MARKETWATCH

Impact Of Health Plan Design And Management On Retirees' Prescription Drug Use And Spending, 2001

Plans with aggressive cost sharing lowered health plan spending but cost retirees more, this study finds.

by Cindy Parks Thomas, Stanley S. Wallack, Sue Lee, and Grant A. Ritter

ABSTRACT: We examined 2001 prescription drug claims for a range of employer-based retiree plans administered by a national pharmacy benefit management firm, to understand how use and spending differ with various cost-sharing approaches and other drug use management techniques among the elderly. In these plans, most of which had generous benefits and substantial use of mail order, more aggressive cost-sharing requirements combined with other management strategies were associated with greater member cost sharing, a shift to less costly medications (generic and mail order), and lower total prescription drug spending. Although we did not find lower rates of use in plans with aggressive cost sharing, this may be attributable in part to their higher drug use associated with mail-order incentives.

OVER THE PAST TWELVE YEARS outpatient prescription drug spending has grown from $40 billion to $160 billion per year.[1] Overall drug spending in the private sector grew at approximately 15–20 percent per year during the late 1990s.[2] The share of the private employer insurance dollar that goes toward paying for prescription drugs has also increased. Driven by these rising costs, insurers and payers are turning increasingly to greater cost sharing and other utilization management strategies.

The manner in which a prescription drug benefit is designed and implemented has a major impact on prescription drug use and on the cost to payers and people with coverage. Strategies to manage prescription drug use and spending are an important feature of benefit plans currently in place in the private sector and under discussion for the Medicare population. Methods now being used to encourage appropriate prescribing and to limit spending include formulary management; use of mail order; prior authorization and utilization review; incentives for providers; and consumer cost sharing through a combination of deductibles, copayments or coinsurance, and maximum allowable benefits. The impact of these benefit features has not been well documented outside of anecdotal reports on their use in specific programs. Thus, it is often difficult to extract lessons for public policy in this area.

Cindy Thomas is a research scientist at the Schneider Institute for Health Policy, Brandeis University, in Waltham, Massachusetts, and is codirector of the institute's Prescription Drug Analysis Group. Stan Wallack is the institute's founder and executive director and a member of the Brandeis faculty. Sue Lee is an economist and research scientist, and Grant Ritter, a senior scientist, both at the Schneider Institute.

This paper uses 2001 prescription drug claims data from a national pharmacy benefit management (PBM) company to examine prescription drug use and spending for people age sixty-five and older who have private employer-based insurance. We examine a range of employer-based plans, to understand how use and spending differ with various cost-sharing approaches and other drug use management techniques. Because of the necessary criteria for our sample selection, the sample does not reflect the PBM's entire book of business or all employer clients.

Cost Sharing And The Demand For Prescription Drugs

Similar to the demand for overall health services, the type and level of insurance coverage for prescription drugs can alter patterns of use and overall spending. First, Medicare beneficiaries with any drug coverage use up to 30 percent more prescriptions than do those with no prescription drug insurance.[3] This large difference is related to a number of factors, including income and health status. Also, a considerable body of literature indicates that people with drug coverage respond to differences in drug prices, even small changes in copayments.[4] However, such estimates based on data up through the mid- to late 1990s must be reexamined in the current dynamic market for prescription drugs, one characterized by more drugs used for the treatment of chronic conditions and an increasing range of drug cost management techniques established by payers and implemented by PBM firms.

■ **Plan design features.** Building upon knowledge that use of prescription drugs can be affected by cost incentives and other management approaches, most insurers have implemented programs to control use and manage a preferred drug list, directing members toward less costly yet still appropriate medications. These approaches are complemented by other strategies that direct educational efforts to the physician, the plan member, and the pharmacist and, in some cases, that provide financial incentives to pharmacies to dispense equivalent generic medications. Prescription drug benefit programs generally include a combination of features, tailored to the individual client or plan sponsor. Since the number and strength of the cost containment efforts are interrelated, it is difficult to determine the independent effect of each of them.

■ **Tiered cost sharing.** Tiered copayment programs have become increasingly common in recent years: More than half of all people with prescription drug insurance were in three-tier plans by 2002.[5] Such approaches have the potential to be moderately successful in lowering the costs of prescription drugs, depending on the pricing scheme and relative differences in copayments between tiers.[6]

A recent study by Brenda Motheral and Kathleen Fairman examined a preferred provider organization (PPO) that moved from two to three tiers, comparing it with a similar group that did not adopt the three-tier design (all ages included).[7] The three-tier plan showed slower growth in utilization and costs compared with the control plan, and there was no offsetting increase in nondrug medical care. However, the majority of savings to the health plan sponsor itself was attributable to increased member cost sharing, with the remainder attributable to lower overall use of medications and (a much smaller amount) to use of lower-cost medications.

In a related study, the researchers compared more and less aggressive three-tier plans and found that those with lower copayments at each level had cost trends similar to overall industry rates (no overall savings), while more aggressive plans with higher copayments at each level had cost trends that increased more slowly.[8]

Finally, a recent study by Geoffrey Joyce and colleagues, also looking at the effect of tiered copayments on drug spending for people under age sixty-five in employer groups, found that increasing copayments only by $5 (from $5 to $10) in a single-tier plan or doubling the rates in a three-tier plan can lower overall drug spending considerably (22 percent and 34 percent, respectively).[9] However, studies such as the latter that compare employer groups including both fee-for-service

(FFS) and managed care must take into account the varying management tools that are used alongside higher copayments to manage drug costs and not attribute all differences in use to copayments alone.

The above studies are not restricted to the elderly. There are several reasons that elderly people in employer-sponsored (retiree) health plans respond differently than the younger population does when faced with various plan designs and copayment levels. On the one hand, the elderly use more medications for chronic illness, which suggests that there may be less discretion and thus perhaps less response to copayment changes. On the other hand, since a large proportion of the elderly live on limited incomes, copayment requirements may have an even greater impact on their choice of medications. This study looks specifically at a sample of the elderly insured population to examine some of these issues.

Study Data And Methods

This cross-section study examines prescription drug claims of people age sixty-five and older in self-insured employer groups with prescription drug insurance plans administered by a national PBM.[10] Analyses were conducted at the level of both the plan and the individual member across groups of plans. Data are age-adjusted; where appropriate, we note these adjustments to make measures across plans and plan groupings comparable.

■ **Population and plans studied.** For this analysis we selected self-insured employer groups that offer their employees only one prescription drug plan. Members of such groups have only one benefit plan available, and thus any potential selection bias is reduced. Employer groups were restricted to those that did not change plan designs or special interventions at any point during the year; had full information on the age and sex of all people covered; and had at least fifty people age sixty-five and older covered continuously during the year. Groups were eliminated if they had specific exclusions for broad classes of drugs (for instance, no coverage of cholesterol-lowering medications), if they were restricted to specific states, or if they had an unusual set of features that would make the results less generalizable. All plans in the study were FFS plans, and all had relatively generous benefits, open formularies covering both generic and brand-name medications (with similar maximum allowable cost incentives for use of generics), and no annual or quarterly maximum dollar benefits or stop-loss provisions for individual members. Most offered members incentives to use mail-order pharmacies.[11] Thus, the sample selected for the study had a higher mail-order penetration than is true for all of the PBM's employer clients. Our limitations resulted in a sample of ninety-six plans, representing a range of industries whose members' health status might differ. Although health status is an important factor in overall prescription drug use, we made no adjustments (beyond age) for potential differences in health status across plans related to employment sector.

■ **Plan design variables.** The PBM provided claims and employer-group information to allow us to measure several features of companies' benefit plans. This includes the number of tiers in a plan, the dollar or coinsurance rate at each tier, the drugs included in the tiers, mail order or retail pharmacy purchase, different strategies for utilization and formulary management, and whether or not each health plan had strong prior authorization controls for specific drugs.

■ **Spending and use measures.** We use ingredient cost paid per prescription as a measure of spending, unless noted otherwise. This includes members' and insurers' shares of the cost but does not include a dispensing fee (which generally varies by client and pharmacy between $1.50 and $2.75 per prescription for retail purchases). Where dispensing fees are relevant to comparisons, they are added in and noted. Ingredient cost for mail- and retail-dispensed prescriptions are comparable because each type of purchase is subject to discounts or rebates (which are not included in the ingredient cost of a prescription in either setting). All averages for plans and plan groupings are per enrollee rather than per user.

Mail-order prescriptions (generally a

thirty-to-ninety-day supply) have been adjusted to thirty-day equivalents unless noted otherwise, so that plans with higher rates of mail-order use would not appear to have lower rates of prescription use or higher costs per prescription. Retail prescriptions were not adjusted for days' supply, but in this sample the supply averages twenty-nine days.

Study Findings

The health plans in our sample represent ninety-six employer groups with 29,435 continuously covered members age sixty-five and older. There is a wide variation in the member composition and in use and spending across employer prescription drug plans (Exhibit 1). This sample includes several plans with strong incentives to use mail order. As a result, the proportion of mail-order prescriptions is high relative to the entire range of retiree plans covered by this PBM, but reasonable considering that the PBM's employer groups in general have higher mail-order use than do other types of plan sponsors (insurers or health maintenance organizations). The total number of prescriptions is also higher than average for retiree plans, which reflects the fact that employer groups have higher prescription drug use than do other types of clients for this PBM (insurers or HMOs).

Exhibit 2 shows age-adjusted use and spending measures for plan design groupings with the largest membership in the sample, constructed on the basis of tier, type, and level of copayment for retail prescriptions. These eight plan groupings represent 60 percent of the ninety-six plans in the sample and three-fourths of the enrollees. In addition to these largest plan types, other combinations of copayment and formulary management levels are represented among the employer groups in our sample. Although less common plans are not included among the categories described in Exhibit 2, they are included in the "total" row and all other analyses.

Average annual spending per member across all plans was $1,571, with an average of 18 percent paid out of pocket (excluding any premiums). It must be noted again that these estimates are based on members of a sample of

EXHIBIT 1
Variations In Drug Benefit Plan Characteristics And Prescription Drug Use And Spending Among Enrollees, 2001

Plan characteristic (N = 96 plans)	25th percentile	Median	75th percentile	Range (5%–95%)[a]
Number of enrollees 65+	69	138	268	53–1,009
Average age of enrollees age 65+ (years)	71.0	73.7	75.6	68.5–82.4
Percent female	40%	51%	59%	16%–95%
Average annual Rx per enrollee age 65+, mail-order adjusted[b]	28.4	34.1	39.6	19.9–46.8
Average annual spending (ingredient cost) per enrollee age 65+	$1,382	$1,528	$1,694	$903–$2,125
Percent generic Rx, mail-order adjusted[b]	33.3%	37.1%	40.4%	29%–44%
Percent mail-order Rx, unadjusted for 30-day supply[c]	7%	16%	30%	0–67%
Average annual member out-of-pocket cost sharing	13%	17%	22%	7%–36%

SOURCE: Brandeis Prescription Drug Employer Group Analytic File, 2002.
NOTE: Drug spending is ingredient cost only.
[a] The restricted range omits the top and bottom five plans, to protect confidentiality.
[b] Each 90-day mail-order prescription equals three prescriptions.
[c] Each 90-day mail-order prescription equals one prescription.

EXHIBIT 2
Drug Use And Spending In Plans With Common Copayment And Coinsurance Levels, Age Adjusted, 2001

Total and by plan type with largest membership in sample[a]	Average annual Rx per member: Unadjusted for mail order[b]	Average annual Rx per member: Mail-order adjusted[c]	Average annual spending per enrollee	Average member out-of-pocket cost sharing
N = 96 plans (29,435 members)	25.2	36.3	$1,571	18%
Largest flat-dollar copayment plan categories, description of retail purchase copayments[d]				
1-tier, <$10 (n = 1,217 members, 2 plans)	22.4	35.8	1,669	8
2-tier, $5/$10 (n = 2,298 members, 14 plans)	27.1	33.3	1,546	14
2-tier, $5/$15 (n = 1,461 members, 8 plans)	27.4	31.4	1,737	16
3-tier, $5/$15/$25 (n = 1,954 members, 14 plans)	25.9	37.8	1,743	18
3-tier, $9/$9/$18 (n = 3,204 members, 3 plans)	23.3	35.8	1,551	19
Largest coinsurance plan categories, with retail copayments as percent of ingredient cost of Rx for retail purchases				
1-tier, 20% or less (n = 4,407 members, 4 plans)	30.1	33.2	1,578	12
1-tier, 50% or less (n = 1,344 members, 5 plans)	22.4	36.4	1,468	28
3-tier, 10%/20%/40% (n = 5,919 members, 10 plans)	20.1	41.8	1,505	22

SOURCE: Brandeis Prescription Drug Employer Group Analytic File, 2002.
NOTE: Does not include entire sample.
[a] All plans are considered open formulary, as is typical for employer-sponsored plans.
[b] Each 90-day mail-order prescription equals one prescription.
[c] Each 90-day mail-order prescription equals three prescriptions.
[d] Copayment descriptions are for retail purchases only. Mail-order purchases generally have lower or no copayments. This accounts for the difference in plan design description and actual member cost share (for example, the 50 percent coinsurance plan has an actual 26 percent member cost share).

self-insured employer groups, which offer only a single choice of plans, rather than the PBM's entire book of business.

Age-adjusted utilization (number of prescriptions, with mail order adjusted for a thirty-day supply) ranged between 31.4 and 41.8 prescriptions per year across the displayed plan categories. Variations may be attributable to factors other than plan design and copayment levels (for example, regional differences, physician prescribing patterns, or case-mix). Examined closely, however, Exhibit 2 does show some patterns. Within plans with flat copayments, the plan categories with more tiers or higher copayment levels show greater levels of out-of-pocket cost as a percentage of total expenditure. The plan groups with the highest out-of-pocket member cost share, however, are the plans with higher coinsurance (at least 50 percent, and 10/20/40 percent), with 22–28 percent member cost share and lowest average cost per prescription of all plan categories. Exhibit 2 also shows that for these plan groupings, copayment design is not associated with drug use, as measured by number of prescriptions dispensed, after adjustment for mail order.

Note that rebates are not included in our

data; as a result, our spending values may be somewhat misleading. Depending upon the drug manufacturer's contract with the PBM, spending levels—notably, the share paid by the employer sponsor—may be overestimated. This overestimation is not consistent across plan types. Three-tier plans, for example, promote greater use of preferred brand-name drugs for which rebates are common.

■ **Three-tier programs.** Exhibit 3 shows how average plan use and spending differ for plans with three-tier copayment schemes versus those with one- and two-tier schemes. Plans with coinsurance rather than copayments were excluded from this analysis because the incentives for use of less expensive medications make them different from the incentives inherent in tiered plans. Exhibit 3 adjusts for differences in age distribution and converts mail-order prescriptions to thirty-day equivalents but does not adjust for other plan design features (such as prior authorization or pharmacy incentives).

On average, for our sample, overall expenditures per enrollee are essentially the same. The average cost of a prescription is lower for three-tier plans than for one- and two-tier plans, with lower unit costs offset by the higher usage among members of the three-tier plans. While overall generic fill rates are similar in all three types of plans, the average price per brand-name prescription is 13 percent lower ($9) in the three-tier plans. Finally, members' out-of-pocket share is higher in three-tier plans, rising to nearly 20 percent versus a 13 percent average for one- and two-tier plans ($315 per year versus $213 per year).

It is important to note that the three-tier plans in our sample also have a higher proportion of mail-order use (25 percent) than do two-tier plans (16 percent), which may account for a large part of the savings, especially for brand-name drugs. This suggests that at least in this sample, three-tier programs achieve savings for plan sponsors through a combination of factors: requiring higher member contributions; consuming less costly prescriptions; using a higher rate of mail order than one- and two-tier plans; and other PBM drug management approaches that may be more common in three-tier programs than others. People using expensive drugs—in par-

EXHIBIT 3
Drug Use And Spending In Three-Tier Copayment Plans Versus Other Copayment Plans, Age Adjusted, 2001

Use/spending measure[a]	One- and two-tier copayment plan members (n = 5,311)	Three-tier copayment plan members (n = 6,355)
Average annual adjusted Rx per enrollee, mail-order adjusted	32.8	36.4
Average annual spending per enrollee	$1,596	$1,608
Average annual spending per brand-name Rx	$68	$59
Average annual spending per all Rx	$49	$44
Percent generic Rx, mail-order adjusted	38%	36%
Average annual member out- of-pocket cost sharing	13%	20%
Average annual out-of-pocket cost per member	$213	$315

SOURCE: Brandeis Prescription Drug Employer Group Analytic File, 2002.
NOTE: Flat-dollar copayment plans only; percentage plans are excluded because they have inherent incentives to choose lower-cost medications. Drug spending is ingredient cost only.
[a] All measures are weighted means for the tier grouping. Per member measures are weighted so that each member within the tier grouping receives equal weight; per prescription measures are weighted so that each prescription within the tier grouping (after adjusting for mail order) receives equal weight.

ticular, those subject to the highest copayment amount—may be motivated to use mail order to reduce the cost of the medication.

We also categorized plans by overall aggressiveness of the copayment strategy, whether a percentage or set dollar amount, regardless of tier. Thus, plan groupings with higher-than-average actual member copayment per brand-name drug, and greater than 30 percent coinsurance for brand-name drugs, were compared with those having lower cost-sharing requirements (Exhibit 4).[12]

Exhibit 4 shows that for plans that require higher copayments for retail prescriptions, cost per prescription (especially for brand-name drugs) is considerably less. This indicates that members are both choosing less costly drugs and using mail order more often. Although the annual cost for the plan sponsor's portion of the payments is lower for plans with higher cost-sharing requirements, the average annual member out-of-pocket share is 60 percent higher in plans with aggressive copayments than in others; more aggressive plans save plan sponsors $266 per member on average for their share of payments over less aggressive plans ($1,421 versus $1,155) while increasing members' average costs by $145 ($389 versus $244). Thus, just over half of the savings to plan sponsors is attributable to increased cost sharing. The use of less costly medications in the more aggressive plans is borne out by the slightly higher use of generics but more so by the lower cost of brand-name drugs. Again, while raw numbers show lower use rates in aggressive plans, the age-adjusted, mail order–adjusted, overall prescription drug use rate is higher for aggressive plans, which suggests that greater cost sharing is not associated with lower use levels in this particular sample. The greater use of mail order, in effect, lowers the price of drugs, resulting in lower spending but higher use.

To assess the impact of mail order on use rates, we looked at a subsample of 3,178 elderly

EXHIBIT 4
Drug Use And Spending In Plans With More And Less Aggressive Cost Sharing, Age Adjusted, 2001

	Less aggressive cost sharing (n = 20,442 members)	More aggressive cost sharing (n = 8,993 members)
Average annual Rx per enrollee, mail order adjusted	35.2	38.6
Average annual Rx per enrollee, mail order unadjusted	26.7	22.0
Average annual spending per enrollee, including dispensing fee	$1,665	$1,544
Average annual spending per Rx	$45	$39
Average expenditure per brand-name Rx	$63	$53
Average percent generic Rx, mail order adjusted	36.6%	38.3%
Average percent retail generic Rx	38.1%	44.3%
Average percent mail-order Rx, unadjusted for 30-day supply	19%	45%
Average annual member out-of-pocket cost sharing	15%	25%
Average annual overall cost per member to plan sponsor[a]	$1,421	$1,155
Average annual member out-of-pocket cost (excluding premiums)	$244	$389

SOURCE: Brandeis Prescription Drug Employer Group Analytic File, 2002.
NOTE: Drug spending is ingredient cost only, unless otherwise noted.
[a] Total prescription drug expenditures per year, minus member share.

people in aggressive plans with lower mail-order use (an average of 18 percent of prescriptions are mail order, similar to our sample of less aggressive plans). These plans still have lower overall spending per enrollee ($1,579 versus $1,665 for less aggressive plans) and higher generic rates (40.1 percent versus 36.6 percent). However, they are associated with 6 percent lower overall utilization rates (thirty-three prescriptions, mail order-adjusted, per year versus thirty-five for less aggressive plans) and lower overall savings than high-mail-order plans. This underscores the importance of understanding how mail order or volume discounts factor into cost management strategies.

"A high copayment differential for retail purchase appears to encourage people to purchase more of their brand-name drugs through mail order."

There are several possible explanations for the higher utilization in more aggressive plans. Some employer groups, for example, may have chosen more aggressive copayment designs, because they had historically higher rates of drug use. Also, the more aggressive plans, on average, have higher mail-order rates. Because of patient mix (that is, sicker members), waste, or perhaps other reasons, higher mail-order rates are positively correlated with greater use of prescription drugs.

■ **Copayments and generic versus brand-name medications.** Because of the savings potential associated with using generic medications, they are promoted through plan design and by programs chosen by clients to increase generic use. The average price per prescription for this population (across all plans, with mail order adjusted for thirty-day equivalents) is $16 for all generic prescriptions, compared with $60 for all brand-name prescriptions. The average mail-adjusted generic dispensing rate for this population across all plans and all tiers is 37.2 percent, with little difference overall by the number of tiers in a plan. All coinsurance plans (regardless of number of tiers), and two- and three-tier copayment plans contain incentives to promote use of generics.

The plan-design spread between retail pharmacy copayments for generic and brand-name drugs is most commonly $5 for two-tier plans in this sample and generally no more than a $10 difference between generic and preferred brand for three-tier plans. Plans using coinsurance, on the other hand, depending upon exact design, can have a substantial spread in actual retail payment amounts for brand-name versus generic drugs (Exhibit 5).

This exhibit points out an important finding of this study. In general, as the difference in actual copayment between generic and brand-name drugs increases, so does the retail generic use rate. The plans with the greatest actual spread between generic and brand-name drugs for retail prescriptions (the 50 percent or higher coinsurance plans and two- and three-tier copayment plans) each have a spread in payments of more than $10 and generic use rates of more than 40 percent for retail purchases, with higher overall generic use rates than in the other plan types.

While the generic use rate for retail purchase is directly related to the differential in actual average copayment dollars per prescription between brand-name and generic drugs, the overall generic use rate for a plan (retail plus adjusted mail order) is generally less sensitive to copayment design. This indicates one important way in which copayment design affects the use of prescription drugs. A high co-payment differential for retail purchase appears to encourage people to purchase more of their brand-name drugs through mail order, where effective copayments are lower and less price-sensitivity exists. Even in mail order, we found little use of brand-name drugs for which an exact generic equivalent is available, so the higher brand-name use we found in mail-order purchases likely reflects greater use of single-source brands through the mail in an effort to limit members' out-of-pocket spending.

■ **Mail-order use.** The prevalence of chronic disease among older populations

EXHIBIT 5
Actual Retail Out-Of-Pocket Costs And Percentage Generic Drug Usage, For Members In Common Plan Types, 2001

	Average actual retail out-of-pocket cost per Rx		Average percent generic Rx	
Plan type	Generic	Brand-name	Retail only	Retail and adjusted mail order
1-tier, all Rx, 20% coinsurance or less	$2	$8	35.5%	36.2%
1-tier, all Rx, 50% coinsurance or more	11	39	43.7	38.9
2-tier dollar copayment, $4–$10 spread between generic and brand-name Rx	5	8	37.8	36.9
2-tier dollar copayment plus percent coinsurance, with more than 20% for brand-name drug	11	34	40.6	40.9
3-tier dollar copayment, $5–$10 spread between tier 1 (most generics) and tier 2 (preferred brand-name)	6	17	40.7	36.1
3-tier percent coinsurance (10%/20%/30%)	2	17	44.1	44.5

SOURCE: Brandeis Prescription Drug Employer Group Analytic File, 2002.

means that mail order is an important plan feature for the elderly. Mail-order copayments per thirty-day supply are lower than for retail purchase (the copayment for a ninety-day supply is usually double that for a thirty-day supply, but some plans require no copayments for mail-order purchase), which creates an incentive for members to use mail order, especially for brand-name drugs.

We found a large variation across plans in the proportion of all prescriptions that were ordered through the mail, ranging from a few retail-only plans to plans where more than half of all prescriptions were mail order. Overall, mail-order purchase of generics was lower on average than for retail sales (39 percent for mail order, 35 percent for mail), a finding consistent with earlier research on mail-order pharmacy claims.[13] Across plans, the generic use rate could be as much as 10 percent higher in retail sales than in mail-order sales.

Mail order is a potential savings feature both for members (through lower copayments) and for the plan (through lower prices), depending on cost-sharing requirements. The average mail-order price for all prescriptions was $7.98 less than the average retail price with dispensing fees ($40.77 versus $48.75). The average price difference for generics was $0.86 ($16.80 mail order, $17.66 retail); for brand-name drugs, it was $14.89 ($53.86 mail order, $68.57 retail). While this may differ with each PBM, transaction costs per prescription in this PBM are calculated the same way for mail and retail purchases. Thus, both mail and retail ingredient costs are net of rebates, and they include the same method for calculating discounts.

The savings associated with mail order are most apparent for brand-name medications. This difference is attributable to differences in the mix of brand-name drugs purchased by mail, volume discounts associated with more days' supply per prescription, and no dispensing fees. The actual savings to the plan sponsor, however, depend on the mail-order copayments. Nevertheless, even though copayment levels are generally less for mail order based on a thirty-day supply, and more brand-name drugs are purchased through mail order, savings can be considerable.

■ **Three-tier plans and use of preferred medications.** A major goal of three-tier benefit designs is to provide an incentive for plan members to purchase less costly, preferred brand-name drugs. Such drugs in our sample averaged an ingredient cost of $10 lower than that of nonpreferred brands ($56 versus $66). This difference (to the plan sponsor or PBM) is in reality even greater when rebates are factored in to decrease the net price of preferred drugs that are subject to such discounts.

Our data suggest that elders are still purchasing nonpreferred third-tier prescriptions in the retail market. Although the selection of which drugs are placed on the third tier may vary across clients, nearly one-fifth of all retail prescriptions and nearly a third of brand-name retail prescriptions purchased by members of dollar copayment plans are third-tier medications. The plans all have a difference of $9–$13 in the retail copayment between the second and third tiers.[14]

Although the difference in copayment levels between tiers two and three is designed to promote use of preferred medications, the copayment difference between tier-two drugs (preferred) and tier-three drugs (nonpreferred) must be high enough to promote switching. Although the numbers for analysis are small, we found that as few as 7 percent of prescriptions were purchased on the third tier for plans with a $15 difference in copayments between the second and third tiers, compared with 22 percent of prescriptions on the third tier for all three-tier plans.

It should be noted that the number of medications placed on, and purchased in, the third tier differs across plans and by therapeutic category. For example, half of all brand-name drugs purchased at retail in the anti-arthritic class are listed the third tier, while 14 percent of all brand-name hypoglycemic drugs purchased at retail are in the third tier. Thus, potential savings will differ for therapeutic categories based on how many medications are placed in the third tier and on how discretionary the use of the medications is. Further analysis is necessary to determine how choice of medications is affected by larger copayment differences among tiers for preferred and nonpreferred medications.

■ **Prior authorization.** When incentives are strong enough, copayment design has the potential to affect members' choice of medications and use of mail order. However, because prior authorization is a strong utilization management technique in many of the plans included in our analysis, we address it here.

Prior authorization to dispense a prescription may be required for several reasons. Some specific high-cost or nonformulary medications require prior authorization whenever dispensed. Other medications may be subject to prior authorization based on additional factors, to override rules such as limited numbers of pills per prescription, specific combinations of medications, or early refills. We examined the impact of prior authorization programs by grouping plans in our data set according to how frequently they deny prescriptions through prior authorization. Thus, some plans were categorized as having strong prior authorization vis-à-vis other plans in which prior authorization is seldom or never used to reject claims. Prior authorization is in place for several one-, two-, and three-tier programs but is more common among three-tier plans in our sample. We calculated "savings per user" to indicate the difference in annual treatment cost by replacing high-cost drugs requiring prior authorization with other medications.[15] Plans with strong prior authorization controls show savings per user in several classes with high-cost drugs: anti-obesity drugs, savings of $58 per user; blood products, savings of $33 per user; and central nervous system drugs, savings of $73 per user.

Prior authorization may have a strong effect on overall spending, especially in plans that tightly control many medications. Its impact, however, cannot be examined alone with these data: Prior authorization is often used in combination with other incentives apart from copayment design. It is also used in many cases to restrict use of common but high-cost medications, such as Cox-2 inhibitor arthritis medications (Vioxx or Celebrex), and these efforts often have a considerable impact on costs.

Discussion

This analysis shows that members of retiree benefit plans respond to moderate copayment incentives through a combination of purchasing less costly generic drugs and purchasing more drugs through mail order, which results in lower expenditures. Higher copayments and three-tier plans are associated with considerably greater cost sharing by plan members, a finding that is consistent with those of other studies. Plan features (prior authorization and utilization or formulary management) in combination with higher copayments are associated with sometimes substantial differences in the types and mix of prescriptions used and their cost. Additionally, while higher copayment levels are associated with a modest (6 percent) decrease in use for plans with low to moderate mail-order use, when mail-order incentives are in place, the higher use associated with mail order offsets this effect.

Prescription drug use and spending are the result of variations across plans within and across tiers, both imbedded in plan design and copayment and utilization management strategies, and resulting from differences among plan members. Plans that may have seemingly uniform copayment designs often will have implemented specific programs that affect use and are not evident in the copayment descriptors. Although we attempted to control for this factor by choosing plans within one PBM that had a minimum of special incentive programs for pharmacists or physicians, we still found that plans with more tiers also often had other programs in place, such as interventions at the pharmacy or provider level. Differences in use and spending associated with higher copayments, therefore, should not be attributed solely to copayments without controlling for other drug cost containment programs.

The study sample is a relatively small sample of elderly people, with employer insurance, in stable plans, given only one choice of prescription drug plans. The plans in our sample had relatively generous insurance coverage, so we were unable to look at the effect of very restricted coverage or high cost sharing. Additionally, we were unable to adjust for income, which would clearly have an impact on how responsive plan members are to copayment differences.

Nevertheless, the results of this study have several implications for Medicare prescription drug policy. It is clear that plan design creates incentives for retirees to make reasonable drug choices, with higher copayments leading to use of less costly drugs and moderately lower retail use. However, it is important to look beyond copayment design to an overall strategy for managing prescription drug use and spending. A combination of strategies in addition to cost sharing is likely to be most effective in this regard.

"It is important to look beyond copayment design to an overall strategy for managing prescription drug use and spending."

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NOTES

1. Centers for Medicare and Medicaid Services, "Table 2: National Health Expenditure Amounts, and Average Annual Percent Change by Type of Expenditure: Selected Calendar Years 1980–2011," 2002, www.cms.hhs.gov/statistics/nhe/projections-2001/t2.asp (1 November 2002).
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10. Because enrollees in our sample were selected on the basis of age (sixty-five and older) rather than work status, some in our sample may be working rather than retired.
11. Most plans had cost-sharing incentives to purchase mail-order prescriptions. For instance, mail-order copayments were often up to twice as high as those for retail purchase of prescriptions, but they covered a ninety-day supply. Thus, copayments for mail-order purchase could effectively be as little as one-third those for retail purchases. According to sources at the PBM, it is typical for employer-sponsored and union plans to use mail order to a greater extent than HMOs or other insurers do.
12. Average copayment per prescription was calculated as the ratio of total member cost divided by total ingredient cost, including dispensing fee. The average actual copayment for retail purchase of a brand-name drug was $13.95 across all plans and prescriptions (the average brand-name copayment for mail-order purchase was $7.35 for a thirty-day supply). The mean copayment amount across all prescriptions (retail and adjusted mail order) was $9.13; median, $6.34).
13. R.R. Henderson and B.R. Motheral, "Mail Order Pharmacy: A Case Study," *Drug Benefit Trends* 13, no. 9 (2001): 28–34, 38.
14. We were unable to assign tiers to prescriptions in coinsurance plans or mail-order purchase, so this analysis was restricted to three-tier copayment plans and retail purchases.
15. Savings in this case were calculated in the following manner: Plans were grouped by strong versus weaker prior authorization controls according to PBM measures, including the proportion of times a claim was denied through prior authorization. Then for each category (strong versus weaker controls), the average cost per prescription for all users of prescriptions in the therapeutic class was calculated. The difference in cost per user in several therapeutic classes for strong versus weak prior authorization plans was then determined and is reported here.