Commentary

Comment on de Brantes, Rastogi, and Painter: Reducing Avoidable Complications in Patients with Chronic Diseases: The *Prometheus* Approach

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Since the Institute of Medicine's publications (1999, 2001) that highlighted major deficiencies in the quality of health care in the United States, extensive efforts have been made to improve patient care. Legislation was passed that requires reporting of compliance with national performance measures (Public Law 109–171, 2006), guidelines were developed by specialty societies to provide clinical direction (Agency for Healthcare Research and Quality 2011) and pay-for-performance programs were underwritten by hospitals and insurers (Lindenauer et al. 2007). There is little evidence to suggest that these initiatives substantially improved the overall quality of patient care. Meanwhile, health care costs continue to spiral out of control, threatening the stability and welfare of our entire economy.

HSR's December Theme Issue on Payment Reform addresses "an area that will undoubtedly be of critical importance as the nation gears up to implement one of the largest American health reform initiatives in history" (Fraser, Encinosa, and Baker 2010). In this issue, de Brantes, Rastogi, and Painter (2010) attempt to demonstrate that the recently developed *Prometheus* payment system can make a substantial, relatively painless contribution to quality improvement and cost containment by creating strong financial incentives for health care providers to reduce costly potentially avoidable complications (PACs). Although implementation of the *Prometheus* payment system in several pilot sites was funded by the Robert Wood Johnson Foundation in February 2008 (Robert Wood Johnson Foundation 2011), analyses presented in this paper utilized only historical data from a large claims data set and projections by other investigators.

Based on the assumption that a prototypical practice achieved target complication rates, the authors projected a net gain of “close to U.S.\$20,000” for this practice if the *Prometheus* payment system were employed. While not a clinically achievable end-point, the authors identify that the elimination of all PACs from this prototypical practice would have a “total calculated margin opportunity for the practice [that] is close to U.S.\$600,000.” From their analysis of this single prototypical practice, the authors concluded that “the incentives in the *Prometheus* Payment appear to create the impetus for reduction in PACs.” In their abstract, they extended their findings to suggest that “total costs associated to the six chronic conditions studied could decrease by 3.8 percent” as a result of nationwide adoption of *Prometheus* payment reform.

A careful examination of this paper calls all of these conclusions into question. It also exposes several unintended consequences that are likely to undermine efforts to address the current health care crisis in the United States. These unintended consequences arise from an acceptance of three fallacies: the fallacy of the prototypical practice, the fallacy of arbitrary standards, and the fallacy of something for nothing.

THE FALLACY OF THE PROTOTYPICAL PRACTICE

To assess the potential benefits of their system, the authors constructed a “prototypical” practice that cared for six chronic conditions that were distributed exactly as they were in the entire claims database. This “prototypical” practice had 115 patients with chronic obstructive pulmonary disease (COPD), 250 patients with diabetes, 22 patients with congestive heart failure (CHF), 161 patients with asthma, 89 patients with coronary artery disease (CAD), and 364 patients with hypertension. For each condition, they assumed implementation of the *Prometheus* payment system reduced the cost of PACs to an arbitrary reference standard based on previously published literature. They then compared the practice’s hypothetical revenue under the *Prometheus* payment system to its actual revenue under the existing fee-for-service payment system and found that revenue was U.S.\$19,196 higher with *Prometheus* payment.

However, a more detailed analysis of the hypothetical experience of the prototypical practice reveals that adoption of the *Prometheus* payment system

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resulted in a reduction in revenue for three of these six chronic conditions. According to table 4 in de Brantes, Rastogi, and Painter (2010), a switch to *Prometheus* payment would result in a net loss in revenue of U.S.\$57,558 caring of 547 cases of CHF, asthma, and hypertension. The observed net revenue increase resulted mainly from a net gain of U.S.\$73,311 from the care of 204 patients with COPD and CAD, and a small additional net gain of only U.S.\$3,472 for 250 patients with diabetes.

Few practices will have case-mix distributions that parallel this proposed prototypical practice. Small shifts in case-mix from COPD and CAD to CHF, asthma, and hypertension could result in a net decline in total operating margin for practices switching to the *Prometheus* payment system. If the authors' projections are correct, adoption of the proposed new payment system would create a strong financial incentive for practices to focus on attracting cases with COPD and CAD and avoiding cases with CHF, asthma, and hypertension. This unintended consequence would be harmful to patients with specific common chronic diseases and to the health care system.

A further consideration is the interaction of multiple chronic conditions in the same patient. The "silo" approach of looking at each chronic medical condition as an isolated entity ignores the interaction and synergism of disease processes that may increase resources and services necessary for effective patient management. Selected treatments may be duplicated within each silo of care and potentially result in excess estimates of cost. Chronic medical conditions cluster together in many patients and will require a multivariate model to more accurately predict costs. The multiplicity of chronic diseases together truly identifies that simulations that sum the effects of individual conditions must be viewed with caution and suspicion.

THE FALLACY OF ARBITRARY STANDARDS

The authors selected an arbitrary reference standard and based their entire analysis on the assumption that implementation of the *Prometheus* payment system would enable practices with higher-than-standard rates of PACs to achieve their reference level of performance. No empirical or theoretical justification is given for their calculating "potential savings if PAC rates for states above the second decile [the best performing 20 percent] were reduced to second decile levels." The authors do not compute potential savings if the rate of PACs were reduced to deciles higher than their reference standard, but it appears from their Table 1 that their "prototypical" practice would

experience a decrease in revenue if they adopted *Prometheus* payment and had a PAC rate in the fourth decile instead of the second.

The authors justify their choice of a reference standard by citing the results of a systematic literature review they performed “to understand the percentage of PACs that might be avoided in clinical settings for the six chronic conditions studied, and to determine whether current observed rates of PACs could be reduced nationally.” They note that the potential for reductions in PACs was “significantly greater than what we used in our estimations.” However, the studies they cite were narrowly focused on reducing specific PACs using disease management techniques that add to the cost of routine care. Neither the applicability of these techniques to the full range of PACs nor the added costs of new disease management programs needed to reduce PAC rates were estimated and incorporated into analyses of adopting the *Prometheus* payment system. Furthermore, the literature they cite included studies from “very varied clinical settings.” Many were conducted in other countries such as Germany and United Kingdom where delivery systems and financial incentives are different from the United States. Even de Brantes, Rastogi, and Painter (2010) concludes that: “there is no evidence that the results achieved in these settings could be replicated widely across the U.S. delivery system.”

In justifying their use of the second decile of non-risk-adjusted rates of PACs among the 50 very diverse states as a reference standard, de Brantes, Rastogi, and Painter (2010) notes that “given the relative homogeneity of the population studied, the variation in average PAC rates by state cannot be explained away by differences in population mix.” Inclusion of beneficiaries of a single private insurance plan who all are under age 65 raises serious questions about the applicability of the study to the entire population of individual states or of the United States as a whole. In reality, observed differences in rates of PACs among states are likely due, in large part, to clinically important intrinsic differences of chronic disease frequency and availability of health services among the states themselves (Nash 2010). Furthermore, they make no reference to differences among states in potential risk factors such as weather conditions and occupational exposures that may affect rates of PACs. To the extent that differences in states’ unadjusted rates of PACs are the product of intrinsic risk factors that are unaffected by the quality of clinical care, use of the authors’ arbitrary reference standard will make it extremely difficult for physicians practicing in states with high intrinsic patient risks to achieve performance thresholds required from adoption of the *Prometheus* payment system.

Even if an unadjusted second decile performance standard were achievable throughout the United States, reductions in PAC rates will require time. In patients with chronic conditions, even the occurrence of acute PACs often is influenced by the quality of care delivered over many prior years. Projections that assume rapid attainment of reference standards that do not incorporate realistic schedules of new performance objectives will subject many providers who implement quality improvement initiatives to years of financial losses before these initiatives come to full fruition. Acceptance of arbitrary and unrealistically optimistic performance standards forces providers either to suffer severe economic losses or to find ways to “game the system.” Neither of these unintended consequences will benefit individual patients or the health care system.

THE FALLACY OF SOMETHING FOR NOTHING

Although de Brantes, Rastogi, and Painter (2010) focuses virtually all its attention on potential financial benefits from reductions in rates of PACs, it acknowledges the absence in its projections of any estimate of “the expenses that would likely be incurred by the [prototypical] practice in order to improve the clinical management of patients” sufficiently to achieve the reductions in PACs on which these financial benefits depend. However, other studies have demonstrated that these expenses could be substantial, and potentially greater than projected savings. For example, the authors cited McGlynn et al. (2003) in which chronic care patients received only 56.1 percent of recommended care. Saydah, Fradkin, and Cowie (2004) found that only 7 percent of patients in a commercial insurance database received pharmacologic management of diabetes, hyperlipidemia, and hypertension that met clinical standards endorsed by the American Diabetes Association. My own published research even in inpatient acute surgical care (Fry et al. 2010a, 2011; Pine et al. 2010) also has found strong associations between high complication rates and lower cost hospitals. There will be expenses of implementation of rigorous patient management programs, expenses of additional services that need to be provided, and there will be lost revenues from fees that are avoided. The complexity of anticipated and unanticipated consequences from these interactive multiple variables mean that all simulations must be validated by demonstration projects.

The projected U.S.\$19,196 increase in revenue for the authors’ “prototypical” practice and their projected 3.8 percent savings to the health

care system as a whole depend on providers improving care to meet an ambitious reference standard without incurring any additional costs to do so. Increased costs to practices investing in reengineering current practice patterns and adding services required to reduce PACs will increase losses associated with three of the six conditions studied, eradicate savings from the improved care of diabetes, and erode, if not eradicate, any savings from improved care of the remaining two conditions. Based on these projections, providers with PAC rates that already are lower than reference standards can profit by adopting the *Prometheus* payment system. On the other hand, providers who adopt this system and attempt to profit by reducing average rates of PACs to recommended levels are likely to suffer severe financial penalties.

ABANDONING THE MYTH OF THE EASY FIX

The authors' conclusion that adoption of *Prometheus* payment will create a strong financial incentive for providers to do what it takes to reduce rates of potentially avoidable complications rests on the premise that rates of PACs can be decreased sufficiently to generate substantial net savings for providers who adopt this payment system. This premise is supported by their contention that a prototypical practice could increase its revenue by nearly U.S.\$600,000 from the savings if all PACs were eliminated. However, they provide no convincing evidence that adoption of the *Prometheus* payment system will achieve even the U.S.\$19,196 in increased revenue if PAC rates in the prototypical practice were reduced to those of the *Prometheus* reference population. It is unclear why the complex *Prometheus* payment system would provide a more effective incentive for reducing PAC rates than a straightforward pay-for-performance system that based bonus payments on calculated savings from reduced rates of PACs.

There are strong political and emotional reasons for clinging to the myth that out-of-control health care costs can be contained by implementing a payment system that used savings from improved quality to reward providers who delivered cost-effective care. Like the authors and many others in health care policy, I found the idea that health care costs could be controlled mainly by improving clinical quality extremely attractive. Unfortunately, the promise of vast savings from reduced complications has remained elusive, and the evidence presented by de Brantes, Rastogi, and Painter (2010) does little to support this conclusion.

The real challenge in designing a new bundled payment system is not only to create incentives to reduce PACs, but it is to create incentives to reduce inefficient care while maintaining or improving clinical quality. Health care providers do not want to harm their patients. The vast majority are dedicated to providing the best care possible. Advanced disease, poor patient compliance, and restricted patient access to needed health care services are factors in addition to potentially suboptimal care by providers that influence rates of occurrence of PACs. However, the relative contribution of each of these factors to the overall incidence of PACs remains uncertain. Blanket statements about the potential benefits from improved prevention and attendant projections of financial savings in the outpatient management of chronic medical diseases are not supported by objective studies.

The authors' concept of bundling the total costs of routine care with warranties that shift financial risk associated with PACs to providers is consistent with payment reforms advocated by the Medicare Payment Advisory Commission (Hackbarth, Reischauer, and Mutti 2008), by my research team (Fry, Pine, and Pine 2010b), and certainly by others (Casale et al., 2007). But from the data presented by de Brantes, Rastogi, and Painter (2010), the *Prometheus* payment system appears to shift risk to providers without providing adequate compensation to cover the costs associated with managing that increased risk. In contrast, properly designed episode-based payment systems carefully balance realistic risk-adjusted global fees with warranties, direct payments, and outcome-based restrictions on financial rewards for good economic stewardship to guard against under-use of essential services. Global payments can provide an incentive for good economic stewardship and health care warranties can protect against underutilization and rewards high-quality care. However, the risk-adjusted global fee must be sufficiently large to cover the costs of services associated with high-quality care and the risk-adjusted warranty must be calibrated to achievable results. To be successful in containing costs without compromising quality, an episode-based global payment system must be fair to payers, providers, and patients and not overly disadvantage one to benefit another.

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