Value-Based Insurance Design

By abandoning the archaic principle that all services must cost the same for all patients, we can move to a high-value health system.

by Michael E. Chernew, Allison B. Rosen, and A. Mark Fendrick

ABSTRACT: When everyone is required to pay the same out-of-pocket amount for health care services whose benefits depend on patient characteristics, there is enormous potential for both under- and overuse. Unlike most current health plan designs, Value-Based Insurance Design (VBID) explicitly acknowledges and responds to patient heterogeneity. It encourages the use of services when the clinical benefits exceed the cost and likewise discourages the use of services when the benefits do not justify the cost. This paper makes the case for VBID and outlines current VBID initiatives in the private sector as well as barriers to further adoption. [*Health Affairs* 26, no. 2 (2007): w195–w203 (published online 30 January 2007; 10.1377/hlthaff.26.2.w195)]

ONE OF THE FUNDAMENTAL TENETS of clinical medicine is *primum non nocere:* "First do no harm." In today's complex health care environment, this principle should be extended beyond the clinician-patient relationship to health care financing. Implementing it is a challenging task in both clinical and financial settings for a number of reasons.

On the clinical side, most if not all interventions intended to improve health entail some risk of an adverse event. Clinicians must weigh these risks against the benefits when determining the appropriate course of treatment. In health care financing, there is often a similar yet underappreciated trade-off between cost containment initiatives and access to effective medical services. Efficiency would promote the use of "valuable" interventions whose expected net clinical benefits justify the associated expenditure and limit access to those services whose costs exceed the expected clinical gain. This is the fundamental paradigm of cost-effectiveness analysis.

In the status quo, cost-sharing amounts are generally constant for each specific service, although the clinical values of these services are extremely disparate and likely depend upon who receives them. With some exceptions for preventive and screening services, the level of cost sharing is seldom related to the potential benefit each service might provide.

Ideally, uniform patient copayments would discourage use of low-value care

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DOI 10.1377/hlthaff.26.2.w195

only. This assumes, however, that patients can distinguish between high- and low-value therapies and respond to copayments accordingly. Yet a large body of evidence demonstrates that higher copayments reduce the use of both highly valuable and marginally valuable health care services and may result in worse health outcomes.[1] In fact, the literature demonstrates that the adverse consequences of higher copayments can arise at even relatively modest levels.[2]

In response to the likely adverse clinical effects of the current trend toward higher copayments, Mark Fendrick and colleagues have proposed the Value-Based Insurance Design (VBID) approach, which advocates that copayment rates be set based on the value of clinical services (benefits and costs)—not exclusively the costs.[3] In this setting, cost sharing is still put to use, but a clinically sensitive approach is explicitly adopted to mitigate the adverse health consequences of high out-of-pocket spending.[4] Recognizing that the value of an intervention varies across patients, more-efficient resource allocation can be achieved when the amount of patient cost sharing is a function of the value that the specific service provides to the specific patient. Subsequent literature supports this basic idea.[5]

VBID: Economic Theory

Economic theory suggests that the value of insurance arises because it allows people to alleviate the financial risk associated with the risk of illness and because it allows those who become ill to afford care they would otherwise not be able to purchase.[6] However, by lowering the cost of care to patients at the point of service, insurance encourages use of services whose clinical benefits might not justify the total cost. This excess consumption is commonly termed "moral hazard" and reduces the value provided by the health care system.[7]

The motivation behind the use of cost sharing to allocate medical services and contain costs follows standard economic theory, which presumes that consumers will use only those services whose benefit exceeds the cost to them. By increasing costs at the point of service, moral hazard can be reduced and value increased. The optimal amount of cost sharing reflects a balance between the risk and income-transfer effects of insurance against the moral hazard costs.

VBID relaxes the questionable assumption that when faced with cost sharing, consumers will balance costs and clinical value optimally. The underuse of valuable clinical services when a person is faced with even modest copayments likely represents a range of information issues, including how people understand their medical care, how they make decisions amid uncertainty, and how they make trade-offs over time.[8]

Because consumers' behavior might not follow standard assumptions, targeted reductions in the level of cost sharing can increase value by reducing underuse (for example, reducing cost sharing for beta-blocker therapy for patients with congestive heart failure [CHF] can increase beta-blocker adherence and therefore value in the health care system).

Experience With VBID

Although the theory of VBID argues for cost sharing that varies by individual, the administrative costs of implementing such a system, communication issues, and current information requirements make such a system impractical for widespread adoption. However, employers are actively experimenting with variations of VBID, and these initial efforts merit further consideration.[9]

■ **Two approaches.** In practice, there are two general approaches to VBID targeting. The first approach simply targets clinically valuable services for copayment reduction (for example, beta-blockers). Although these services provide substantial benefit for some users (such as patients with CHF or myocardial infarction [MI]), they provide less value for other patients (such as those with performance anxiety), and the system does not attempt to differentiate between these patients. The second approach targets patients with select clinical diagnoses (for example, CHF) and lowers copayments for specific high-value services (for example, beta-blockers and angiotension-converting enzyme [ACE] inhibitors).

The second approach, although requiring more-sophisticated data systems to implement, creates a differential copayment based on patients' characteristics. Programs using this approach typically identify patients with specific diseases, such as diabetes or coronary heart disease (CHD), and reduce copayments for only high-value services for these patients. Both the targeting of high-value services only and high-value services for specific groups of patients are examples of VBID, because they both use assessment of value to determine copayment rates.

■ **Experimentation with first approach.** Several firms are experimenting with one of these two forms of VBID. Pitney Bowes (Stamford, Connecticut) uses the first approach, reducing copayments for all users of drugs commonly prescribed for diabetes, asthma, and hypertension. A second program, implemented by ActiveHealth Management (an integrated care management company that is an independent subsidiary of Aetna), focuses on drugs as well, lowering copayments for ACE inhibitors and angiotensin-receptor blockers (ARBs), beta-blockers, medications for glucose control, statins, and inhaled steroids (used largely to treat asthma). In these initiatives, all users of these classes of drugs pay lower copayments, regardless of their level of benefit from them. The ActiveHealth program goes two steps further by excluding patients with contraindications from the copayment relief and by informing those who would benefit from, but are not using, the targeted services of the lower copayment.

Similar programs have been incorporated into some health savings account (HSA) products, which provide first-dollar coverage for medications used to treat important chronic diseases. For example, Aetna's HSA defines *preventive care* to include services that are important for chronic disease patients and therefore gives these services first-dollar coverage.[10]

■ **Experimentation with second approach.** Use of the second approach, which targets patients, is less common. Two examples are the municipality of Asheville,

North Carolina, and the University of Michigan. Both of these employers implemented a program that lowered copayments for selected medications for employees with diabetes. The Asheville program is pharmacist-led and includes coached self-management. It has since expanded to include other employers.

Barriers To VBID

Despite these examples of VBID, the national trend in health insurance design does not use value in setting cost-sharing parameters. We believe that this reflects several barriers to VBID implementation.

■ **Concern over costs of increased use.** With health care costs rising rapidly, purchasers are looking for ways to constrain cost growth. VBID typically involves lowering copayments for some underused, high-value services. Lower copayments are associated with higher costs and concerns that VBID will increase spending—at least in the short term—and dampen enthusiasm for VBID. Moreover, the employer might not capture any long-term savings accruing as a result of improved health status because of employee turnover.

■ **Cost of implementation.** Implementation of VBID involves identification of high-value services and, in cases in which the system targets specific patient groups, identification of which groups would be eligible for lower copayments. Systems that target patients will be more costly to implement, because the eligibility data must then be transferred from the payers to the point of service, often requiring data transfers and cooperation across organizations.

■ **Data issues.** It is not surprising that current patient-targeted VBID programs focus on diabetes, because patients with diabetes can easily be identified using existing pharmaceutical data sets. Integrated claims data would facilitate progress in other disease areas but would likely be more costly.

Additional challenges include absence of risk factors in claims data (for example, past heart attack and smoking status) and lack of data for new enrollees. VBID programs that target specific patient groups need alternative processes to deal with these data issues, which might add cost.

Electronic medical records and health assessment data—increasingly available as part of disease management programs—will expand capabilities and add further efficiencies. In fact, integration of VBID with disease management could offer a powerful program that might be more effective than either of these programs would be alone, while leveraging existing information systems. Some companies, such as ActiveHealth Management, have developed such information systems and are marketing patient-targeted VBID support systems.[11]

■ **Insufficient research.** Another concern about VBID is that it will only succeed if research can differentiate between high- and low-value services. More-sophisticated systems that target patient groups will require more-detailed evidence than now exists in many disease areas.[12] However, existing evidence is sufficient to support VBID in selected disease areas.

■ **Human resource concerns.** Some stakeholders have expressed concern that people will object to some patients' being charged less than others for certain services. Explaining the program to employees could be complex, particularly if programs differentiate by patient group. Employees would also need to be informed of their eligibility for the program, which could change over time. Moreover, where workers are unionized, employers might need to get approval from the union.

■ **Fraud.** VBID programs that differentiate among patients will inevitably require algorithms that define which patients are eligible for the lower copayment. One concern is that patients or providers might be encouraged to misreport information to qualify for the reduced copayment. To minimize this concern, programs must be limited to areas where identifiable information exists to classify patients. As discussed above, some disease areas are more amenable to this than others.

■ **Legal barriers.** An additional concern is that legal and regulatory barriers might impede implementation of VBID programs. However, existing programs, such as those discussed above, demonstrate that these concerns can be overcome. In some cases, regulatory concerns are relevant. For example, there is ambiguity regarding the legality of inclusion of preventive services for chronic diseases in the definition of *preventive services* for HSAs. In government programs, other policies are relevant. The Medicare Health Support programs, which serve patients with chronic diseases, are limited in their ability to give patients financial incentives to encourage the use of high-value services.

■ **Privacy concerns.** Another concern, particularly in programs that vary by patient group, is that VBID requires identification of employees with specific conditions. It is important that the transfer of data and communication activities surrounding VBID be sensitive to this information and that they comply with the Health Insurance Portability and Accountability Act (HIPAA) privacy regulations. Similar issues arise with disease management programs.

■ **Unintended incentives.** Two types of unintended incentives associated with VBID are of concern. First, if copayments are lowered for all products, incentives to use more-efficient delivery settings or services might be reduced (for example, VBID might discourage use of generic medications if the copayments for important brand-name medications are lowered). The magnitude of this effect is an empirical issue, but the concern can be addressed by maintaining a cost advantage for favored products or by use of other programs to encourage use of favored products.

Second, because certain risk factors are associated with behavior such as smoking, VBID could be interpreted as encouraging such behavior. This concern can be addressed without abandoning the underlying VBID design by adjusting the employee share of premiums or integrating the program with a disease management program.

■ **Adverse selection.** Since VBID favors patients with specific diseases, either because the patients are targeted or because the services they use are targeted, VBID plans might attract a disproportionate number of patients with chronic condi-

tions.[13] This selection issue is similar to that which could arise any time a plan offered high-quality services for patients with chronic diseases through mechanisms such as disease management. The concern is more salient for small employers or employers that offer multiple plan options; it can be surmounted by risk adjustment or by implementing the VBID design for all employees in a firm.

Despite these barriers, VBID programs need not incorporate all possible details and degrees of sophistication. Many barriers can be surmounted by simplifying the system. Programs that do not differentiate by patient group clearly face fewer barriers but will likely have less favorable financial profiles. The appropriate degree of targeting will depend on the trade-off between the cost of overcoming these barriers relative to the possible gain from better targeting. As the experiences of the existing programs illustrate, benefit packages in the VBID spirit can be implemented with success.

Lessons From The Field: VBID At The University Of Michigan

The evolution of a VBID program implemented at the University of Michigan (UM) might prove instructional for future VBID efforts. On 1 July 2006, UM implemented M-Healthy: Focus on Diabetes Program for its 2,200 employees and dependents with a diagnosis of diabetes mellitus.[14] This program provides copayment reductions to targeted patients (diabetics) for targeted interventions deemed from the medical evidence as highly beneficial. The targeted services include several drugs that affect blood sugar, blood pressure, cholesterol, and depression and that help prevent or reduce the long-term complications of diabetes. Copayments for annual eye exams were also reduced for enrollees in the UM health plan. Only people with diabetes, identified by pharmaceutical claims, are eligible for copayment reductions.[15]

Because of contract language with the three unions representing UM employees, implementation of the pilot program required agreement by the unions. The university's pharmacy benefit management (PBM) firm provided the targeted copayment reductions at the point of service. All UM employees were notified about the pilot program by letter and e-mail. To maintain the tiered formulary incentives for use of less expensive medications (such as generics), the VBID intervention lowers copayments in a graded fashion. For the medications of interest, tier 1 copays decreased by 100 percent (from $7 to $0); tier 2 copays, by 50 percent (from $14 to $7); and tier 3 copays, by 25 percent (from $24 to $18). The program received overwhelming employee support through numerous e-mail testimonials and virtually no dissent, which suggests that human-resource concerns can be overcome.

Financial Effects Of VBID

The goal of the health care system is to improve health, not to save money. Dropping coverage completely could save money, at least in the short run, yet it would

not be socially desirable. The driving idea behind VBID is that the use of high-value services should be encouraged. Yet given the concern about health care cost growth, it is imperative to assess the financial consequences of a VBID design. Because there is no single VBID intervention, it is difficult to provide an answer to the question regarding the "bottom line" effects of such a plan.

■ **Direct costs plus added value.** The basic accounting identity that describes the financial effects of lowering copayments (or maintaining low copayments) for any given service is straightforward. Specifically, the cost to the payer of lower copays is the extra share of spending for the services that would have been used anyway and the purchaser share of the costs of increased consumption resulting from the copay reductions. This additional expense of extra consumption is assumed to add value because VBID targets high-value services.

■ **Savings from improved health.** Offsetting the direct costs are the savings due to the improved health generated by the extra service use. For example, the direct costs of lower copayments for cholesterol-lowering medication would be offset, at least partially, by savings attributable to fewer heart attacks. The net financial benefit will be greater if the underlying risk of an adverse outcome is high, if the cost of that adverse outcome is high, if consumers are very responsive to lower copayments, and if the service is very effective at preventing the adverse outcome.

■ **The targeting factor.** Because these factors vary across the population, the financial impact of a VBID program will depend on the level and precision of targeting. Most services provide significant value for a subset of patients. The better the system is at identifying those patients, and the more responsive those patients are to copayment changes, the more likely the system will be to achieve a high financial return. Employers with more-targeted programs incur lower costs because fewer services are eligible for lower copayments, and most of the financial and clinical gains still accrue because the patients who benefit the most get the lower copayments. In deciding whether to limit VBID to targeted patient groups (as opposed to just targeting high-value services), purchasers will need to weigh added implementation costs against the better financial profile from more-targeted programs.

Simulation exercises suggest that well-targeted VBID programs could save money. Allison Rosen and colleagues provide an example of where VBID could save money, reporting that cost savings are possible when selected drug classes are provided free of charge to Medicare enrollees with diabetes mellitus.[16] However, Medicare beneficiaries are at greater risk of costly adverse events in a shorter window of time, so these results might not generalize to a commercially insured population.

One could design a VBID system to achieve any cost target by financing the costs of lower copays for high-value services through higher copays on less valuable services. Dana Goldman and colleagues provide the best available analysis of such an approach by examining the impact of financing lower copays for high-benefit statin users by increasing copays for lower-benefit statin users.[17] If the

clinical benefits of statins provided to those low-risk patients were cost-effective (which we believe to be so), it would be preferable to implement a broader VBID program financed by raising copays for other services unrelated to statins, or even unrelated to cardiovascular disease, that are determined to be of lesser value.

Estimates from the Pitney Bowes and Asheville experiences suggest that VBID can save money. One year after Pitney Bowes lowered medication copays for asthma and diabetes medications in 2001, the company reported in the *Wall Street Journal* a one-year savings of $1 million, although more rigorous controlled evaluations of this program would be needed to definitively assess its impact.[18] An evaluation of the Asheville project (which included more than copay reduction) reported five-year outcomes that include marked increases in medication adherence, a two- to threefold increase in achieving diabetes performance measures, approximately a 50 percent decrease in average annual sick leave, and a trend in overall medical costs that was 58 percent below expected levels.[19] However, it is unclear how sensitive this finding is to the methods used to estimate expected costs.

Concluding Comments

VBID is a clinically sensitive form of cost sharing because it recognizes that services vary in the value they provide to patients and that not all patients with a specific clinical condition receive the same level of benefit from a specific intervention. If different cost-sharing provisions are allowed for different services, value can be increased without eliminating the role of cost sharing in the system.

In this way, VBID can address several important inconsistencies in the current system and work synergistically with other initiatives. For example, current disease management programs and pay-for-performance (P4P) systems devote resources to improving the quality of care for targeted patients in selected clinical areas. Financial aspects of benefit design should support such efforts, but existing cost-sharing arrangements often discourage the use of the high-value services encouraged by P4P and disease management.[20] Through an alignment of incentives based on overall value of clinical services, not just cost, VBID could ameliorate this concern. By using our knowledge wisely and abandoning the archaic principle that all services must cost the same for all patients, regardless of clinical situation, we can move toward a high-value health care system for all.

This research was conducted as part of work for the Center for Value-Based Insurance Design, which receives support from Pfizer, Merck, and the University of Michigan. Michael Chernew and Mark Fendrick have a consulting agreement with ActiveHealth Management, which is mentioned in the paper.

NOTES

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