Supporting Consumer Access to Specialty Medications Through Value-Based Insurance Design

A. Mark Fendrick, MD
Jason Buxbaum, MHSA
Kimberly Westrich, MA

National Pharmaceutical Council

SCHOOL OF PUBLIC HEALTH
CENTER FOR VALUE-BASED INSURANCE DESIGN
UNIVERSITY OF MICHIGAN

Acknowledgments

The authors thank Jonas de Souza, MD, of the University of Chicago and Eric Ruderman, MD, of the Northwestern University Feinberg School of Medicine for their valuable input. The authors also gratefully acknowledge the research assistance of Daniel Semaan, as well as the thoughtful contributions of Jillian Davenport, Kahlie Dufresne, Thomas Riley, Kate Johnson, Andrea Hofelich, Sallie Lyons, and graphic designer Diana Enyedi.

For copies of this report, please contact the National Pharmaceutical Council at 202-827-2100 or visit www.npcnow.org.

Supporting Consumer Access to Specialty Medications Through Value-Based Insurance Design

SUPPORTING CONSUMER ACCESS TO SPECIALTY MEDICATIONS THROUGH VALUE-BASED INSURANCE DESIGN

Table of Contents

Table of Contents (Continued)

SUPPORTING CONSUMER ACCESS TO SPECIALTY MEDICATIONS THROUGH VALUE-BASED INSURANCE DESIGN

Executive Summary

Specialty pharmaceuticals are medications that consist of complex molecules, have qualities that result in costly delivery, and/or carry high costs ($600 or more per month is a common threshold).[1,2] These medications are frequently used in the treatment of rheumatoid arthritis (RA), multiple sclerosis (MS), cancer and a variety of other serious health conditions.

About one quarter of total pharmaceutical spending in the commercial market is devoted to specialty medications.[3] If current trends hold, spending on specialty medications may comprise half of all pharmaceutical spending by 2018 for commercial health care plans.[4] These trends have invited the scrutiny of plan sponsors. To control spending, many payers and purchasers have established requirements for high cost-sharing, requirements that may trigger cost-related non-adherence for some patients.

This report outlines that: (1) for many patients and clinical indications, high spending on specialty medications is money well spent; (2) indiscriminate, high cost-sharing for specialty medications can be harmful to patients and employers; and (3) payers and purchasers can deploy a variety of tactics to help assure that patients have access to the right medications. Value-based insurance design (V-BID) is a key tactic payers and purchasers can use to promote access to high-value specialty medications.

Context

Cost-Effectiveness of Specialty Medications

Many specialty medications deliver substantial improvements in health that were simply not possible prior to their creation. For every specialty pharmaceutical dollar, however, the health purchased varies considerably. This reality—that the benefit delivered by any given medication may vary markedly depending on the particular circumstances around its use—supports the implementation of condition-specific, clinically nuanced variation in benefit design.

Coverage for Specialty Medications

Until 2002, most individuals with employer-sponsored insurance with prescription drug coverage were in plans with one or two tiers. Consumers' out-of-pocket payments for obtaining medication were set at one of two amounts, a lower one for the first tier and a higher one for the second tier. These amounts were either copayments (a flat payment such as $10) or coinsurance (a percentage of the cost, such as 10%). This has changed. Plans with three or more tiers are now the norm. In 2013, 23% of individuals with employer-sponsored prescription drug coverage were in plans with four or five tiers, with tiers four and five typically devoted to specialty medications.[5] Of those in plans with specialty tiers, more than 40% were subject to coinsurance-based (rather than copayment-based) cost-sharing.[6] The average coinsurance rate for specialty tier drugs is about 30%,[5] although coinsurance rates as high as 50% exist.[7] Given high prices, coinsurance-based cost-sharing can make for extremely high out-of-pocket costs (eg, if a drug costs $1,000/month, 30% coinsurance equals $300/month out-of-pocket). The Affordable Care Act (ACA) does not fully address these concerns.

Consequences of High Cost-Sharing

As cost-sharing for health care services increases, medication initiation and adherence decreases. As summarized in a 2007 *Journal of the American Medical Association* synthesis on prescription drug cost-sharing, "Increased cost-sharing is associated with lower rates of drug treatment, worse adherence among existing users, and more frequent discontinuation of therapy."[8]

For some conditions, savings through averted emergency room visits and hospitalizations may offset increased spending on pharmaceuticals. For many employers, however, the costs of medical care may be secondary to the costs associated with presenteeism and absenteeism. One 2009 analysis found that the cost to employers of lost productivity due to poor health is 2.3 times as much as the cost of direct medical and pharmacy spending combined.[9]

For three conditions commonly treated with specialty pharmaceuticals—rheumatoid arthritis (RA), multiple sclerosis (MS), and cancer—a significant body of research shows that cost-related non-adherence is a significant issue. Non-adherence is associated with increased morbidity, and for some conditions, increased mortality.

Value-Based Insurance Design (V-BID)

V-BID reduces barriers to high-value clinical services and providers, and discourages use of services and providers that are of lower value, aligning consumer incentives with value. V-BID is driven by the concept of clinical nuance which recognizes that: (1) medical services differ in the benefit provided; and (2) the clinical benefit derived from a specific service depends on the characteristics of the patient receiving it, who provides it, and where the service is delivered. Plans incorporating V-BID establish lower cost-sharing on high-value services, drugs, providers, and settings as a means to increase utilization that represents worthwhile investment in health.

A wide range of plan sponsors have embraced V-BID, and more than one dozen peer-reviewed articles have studied the impact of V-BID for prescription drugs. Most studies have reported improvements in adherence and health outcomes without statistically significant increases in total spending. V-BID interventions that carefully target patients are particularly promising.

Applying V-BID to Specialty Medications

V-BID implementations for specialty medications strive to ensure that cost-sharing is related to clinical value—not simply acquisition cost. Payers and purchasers may deploy a variety of techniques, with varying levels of nuance, to achieve this goal.

Impose No More Than Modest Cost-Sharing on High-Value Medications

Abolishing the four- and five-tier rankings may be the most straight-forward approach to promoting access to all medically necessary treatments. Such an approach limits possibilities for clinically nuanced differentiation among treatments within the tiers, but promotes access to all potentially important medications. It is required in state-regulated plans in New York[10] and Vermont.[11]

Payers and purchasers may also become more selective by lowering high cost-sharing for only certain chosen specialty drugs. A payer or purchaser, perhaps in partnership with physician leaders, can seek to identify particular specialty medications that consistently deliver outstanding value given prescribing patterns. These drugs can then be moved from higher to lower tiers. A similarly selective approach could be used when evidence suggests that non-adherence among a particular population is especially problematic.

Reduce Cost-Sharing in Accordance With Patient- or Disease-Specific Characteristics

To ensure good value for health care spending, it is essential that therapies are available to those who will benefit from them. It is less critical that therapies are easily accessible to those who are unlikely to benefit. For example, among cancer patients, the type of cancer, the stage of chemotherapy, and the presence or absence of a biomarker (a biological indicator used to determine risk, estimate prognosis, select optimal therapy, etc.) frequently can be referenced to differentiate high-value treatment from low-value treatment. Payers and purchasers should consider reducing cost-sharing for specialty drugs on the basis of patient characteristics when evidence suggests that the therapy is especially important to achieve optimal health outcomes.

Relieve Patients From High Cost-Sharing After Failure on a Different Medication

Another approach to incorporating V-BID in cost-sharing for specialty pharmaceuticals entails selectively reducing cost-sharing for specialty medications if the patient does not respond as desired to another medication. This strategy is referred to as "reward the good soldier" or "step-edit with copayment relief." For example, a payer might wish to encourage the use of methotrexate as a first-line treatment for RA, given reasonable levels of effectiveness in certain patients. However, not all patients respond adequately to therapy with only this medication. A "reward the good soldier" V-BID benefit structure would offer relief from higher cost-sharing for biologics (eg, adalimumab, etanercept) after failure of the more preferred regimen.

Use Cost-Sharing to Encourage Patients to Select High-Performing Providers and Settings for Their Care

Payers and purchasers can encourage consumers to select high-value settings and providers through differentiated cost-sharing. To direct greater volume to high-value providers, plans can offer lower cost-sharing for those members choosing to receive care at sites that meet one or more of the following characteristics related to quality and efficiency:

- Designation as a "center of excellence";
- Consistent use of evidence-based clinical pathways, such as National Comprehensive Cancer Network (NCCN) guidelines for cancer patients, with an allowance for deviation based on individual circumstances;[12]
- Tendency to appropriately engage patients in key decisions;
- Tendency to avoid costly services when their use will not affect treatment decisions; and
- Consistency in achieving key condition-specific quality goals.

Keys to Success

Successful implementation of clinically nuanced benefit designs for specialty pharmaceuticals will require addressing several foreseeable challenges. These include:

- Preparing for administrative complexity;
- Establishing incentives that engage patients early;
- Communicating effectively about V-BID;
- Integrating V-BID with provider-facing initiatives; and
- Recognizing that the perfect must not be the enemy of the good.

Conclusion

Payers and purchasers must be cognizant of how cost-sharing can impact adherence, health, productivity, and financial well-being among all patients who use critical medications. Given the prevalence of four- and five-tier arrangements that incorporate high levels of cost-sharing, the potential for harm due to non-adherence is particularly grave for patients with conditions that are managed with high-tier specialty medications. V-BID principles can improve quality, reduce waste, foster engagement and mitigate legitimate concerns that one-size-fits-all cost-sharing may lead individuals to forgo clinically important care.

In sum, public and private health care leaders are charged with driving better value, better quality, and better access to necessary care. By prioritizing how well we spend our health care dollars, V-BID can help leaders deliver on these goals.

A. INTRODUCTION

The past several decades have produced remarkable technological and therapeutic innovations for the prevention and treatment of disease, resulting in impressive reductions in morbidity and mortality. Despite unequivocal evidence of significant improvement in patient outcomes and population health, substantial underutilization of evidence-based services persists across the spectrum of clinical care. Although gaps in quality of care receive some attention, cost growth remains the principal focus of health care reform discussions. Given the broad consensus that our current level of health care spending does not deliver sufficient value in terms of individual or population health, stakeholders must shift the focus from *how much* to *how well* we spend our health care dollars. This holds true for spending on pharmaceuticals: in general, purchasers and payers have emphasized cost, with relatively less attention to how much health and productivity drugs can deliver.

In recent years, this emphasis on cost has persisted despite relatively low rates of pharmaceutical spending growth, with multiple years of less than 1% growth in the recent past. Yet, looking ahead, experts forecast a different story. Spending on retail prescription drugs is projected to grow at an average annual rate of 5.2% beginning in 2014, rising to 6.7% by 2022.[13] Specialty pharmaceuticals—complex medications that treat conditions such as cancer, rheumatoid arthritis (RA), and multiple sclerosis (MS)—will represent a critical component of the increasing pharmaceutical cost trend, going forward.

Today, outpatient pharmaceutical spending devoted to specialty medications stands at nearly one quarter of total pharmaceutical spending in the commercial market, and more in the Medicare market.[3] This figure has grown rapidly in recent years, driven by annual spending increases of 14% to 20%.[14] High prices, increasing utilization, and new approvals for specialty medications have contributed to this increase—60% of new approvals in 2014 are expected to be for specialty medications. If current pricing, utilization, and new drug approval trends hold, spending on specialty medications may comprise half of all pharmaceutical spending by 2018 for commercial plan sponsors.[4]

Current and anticipated costs associated with specialty drugs have invited the scrutiny of plan sponsors. To control spending on these medications, many payers and purchasers have put in place requirements for consumers to pay hundreds or thousands of dollars per month out-of-pocket for medication—levels that may cause patients to stop purchasing their medications, resulting in worse health outcomes. In general, cost-sharing of this sort has been implemented indiscriminately, with levels of cost-sharing for essential, life-saving specialty medications being similar to levels of cost-sharing for medications that deliver less compelling value.

This report aims to support plan sponsors, health plans, and policymakers who are ready to rethink one-size-fits-all benefit designs for specialty medications.

This paper outlines that: (1) for many patients and clinical indications, high spending on specialty medications is money well spent; (2) indiscriminate, high cost-sharing for specialty medications can be harmful to patients and employers; and (3) payers and purchasers can deploy a variety of tactics to help assure that patients have access to the right medications.

This paper will explore value-based insurance design (V-BID) as a key tactic to ensure that patients have access to the right medications. V-BID refers to insurance arrangements that align consumer incentives with clinical evidence by reducing financial barriers to high-value services and providers, and by financially discouraging the use of low-value services and providers. V-BID is driven by the concept of clinical nuance, which recognizes that: (1) medical services differ in the benefit provided, and (2) the clinical benefit derived from a specific service depends on the characteristics of the patient using it. A growing body of literature shows that V-BID can meaningfully improve adherence without increasing the overall spending of plan sponsors, and in some instances, can even decrease aggregate spending.

To date, there have been very few applications of V-BID in the domain of specialty pharmaceuticals. As described in a Center for Studying Health System Change issue brief, there has been interest in such an approach, but action has been limited as employers take "a wait-and-see approach."[14] This report aims to inform plan sponsors, health plans, and policymakers who are ready to rethink one-size-fits-all benefit designs for specialty medications.

B. SPECIALTY MEDICATIONS: CONTEXT, COST-SHARING AND THE SIGNIFICANCE OF COST-RELATED NON-ADHERENCE

1. CONTEXT

1-A. Characteristics and Uses of Specialty Medications

Characteristics of Specialty Medications

There is no single agreed-upon definition of a specialty medication. In general, the term is used to refer to medications that possess at least one of four characteristics:

- Qualities that make for costly medication delivery, such as requirements for professional administration or special handling (eg, temperature control, protection from radiation);
- Complex treatment administration (eg, delivery of medication by infusion, frequent dose adjustment);
- Complex molecule composition, especially when the molecules are created with the aid of living organisms (ie, "biologics"); and
- High costs (eg, greater than the threshold of $600 per month established by the Centers for Medicare & Medicaid Services [CMS] for purposes related to Medicare prescription drug benefits).[1,2]

Generics or biosimilars do not generally exist today for specialty medications, in contrast to non-specialty medications. (Biosimilars are versions that are highly similar to the original biologic product and have no clinically meaningful differences with respect to safety, purity, and potency.[15]) While there has been discussion of increased competition from biosimilars, they are not expected to deliver the sort of cost savings offered by traditional generic molecules relative to branded drugs, given the high expected costs for biosimilar clinical trials and production.

Uses of Specialty Medications

Historically, specialty medications were used for a small number of relatively uncommon conditions, such as hemophilia. This is no longer the case. Today, specialty medications are used to treat a wide range of diagnoses. These medications often deliver dramatic improvements in health and functioning (see 1-D. Cost-Effectiveness of Specialty Medications, and 3. Prevalence and Implications of Cost-Related Non-Adherence for Three Conditions Commonly Treated With Specialty Medications).

Specialty medications have become the standard of care for many chronic and rare conditions, especially inflammatory conditions (eg, rheumatoid arthritis, psoriasis), multiple sclerosis, HIV/AIDS, and many cancers. Specialty medications are also commonly used to treat hepatitis, growth deficiency, hemophilia, pulmonary hypertension, and a variety of other conditions.[3] Food and Drug Administration approvals in 2013[16,17] for specialty hepatitis C medications have demonstrated substantial improvements in clinical outcomes relative to previously available therapies,[18] and will likely lead to increased specialty pharmaceutical use for this specific condition.

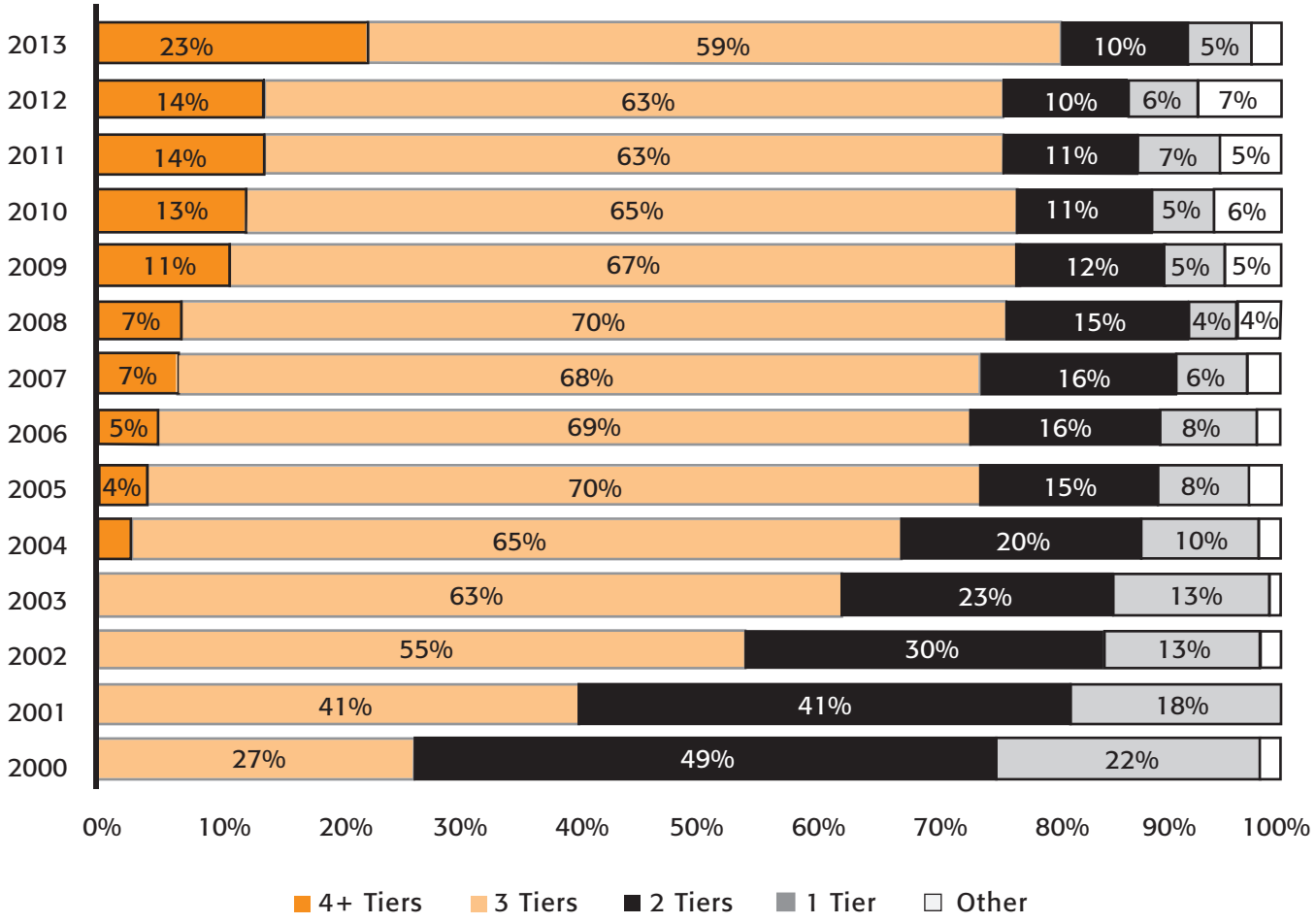
1-B. Coverage for Specialty Medications

Specialty medications can be covered under a medical benefit or a pharmacy benefit. Historically, specialty medications that require professional administration—at a physician's office, other outpatient clinic, or in the patient's home with the assistance of a home health nurse—have been covered under the medical benefit. Self-administered agents have generally been covered under the pharmacy benefit (though there are exceptions for some agents that have equivalent forms requiring professional administration).[19] The remainder of this section discusses how plans have developed cost-sharing for specialty medications covered under the pharmacy benefit in the context of employer-sponsored and Medicare Part D health plans.

Employer-Sponsored Commercial Plans

Until 2002, most individuals who had employer-sponsored insurance with prescription drug coverage were in plans with one or two tiers; that is, out-of-pocket cost-sharing was set at one of two possible amounts. As shown in Exhibit 1, plans with three tiers—typically arranged as generic (tier one), preferred brand (tier two), and non-preferred brand (tier three)—experienced dramatic growth beginning in 2002. For most years between 2003 and 2012, about two-thirds of individuals with employer-sponsored insurance were in a three-tier plan.[5]

Exhibit 1: Distribution of Covered Workers, By Prescription Drug Benefit Design[5]



A growing number of commercial plan sponsors are now offering plans with four tiers, typically including dedicated tiers for generic, preferred brand, non-preferred brand, and specialty medications. Some even offer plans with five tiers, arranged as generic, preferred brand, non-preferred brand, preferred specialty, and non-preferred specialty.[1] The prevalence of a specialty tier, or tiers, in the coverage carried by individuals with employer-sponsored prescription drug coverage has increased markedly in the last decade, rising from 3% in 2004 to 23% in 2013.[5]

In contrast to coverage for tiers one through three, coverage for specialty tier drugs is much more likely to involve coinsurance rather than copayments. Between 43% and 48% of individuals with employer-sponsored prescription drug plans with specialty tiers are subject to coinsurance-based, versus copayment-based, cost-sharing.[5,6]

Among plans imposing cost-sharing through coinsurance, the average coinsurance rate for specialty tier drugs is 32% (see Exhibit 2),[5] with some plans as high as 50%.[7] When applied to drugs that carry very high prices, rates at this level can make for very high out-of-pocket expenses. For example, *Kaiser Health News* reported on a 63-year-old woman with acute promyelocytic leukemia whose prescription for tretinoin, at a monthly cost of $6,800, carried a monthly coinsurance payment of $1,700.[7]

Exhibit 2: Average Coinsurance for Specialty Medications Covered Under Prescription Benefit (2013)[5]

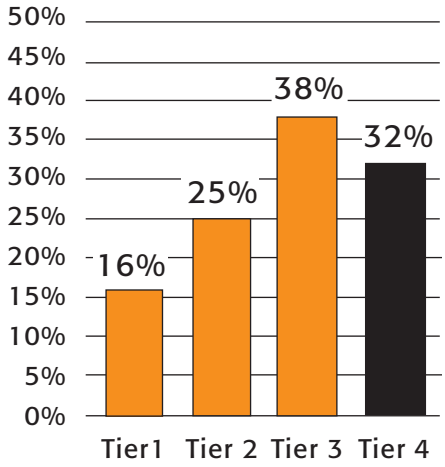
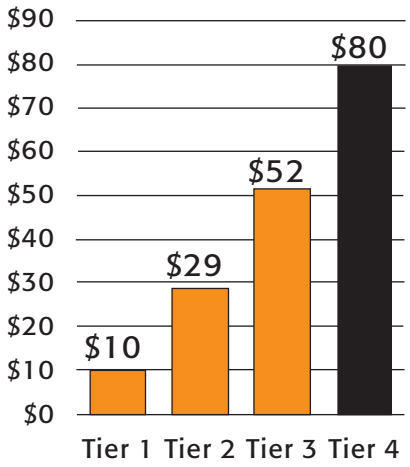


Exhibit 3: Average Copayment for Specialty Medications Covered Under Prescription Benefit (2013)[5]



Until this year, about one quarter of those with coinsurance had no maximum out-of-pocket limit, meaning that the woman described above was responsible for the more than $20,000 annual coinsurance expense. However, beginning in 2014 the Affordable Care Act (ACA) required non-grandfathered group plans and individual plans to limit out-of-pocket cost-sharing (ie, deductibles, coinsurance, and copayments) to no more than the limit applicable to high-deductible health plans, which in 2014 is $6,350 for an individual, and $12,700 for a family of four (see Appendix A).

While the changes imposed by the ACA represent a marked improvement for many consumers, even these new out-of-pocket limits can leave beneficiaries subject to very significant levels of cost-sharing that do not account for the patient-specific benefits of therapy, or clinical nuance. Further, the new limits have been amended for the 2014 plan year, allowing plans that use separate administrators for different components of their benefit packages (eg, medical and pharmacy) to apply the limit separately to these component parts, rather than collectively for all cost-sharing.

Outside of the few states that have moved to prohibit four-tier arrangements (discussed further below), the trend toward high cost-sharing for prescription specialty medications shows few signs of abating in the commercial space.

Medicare Part D

Nearly all Medicare Part D plans include a specialty tier, and impose higher cost-sharing for specialty medications. According to a 2011 study, 89% of Part D prescription drug plans (PDPs) use formulary tiers, as do 95% of Medicare Advantage-Prescription Drug Plans (MA-PDs). Among Medicare beneficiaries in these plans, 94% of PDP enrollees and 100% of MA-PD enrollees are in plans with specialty tiers.[20]

CMS permits PDPs to employ a specialty tier provided three conditions are met:

- Only one tier is designated as a specialty tier;
- Cost-sharing is limited for plans with standard deductibles to a maximum of 25% after the deductible and before the "donut hole"; or to 33% for plans with decreased deductibles; and
- It includes only drugs with negotiated prices greater than a specified dollar amount, currently $600 per month.[21,a]

According to 2013 data, about 48% of PDP beneficiaries and 82% of MA-PD beneficiaries were in plans charging 33% coinsurance for specialty drugs during the initial coverage period. As shown in Exhibit 5, the portion of MA-PD plan beneficiaries in plans imposing 33% coinsurance during the initial coverage period has increased since 2009, with a slight decrease in 2013.[20,22]

Exhibit 4: Portion of Enrollment in Part D PDPs With Specialty Tiers, by Specialty Tier Coinsurance Rate (2009-2013)[22]

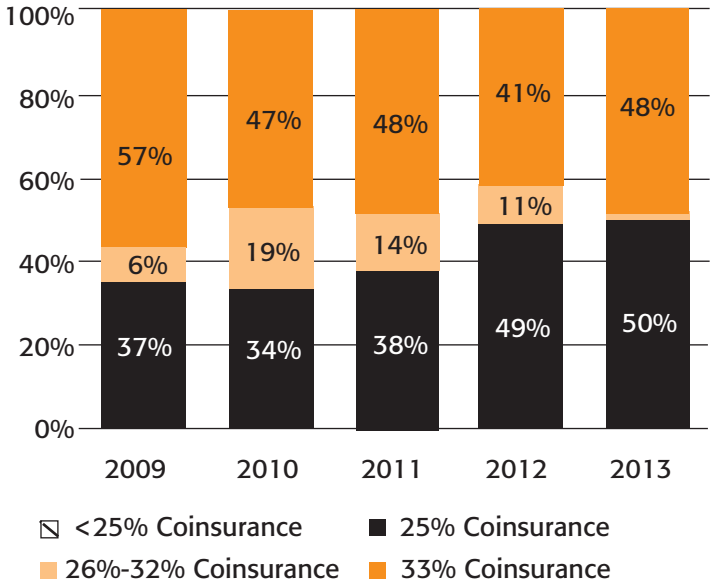
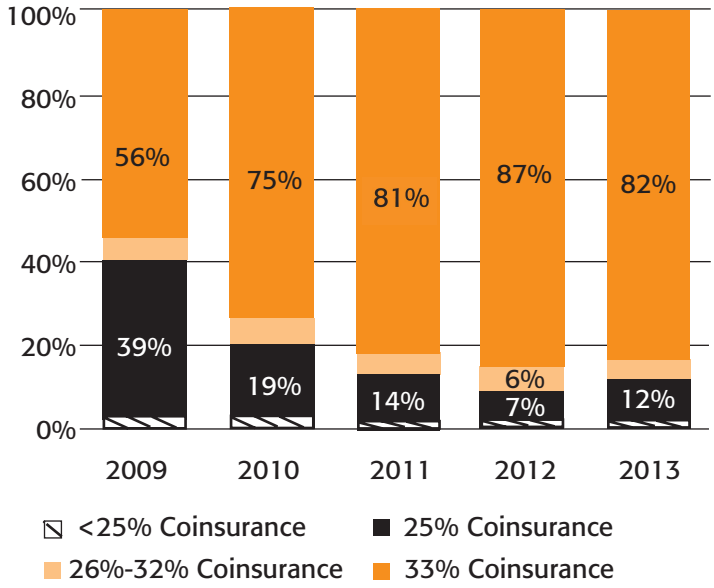


Exhibit 5: Portion of Enrollment in Part D MA-PDPs With Specialty Tiers, by Specialty Tier Coinsurance Rate (2009-2013)[22]



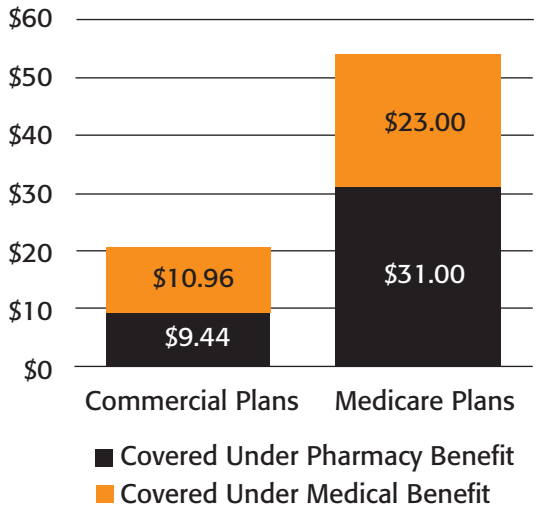
1-C. Costs Associated With Use of Specialty Medications

Relative to other pharmaceuticals, many specialty medications deliver both greater clinical benefits and higher costs—sometimes $50,000 or more per year of therapy. Reflecting these high unit costs, in 2012 specialty medications accounted for 12% of commercial spending under the pharmacy benefit, despite representing less than 0.5% of total prescription fills, according to Milliman.[23] As previously noted, if current trends continue, spending on specialty medications may account for 50% of all pharmaceutical spending for commercial plan sponsors as soon as 2018.[4]

Milliman has estimated that this spending is responsible for an average per member per month (PMPM) specialty drug cost of $9.44 under the pharmacy benefit, and $10.96 under the medical benefit for commercial populations.[23] For aged, non-dual-eligible Medicare beneficiaries, Milliman has estimated that in 2012 specialty tier Part D drugs cost about $31 PMPM.[21] Specialty drugs covered under Part B were less expensive, averaging $23 PMPM.[21] (See Appendix B for information on the distinction between Parts B and D of Medicare.)

[a] Not all drugs costing more than $600 per month are included in specialty tiers; Part D plans sometimes cover these medications in the non-preferred brand tier.

Exhibit 6: Milliman Estimates of Average Spending on Specialty Medications, by Benefit (2012)[21,23]



1-D. Cost-Effectiveness of Specialty Medications

Many specialty medications deliver substantial improvements in health that were simply not possible prior to their creation. For instance, imatinib, a drug used to treat chronic myelogenous leukemia (CML), has improved three-year survival in this type of cancer from 81% to 96% at a much lower toxicity burden.[24] Similarly, eculizumab, a first-in-class drug treating paroxysmal nocturnal hemoglobinuria, a rare, often fatal blood disorder, has improved five-year survival from 69% to 96%.[25]

While the improvements in health that specialty medications can bring about are often readily apparent, their value, in light of their high costs, may be less obvious. A systematic review by Zalesak and colleagues summarizes the cost-effectiveness of specialty medications across the three conditions for which they are most commonly used: rheumatoid arthritis (RA), multiple sclerosis (MS) and breast cancer.[2] Zalesak and colleagues found that many specialty medications deliver improvements in health and health-related quality of life at prices that are lower or competitive with many commonly accepted medical interventions.[2] However, the authors found that the health purchased for every specialty pharmaceutical dollar varies considerably across the three conditions examined.[2]

As is discussed further in C. Value-Based Insurance Design, this reality—that the benefit delivered by any given medication may vary markedly depending on the particular circumstances around its use—supports the use of condition-specific, clinically nuanced variation in benefit design.

2. CONSEQUENCES OF HIGH COST-SHARING

2-A. Consumption, Cost-Sharing and Non-Adherence

Basic economic theory teaches that, in general, the lower the price, the more a good or service will be consumed. Conversely, when price rises, consumption tends to decrease. With few exceptions, this pattern holds for a wide range of goods and services. The landmark RAND Health Insurance Experiment (HIE), conducted from 1971-1982, demonstrated that health care services are subject to this basic law of demand. As theory and common sense would predict, researchers found that the more costs that patients had to pay out-of-pocket, the less medical care they consumed. In fact, patients who had zero cost-sharing consumed about 40% more care than those who faced a steep deductible.[26] Critically, however, the investigators found that higher cost-sharing decreased use of essential as well as non-essential care—a finding that has been confirmed in other research.[27,28]

The basic finding—as cost-sharing for health care services increases, initiation and adherence decrease—is true across a wide range of health care services, including prescription drug therapy.[8,29-40] As summarized in a 2007 *Journal of the American Medical Association* synthesis concerning prescription drug cost-sharing, "Increased cost-sharing is associated with lower rates of drug treatment, worse adherence among existing users, and more frequent discontinuation of therapy."[8]

Higher cost-sharing is associated with decreases in both essential and non-essential service use.

2-B. The Consequences of Non-Adherence

Lower levels of drug adherence, which can be triggered by cost-sharing increases, are associated with a number of ills. As former Surgeon General C. Everett Koop once said, "Drugs don't work in patients who don't take them." The impact of non-adherence on patient health has been extensively studied.[41-48] Statistically significant results demonstrating that greater adherence promotes better health have been reported with respect to coronary artery disease,[46] asthma,[47] hypertension,[48] and depression.[45] Furthermore, a considerable body of evidence, detailed below, makes clear that this trend holds for conditions commonly treated with specialty medications.

Adherence and Total Spending

Poor drug adherence is not only associated with worse health, but also with increases in total spending for certain chronic conditions. In particular, savings through averted acute-care utilization may offset increased spending on pharmaceuticals for many conditions, including lipid disorders, congestive heart failure, schizophrenia, and diabetes.[41,49-54] A 2011 study by Roebuck and colleagues, designed to control for hard-to-detect "healthy adherer" effects, reported substantial savings through higher levels of adherence. The savings ranged from $1,860 to $8,881 per member per year for four vascular diseases, with members who had congestive heart failure showing the greatest savings.[55]

This finding has not been universally replicated, and may not apply for conditions that require treatment with very expensive medications. However, for many conditions treated with specialty medications, there may be substantial offsets associated with improved adherence through reductions in the use of acute care and in other non-medical costs such as impaired productivity.

Lost productivity due to poor health costs employers 2.3 times as much as direct medical and pharmacy spending combined.

Adherence and Chronic-Disease-Related Non-Medical Economic Costs

The effect of drug adherence on workplace productivity has received little attention compared to the relationships between adherence and health, and between adherence and total health care spending. Experts estimate that more than $1 trillion is lost in productivity every year due to chronic disease; a 2012 study determined that medication non-adherence comprises a substantial component of this $1 trillion figure.[56] Specifically, the investigators found that individuals who are adherent with their medications are absent from work between 3.1 days and 7.1 days less than individuals who are not adherent.[57]

For employers, the costs of health-related absenteeism and presenteeism (working at an impaired level) are very substantial. An analysis reported in a seminal 2009 article by Loeppke and colleagues indicated that lost productivity because of poor health costs employers 2.3 times as much on average as direct medical and pharmaceutical spending combined.[9]

Many of the conditions that are treated by specialty drugs are associated with decreased ability to participate in the workforce, especially if left untreated (see Exhibit 7).[9] And, while little is definitively known about the impact for employees of specialty medications on workplace productivity and retention, it is reasonable to expect that purchasers with benefit packages that facilitate medication adherence can expect better employee productivity than purchasers whose plans impose substantial barriers to adherence in the form of high cost-sharing.

Exhibit 7: Absenteeism and Presenteeism Associated With Three Select Conditions (Based on Employee Reporting of Physician-Identified Conditions, 2007-2008)[9]

	Relative to Employees With No Identified Conditions		Relative to Employees Without Particular Conditions	
Condition	Days per Year Lost Due to Absenteeism (SE)	Days per Year Lost Due to Presenteeism (SE)	Days per Year Lost Due to Absenteeism (SE)	Days per Year Lost Due to Presenteeism (SE)
Arthritis	5.3[a] (0.5)	6.0 (0.6)	4.1[a] (0.4)	3.1[a] (0.5)
Osteoporosis	7.5[a] (1.2)	5.7[a] (1.7)	4.2[a] (1.2)	0.3 (1.6)
Cancer	9.8[a] (0.9)	5.4[a] (1.2)	7.6[a] (0.9)	1.4 (1.2)
SE: Standard error				
[a] Statistically significant at $p<0.05$, two-sided test				

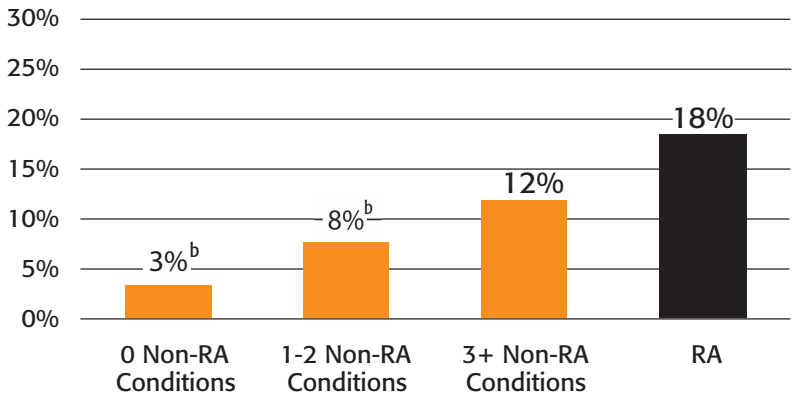
2-C. High Cost-Sharing and Financial Burdens

A sizable body of research also demonstrates that high levels of cost-sharing, even among people with insurance, can meaningfully harm patients' financial well-being.[58-61] These effects may be particularly pronounced among those using specialty drugs, given the high cost-sharing for these medications. Studying Medicare beneficiaries, Harrold and colleagues found that beneficiaries with rheumatoid arthritis (RA) were considerably more likely than other beneficiaries to indicate that they spent "less money on food, heat or other basic needs so [they] would have money for medicine" (see Exhibit 8).[61] Nearly one out of five Medicare beneficiaries responded in the affirmative to this inquiry.[58] While this study is limited to patients receiving RA drugs, it is reasonable to expect similar results for patients with other conditions commonly treated with specialty medications.

3. PREVALENCE AND IMPLICATIONS OF COST-RELATED NON-ADHERENCE FOR THREE CONDITIONS COMMONLY TREATED WITH SPECIALTY MEDICATIONS

A growing body of research has investigated the relationships between and among cost-sharing for specialty drugs, adherence, and key outcomes of interest. This section samples and briefly reviews that literature with regard to three conditions commonly treated with specialty medications.

Exhibit 8: Portion of Medicare Beneficiaries Indicating Less Spending on Basic Needs Due to Morbidity Burden, By Number of Self-Reported Conditions and Presence of RA (2008)[61,a]



[a] Data drawn from Medicare Current Beneficiary Survey (MCBS). The MCBS asks respondents to self-report their morbidity burden in terms of health conditions.
[b] Difference relative to RA significant at $p<0.05$.

3-A. Rheumatoid Arthritis (RA)

Associations Between Non-Adherence and Out-of-Pocket Costs

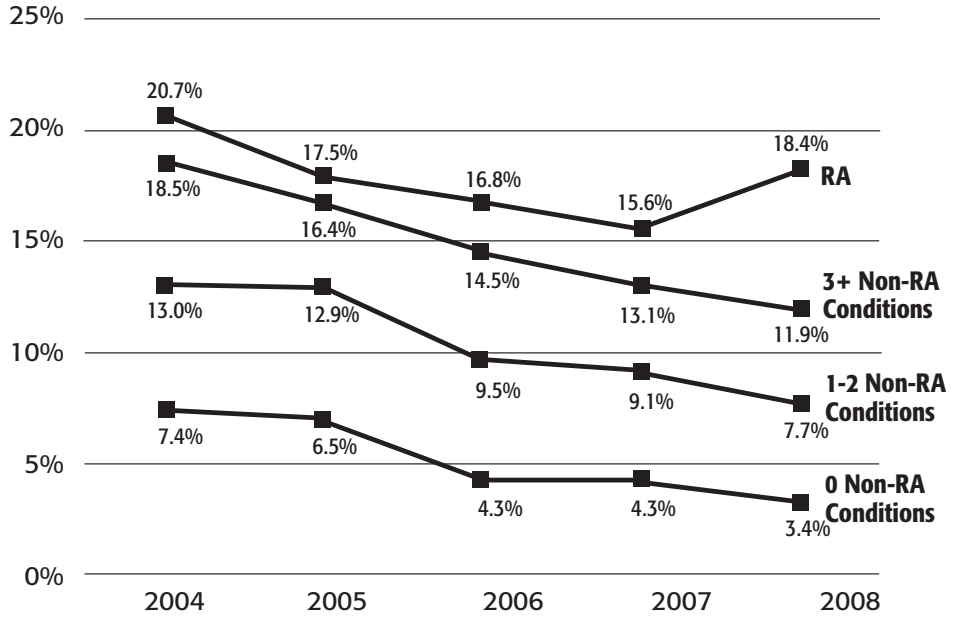
A number of studies have examined cost-related non-adherence and therapy discontinuation for specialty medications frequently recommended in the treatment of RA.[62] The investigations have examined the issue using a range of data sources, methods, and populations. The studies consistently find that high out-of-pocket costs can inhibit access to specialty medications for RA:

- Using data from the Medicare Current Beneficiary Survey, a 2013 study by Harrold and colleagues found that 18.4% of older adults with RA experienced cost-related non-adherence in 2008. The corresponding figure for older adults with three or more self-identified non-RA conditions was 11.9%.[61] In contrast to the overall decreases in cost-related non-adherence observed between 2007 and 2008 for beneficiaries with non-RA chronic conditions, rates of cost-related non-adherence increased for patients with RA between 2007 and 2008. (See Exhibit 9.)
- Investigating the experience of employees of large firms, in 2010 Karaca-Mandic and colleagues found that a doubling of out-of-pocket cost-sharing for specialty RA medications, from $400 to $800, was associated with a 3.8% decrease in therapy continuation, representing a decrease from 80% to 77%. A tripling of the out-of-pocket cost-sharing, to $1,200, reduced continuation to 75%. The investigators found that the greatest impact of cost-sharing was in inhibiting the start of therapy. A doubling of cost-sharing, from the mean of $400 to $800, reduced the probability of RA therapy initiation by 9.3%.[63]
- A 2013 study by Strand and colleagues drew on data from the Consortium of Rheumatology Researchers of North America (CORRONA), the largest researcher-developed registry of patients with RA in the US.[64] The investigators analyzed the reported reasons for therapy discontinuation among patients treated with biologics, and found that 9% of discontinuations were due to issues related to access.[65]

Consequences of Medication Non-Adherence

The most commonly prescribed RA specialty medications are tumor necrosis factor α inhibitors (anti-TNFα agents) that have been shown to inhibit the progression of the disease, delay or prevent joint damage and improve functional status. These specialty medications are often used in conjunction with methotrexate (a non-specialty medication), when methotrexate therapy has been used as a first-line agent and has not produced satisfactory clinical results.[62] When needed, use of anti-TNFα agents can dramatically increase the odds of

Exhibit 9: Prevalence of Cost-Related Medication Nonadherence Among Medicare Beneficiaries With and Without RA (By Number of Self-Reported Conditions)[61]



remission,[66] "enabl[ing] the attainment of unprecedented outcomes."[67] Even when remission is not achieved, anti-TNFα agents meaningfully reduce the severity of symptoms in more than half of patients.[68] In turn, these reductions in symptom severity can increase patient employability, decrease absenteeism, and decrease the need for less physically demanding job duties. As Curkendall and colleagues write, "As with therapies for other illnesses, poor adherence or discontinuation of anti-TNFα therapy could cause patients to forgo these benefits."[69]

3-B. Multiple Sclerosis (MS)

Associations Between Non-Adherence and Out-of-Pocket Costs

Two 2012 studies investigated the relationship between high cost-sharing for MS specialty medications, non-adherence and non-initiation:

- In 2012, Palmer and colleagues used databases of Medicare and commercial claims to assess the impact of cost-sharing for MS medications on decisions to commence treatment, adhere with the medication regimen and continue treatment. The investigators found that high cost-sharing (>$29/month in out-of-pocket responsibility) was associated with lower odds of receiving medication, lower odds of adherence, and greater risk of treatment discontinuation.[70]

- A 2012 article by Romley and colleagues studied the impact of cost-sharing on the initiation of treatment for MS with several commonly used specialty medications. Drawing on a database of health claims from large employers, the authors found that a doubling of out-of-pocket cost-sharing from the mean cost-sharing level reduced treatment initiation by 4% over the two years following MS diagnosis. An increase in cost-sharing from zero to the 95th percentile was associated with a 13% reduction in medication initiation within the two years following diagnosis.[71]

Consequences of Medication Non-Adherence

MS disease-modifying therapies (DMTs) can reduce rates of relapse and the overall progression of the disease. The magnitude of the effects is noteworthy. Research conducted in 2011 by Tan and colleagues found that greater adherence is associated with fewer MS-related inpatient admissions, fewer relapses, and lower overall medical costs.[72] Given the positive association between adherence and patient outcomes, and the negative association between adherence and cost-sharing, the aforementioned Palmer study concluded that making

MS medications more expensive may "increase health resource utilization as well as the risk of relapse and progressive disability."[70] Romley and colleagues' findings, above, regarding cost-sharing and therapy initiation are particularly problematic, given that earlier use of specialty MS medications has been associated with the prevention of relapses and disability progression.[71]

3-C. Cancer

Associations Between Non-Adherence and Out-of-Pocket Costs

Many studies have investigated the impact of out-of-pocket costs on the use of chemotherapy and other anti-cancer agents. Two recent studies follow:

- In a 2012 article, Engle-Nitz and colleagues examined a change in cost-sharing for erlotinib, a medication used in the treatment of non-small cell lung cancer (NSCLC, by far the most common type of lung cancer) for patients with advanced cancer that has not responded to other therapies. The investigators took advantage of a natural experiment when a health plan changed the classification of erlotinib from tier three to tier two, resulting in an average copayment reduction of $73. Using pharmacy claims, Engle-Nitz et al found a statistically significant association between adherence and copayment levels. Patients with copayments of $30 or less were more adherent than patients with copayments of $45-$60.[73]

- In a 2014 *Journal of Clinical Oncology* article, Dusetzina and colleagues investigated how cost-sharing is associated with the use of imatinib, an important drug used in the treatment of patients with chronic myeloid leukemia (CML). Drawing on a sample of claims from a large commercial database, the investigators found that copayments ranged from $0 to more than $4,700 per month. Among patients with lower copayments (below the 75th percentile), 21% were nonadherent, compared to 30% of patients with higher copayments (above the 75th percentile), a statistically significant difference. A similar relationship was observed between cost-sharing and treatment discontinuation.[74]

Consequences of Medication Non-Adherence

"Tyrosine kinase inhibitors (TKIs) are considered by some to be the most successful class of targeted therapies developed in cancer, exceeding all survival expectations," wrote Dusetzina et al.[74] TKIs such as imatinib have radically improved the prognosis for patients with CML. What was previously a condition that killed patients in five to six years can now be successfully managed for decades. In fact, patients on imatinib have survival rates that are not statistically significantly different from survival rates among the general population.[75]

Imatinib is a particularly revolutionary medication, yet it is not unique among anti-cancer agents. The other cancer medications and medication classes discussed in this section also offer substantial improvements in survival.[76,77] In each of these cases, it stands to reason that non-adherent patients, including those experiencing cost-related non-adherence, may suffer earlier deaths than would be expected with treatment.

C. VALUE-BASED INSURANCE DESIGN (V-BID)

1. Background

V-BID reduces barriers to high-value clinical services and providers, and discourages use of services and providers that are of lower value, thereby aligning consumer incentives with value. V-BID is driven by the concept of clinical nuance, which recognizes that: (1) medical services differ in the benefit provided; and (2) the clinical benefit derived from a specific service depends upon the characteristics of the patient using it, who provides it, and where the service is delivered. As discussed in 2-A. Consumption, Cost-Sharing and Non-Adherence, a wide body of evidence demonstrates that higher cost-sharing is generally associated with reductions in service use, including both high-value and low-value services.

V-BID plans lower cost-sharing on high-value services, drugs, providers and settings as a means to increase utilizations that are worthwhile investments in health. These plans also reflect that value may vary: what is high-

value and what is low-value often depends on the particular patient and his or her condition (ie, the concept of clinical nuance). This means that the cost-sharing charged to Beneficiary A for any particular procedure, service or medication may rightly differ from the cost-sharing charged to Beneficiary B, based on each patient's condition or site-of-service decision.

2. Implementation

V-BID has been used to distinguish between settings and services of differing value relative to a variety of ailments and conditions. Notably V-BID has not generally been applied to conditions commonly treated with specialty medications, such as cancer, rheumatoid arthritis (RA), or multiple sclerosis (MS). Drawing on the background presented in this section, chapter D. Applying V-BID to Specialty Medications discusses possibilities for enhancing value through the application of V-BID for conditions involving use of specialty medications.

2-A. V-BID for Services

Payers and purchasers have sought to recognize that some services are of greater value than other services. The Oregon Public Employee Benefit Board (PEBB) has been particularly innovative in this respect. Rather than applying "one-size-fits-all" cost-sharing across services—for example, 20% coinsurance across-the-board—PEBB has sought to differentiate among key services. PEBB members generally enjoy eliminated or reduced cost-sharing for smoking cessation services, substance abuse treatment, and visits at recognized primary-care homes, Oregon's version of medical homes. PEBB also imposes surcharges on certain types of care that are commonly overused, through an "additional cost tier." This additional cost tier adds $100 (for services costing less than $5,000) or $500 (for services costing more than $5,000) to the standard cost-sharing requirement imposed on several types of treatment, including certain hip and knee procedures, sleep studies, spine pain procedures, upper endoscopy, and high-tech imaging studies.[78]

Another example of V-BID for services is the new Affordable Care Act (ACA) requirement for most health plans to offer coverage of certain evidence-based preventive health services, including those rated "A" or "B" by the United States Preventive Services Task Force (USPSTF).[79] This provision now applies to the vast majority of commercial health plans,[80] including those purchased on the ACA-created health insurance exchanges. The US Department of Health and Human Services has estimated that more than 70 million Americans in commercial plans received at least one preventive service without cost-sharing in 2011 or 2012 because of this requirement.[81]

2-B. V-BID for Medications

To date, most V-BID implementations for medications have entailed lowering cost-sharing for high-value, small-molecule drugs. Exhibit 10 presents findings from peer-reviewed evaluations of these interventions. The most commonly targeted medication classes are those that are used to control diabetes, coronary artery disease, congestive heart failure, asthma, hyperlipidemia, and hypertension. Relative to other possible targets for V-BID, reducing cost-sharing for drugs has the benefit of administrative simplicity. Plan administrators pursuing these programs have reduced cost-sharing, or, in some cases, eliminated it entirely for certain medications. On average, investigators have found that adherence improves among the targeted population by 3% in one year, though some studies have reported improvements of 9% or more. In some cases, cost-sharing strategies have been combined with other interventions, such as disease management.

While improvements in adherence are generally in the single digits, the associated improvement in population or workforce health has been substantial, given the prevalence and morbidity burden of many targeted conditions. Similarly, offsets in medical utilization that have resulted from increased use of high-value medications have been substantial. Of the studies that have examined the impact of V-BID on overall payer/purchaser spending, most find no statistically significant increase in total medical costs over one-year to three-year time frames, despite increases in drug expenditures (see Exhibit 10).

Exhibit 10: Impact of V-BID Medication Adherence Programs (Adapted From Lee et al., With Additions)[82-86]

Sponsor	Drug Class or Population	Impact on Adherence (percentage points)		Impact on Medical and Drug Costs (percentage points, unless otherwise indicated)	
		1 year	3 years	1 year	3 years
CVS/Caremark	Insulin	9.9[f]	—	—	—
	Oral antidiabetics	5.0[f]	—	—	—
	All antidiabetics	7.2[f]	—	—	—
Marriott	ACE inhibitors, ARBs	2.6[f]	—	−$26.88 PMPM[c]	—
	Beta-blockers	3.0[f]	—		—
	Antidiabetics	4.0[f]	—		—
	Statins	3.4[f]	—		—
	Inhaled steroids	1.9[a]	—		—
Pitney Bowes	Statins	3.1[d]	—	3.0[b]	—
	Clopidogrel	4.2[d]	—	−6.0[b]	—
Novartis	Asthma	0.0[b]	0.3[b]	28.0[b]	8.4[b]
	Antidiabetics	−0.2[e]	2.0[d]		
	Cardiovascular	0.7[e]	−0.1[e]		
	Overall	0.5[e]	1.8[e]		
	Asthma	—	9.0[c]	—	-18.0[c]
	Antihypertensives	—	9.0[c]	—	-5.0[c]
	Antidiabetics	—	4.0[c]	—	-9.0[c]
Florida Health Care Coalition	Insulin	2.5[b]	3.6[b]	−20.3[e]	-11.8[b]
	Oral antidiabetics	0.4[b]	0.8[b]		
	All diabetes medications	8.3[b]	4.1[b]		
	Insulin with disease management	3.7[b]	2.7[d]	3.3[b]	8.5[b]
	Oral antidiabetics with disease management	1.0[e]	5.8[f]		
	All diabetes medications with disease management	3.7[e]	6.5[f]		
Blue Cross Blue Shield of North Carolina 2010	ACE inhibitors, ARBs	2.5[f]	4.8[a,f]	—	—
	ARBs	0.9[e]	−0.2[a,b]	—	—
	Beta-blockers	2.2[f]	4.3[a,f]	—	—
	Calcium channel blockers	0.9[e]	2.0[a,f]	—	—
	Cholesterol absorption inhibitors	0.3[b]	0.4[a,b]	—	—
	Diuretics	2.8[f]	4.5[a,f]	—	—
	Metformin	3.2[f]	5.0[a,f]	—	—
	Statins	1.4[f]	2.3[a,f]	—	—

[a] At two years
[b] Not significant
[c] Value not available
[d] $p<0.05$
[e] $p<0.01$
[f] $p<0.001$
[g] No data on year-on-over-year changes. Study conducted over two plus years.

Exhibit 10 (Continued): Impact of V-BID Medication Adherence Programs (Adapted From Lee et al., With Additions)[82,86]

Sponsor	Drug Class or Population	Impact on Adherence (percentage points)		Impact on Medical and Drug Costs (percentage points, unless otherwise indicated)	
		1 year	3 years	1 year	3 years
Blue Cross Blue Shield of North Carolina 2014[86]	Patients with hypertension	2.2[f]	3.4[f] (at two years)	−$12.00 PMPM[d]	−$5.58 PMPM[b] (at two years)
	Patients with hypertension and hyperlipidemia	1.6[f]	3.0[f] (at two years)	—	—
	Patients with hypertension and coronary artery disease	2.0[c]	2.7[c] (at two years)	—	—
State of Colorado	Insulin	9.4[e]	11.3[a,e]	18.0[d]	—
	Oral antidiabetics	2.5[c]	−1.0[c]		—
	Overall	3.2[c]	1.3[c]		—
Blue Cross Blue Shield of Minnesota	Statins	4.9[d]	—	—	—
	Sulfonylurea	0.6[c]	—	—	—
	Metformin	2.3[c]	—	—	—
	Thiazolidinediones	−1.9[c]	—	—	—
	Insulin	−0.6[c]	—	—	—
Health Alliance 2007	Antidiabetics	7.3[f]	—	—	—
Health Alliance 2008	Statins	2.7[d]	—	—	—
Large Medicare Part D Plan[86]	Two statins	10.9[f]	—	—	—
Sponsors of Aetna-Administered Plans [82] *Limited to patients with history of myocardial infarction*	ACE inhibitors, ARBs	5.6[f,g]		−8.0[b]	
	Beta-blockers	4.4[f,g]			
	Statins	6.2[f,g]			
	All three of above	5.4[f,g]			

[a] At two years [b] Not significant [c] Value not available [d] p<0.05 [e] p<0.01 [f] p<0.001 [g] No data on year-on-over-year changes. Study conducted over two plus years.

Plan sponsors hope to offset the cost of additional medication use through reduced utilization of downstream services, such as hospitalizations related to non-adherence. The promise of V-BID for medications is perhaps best illustrated by a methodologically rigorous 2011 trial that targeted patients with a history of myocardial infarction.[82,83] The trial was unusual; in other V-BID drug implementations the basis for qualification for reduced cost-sharing had been considerably broader. The investigators found that:

> The rates of total major vascular events or revascularization were significantly reduced in the full-coverage group (21.5 vs 23.3), as was the rate of the first major vascular event (11.0 vs 12.8). The elimination of copayments did not increase total spending ($66,008 for the full-coverage group and $71,778 for the usual-coverage group).[82]

Studies that do not find budget neutrality in V-BID implementation often find considerable benefits nevertheless. For example, a 2014 study of V-BID for Blue Cross Blue Shield North Carolina members with hypertension, conducted by Maciejewski and colleagues, found statistically significant reductions in acute care use among a high-risk subgroup of hypertensive patients following V-BID implementation. Overall, their data indicated that approximately 89% of program costs ($6.4 million) were offset through reductions in utilization (a decrease of $5.7 million). This was achieved despite a relatively broad approach to eligibility (ie, the program was not limited to high-risk hypertensive patients).[86]

It bears emphasizing that there has been little work quantifying the impact on employee productivity of V-BID interventions resulting in improvements in medication adherence. As discussed previously (see B-2-C. High Cost-Sharing and Financial Burdens), many employers will find that the avoidable costs of reduced productivity or absenteeism dwarf the avoidable spending on the cost of a particular medication. Fully accounting for non-medical offsets would likely change the equation considerably, enhancing the cost-saving capability of carefully designed V-BID implementations.

There is relatively little research on patient perceptions of V-BID interventions. As might be expected, however, the research that does exist indicates that patients approve of these arrangements. One study examined a Christiana Care Health System intervention that eliminated cost-sharing for employees' diabetes medications and supplies. Employees reported overwhelmingly positive perceptions when surveyed, with more than two-thirds agreeing with the statement that "the program helped me take better care of my diabetes."[87]

3. The Work Ahead: Customizing and Aligning

Over the last 15 years, great strides have been made in taking V-BID from the drawing board to implementation. However, much work remains ahead to improve and build on these efforts. Payers and purchasers keen to achieve optimal value can work to align consumer-facing V-BID incentives with provider-facing incentives (eg, quality metrics related to chronic disease management for patient-centered medical homes).[88] Payers and purchasers also can seek to design their V-BID programs in alignment with emerging best practices. In a 2014 *Health Affairs* article, Choudhry and colleagues identified several promising practices through an analysis of the features and efficacy of 76 V-BID plans.[89] Among them:

- Offering incentives that are more generous (defined as offering generic drugs for $0 and brand-name drugs for no more than a $10 copayment, or 15% coinsurance);
- Targeting high-risk patients (defined as "those at an increased risk of morbidity and mortality based on disease specific definition"); and
- Offering wellness plans in conjunction with the V-BID plan.

It bears emphasizing that the findings discussed in this chapter have been in the context of small molecule drugs and certain medical services, not specialty pharmaceuticals. The following chapter discusses possibilities for applying V-BID concepts in that context.

D. APPLYING V-BID TO SPECIALTY MEDICATIONS

Payers and purchasers must be cognizant of how cost-sharing can impact adherence, health, productivity and financial well-being among all patients who use critical medications. Given the prevalence of four- and five-tier arrangements that require high levels of cost-sharing (see B-1. Context), the potential for harm due to non-adherence is particularly grave for patients with conditions that are managed with specialty medications. The introduction of $6,350 (individual)/$12,700 (family) out-of-pocket maximum limits in non-grandfathered plans, as specified by the Affordable Care Act (ACA), does not solve affordability problems (see Appendix A). For some patients, even these capped limits pose a financial hardship, especially for those who must pay the entire amount within a short timeframe. This chapter outlines several V-BID options for avoiding or minimizing harm caused to patients due to high cost-sharing.

1. Impose No More Than Modest Cost-Sharing on High-Value Medications

V-BID implementation for specialty pharmaceuticals would seek to ensure that cost-sharing is related to clinical value, not simply acquisition cost. Payers and purchasers can deploy a variety of techniques, with varying levels of nuance, to achieve this goal.

Abolishing four- and five-tier arrangements altogether may be the most straightforward approach to promoting access to all medically necessary treatments, although such an approach limits possibilities for clinically nuanced differentiation among treatments within the tier. Nevertheless, the approach merits discussion. In general, the elimination of four- and five-tier arrangements translates to setting cost-sharing for specialty drugs at levels no greater than cost-sharing for non-specialty, non-preferred branded medications. This approach is now required in state-regulated plans in multiple states, including New York[10] and Vermont,[11] both of which enacted legislation banning four- or five-tier plans, and Delaware, which enacted legislation capping copayments or coinsurance at $150 per month.[90] These approaches avoid the complexities involved in cost-sharing structures that are more targeted, and may be considerably easier to implement than other concepts discussed in this section.

Payers and purchasers can become more selective by eliminating or lowering high cost-sharing for only certain specialty drugs. As discussed in the previous chapter, the same service or drug may have differing value for different patients given the nature of their conditions and a variety of other variables. The same procedure, colonoscopy, for instance, may be high-value when performed on a 55-year-old man who has never been screened, or low-value if it is performed on a healthy 30-year-old man with no pertinent family history.[91] Of course, this concern is not equally salient across all medications and services.

A similar pattern holds for specialty medications: many medications are rarely used inappropriately, while others have patterns of use for which value is questioned (as also happens with some non-specialty pharmaceuticals). A payer or purchaser, perhaps in partnership with physician leaders, could seek to identify particular specialty medications that consistently deliver outstanding value given prescribing patterns. These drugs could then be moved to a lower tier. A similarly selective approach could be used when evidence suggests that non-adherence among a set of patients is especially problematic or costly. Surveys of patients, surveys of providers, and records from pharmacies regarding abandoned prescriptions could be valuable for ascertaining this information.

2. Reduce Cost-Sharing in Accordance With Patient- or Disease-Specific Characteristics

Many medical interventions are considerably more valuable for some patients than for others. What is or is not high-value may vary depending on age, sex, disease, or other variables relating to the nature of the intervention (eg, curative versus palliative use of a medication).[92,93] For example, the United States Preventive Services Task Force (USPSTF) recently recommended that computed tomography (CT) scan screening for lung cancer should focus on certain high-risk current and former smokers aged 55 years to 80 years, rather than on all adults aged 55 years to 80 years.[94] To ensure good value for health care spending, it is essential that therapies be available to those who will benefit from them. It is less critical that therapies be easily accessible to those who are unlikely to benefit.

As discussed earlier (see B-1. Context), the level of cost-sharing associated with tiers four and five often imposes significant financial barriers to medication use, regardless of clinical importance. In enforcing cost-sharing requirements, plan administrators rarely distinguish exceptionally high-value tier-four medications from others, because acquisition cost, not clinical value, tends to determine cost-sharing. This focus should be reconsidered. The oncology space provides a prime example for why patient-specific clinical value is important. For cancer patients, the type of cancer, the stage of chemotherapy and the presence or absence of a biomarker (a biological indicator used to determine risk, estimate prognosis, select optimal therapy, etc) may determine what is high-value or low-value treatment.[92,95] Similarly, in the rheumatology space the presence or absence of poor prognostic markers of disease progression, which may indicate the risk of worse outcomes in the absence of effective therapy, may mean the difference between high-value and low-value biologic therapy.[62]

An example of a relevant biomarker is a medication commonly used in the treatment of metastatic colorectal cancer, cetuximab. Cetuximab delivers great benefit to certain patients depending on the presence or absence of certain tumor-related characteristics. "Only patients whose tumors have a KRAS mutation-negative gene, commonly known as 'wild-type'…should receive Erbitux [cetuximab]."[96] Research indicates that cetuximab offers risks but no benefits if the metastatic colorectal cancer has the KRAS mutation, but 4.7 extra months for those with the wild type.[97]

Payers and purchasers should consider reducing high cost-sharing for specialty drugs on the basis of patient characteristics when available evidence suggests that drug therapy is especially important for achieving optimal health outcomes, as in certain uses of cetuximab, or in the use of early biologic therapy in patients with poor prognosis rheumatoid arthritis (RA). Such an approach may require creating new provider/plan information-sharing arrangements, which may have up-front costs, but the merit of clinically nuanced cost-sharing could make these expenses worthwhile.

Additionally, payers and purchasers should seek to ensure that evidence-based biomarker tests are available with minimal cost-sharing for patients who may benefit from the results. For example, payers may seek to waive cost-sharing entirely for biomarkers identified in the National Comprehensive Cancer Network (NCCN) Biomarkers Compendium.[98]

3. Relieve Patients From High Cost-Sharing After Failure on a Different Medication

Another approach to incorporating V-BID in cost-sharing for specialty pharmaceuticals could entail selectively reducing cost-sharing for specialty medications if the patient does not respond as desired to another medication. This is referred to as "reward the good soldier" or "step-edit with copayment relief."[99] Suppose, for example, that a payer wished to encourage the use of methotrexate as a first-line treatment for RA, given reasonable levels of effectiveness in certain patients. However, not all patients respond adequately to therapy with this medication. A "reward the good soldier" V-BID benefit structure would offer relief from higher cost-sharing for biologics (e.g., adalimumab, etanercept) for patients who first failed on the more preferred medication. Such a benefit structure would maintain incentives for the use of preferred medications, but reduce concerns about the addition of essential medications, when necessary. As Chernew and colleagues have written, "While acquisition cost is an important element of cost-sharing, it should be acknowledged that there are certain clinical instances where low cost alternatives are not available and/or do not achieve the desired clinical outcome.[99] A "reward the good soldier" benefit design would recognize this.

4. Use Cost-Sharing to Encourage Patients to Select High-Performing Providers and Settings for Their Care

The provider of, or setting for, any given service often serves as an important indicator of value. Payers and purchasers can encourage consumers to select high-value settings and providers through differentiated cost-sharing. As discussed previously, Oregon PEBB's experience in lowering cost-sharing for visits at recognized primary care homes is an example of this tactic.

Consumers respond to "center of excellence" programs of this type. For example, Cleveland Clinic now accepts bundled payments from certain large employers, including home-improvement retailer Lowes, for select packages of services. Lowes offers a benefit design that generously rewards covered employees and their dependents for traveling to Cleveland for certain cardiac procedures. This encouragement takes the form of full reimbursement for travel costs and a waiving of the standard $500 deductible. Employers have been drawn to these arrangements in part by the clinic's willingness to accept efficiency-promoting bundled payments, and by its performance on key measures of quality, and have agreed to reduce cost-sharing to encourage use of the preferred provider.[100,101]

Similar arrangements to identify and promote high-value providers could be established for the treatment of cancer, multiple sclerosis (MS), RA, systemic lupus and other conditions commonly treated with specialty medications. For example, many oncology practices have adopted the use of clinical pathways, sets of evidence-based practices that are expected to produce optimal results for most, but not all, patients.[102] According to a 2011 survey, about 40% of payers had oncology care pathways in place, and the figure has likely increased since then. Payers typically encourage providers to use externally developed pathways, such as those of the NCCN.[12] A 2010 study on the treatment of non-small-cell lung cancer at US oncology practices found that the use of a guided protocol, with an allowance for deviation based on individual circumstances, resulted in 35% lower costs for outpatient spending, with no differences in overall survival.[103]

In many cases, practices have been offered incentives for adopting these pathways. Most commonly, these have included increased drug reimbursements, and relief from administrative requirements such as prior authorization. For example, United Healthcare has piloted a model that offers bundled payments to oncology groups for 19 types of clinical episodes related to breast, colon, and lung cancer, with a provision to reimburse 100% of drug acquisition costs. Participating oncology groups are expected to adhere to agreed-upon pathways for at least 85% of their United Healthcare patients, with exceptions for medical contraindications and clinical trial enrollment. Early results appear promising.[104] Other conditions that are commonly treated with specialty medications, such as MS, also have guidelines available.[105] Payers and purchasers could seek to develop similar arrangements.

V-BID could pair naturally with these provider-oriented initiatives. To direct greater volume to high-value providers, health plans could offer incentives for plan members who choose to receive care at sites that meet one or more of the following characteristics related to quality and efficiency:

- Designation as a "center of excellence";
- Consistent use of evidence-based clinical pathways, such as NCCN guidelines for cancer patients, with an allowance for deviation based on individual circumstances;[12]
- Tendency to appropriately engage patients in key decisions;
- Consistency in achieving key condition-specific quality goals (eg, in the context of RA, modifying therapy to achieve a defined disease activity target, and measuring progress toward that target);[67] and
- Tendency to avoid costly services when their use will not affect treatment decisions. (This could align with Choosing Wisely recommendations from the American Society of Clinical Oncology [ASCO] and the American College of Radiology [ACR].[106,107] Choosing Wisely, an initiative of the American Board of Internal Medicine, is a partnership through which specialty societies and others have identified health care services that are commonly overused.)[108]

Incentives for consumers receiving care with a qualified high-value provider could take the form of lower cost-sharing for medications, through the movement of clinically indicated drugs from tier four or five to a lower tier, or of lower out-of-pocket maximums, copayments, or coinsurance rates.

5. Keys to Success

Successful implementation of clinically nuanced benefit designs for specialty pharmaceuticals will require addressing several foreseeable challenges.

Preparing for Administrative Complexity. Implementation of V-BID for specialty drugs, and for patients with conditions that are commonly treated with specialty drugs, presents special challenges. Even advanced "smart" formularies that account for clinical benefit when setting cost-sharing levels (of the sort that Premera Blue Cross has implemented) may face difficulties in appropriately tiering specialty medications that deliver differing value across patients with different conditions.[109] Some level of administrative complexity may be necessary to achieve appropriately nuanced benefit designs.

Establishing Incentives That Engage Patients Early. In general, any V-BID implementation for specialty-medication-relevant conditions will enjoy more success if patients are incentivized earlier rather than later in their disease course. Early engagement can mean the difference between establishing a relationship with a favored rather than a less preferred provider, and may forestall the possibility of disrupting existing relationships later in time. Further, patients with conditions requiring specialty drugs often reach their plans' out-of-pocket maximums. A V-BID program that makes incentives available only in the later stages of the disease course may find that incentives are of limited impact, because many patients will have already reached the out-of-pocket maximum, and will no longer be subject to cost-sharing of any sort.

Communicating Effectively About V-BID. Effective communication with consumers about V-BID is valuable for promoting engagement, optimizing participation, and avoiding surprises that may confuse consumers. Many individuals are unfamiliar with basic cost-sharing terminology,[110] and the nuances of certain V-BID implementations may not be immediately intuitive. Deliberate, carefully executed communication strategies are likely to prove worthwhile.[111]

Integrating V-BID With Provider-Facing Initiatives. The most effective health system reform efforts will deploy multiple complementary strategies that impact different stakeholders. V-BID is an incremental solution. When deployed in combination with other provider-oriented strategies, patient-facing V-BID incentives can ensure that both providers *and* patients share payers' objectives for achieving value in health care.[95]

Recognizing That the Perfect Must Not Be the Enemy of the Good. All programs must start somewhere. For some plan sponsors, a comprehensive and far-reaching V-BID implementation for specialty pharmaceuticals may not be feasible immediately. Leaders may instead choose to begin with certain high-priority medications or conditions. An inability to guarantee unfettered access to all high-value specialty drugs need not lead to a lack of action.

E. CONCLUSION

Given high prices, increasing use and a burgeoning pipeline, spending on specialty pharmaceuticals will only attract more scrutiny from payers and purchasers over the coming years. However, promoting the prudent use of resources need not entail limiting access to the significant, tangible benefits that these medications can deliver. In addition to great health benefits, these medications may pay dividends in terms of improved workplace productivity.

Accordingly, the last decade's trend toward high cost-sharing for expensive medications, regardless of clinical benefit, merits reassessment. Cost-related non-initiation and non-adherence can mean forgoing important clinical benefits for a significant portion of patients who require therapy. An unrelenting drive to shift costs to patients, irrespective of clinical value, may lead to more bankruptcies, inferior workplace productivity, and increases in avoidable morbidity and mortality.

The tactics discussed in this report—tiering based on clinical benefit rather than acquisition cost, customizing cost-sharing in accordance with patient-specific value, "rewarding the good soldier," and encouraging the use of high-performing providers—offer another way forward. For conditions commonly managed with specialty medications, V-BID principles can improve quality, reduce waste, foster engagement, and mitigate legitimate concerns that one-size-fits-all cost-sharing may lead individuals to forgo clinically important care.

The ultimate test of health care transformation will be whether it improves health and addresses rising costs. Tools like V-BID, that change the focus from *how much* to *how well* we spend our health care dollars, will better enable the achievement of these goals.

APPENDIX A. THE AFFORDABLE CARE ACT, OUT-OF-POCKET MAXIMUMS, AND COVERAGE FOR SPECIALTY MEDICATIONS

The Affordable Care Act (ACA) provides that, in general, commercial health plans must limit out-of-pocket cost-sharing (ie, deductibles, coinsurance, and copayments) for in-network essential health benefits (EHBs) to no more than the limit applicable to high-deductible health plans.[b] For 2014, these figures are $6,350 for individual coverage and $12,700 for family coverage. In February 2013, the US Departments of Labor, Health and Human Services, and the Treasury announced that enforcement for group plans in 2014 would be different. Plans that use separate administrators for different components of their benefit packages (eg, medical benefits and pharmacy benefits) may exceed the combined limit on out-of-pocket cost-sharing. This is permitted only so long as each separate out-of-pocket limit is itself less than $6,350 for individual coverage and $12,700 for family coverage.

When fully implemented, these new parameters will represent a marked improvement for many consumers, especially consumers with individual coverage in Vermont, Washington, Oregon, Alabama, Florida, and Arizona. According to a 2013 analysis, the average individual out-of-pocket limit among plans in each of these states ranged from $7,396 (Arizona) to $10,013 (Vermont). Each of these limits is at least $1,000 more than the maximum limit that will be acceptable for non-grandfathered plans when the ACA is fully implemented.[112]

The EHB requirements for drug coverage also may represent another improvement for consumers. The regulations specify that all exchange-sold plans must cover the greater of (a) the same number of drugs in each class/category as the state's benchmark plan or (b) one drug for each class/category in the plan's formulary.[c] The plan also must have a procedure to cover medically necessary non-formulary drugs.

However, coverage of a medication may not equate to affordable access. Specialty medications may still be prohibitively expensive, despite coverage. For example, in Connecticut and Oregon beneficiaries who are not eligible for cost-sharing subsidies, that is, those with incomes greater than 250% of federal poverty level, face coinsurance of 50% for tier-four drugs in certain popular plan designs. Furthermore, coverage in these plans does not take effect until the beneficiary absorbs a substantial deductible ($2,000 in Oregon and $2,700 in Connecticut).[114]

[b] These requirements do not apply to grandfathered plans, ie, plans that were in effect on March 3, 2010, and have not made significant changes to benefits or premiums since that time. In 2013, 36% of those with employer-sponsored coverage were in a grandfathered plan. The portion of plans with grandfathered status is widely expected to decline over time.[80]

[c] According to a March 2014 article in the *American Journal of Managed Care*, these regulations may not consistently ensure patient access to medications that must be covered. Analyzing plans in California and Massachusetts, the investigators concluded that, "health plans are not fully compliant with state and federal regulations."[113]

APPENDIX B. SPECIALTY MEDICATION REIMBURSEMENT AND COST-SHARING FOR MEDICARE BENEFICIARIES

As enacted in 1965, Medicare generally did not cover prescription medications. Exceptions were made, however, for drugs administered in physician offices or patients' homes. Today, Medicare Part B, the medical services component of Medicare, covers costs for most specialty drugs that are not self-administered by patients. This includes many chemotherapy agents and vaccinations. Part B also covers some drugs that are administered by patients, such as medications that are given in conjunction with the use of durable medical equipment (eg, nebulizer treatments); given in the course of home health care; or related to care for end stage renal disease (ESRD), hemophilia, primary immune deficiency disease, or transplants (for certain patients).[115] Part B also covers certain oral anti-cancer drugs if the same medication is available as an injectable (this list is not exhaustive).[116]

With exceptions for self-administered agents obtained by patients at pharmacies, Part B reimbursement for specialty drugs generally operates under a "buy and bill approach." That is, the provider purchases the drug, administers the drug to the patient, and bills Medicare. Medicare payment is determined through a formula intended to cover providers' medication acquisition costs plus a margin for non-acquisition expenses and profit (often 6% of acquisition costs).[117]

For patients with Original Medicare (ie, not enrolled in a Medicare Advantage plan) receiving Part B-covered drugs at a pharmacy or in a physician's office, cost-sharing is 20% of the Medicare-approved charge once the Part B deductible has been satisfied. Patients pay a copayment for Part B-covered drugs received from a hospital outpatient department.

Medicare Part D covers outpatient prescription drugs for medications that are not otherwise available under Part B. Patient cost-sharing depends on the particular Medicare Prescription Drug Plan a beneficiary is enrolled in, and may vary within the confines of parameters determined by the Centers for Medicare and Medicaid Services (CMS) (see B-1-B. Coverage for Specialty Medications).

Given the relevant statutes and guidance from CMS, the decision as to whether a particular medication is covered under Part B or Part D may vary according to the beneficiary's diagnosis, the site where he or she received services, and other considerations. The distinction is significant, however, because cost-sharing may vary dramatically for beneficiaries depending on whether the medication is covered under Part B or Part D.

REFERENCES

[1] EMD Serono specialty digest, 9th edition: managed care strategies for specialty pharmaceuticals. EMD Serono Web site. http://specialtydigest.emdserono.com/pdf/Digest9.pdf. Published 2013. Accessed April 16, 2014.

[2] Zalesak M, Greenbaum JS, Cohen JT, et al. The value of specialty pharmaceuticals–A systematic review. *Am J Manag Care*. In press.

[3] Express Scripts drug trend report. Express Scripts Web site. http://lab.express-scripts.com/insights/industry-updates/~/media/07e71c2358f244678d1812c80e273014.ashx. Published 2013. Accessed April 16, 2014.

[4] Artemetrx. Specialty drug trend across the pharmacy and medical benefit. Artemetrx Web site. http://www.artemetrx.com/docs/ARTEMETRX_Specialty_Trend_Rpt.pdf. Published 2013. Accessed April 16, 2014.

[5] Kaiser Family Foundation, Health Research & Educational Trust. Employer health benefits 2013 annual survey. http://kaiserfamilyfoundation.files.wordpress.com/2013/08/8465-employer-health-benefits-20131.pdf. Published 2013. Accessed April 16, 2014.

[6] Pharmacy Benefit Management Institute. 2013 PBMI specialty drug report. http://reports.pbmi.com/report.php?id=2. Published 2013. Accessed April 16, 2014.

[7] Appleby J. Workers squeezed as employers pass along high costs of specialty drugs. *Kaiser Health News*. August 22, 2011. http://www.kaiserhealthnews.org/stories/2011/august/22/workers-squeezed-as-employers-pass-along-high-costs-of-specialty-drugs.aspx. Accessed April 16, 2014

[8] Goldman DP, Joyce GF, Zheng Y. Prescription drug cost sharing: associations with medication and medical utilization and spending and health. *JAMA*. 2007;298(1):61-69.

[9] Loeppke R, Taitel M, Haufle V, Parry T, Kessler RC, Jinnett K. Health and productivity as a business strategy: a multiemployer study. *J Occup Environl Med*. 2009;51(4):411-428.

[10] An act to amend the public health law and the insurance law, in relation to cost-sharing, deductible or co-insurance for tier IV prescription drugs; and to amend the executive law, in relation to unlawful discriminatory practice in relation to tier IV prescription drugs. S5000. 2009-2010 Reg Sess (NY 2010). http://assembly.state.ny.us/leg/?sh=printbill&bn=S05000&term=2009. Accessed April 16, 2014.

[11] An act relating to modifications to the ban on gifts by manufacturers of prescribed products. Act 51. 2011-2012 Leg Sess (VT 2011). http://www.leg.state.vt.us/docs/2012/Acts/ACT051.pdf. Accessed April 16, 2014.

[12] National Comprehensive Cancer Network. NCCN Guidelines® and derivative information products: user guide. http://www.nccn.org/professionals/. Published 2014. Accessed April 16, 2014.

[13] Cuckler GA, Sisko AM, Keehan SP, Smith SD, et al. National health expenditure projections, 2012-22: slow growth until coverage expands and economy improves. *Health Aff*. 2013;32(10):1820-1831.

[14] Tu HT, Samuel DR. Limited options to manage specialty drug spending. Center for Studying Health System Change Web site. http://www.hschange.org/CONTENT/1286/1286.pdf. Published 2012. Accessed April 16, 2014.

[15] Patient Protection and Affordable Care Act, HR 3590, 111th Cong, 2nd Sess. (passed 2010). Section 7002(b)(2), amending Section 351(i).

[16] Food and Drug Administration. Approval of Sovaldi (sofosbuvir) tablets for the treatment of chronic hepatitis C. http://www.fda.gov/forconsumers/byaudience/forpatientadvocates/ucm377920.htm. Published 2013. Accessed April 16, 2014.

[17] Food and Drug Administration. FDA approves new treatment for hepatitis C virus. http://www.fda.gov/newsevents/newsroom/pressannouncements/ucm376449.htm. Published 2013. Accessed April 16, 2014.

[18] Koff RS. Review article: The efficacy and safety of sofosbuvir, a novel, oral nucleotide NS5B polymerase inhibitor, in the treatment of chronic Hepatitis C virus infection. *Aliment Pharmacol Ther.* 2013;39(5):478-487.

[19] Pharmaceutical Strategies Group. Understanding specialty pharmacy management and cost control. http://www.psgconsults.com/Understanding_Specialty_Pharmacy_Management_and_Cost_Control_FINAL.pdf. Published 2010. Accessed April 16, 2014.

[20] Hoadley J, Summer L, Hargrave E, Cubanski J, Neuman, T. Analysis of Medicare prescription drug plans in 2011 and key trends since 2006. Kaiser Family Foundation Web site. http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8237.pdf. Published 2011. Accessed April 16, 2014.

[21] Dieguez G, Pyenson B, Johnson R. Specialty tiers: benefit design considerations for Medicare Part D. Milliman Web site. http://www.milliman.com/uploadedFiles/insight/2013/specialty-tiers.pdf. Published 2013. Accessed April 16, 2014.

[22] Hoadley J, Summer L, Hargrave E, Cubanski J. Medicare Part D prescription drug plans: The marketplace in 2013 and key trends, 2006-2013. Kaiser Family Foundation Web site. http://kaiserfamilyfoundation.files.wordpress.com/2013/12/8524-medicare-part-d-pdp-marketplace-2013-and-trends1.pdf. Published 2013. Accessed April 22, 2014.

[23] Dieguez G, Johnson R, Pyenson B. Specialty tiers: benefit design considerations for commercial payors. Milliman Web site. http://www.milliman.com/uploadedFiles/insight/2013/Benefit%20design%20considerations%20for%20commerical%20payors.pdf. Published 2013. Accessed April 16, 2014.

[24] Kantarjian HM, Talpaz M, O'Brien S, et al. Survival benefit with imatinib mesylate versus interferon-alpha-based regimens in newly diagnosed chronic-phase chronic myelogenous leukemia. *Blood*. 2006;108(6):1835-1840.

[25] Kelly RJ, Hill A, Arnold LM, Brooksbank GL, et al. Long-term treatment with eculizumab in paroxysmal nocturnal hemoglobinuria: sustained efficacy and improved survival. *Blood*. 2011;117(25): 6786-6792.

[26] Newhouse JP. The Insurance Experiment Group. *Free for all? Lessons from the RAND Health Insurance Experiment*. Cambridge, MA: Harvard University Press; 1993.

[27] Beeuwkes Buntin M, Haviland AM, McDevitt R, Sood N. Healthcare spending and preventive care in high-deductible and consumer-directed health plans. *Am J Manag Care*. 2011;17(3):222-230.

[28] Fronstin P, Sepúlveda MJ, Roebuck MC. Consumer-directed health plans reduce the long-term use of outpatient physician visits and prescription drugs. *Health Aff*. 2013;32(6):1126-1134.

[29] Fung V, Mangione CM, Huang J, et al. Falling into the coverage gap: Part D drug costs and adherence for Medicare Advantage prescription drug plan beneficiaries with diabetes. *Health Serv Res*. 2010;45(2):355-375.

[30] Polinski JM, Shrank WH, Huskamp HA, Glynn RJ, Liberman JN, Schneeweiss S. Changes in drug utilization during a gap in insurance coverage: an examination of the Medicare Part D coverage gap. *PLoS Med*. 2011;8(8):e1001075.

[31] Raebel MA, Delate T, Ellis JL, Bayliss EA. Effects of reaching the drug benefit threshold on Medicare members' healthcare utilization during the first year of Medicare Part D. *Med Care*. 2008;46(10):1116-1122.

[32] Schmittdiel J, Ettner SL, Fung V, et al. The Medicare Part D coverage gap and diabetes beneficiaries. *Am J Manag Care*. 2009;15(3):189.

[33] Li P, McElligott S, Bergquist H, Schwartz JS, Doshi JA. Effect of the Medicare Part D coverage gap on medication use among patients with hypertension and hyperlipidemia. *Ann Intern Med.* 2012;156(11):776-784.

[34] Fung V, Reed M, Price M, et al. Responses to Medicare drug costs among near-poor versus subsidized beneficiaries. *Health Serv Res*. 2013;48(5):1653-1658.

[35] Karaca-Mandic P, Swenson T, Abraham JM, Kane RL. Association of Medicare Part D medication out-of-pocket costs with utilization of statin medications. *Health Serv Res*. 2012;48(4):1311-1333.

[36] Zhang Y, Donohue JM, Newhouse JP, Lave JR. The effects of the coverage gap on drug spending: a closer look at Medicare Part D. *Health Aff*. 2009;28(2):w317-w325.

[37] Sacks NC, Burgess JF, Cabral HJ, Pizer SD, McDonnell ME. Cost sharing and decreased branded oral anti-diabetic medication adherence among elderly Part D Medicare beneficiaries. *J Gen Intern Med*. 2013;28(7):876-885.

[38] Sinnott SJ, Buckley C, David O, Bradley C, Whelton H. The effect of copayments for prescriptions on adherence to prescription medicines in publicly insured populations: a systematic review and meta-analysis. *PloS One*. 2013;8(5):e64914.

[39] Burgess JF Jr, McDonnell ME. Cost sharing and decreased branded oral anti-diabetic medication adherence among elderly part D Medicare beneficiaries. *J Gen Intern Med*. 2013;28(7):1-10.

[40] Zeng F, Chen CI, Mastey V, Zou KH, Harnett J, Patel BV. Effects of copayment on initiation of smoking cessation pharmacotherapy: an analysis of Varenicline reversed claims. *Clin Ther*. 2011;33(2):225-234.

[41] Osterberg L, Blaschke T. Adherence to medication. *N Eng J Med*. 2005;353(5):487-497.

[42] Dimatteo MR, Giordani PJ, Lepper HS, Croghan TW. Patient adherence and medical treatment outcomes: a meta-analysis. *Med Care*. 2002;40(9):794-811.

[43] Lau DT, Nau DP. Oral antihyperglycemic medication nonadherence and subsequent hospitalization among individuals with type 2 diabetes. *Diabetes Care*. 2004;27(9):2149-2153.

[44] Ho PM, Rumsfeld JS, Masoudi FA, et al. Effect of medication nonadherence on hospitalization and mortality among patients with diabetes mellitus. *Arch Intern Med*. 2006;166(17):1836-1841.

[45] Sirey JA, Bruce ML, Kales HC. Improving antidepressant adherence and depression outcomes in primary care: the treatment initiation and participation program. *Am J Geriatr Psychiatry*. 2010;18(6):554-562.

[46] Ho PM, Magid DJ, Shetterly SM, et al. Medication nonadherence is associated with a broad range of adverse outcomes in patients with coronary artery disease. *Am Heart J*. 2008;155(4):772-779.

[47] Mäkelä MJ, Backer V, Hedegaard M, Larsson K. Adherence to inhaled therapies, health outcomes and costs in patients with asthma and COPD. *Respir Med*. 2013;107(10):1481-1490.

[48] Muntner P, Halanych JH, Reynolds K, et al. Low medication adherence and the incidence of stroke symptoms among individuals with hypertension: The REGARDS Study. *J Clin Hypertens*. 2011;13(7):479-486.

[49] Balkrishnan R, Rajagopalan R, Camacho FT, Huston SA, Murray FT, Anderson RT. Predictors of medication adherence and associated health care costs in an older population with type 2 diabetes mellitus: a longitudinal cohort study. *Clin Ther*. 2003;25(11):2958-2971.

[50] Balkrishnan R, Bhosle MJ, Camacho FT, Anderson RT. Predictors of medication adherence and associated health care costs in an older population with overactive bladder syndrome: a longitudinal cohort study. *J Urol*. 2006;175(3):1067-1072.

[51] Ettinger AB, Manjunath R, Candrilli SD, Davis KL. Prevalence and cost of nonadherence to antiepileptic drugs in elderly patients with epilepsy. *Epilepsy Behav*. 2009;14(2):324-329.

[52] Kane S, Shaya F. Medication non-adherence is associated with increased medical health care costs. *Dig Dis Sci*. 2008;53(4):1020-1024.

[53] Stuart B, Davidoff A, Lopert R, Shaffer T, Shoemaker JS, Lloyd J. Does medication adherence lower Medicare spending among beneficiaries with diabetes? *Health Serv Res*. 2011;46(4):1180-1199.

[54] IMS Institute for Healthcare Informatics. Avoidable costs in U.S. healthcare: the $200 billion opportunity from using medicines more responsibly. http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Institute/RUOM-2013/IHII_Responsible_Use_Medicines_2013.pdf. Published 2013. Accessed April 16, 2014.

[55] Roebuck MC, Liberman JN, Gemmill-Toyama M, Brennan TA. Medication adherence leads to lower health care use and costs despite increased drug spending. *Health Aff*. 2011;30(1):91-99.

[56] DeVol R, Bedroussian A, Charuworn A, et al. An unhealthy America: the economic burden of chronic disease—charting a new course to save lives and increase productivity and economic growth. Milken Institute Web site. http://www.milkeninstitute.org/publications/publications.taf?function=detail&ID=38801018&cat=resrep. Published 2007. Accessed April 16, 2014.

[57] Carls GS, Roebuck MC, Brennan TA, Slezak JA, Matlin OS, Gibson TB. Impact of medication adherence on absenteeism and short-term disability for five chronic diseases. *J Occup Environ Med*. 2012;54(7):792-805.

[58] National Patient Advocate Foundation. Medical debt, medical bankruptcy and the impact on patients. http://www.npaf.org/files/Medical%20Debt%20White%20Paper%20Final_0.pdf. Published 2012. Accessed April 16, 2014.

[59] Pollitz K, Cox C, Lucia K, Keith K. Medical debt among people with health insurance. Kaiser Family Foundation Web site. http://kaiserfamilyfoundation.files.wordpress.com/2014/01/8537-medical-debt-among-people-with-health-insurance.pdf. Published 2014. Accessed April 16, 2014.

[60] Jagsi R, Pottow JAE, Griffith KA, et al. Long-term financial burden of breast cancer: experiences of a diverse cohort of survivors identified through population-based registries. *J Clinl Oncol*. 2014. Online before print.

[61] Harrold LR, Briesacher BA, Peterson D, et al. Cost-related medication nonadherence in older patients with rheumatoid arthritis. *J Rheumatol*. 2013;40(2):137-143.

[62] Singh JA, Furst DE, Bharat A, et al. 2012 update of the 2008 American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. *Arthritis Care Res.* 2012;64(5):623-639.

[63] Karaca-Mandic P, Joyce GF, Goldman DP, Laouri M. Cost sharing, family health care burden, and the use of specialty drugs for rheumatoid arthritis. *Health Serv Res*. 2010;45(5):1227-1250.

[64] Consortium of Rheumatology Researchers of North America. About CORRONA. http://corrona.com/about.html. Accessed April 16, 2014.

[65] Strand V, Williams S, Miller PSJ, et al. Discontinuation of biologic therapy in rheumatoid arthritis (RA): analysis from the Consortium of Rheumatology Researchers of North America (CORRONA) Database. *Ann Rheum Dis*. 2013;72(Supplement 3):a71-a72.

[66] Klareskog L, van der Heijde D, de Jager P, et al. Therapeutic effect of the combination of etanercept and methotrexate compared with each treatment alone in patients with rheumatoid arthritis: double-blind randomized controlled trial. *Lancet.* 2004;363(9410):675-681.

[67] Smolen JS, Aletaha D, Bijlsma JW, et al. Treating rheumatoid arthritis to target: recommendations of an international task force. *Ann Rheum Dis*. 2010;69(4):631-637.

[68] Maini R, St. Clair, EW, Breedveld F, et al. Infliximab (chimeric anti-tumour necrosis factor a monoclonal antibody) versus placebo in rheumatoid arthritis patients receiving concomitant methotrexate: a randomised phase III trial. *Lancet*. 1999;354(9194):1932-1939.

[69] Curkendall S, Patel V, Gleeson M, et al. Compliance with biologic therapies for rheumatoid arthritis: do patient out-of-pocket payments matter? *Arthritis Care Res*. 2008;59(10):1519-1526.

[70] Palmer L, Abouzaid S, Shi N, et al. Impact of patient cost sharing on multiple sclerosis treatment. *Am J Pharm Benefits*. 2012;4(special issue):sp28-sp36.

[71] Romley J, Goldman D, Eber M, Dastani H, Kim E, Raparla S. Cost-sharing and initiation of disease-modifying therapy for multiple sclerosis. *Am J Manag Care.* 2012;18(8):460-464.

[72] Tan H, Cai Q, Agarwal S, Stephenson JJ, Kamat S. Impact of adherence to disease-modifying therapies on clinical and economic outcomes among patients with multiple sclerosis. *Adv Ther*. 2011;28(1):51-61.

[73] Engel-Nitz NM, Satram-Hoang S, Cao F, Reyes CM. Lung cancer: copayments and behavior following erlotinib formulary tier change. *Am J Pharm Benefits*. 2012;4(special issue):sp6-sp16.

[74] Dusetzina SB, Winn AN, Abel GA, Huskamp HA, Keating NL. Cost sharing and adherence to tyrosine kinase inhibitors for patients with chronic myeloid leukemia. *J Clin Oncol*. 2014;32(4):306-311.

[75] Gambacorti-Passerini C, Antolini L, Mahon FX, et al. Multicenter independent assessment of outcomes in chronic myeloid leukemia patients treated with imatinib. *J Natl Cancer Inst*. 2011;103(7):553-561.

[76] Coudert B, Ciuleanu T, Park K, et al. Survival benefit with erlotinib maintenance therapy in patients with advanced non-small-cell lung cancer (NSCLC) according to response first-line chemotherapy. *Ann Oncol*. 2012;23(2):388-394.

[77] Neugut AI, Subar M, Wilde ET, et al. Association between prescription co-payment amount and compliance with adjuvant hormonal therapy in women with early-stage breast cancer. *J Clin Oncol*. 2011;29(18):2534-2542.

[78] State of Oregon Public Employees' Benefit Board. Summary plan description. http://www.oregon.gov/DAS/PEBB/docs/spd/subsections/medicaldrugplancomparisons.pdf. Published 2012. Accessed April 16, 2014.

[79] University of Michigan Center for Value-Based Insurance Design. V-BID in action: preventive care coverage in the Patient Protection and Affordable Care Act. http://www.sph.umich.edu/vbidcenter/publications/pdfs/V-BID%20brief%20Prevention2713%20Nov%202013.pdf. Published 2013. Accessed April 16, 2014.

[80] Barr S. FAQ: grandfathered health plans. *Kaiser Health News*. November 2013. http://www.kaiserhealthnews.org/stories/2012/december/17/grandfathered-plans-faq.aspx. Accessed April 16, 2014.

[81] US Department of Health & Human Services. Affordable Care Act extended free preventive care to 71 million Americans with private health insurance. http://www.hhs.gov/news/press/2013pres/03/20130318a.html. Published 2013. Accessed April 16, 2014.

[82] Choudhry NK, Avorn J, Glynn RJ, et al. Full coverage for preventive medications after myocardial infarction. *N Eng J Med*. 2011;365(22):2088-2097.

[83] Kulik A, Desai NR, Shrank WH, et al. Full prescription coverage versus usual prescription coverage after coronary artery bypass graft surgery: analysis from the Post-Myocardial Infarction Free Rx Event and Economic Evaluation (FREEE) randomized trial. *J Am Heart Assoc*. 2013;128(Supplement 1):s219-s225.

[84] Lee JL, Maciejewski ML, Raju SS, Shrank WH, Choudhry NK. Value-based insurance design: quality improvement but no cost savings. *Health Aff*. 2013;32(7):1251-1257.

[85] Chen S, Shah SN, Lee Y, et al. Moving branded statins to lowest copay tier improves patient adherence. *J Manag Care Pharm*. 2014;20(1):34-42.

[86] Maciejewski ML, Wansink D, Lindquist JH, Parker JC, Farley JF. Value-based insurance design program in North Carolina increased medication adherence but was not cost neutral. *Health Aff*. 2014;33(2):300-308.

[87] Elliott DJ, Robinson EJ, Anthony KB, Stillman PL. Patient-centered outcomes of a value-based insurance design program for patients with diabetes. *Popul Health Manag*. 2013;16(2):99-106.

[88] Fendrick AM, Sherman B, White D. Aligning incentives and systems: promoting synergy between value-based insurance design and the patient centered medical home. University of Michigan Center for Value-Based Insurance Design & Patient-Centered Primary Care Collaborative. http://www.sph.umich.edu/vbidcenter/registry/pdfs/whitepaper33010.pdf. Published 2010. Accessed April 16, 2014.

[89] Choudhry NK, Fischer MA, Smith BF, et al. Five features of value-based insurance design plans were associated with higher rates of medication adherence. *Health Aff.* 2014;33(3):493-501.

[90] An act to amend Title 18 of the Delaware Code relating to specialty tier prescription drug coverage. SS 1 for SB 35. 147th GA (DE 2013). http://www.legis.delaware.gov/LIS/LIS147.NSF/b51f4b5053c30a5c852574480048057a/561af40238a443c885257b81005844f8?OpenDocument. Accessed April 16, 2014.

[91] US Preventive Services Task Force. Screening for colorectal cancer. http://www.uspreventiveservicestaskforce.org/uspstf/uspscolo.htm. Published 2008. Accessed April 16, 2014.

[92] de Souza JA, Polite BN, Manning WG, Fendrick AM, Ratain MJ. Value-based insurance design in oncology. *Lancet Oncol*. 2011;12(4):321-323.

[93] Kelly RJ, Smith TJ. Delivering maximum clinical benefit at an affordable price: engaging stakeholders in cancer care. *Lancet Oncol*. 2014;15(3):e112-e118.

[94] US Preventive Services Task Force. Screening for lung cancer. http://www.uspreventiveservicestaskforce.org/uspstf/uspslung.htm. Published 2013. Accessed April 16, 2014.

[95] de Souza JA, Ratain MJ, Fendrick AM. Value-based insurance design: aligning incentives, benefits, and evidence in oncology. *J Natl Compre Canc Netw*. 2012;10(1):18-23.

[96] ERBITUX (cetuximab). Eli Lilly and Company. http://www.erbitux.com/index.aspx. Published 2014. Accessed April 16, 2014.

[97] Karapetis CS, Khambata-Ford S, Jonker DJ, et al. K-ras mutations and benefit from cetuximab in advanced colorectal cancer. *N Engl J Med*. 2008;359(17):1757–1765.

[98] National Comprehensive Cancer Network. About the NCCN biomarkers compendium. http://www.nccn.org/professionals/biomarkers/default.asp. Published 2014. Accessed April 16, 2014.

[99] Chernew M, Gibson TB, Fendrick AM. Trends in patient cost sharing for clinical services used as quality indicators. *J Gen Intern Med*. 2010;25(3):243-248.

[100] Chen C. Cheaper surgery sends Lowe's flying to Cleveland Clinic. *Bloomberg*. http://www.bloomberg.com/news/2014-03-07/cheaper-surgery-sends-lowe-s-flying-to-cleveland-clinic.html. Published 2014. Accessed April 16, 2014.

[101] The Advisory Board Company. For Cleveland Clinic, employer deals have been a 'win-win-win.' http://www.advisory.com/daily-briefing/2014/03/10/for-cleveland-clinic-employer-deals-have-been-a-win-win-win. Published 2014. Accessed April 16, 2014.

[102] The US Oncology Network. Level I pathways. http://www.usoncology.com/cancercareadvocates/AdvancingCancerCare/DeliverHigh-QualityCare/LevelIPathways. Published 2014. Accessed April 16, 2014.

[103] Neubauer MA, Hoverman JR, Kolodziej M, et al. Cost effectiveness of evidence-based treatment guidelines for the treatment of non-small-cell lung cancer in the community setting. *J Oncol Pract*. 2010;6(1):12-18.

[104] Newcomer LN. Changing physician incentives for cancer care to reward better patient outcomes instead of use of more costly drugs. *Health Aff*. 2012;31(4):780-785.

[105] Yamout B, Alroughani R, Al-Jumah M, et al. Consensus guidelines for the diagnosis and treatment of multiple sclerosis. *Curr Med Res Opin*. 2013;29(6):611-621.

[106] American Society of Clinical Oncology. ASCO's 2013 top five list in oncology. http://www.asco.org/practice-research/ascos-2013-top-five-list-oncology. Published 2013. Accessed April 16, 2014.

[107] American College of Radiology. Choosing Wisely resources. http://www.acr.org/Quality-Safety/Resources/Choosing-Wisely-Resources. (n d) Accessed April 16, 2014.

[108] American Board of Internal Medicine Foundation. Choosing Wisely: About. http://www.choosingwisely.org/about-us/. Published 2014. Accessed April 16, 2014.

[109] Clancy C. Premera Blue Cross's value-based drug formulary gaining traction. HealthLeaders InterStudy. http://hl-isy.com/Healthcare-Reform-Blog/May-2013/Pharmacy-benefits-051613. Published 2013. Accessed April 16, 2014.

[110] Ginsburg M, Glasmire K, Foster T. Sharing in the cost of care: perspectives from potential health plan users of the California Health Benefit Exchange. California Health Benefit Exchange, Center for Healthcare Decisions Web site. http://chcd.org/docs/hbex_report_6.15.12.pdf. Published 2012. Accessed April 16, 2014.

[111] Midwest Business Group on Health, University of Michigan Center for Value-Based Insurance Design, Buck Consultants. Communicating value-based benefits: employee research project results. http://www.sph.umich.edu/vbidcenter/publications/pdfs/CommunicatingVBBenefits-Apr12.pdf. Published 2012. Accessed April 16, 2014.

[112] 1 in 3 health plans' out-of-pocket costs fail ACA standards. HealthPocket Web site. http://www.healthpocket.com/healthcare-research/infostat/1-3-health-plans-out-of-pocket-costs-fail-aca-standards/#.UuC0dBAo7IU. Published 2013. Accessed April 16, 2014.

[113] Cohen JP, Felix A, Vasiadi M. Complying with state and federal regulations on essential drug benefits: implementing the Affordable Care Act. *Am J Manag Care*. 2014;20(2):100-103.

[114] Pearson CF. Drug coverage in essential health benefits. Avalere Health Presentation at Health Insurance Exchange Summit. http://www.ehcca.com/presentations/hixsummit1/pearson_ms12.pdf. Published 2013. Accessed April 16, 2014.

[115] Government Accountability Office. Medicare: high-expenditure Part B drugs, report, GAO-13-46R. http://www.gao.gov/assets/650/649459.pdf. Published 2012. Accessed April 16, 2014.

[116] Centers for Medicare & Medicaid Services. Medicare drug coverage under Part A, Part B, and Part D. http://www.cms.gov/Outreach-and-Education/Outreach/Partnerships/Downloads/determine.pdf. Published 2006. Accessed April 16, 2014.

[117] Conti R, Berndt E. Winners and losers from the Zaltrap price discount: unintended consequences? Health Affairs Blog. http://healthaffairs.org/blog/2013/02/20/winners-and-losers-from-the-zaltrap-price-discount-unintended-consequences/. Posted February 20, 2013. Accessed April 16, 2014.

About the National Pharmaceutical Council (NPC)

The National Pharmaceutical Council is a health policy research organization dedicated to the advancement of good evidence and science, and to fostering an environment in the United States that supports medical innovation. Founded in 1953 and supported by the nation's major research-based pharmaceutical companies, NPC focuses on research development, information dissemination, and education on the critical issues of evidence, innovation and the value of medicines for patients. For more information visit www.npcnow.org and follow NPC on Twitter @npcnow.

About the Center for Value-Based Insurance Design

The University of Michigan Center for Value-Based Insurance Design was established in 2005 and since then has led efforts to promote the development, implementation, and evaluation of innovative health benefit designs balancing cost and quality. A multidisciplinary team of faculty, including A. Mark Fendrick, MD, Dean Smith, PhD, and Michael Chernew, PhD, first published and named the V-BID concept, and has guided the approach from early principles to widespread adoption in the private and public sectors. The Center played a key role in the inclusion of V-BID in national health care reform legislation, as well as in numerous state initiatives. For more information visit www.sph.umich.edu/vbidcenter and follow on Twitter @UM_VBID.

1717 Pennsylvania Avenue, NW
Suite 800
Washington, DC 20006

Phone: (202) 827-2100
Fax: (202) 827-0314
Email: info@npcnow.org
www.npcnow.org

University of Michigan
Center for Value-Based Insurance Design
North Campus Research Complex
2800 Plymouth Road
Ann Arbor, MI 48109-2800

Email: vbidcenter@umich.edu
Phone: 734-615-9635
www.vbidcenter.org