical pathways have been

⁹⁶ A.J. Culyer, *The Nature of the Commodity ‘Health Care’ and Its Efficient Allocation*, 23 Oxford Economic Papers 189, xxx (1971).

⁹⁷ Thomas Bodenheimer, *The American Health Care System—The Movement for Improved Quality in Health Care*, 340 New England J. Med. (1999).

⁹⁸ Mark R. Chassin, & Robert W. Galvin, *The Urgent Need to Improve Health Care Quality*, 280 J.A.M.A. 1000, 1001 (1998). See also David Blumenthal, *Health Care Reform at the Close of the 20th Century*, 340 New England J. Med. 1916 (1999). See also Expansion of Quality Measures (Q-SPAN),

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 indirect measures like these, called "surrogate endpoints," to test the efficacy of pharmaceuticals and medical procedures.⁹⁹

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. Full-blown clinical trials 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 that have not been tested clinically. 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, then, doctors already use outcome-based signals. They even loosely tie their compensation to some of these signals when they charge on a fee-for-

Agency for Health Care Policy and Research (Jan. 12, 1998), available on the internet at <http://www.ahrq.gov/qual/qspanovr.htm> (visited Sept. 25, 2000) (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 QIs), Agency for Healthcare Research and Quality (Mar. 1999), available on the internet at <http://www.ahrq.gov/data/qifact.htm> (describing efforts to make quality measures developed by government agencies available to private purchasers). AHCPR Publication Nos. 96-N020, 96-N021, 96-N022, 96-N023, and 96-N024

⁹⁹ See New drug, antibiotic and biological drug product regulations: accelerated approval, 57 Federal Register 13234-13242 (1992) ("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 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, instead of suffering the costs and delays associated with full-blown clinical trials. 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 J.A.M.A. 786 (1999); Robert Temple, *Are Surrogate Markers Adequate to Assess Cardiovascular Disease Drugs?*, 282 J.A.M.A. 790 (1999).

service basis. This is true, for example, of vaccinations.

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.¹⁰⁰ 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.”¹⁰¹

Yet, existing obstacles can be overcome and have been by some providers and payers. Fertility clinics which offer in-vitro fertilization (“IVF”) closely monitor their success rates. They do so because they have to. 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. Payers and accrediting agencies also have 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.”¹⁰²

Health care providers are not accustomed to collecting and analyzing performance data. Historically, their “job descriptions” have not required them to do this.¹⁰³ 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.

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

¹⁰⁰ When this paper was presented in draft, 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.

¹⁰¹ David M. Eddy, *Performance Measurement: Problems and Solutions*, 17 Health Affairs 8, 14 (1998).

¹⁰² Cary Sennett, *Moving Ahead, Measure by Measure*, 17 Health Affairs 36, 36 (1998).

¹⁰³ See Berwick, *supra* note *, at 437.

this reason is a classic example of the “nirvana fallacy” at work. 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 in identifiable situations than 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 fee-for-service medicine, with all the distortions that approach implies.¹⁰⁴ 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.”¹⁰⁵

c) *Cherry Picking*

Another common complaint about RCBA 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.¹⁰⁶

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 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.¹⁰⁷

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. Consequently, 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

¹⁰⁴ See William Sage, *Physicians as Advocates*, 35 *Houston L. Rev.* 1529 (1999).

¹⁰⁵ See Eddy, *supra* note 101, at 17-18 (1998).

¹⁰⁶ See HealthWeek No. 202 (at the Shady Grove fertility center in Gaithersburg, Md., “patients who have a poor prognosis are not offered [the refund] program.”); Moran, *Money-Back Guarantees*

¹⁰⁷ Prob mort literature.

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."¹⁰⁸ This insight can be generalized. Across the entire market for health care, services often are 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.¹⁰⁹ 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.¹¹⁰ 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 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 nor 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 payers 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

¹⁰⁸ Michael L. Millenson, *Demanding Medical Excellence* ** (1997).

¹⁰⁹ Cite Kritzer's articles here. See also Gross and Syverud, *Don't Try* (discussing success rates and zero-offer rates for various kinds of litigated claims).

¹¹⁰ See, e.g., *Merritt v. Faulkner*, 697 F.2d 761, 769 (7th Cir. 1983) (noting that inability of prisoner to obtain a private lawyer to represent him in a damages action indicated the probable merits of the case).

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. Only experience will enable one to determine the magnitude of the problems RBCAs generate, but the early results show solid quality improvements when RBCAs have been used.

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, IVF clinics offer RBCAs. Yet, two scholars have contended that to turn a profit on this basis, IVF clinics must raise their success rates substantially. To accomplish this, clinics must broaden the patient pools by recruiting couples whose odds of conceiving children naturally are far better than those of couples who currently purchase IVF.¹¹¹

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 who used the procedure before. 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. 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. Any technological breakthrough that makes a

¹¹¹ David C. Schmittlein & Donald G. Morrison, *A Live Baby or Your Money Back: The Marketing of in vitro Fertilization Procedures* 4 (August 7, 1998) (typescript) (criticizing money-back guarantees for in vitro fertilization).

medical procedure safer, more effective, or less expensive will change the patient mix. So will 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, again as long as patients are properly informed. The suggestion 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. A provider who knows that its compensation is tied to a particular measure of quality may focus on this measure to the exclusion of other considerations that also are important. In other words, if compensation is tied to improvements in measured areas but deterioration in unmeasured areas is not considered, havoc can result. 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.¹¹²

An example may help the reader appreciate this concern. Suppose we measure the time doctors spend with patients and reward doctors for meeting certain minimums, but we ignore the time nurses spend with patients and the time patients spend in waiting rooms. Doctors will then have incentives 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 or 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 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, it must be shown 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, and whether nurses will see 1 percent fewer patients than they should or 50 percent. 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

¹¹² See Eddy, *supra* note *, at 17.

does not warrant a prohibition on RBCAs. It merely warrants an attitude of caution and realism on the part of those who design and implement 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.¹¹³ 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 because RBCAs employ rather than ignore market forces provides no *a priori* reason for opposing them. The evidence shows that economic incentives influence health care providers.¹¹⁴ 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 reasonable to use scarce resources to treat patients whose chances of benefiting are poor. It is one thing to use computer programs like "prob mort" and APACHE, which evaluate patients' survival odds, to compare CABG providers' success rates. 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 long 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.

It is sad that health care has an 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. 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 collective head in the sand. As a result, a record number of Americans are uninsured, the cost of health care is extraordinary, and the quality varies tremendously and often is intolerably poor. Perhaps it is time to play the cards we have been dealt.

VI. RBCAS IN ACTION

¹¹³ 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 lobby for laws that would enable patients to sue managed care organizations (MCOs) for medical malpractice.

¹¹⁴ See *supra* note ** and accompanying text.

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.¹¹⁵ 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 three million employees, decided to negotiate performance contracts with HMOs. Unfortunately, none of the HMOs could report baseline rates for the frequency of three performance measures (prenatal care, cholesterol screenings, and diabetic retinal exams), and only a few could report such baseline data on another performance measure (childhood immunization rates). 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 (prenatal care, mammography, Pap smears, childhood immunizations, diabetic retinal exam, cholesterol screening and cesarean sections). Under the new contracts, HMOs that failed to meet the targets were required to forfeit a small portion of their fees.

Of the \$420 million in HMO premiums paid to the thirteen participants, less than \$8.5 million, about 2 percent of the total, was tied to performance. Despite the small amount of money at stake, over half of the HMOs met the targets for patient satisfaction with health plan, and three of those that did not still showed improvement compared to 1995. Eight HMOs met their goals for satisfaction with physicians, and five more barely missed.

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

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 premiums. The Central Florida Health Care coalition has proposed a similar plan, which pays providers more if they if they deliver better outcomes.¹¹⁶ Other employer groups are employing similar strategies.¹¹⁷

¹¹⁵ See Helen Halpin Schaffler, Catherine Brown, and Arnold Milstein, *Raising The Bar: the Use Of Performance Guarantees By the Pacific Business Group on Health*, 18 *Health Affairs* 134 (1999); Meyer *et al.*, *supra* note 59, at ** (describing the few employers who are using 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 the provision of standardized information that helps employers compare quality of service across plans and providers). ** do BHAG group as well.

¹¹⁶ Linda O. Prager, *Coalition Proposes Pay Based on Quality*, *Am. Med. News*, June 19, 2000.

¹¹⁷ See Thomas Bodenheimer & Kip Sullivan, *How Large Employers are Shaping the Health Care*

A recent proposal to address medical errors through selective contracting also relies indirectly on RBCAs. The Leapfrog Group, a consortium of employers, has pledged that its members will purchase health care services only from providers who make certain specified investments in error reduction. 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.¹¹⁸ Governmental programs such as Medicaid and the Children's Health Insurance Program are starting to include performance incentives in their contracts.¹¹⁹ Several pharmaceutical companies have offered money-back guarantees on particular products.¹²⁰

Some isolated health care providers also have begun using RBCAs. We are aware of a small number of physicians and clinics that offer money-back guarantees for vasectomy reversals, in-vitro fertilization, vein stripping, and laser vision correction.¹²¹ These examples are found in circumstances where insurance is typically not available, and patients must pay for procedures themselves. All involve what would be commonly classified as "elective" (*i.e.* non-emergency) procedures. All have a determinate endpoint, which can be determined within a reasonable amount of time and at reasonable expense. The probability of the endpoint being attained is at least in part

Marketplace, 338 New Engl. J. Med. ** (1998).

¹¹⁸ See Business Roundtable Press Release, *The Business Roundtable Launches Effort to Help Reduce Medical Errors Through Purchasing Power Clout*, <http://www.brtable.org/press.cfm/464>.

¹¹⁹ Kevin B. Piper & Jeremy J. Alberga, *Performance Incentives for Medicaid Health Plans*, SCHIP Programs, BNA Health Plan & Provider Nov. 15, 2000.

¹²⁰ See, e.g., Pauline Anderson, *Clozapine Comes With Money-Back Offer*, *The Medical Post* (May 16, 1995), <http://www.mentalhealth.com/mag1/p51-cloz.html> (visited Jan. 15, 2000) (reporting that Sandoz Canada, Inc. promised reimbursements if "patients with treatment-resistant schizophrenia" had to be removed from clozapine within six months, and that Merck-Frost has offered reimbursements if patients put on finasteride (Proscar) require surgery after one year of medical therapy); Higher Strength Rogaine Available, WTNH-TV News Online Consumer Team (Sept. 18, 1998) <http://www.wtnh.com/news/health/health091898.html> (visited Jan. 15, 2000) (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").

¹²¹ See e.g., A. Trafford, *Medicine's Money Back Warranty*, *Washington Post* (Aug. 5, 1997), Z06 (reporting that 60 or more in vitro fertilization clinics offer refunds to patients); Claudia Moran, *Money-Back Guarantees: Some Doctors Offer Them, But are They Good Medicine?*, *The Kansas City Star*, <http://www.kcstar.com/item/pages/fyi.pat,fyi/30dad1f5.312.html> (visited Feb. 25, 2000) (discussing refunds offered by fertility clinics and doctors who perform vasectomy reversals); Clinic guarantees reversal of vasectomies, pregnancies [source missing] (Minnesota fertility clinic pledges to give couples a \$6,000 credit to pay for a second fertility technique "if its vasectomy reversal failed to yield a pregnancy within a year"); Doctors in other fields also have begun to explore this terrain. See *Health Week No. 202*, <http://www.pbs.org/healthweek/202.htm> (visited Jan. 9, 2000) ("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 Visual Freedom Center promotional materials (promising 20/20 vision or your money back) (copy on file with authors).

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

affected by the skill of the provider, and the endpoint is not subject to manipulation by either the provider or the patient. The identified services are provided by an individual provider or a small group of providers whose economic interests coincide, 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. These examples validate the analytical model of RBCAs contained in Part IV, and demonstrate that there is nothing inherent in health care that 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. When designing the payment structure, we must first get clear what we want providers of CABG to accomplish. For the sake of simplicity, we will assume that only the following objects 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 while in the hospital; and returning the patient to a defined functional status.

We must also decide how extensively we wish to micro-manage the arrangements that bear on these goals. For example, we could separately hire and incentivize the surgeon, the anesthesiologist, the hospital, the nurses, and the rest of the providers. Or, we could engage a general contractor (GC), e.g., 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 who is willing to make a referral. Can we trust our general practitioner to select the right GC? Studies have shown that the referral market does not always select for quality and that the conventional wisdom concerning good and bad providers can be mistaken. 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

satisfied, \$300 if three are met, and so on.¹²² This gives our general practitioner 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.

Having been routed to a GC we have reason to trust, we then explain our goals, acquire the GC's commitment to meet them, and offer the following fee: (1) \$15,000 for the surgery itself; (2) another \$10,000 for being discharged alive; (3) another \$10,000 if conditions (1) and (2) are met and discharge occurs within five days; (4) another \$10,000 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 the patient attains the specified functional status within a certain period after discharge. If all goes well, the total payment for the surgery will be \$55,000. If the operation fails, only \$15,000 will be paid.

In this example, the fee arrangement is only partly result-based. The \$15,000 payment is guaranteed. The reason for the non-contingent portion is that the GC does not control all of the variables that affect the likelihood of achieving our goals. Nature also comes into play. Consequently, little is gained by requiring the GC to shoulder all of the outcome-related risk, and forcing the GC to bear a risk that he or she does not control might greatly increase the price.

The example also is set up as a first-party payment. This is unrealistic but, fortunately, not essential. A third-party payer could compensate both the primary care physician and the GC. As long as the payment conditions are tied to the patient's well being, both providers will have incentives to care for the patient properly. The source of the reward is immaterial.

A third-party payer might want to alter the proposed RBCA in many ways. 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 also could tie the GC's bonus to the mortality rate for a patient group, thereby helping the doctor diversify uncontrollable variance risks. The payer might also vary the premium for short length of stay by offering \$1000/day for every day under ten, instead of an all-or-nothing lump sum. An HMO also might 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 who handle post-surgical rehabilitation.¹²³ They might even assemble CABG clinics where they could control the entire process, from admission to discharge.

¹²² Here and throughout, we caution readers against putting too much emphasis on specific numbers and "goals." Our interest is in the structure of RCBAs, not the specifics.

¹²³ See also 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").

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 levels, eye examinations, mammograms, and other preventive procedures.¹²⁴ Influenza is one of the leading causes of death in the United States and is particularly dangerous to the elderly, but “only 52 percent of people age 65 and over received the [flu] vaccine in 1993.”¹²⁵

Presumably, much of the responsibility for under-utilization 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 take too long to get through. 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 languages that their patients speak.

We do not know whether all these causes are important, and we cannot assign them relative weights. Nor do we know how these issues can best be dealt with, individually or as a group. However, we do know that businesses in other sectors of the economy find ways to transact with customers despite problems like these. 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. 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 delivered in less than an 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 can increase the likelihood that valuable preventive services will be delivered.¹²⁶ Providers need only have the will to learn the methods and to implement them. RBCAs can supply the needed motivation by rewarding entrepreneurial providers for bettering

¹²⁴ See Chassin, *supra* note * 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.”)

¹²⁵ The Challenge and the Potential, p. 4.

¹²⁶ Over a 3-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 piggyback[ing] vaccination messages on telephone company mailers.” The Challenge and the Potential, p. 5.

historical utilization rates. For example, a health plan with 200,000 children enrolled and a historical vaccination rate of 150,000 (75 percent) 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.

An HMO might even 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. Nurses and paramedics can provide them efficiently.¹²⁷ The only role that doctors' offices need to play is administrative. They need to know which of their patients are hitting thresholds that indicate needs 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, the entrepreneur's compensation would be pegged in some fashion to utilization rates. Presumably, compensation would increase at the margin rather than decline. If half of all seniors get flu shots without being coaxed, there is no reason to pay an entrepreneur a premium for reaching half the population. Moving from fifty to seventy five percent is an accomplishment, however, and reaching the last twenty-five percent 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 size 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 already is occurring in many places. Large employers hold mass inoculation clinics at their workplaces so that all of their employees receive influenza vaccines. Plaintiffs' attorneys send mobile x-ray facilities to job sites and union halls where persons with asbestos-related diseases may be found. Pharmacies give blood pressure tests. Eye exams can be had at shopping malls. If preventive care is separated from acute care and chronic care and 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

¹²⁷ As far back as the 1970s, it was clear that physician assistants could handle about 75 percent of the problems most often encountered in the practice of family medicine. Feldstein, *supra* note *, at 48.

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 in one place groups of patients who extremely sick and frequently immuno-compromised. Others are attributable to poor surgical techniques.¹²⁸ 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.¹²⁹

It is unclear what percentage of these infections is avoidable. 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. 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 them when these infections occur.

D. Medical Errors

RBCAs can be employed to address medical errors directly or indirectly. When compensation is tied to the delivery of error-free services, an RBCA will create a direct incentive to eliminate errors. An indirect incentive will exist 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 IOM’s 1999 report noted:

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

¹²⁸ F. Farber et al., *Relation between Surgical Volume and Incidence of Postoperative Wound Infection*, in Luft et al. 184-185 (1990).

¹²⁹ See Hyman, *supra* note *, at **.

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.¹³⁰

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 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, they would still be crippled by their inability to make timely adjustments as circumstances change. Only informed and motivated providers can create and maintain error-reducing systems, and they will be more likely to do so when this advances 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. Minorities experience higher rates of heart disease, stroke, hypertension, and diabetes. They also receive fewer medical interventions, including both preventive and acute care. These disparities are pervasive and long-standing.

Recently, the Department of Health & Human Services (HHS) forthrightly declared the intention of the United States government to eliminate health-related differences between majority and minority communities within a decade.¹³¹ Unfortunately, the report said little as to how this might be done. RBCAs could bring the dream of equal access to basic services closer to reality. As outlined in Part IV.B., entrepreneurs could be offered 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. There is compelling evidence that the end-of-life care patients receive is not what they want. Often, such care fails to ensure adequate pain control, robs patients of their autonomy, and simply extends the dying process.

¹³⁰ See IOM, *To Err*, *supra* note 5, at 3.

¹³¹ See U.S. Department of Health & Human Services, *Initiative on Eliminating Racial and Ethnic Disparities*, <http://www.raceandhealth.hhs.gov>.>

Scholars have identified durable powers of attorney, living wills, malpractice liability, better training, and periodic disciplinary proceedings as means of addressing these problems, yet these approaches have enjoyed limited success.

RBCAs have some potential to improve end-of-life care by rewarding providers for giving terminally ill patients the services they desire. Many such patients care greatly about the manner in which they are accommodated 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 for end-of-life care to enable 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 only available several months in the future, personnel are rude or indifferent, bills are incomprehensible, records are not available to all involved providers so procedures have to be repeated, and waits of several hours are routine. RBCAs, if appropriately crafted, can create incentives for providers to ensure that patients are seen promptly, and they are satisfied with the care they receive. Indeed, several providers of "urgent care centers" provide a guarantee that patients will be seen within thirty minutes of arrival, and "disease-specific providers" (e.g., cancer care centers) are seeking to offer integrated services in a manner more convenient for patients.¹³²

VII. 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. How we pay health care providers influences the quality of care we receive. Historically, payers 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 all to the good 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.

¹³² See Regina Herzlinger, *Market Driven Health Care* (1999).

Result-based compensation is not a panacea for the agency and informational problems that plague the health care system. 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 can be answered on theoretical grounds. There is no substitute for real-world experimentation on such matters.¹³³

We do not expect RBCAs ever 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, new contingent fee arrangements are still coming on-line. The potential of RCBAs to improve the quality of service has not been exhausted even there.

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 first-rate care will be delivered 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.¹³⁴ When ideal insurance is employed, “medical care [would] always be undertaken in any case in which the expected utility exceeds the expected medical cost.” Almost forty years later, the time may finally be ripe to put Arrow’s insight into action.

¹³³ As noted previously, in the commercial marketplace, express warranties are routinely given on some products and not on other products. When warranties are provided, 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. In like fashion, tires are warranted for tread life, and not consequential damages from a blow-out. Accordingly, one should not expect RBCAs to “take-over” the entire market for health services, and it is hardly a critique of RBCAs that they are not a magic bullet to the agency problems which currently exist in health care.

¹³⁴ Kenneth Arrow, *Uncertainty and the Welfare Economics of Health Care*, 26 *Am. Econ. Rev.* ** (1963).

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 percent 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 percent.”¹³⁵
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 percent filled a prescription for an antibiotic.”¹³⁶ Similarly high prescription rates were reported for pharyngitis and rhinitis, even though antibiotics have no benefit for people with these conditions.¹³⁷
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.”¹³⁸
4. “Among hospitalized elderly patients with depression who were discharged on antidepressant medication, 33 percent 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 percent 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.”¹³⁹
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 percent of adults with [] diabetes had undergone dilated eye examination in the past year (66 percent in the past two years), and 61 percent had undergone any type of eye exam in the past year (79 percent in the past two years). Twenty percent of diabetics had no eye exam in the past two years.”¹⁴⁰
6. “A study of seven managed care organizations revealed that about 16 percent of hysterectomies performed during a one-year period from 1989 to 1990 were

¹³⁵ Schuster *et al.*, *supra* note *, at 521-527.

¹³⁶ *Id.* at 527.

¹³⁷ *Id.* at 528, Table 2.

¹³⁸ *Id.* at 528, Table 2.

¹³⁹ *Id.* at 527.

¹⁴⁰ *Id.*

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- carried out for inappropriate reasons. An additional 25 percent were done for reasons of uncertain clinical benefit.”¹⁴¹
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 percent had received it within 12 months.”¹⁴²
 8. A study published in 1995 found that 9.4 percent of hospital admissions for patients suffering pneumonia were inappropriate.¹⁴³
 9. 27% of tube insertions for ear infections were inappropriate, and 32% were equivocal.¹⁴⁴
 10. From 5% to 35% of women treated at 6 HMOs did not receive all 7 recommended routine prenatal screening tests.¹⁴⁵
 11. Only 41%-54% of patients with chronic uncomplicated hypertension had their hypertension controlled.¹⁴⁶
 12. Among patients with major depression who received antidepressant medications, [only] 78% received dosages within the recommended ranges.¹⁴⁷
 13. For a random sample of patients at 3 hospitals, 14% of CABG surgeries were found to be inappropriate and 30% were equivocal.¹⁴⁸
 14. Although “[a]spirin therapy reduces short-term mortality in patients with suspected heart attack by 23%,” a study of 7917 Medicare patients hospitalized with heart attack found that only 64% received aspirin within the first 2 days of hospitalization.¹⁴⁹ Likewise, although heart attack patients who receive aspirin therapy post-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 not prescribed aspirin.¹⁵⁰
 15. Thrombolytics reduce post-heart attack mortality by as much as 25%, yet studies found that 30%-57% of patients who were candidates for treatment with thrombolytics did not receive them.¹⁵¹
 16. Although “[c]alcium channel blockers should not be given to [heart attack] patients with certain conditions,” 21% of “795 [Medicare] patients with sleep
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¹⁴¹ Id.
¹⁴² Id. at 535.
¹⁴³ Id. at 528, Table 2.
¹⁴⁴ Id.
¹⁴⁵ Id.
¹⁴⁶ Id. at 538, Table 3.
¹⁴⁷ Id. at 540, Table 3.
¹⁴⁸ Id. at 542, Table 3.
¹⁴⁹ Id. at 544, Table 3.
¹⁵⁰ Id. at 544, Table 3.
¹⁵¹ Id. at 546, Table 3.

patients with certain conditions,” 21% of “785 [Medicare] patients with clear contraindication”¹⁵²

17. Beta blocker therapy can reduce post-heart attack mortality by as much as 25%, yet of 2,976 patients who were ideal candidates for treatment with beta blockers, only 45% received them.¹⁵³ In another study of 3,737 Medicare patients, only 21% received beta blockers within 90 days of discharge, and those who did had an adjusted mortality rate 43% below those who did not.¹⁵⁴
 18. A study of carotid endarterectomy surgery, which opens blocked carotid arteries, found that 32% of 1,302 procedures were inappropriate and 32% were equivocal.¹⁵⁵
 19. 14% of 182 deaths in hospitals that resulted from stroke, pneumonia, or heart attack were causally linked to inadequate diagnosis or treatment and could have been prevented.¹⁵⁶
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¹⁵² Id. at 548, Table 3.

¹⁵³ Id. at 548.

¹⁵⁴ Id. at 549, Table 3.

¹⁵⁵ Id. at 550, Table 3.

¹⁵⁶ Id. at 554, Table 3.

Table 2	
1.	Between 44,000 and 98,000 Americans die each year as a result of medical errors committed in hospitals. Even the lower estimate makes hospital-related errors the 8 th leading cause of death, ahead of motor vehicle accidents (43,458), breast cancer (42,297) and AIDS (16,516).
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.
3.	In 1993, medication-related errors caused approximately 7,000 deaths, 1000 more deaths than resulted from injuries sustained in the workplace that year. Annually, medication errors account for one out of 131 outpatient deaths and one out of 854 inpatient deaths. ¹⁵⁷
4.	A study of “two prestigious teaching hospitals” concluded that preventable adverse drug effects beset approximately two of every one hundred patients admitted, “increas[ing] hospital costs by \$4,700 per admission or about \$2.8 million annually for a 700-bed 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.” ¹⁵⁸
5.	The Harvard Medical Practice Study found that adverse events occurred in 3.7 percent of all hospitalizations, that half of these errors were preventable, and that a quarter were caused by negligence. “13.6 percent [of all adverse events] resulted in death and 2.6 percent caused permanently disabling injuries.” ¹⁵⁹ Studies of hospital admissions in Colorado and Utah yielded similar findings.
6.	A 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 percent) “an inappropriate decision was made when, at the time, an appropriate alternative could have been chosen.” ¹⁶⁰
7.	“In an 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.”
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

¹⁵⁷ Id.

¹⁵⁸ IOM, *To Err, supra* note 7, at 2.

¹⁵⁹ *Id.* at 25.

¹⁶⁰ *Id.* at 26.

	<p>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 percent—one injury for each 33 intensive care admissions.”¹⁶¹</p>
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¹⁶¹*Id.* at 28-29.

Table 3

Type of Service	Frequency
Death from Anesthesia	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%