

VHA Pharmacy Use in Veterans With Medicare Drug Coverage

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The Veterans Health Administration (VHA) is the largest single purchaser of pharmaceuticals in the United States. Virtually all honorably discharged veterans are legally eligible to receive care under the VHA system. Veterans Health Administration eligibility rules determine the size of copayments and the specific services to be provided to eligible veterans.¹

Copayments for prescriptions for veterans have historically been very low. Until 2002, the prescription copayment for veterans was \$2 for each 30-day supply of medication; this copayment increased to \$7 in February 2002 and to \$8 in 2006.² These low copayments have made the VHA an attractive source of pharmacy care for veterans.³ Research suggests that approximately 10% of VHA users come to the VHA primarily for pharmacy services,⁴ although the percentage of veterans who rely on the VHA as their primary pharmacy provider may be much higher.⁵

As an alternative source of care and pharmaceutical services, more than 50% of VHA users also are enrolled in Medicare, including more than 90% of those over the age of 65 years. In January 2006, Medicare implemented Medicare Part D as part of the Medicare Modernization Act (MMA). The MMA dramatically changed the health services environment in which the VHA has long operated. For the first time, Medicare is explicitly offering outpatient pharmacy coverage through Medicare prescription drug plans (PDPs), independent of the pharmacy benefits offered through Medicare managed care organizations, and has made PDPs (alone or in combination with managed care plans [MA-PDPs]⁶) available across the United States.⁷

A recent survey of Medicare Part D enrollees indicated that, relative to Medicare beneficiaries who relied primarily on stand-alone PDPs or MA-PDPs, beneficiaries who relied on the VHA for pharmacy care reported lower out-of-pocket spending and were less likely to have delayed filling prescriptions due to cost.⁸ However, there is still little information to guide VHA policy makers on how Medicare pharmacy benefits might affect pharmacy expenditures within the VHA healthcare system, or on how Medicare plan benefits affect Medicare-enrolled veterans' use of VHA pharmacy services. In the current study, we examined how Medicare HMO pharmacy benefit levels among veterans

dually enrolled in the VHA and Medicare healthcare systems affected the likelihood and magnitude of VHA pharmacy use. Specifically, we addressed 2 questions:

Objective: To determine how Medicare benefits affect veterans' use of Veterans Health Administration (VHA) pharmacy services.

Study Design: Retrospective analysis of veterans dually enrolled in the Veterans Health Administration and Medicare healthcare systems.

Methods: We used VHA and Medicare administrative data for calendar year 2002 to examine the effect of Medicare HMO pharmacy benefit levels on VHA pharmacy use.

Results: In 2002, 64% of the VHA and Medicare dually enrolled veterans in our study sample received medications from the VHA. Use of VHA pharmacy services varied monotonically by the level of pharmacy benefits among Medicare HMO enrollees, with veterans enrolled in plans with both low and high pharmacy benefit levels significantly less likely to use VHA pharmacy services than veterans in plans with no pharmacy benefits (odds ratios = .83 and .53, respectively, versus plans with no benefits). Among VHA pharmacy users, enrollment in plans with high levels of benefits was associated with significantly lower annual pharmacy costs than enrollment in plans with no benefits or enrollment in traditional Medicare.

Conclusions: Our findings indicate that non-VHA pharmacy benefits affect both the likelihood and magnitude of VHA pharmacy use. This suggests that Medicare pharmacy coverage (Part D) may significantly reduce the demand for VHA pharmacy services, particularly in geographic regions previously underserved by Medicare managed care plans.

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1. Do greater Medicare health plan pharmacy benefits reduce the likelihood that veterans will use VHA pharmacy services?
2. Among veterans who do use VHA pharmacy services, do Medicare health plan pharmacy benefits reduce the magnitude of their use?

STUDY DATA AND METHODS

We used national VHA and Medicare administrative files from calendar year (CY) 2002 to examine how Medicare HMO enrollment status and pharmacy benefit coverage affected VHA pharmacy use. Our analyses focused on veterans who were enrolled in the VHA and in Medicare for at least 1 month during CY 2002. Each beneficiary's Medicare enrollment and demographic information were obtained from the Medicare denominator file records and merged with the VHA Enrollment file to identify veterans who were dually enrolled in the VHA and Medicare healthcare systems.

Medicare HMO Plan Enrollment

Health maintenance organization plans vary substantially in the level of pharmacy benefits offered. Thus, for each managed care-enrolled veteran, we classified benefit levels associated with his or her HMO contract number. Contract numbers were obtained from the Centers for Medicare & Medicaid Services' Medicare Enrollment Database. Because multiple HMO plans or benefit packages are allowed within a contract's service area, we used the strategy described in the Commonwealth Fund report *Medicare+Choice 1999-2001: An Analysis of Managed Care Plan Withdrawals and Trends in Benefits and Premiums*⁹ to assign a "basic" plan for each managed care contract active in a particular county. The benefits associated with the basic plan were assigned to each beneficiary enrolled in that county.

Also following the Commonwealth scoring algorithm,⁹ Medicare HMO-enrolled veterans were assigned to subgroups based on whether their HMO offered no additional pharmacy benefits, a "low" level of benefits, or a "high" level of benefits. Low-benefit plans were those that either offered only generic medications or had a cap of \$750 or less on either generic or brand name medications. High-benefit plans were those with benefit caps of greater than \$750 for both generic and brand name medications.

Pharmacy Use

Veterans Health Administration pharmacy use data were obtained from the VHA Decision Support System, a national automated management information system that integrates data from clinical and financial systems for inpatient and outpatient care.¹⁰ The system creates an outpatient encounter for

each day a patient fills a prescription, including all pharmacy costs for that day. For our analyses, encounters (costs) were aggregated within each person across the entire calendar year.

Access to Veterans Health Administration Medical Centers

The availability of Veterans Health Administration Medical Centers (VAMCs) was determined by recording the distance from the beneficiary's zip code to the nearest VAMC or Community-Based Outpatient Clinic (CBOC). We also recorded VHA eligibility (priority code) from the VHA Enrollment file. We assigned a "home station" to all veterans to control for clustering and facility characteristics in our multivariate regressions. For VHA-Medicare dual enrollees who had any VHA pharmacy costs during the CY, the home station was where the majority of pharmacy services (according to cost) were obtained. Dual enrollees who did not use VHA pharmacy services were assigned to a home station based on proximity (ie, the closest VAMC). If their closest VHA facility was a CBOC, the VAMC associated with that CBOC was assigned as their home station.

Risk Adjustment

In our multivariable models, we adjusted for patients' health status using the Centers for Medicare & Medicaid Services Hierarchical Condition Category (HCC) risk-adjustment model for community-dwelling populations.¹¹ The model adjusts for diagnoses, age, sex, Medicaid eligibility, and original entitlement of Medicare (disability, end-stage renal disease, or Old Age and Survivor's Insurance). The risk score was created for each patient by using *International Classification of Diseases, Ninth Revision* codes from the VHA administrative data files for CY 2002.

Covariates

We assigned income level according to zip code, age (<65 years, ≥65 years), and race/ethnicity using the 5-digit ZIP Code Tabulation Area income data available in 2000 US Census Summary File 3. Veterans were classified as residing in metropolitan or nonmetropolitan counties using urban influence codes¹² to group all 3141 counties in the United States according to the most recently revised federal definitions of metropolitan statistical areas (MSAs).¹³

The Medicare administrative files did not include an indicator for concurrent participation in the Medicaid program. However, we did classify veterans by whether they received state buy-in through Medicaid to offset their Medicare Part B premiums (Medicare state buy-in). This group included veterans who had their Part B premiums only paid or their Part B premiums and cost-sharing paid (eg, Specified Low-Income

Medicare Beneficiaries [SLMBs] and Qualified Medicare Beneficiaries [QMBs], respectively), as well as veterans who received full Medicaid benefits in addition to being an SLMB or QMB enrollee.¹⁴

VHA Priority Levels

We grouped VHA enrollees into 3 sets of priority levels that broadly differentiated copayment levels and out-of-pocket maximums.¹⁵ These groupings are priority level 1, priority levels 2-6, and priority levels 7 and greater. Priority level 1 veterans generally had no copayments, while veterans with priority levels of 7 or greater (7+) paid the maximum VHA copayment of \$7 (\$2 prior to February 2002) for each of their VHA prescriptions.

Analyses

We conducted all analyses using SAS version 9.1.2 (SAS Institute Inc, Cary, NC). We used a generalized-estimating-equations approach in our multivariable models of pharmacy use and costs to account for clustering of veterans within VAMCs. For our analysis of VHA pharmacy use, we performed a logistic regression using VHA pharmacy use versus no use as a binary outcome. For our analysis of total annual pharmacy cost, we used total cost as a continuous outcome measure. Because the distribution of pharmacy costs was asymmetric and highly skewed, we estimated a regression model assuming a gamma distribution for our outcome measure. This type of distribution has been shown to provide robust estimations in the presence of skewed data.¹⁶ Examination of the regression residuals indicated that our use of a gamma distribution was appropriate.

RESULTS

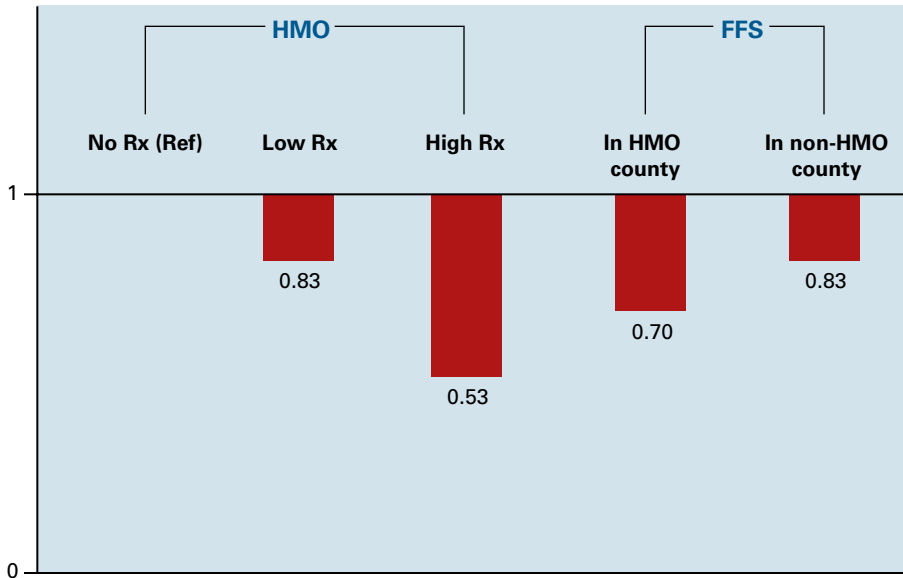
In CY 2002 there were 3.4 million dual VHA-Medicare enrollees. About half of all dual enrollees (52%) lived in areas with available Medicare managed care plans, with approximately 11% overall (22% of those living in HMO counties) actually enrolled in an HMO plan for all or part of

Table 1. Characteristics of Study Population

Characteristic	Number	Percentage
Total	3,424,699	100.0
HMO status		
HMO without Rx benefits	133,679	3.9
HMO with low Rx benefits	198,925	5.8
HMO with high Rx benefits	56,029	1.6
FFS: HMO county	1,405,841	41.1
FFS: non-HMO county	1,630,225	47.6
Age, y		
<65	576,786	16.8
65-74	1,498,025	43.7
75+	1,349,888	39.4
Income, \$		
<20,000	583,634	17.0
20,000-34,999	2,235,285	65.3
35,000+	605,780	17.7
Race		
White	3,019,052	88.2
Black	308,212	9.0
Hispanic	97,435	2.8
Sex		
Male	3,324,513	97.1
Female	100,186	2.9
Buy-in status		
No	3,207,112	93.6
Yes	217,587	6.4
Priority status		
1	347,258	10.1
2-6	1,770,160	51.7
7-9	1,307,281	38.2
Distance, miles		
<5	1,094,673	32.0
5-20	1,497,094	43.7
20+	832,932	24.3
HCC (quintiles)^a		
1	963,255	28.1
2	560,236	16.4
3	538,729	15.7
4	682,147	19.9
5	680,332	19.9
MSA		
No	884,345	25.8
Yes	2,540,354	74.2
Teaching hospital		
No	831,975	24.3
Yes	2,592,724	75.7

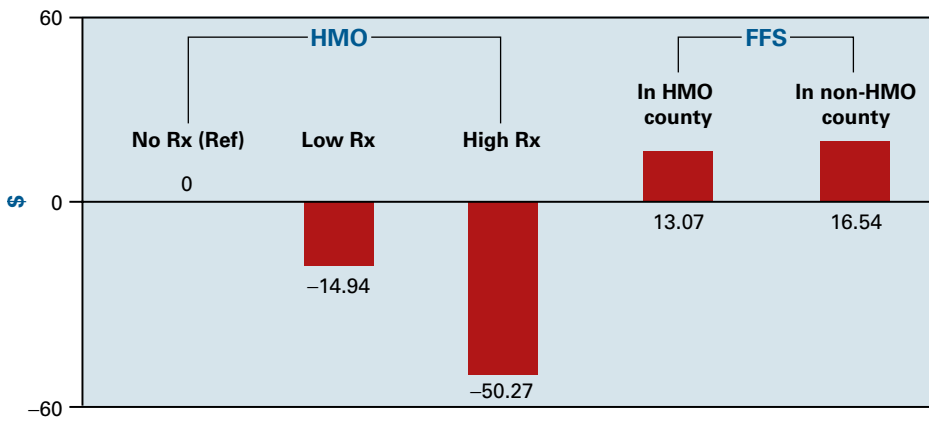
FFS indicates fee-for-service; HCC, hierarchical condition category; MSA, metropolitan statistical area; Rx, prescription; VHA, Veterans Health Administration.
^aDue to ties, the lowest-ordered quintile actually had more than 20% of the sample. Many veterans who never sought care within the VHA system also were grouped within the lowest-ordered quintile.

■ **Figure 1.** Likelihood of Using VHA Pharmacy Services (Odds Ratio)



FFS indicates fee-for-service; Rx, pharmacy; VHA, Veterans Health Administration.

■ **Figure 2.** Differences in Annual Per Capita Cost of VHA Pharmacy Services Among VHA Users



FFS indicates fee-for-service; Rx, pharmacy; VHA, Veterans Health Administration.

CY 2002. Of the 388,633 veterans enrolled in HMO plans, 34% were in contracts whose basic plans did not offer pharmacy benefits, 51% had basic plans with low benefits, and 14% had basic plans with high benefits (Table 1).

Predictors of VHA Pharmacy Service Use

Approximately 64% of the 3.4 million Medicare-enrolled veterans (which accounted for 5% of all Medicare enrollees) received some or all of their medications from the VHA (Table 2). Nationally, the VHA pharmacy expenditures totaled \$2.3

billion (or 68% of all VHA pharmacy costs) for providing pharmacy services to VHA-Medicare dual users. Use of VHA pharmacy services varied monotonically by the level of pharmacy benefits among Medicare managed care enrollees (Table 2).

In our multivariable models, veterans enrolled in Medicare HMO plans with both low and high pharmacy benefit levels were significantly less likely to use VHA pharmacy services than veterans in HMO plans with no pharmacy benefits (Table 3; Figure 1).

Age, Medicare state buy-in, VHA priority level, and HCC risk score were the strongest predictors of VHA pharmacy use. VHA-Medicare enrolled veterans under the age of 65 years were the most likely to use VHA pharmacy services. When veterans younger than age 65 years are eligible for Medicare, it is primarily because they are classified as disabled, and are likely to have substantial healthcare needs. Most of our other covariates also were significant (Table 3). Women were less likely than men to use VHA pharmacy services, and the likelihood of VHA pharmacy use was lower among veterans

residing in MSA counties, veterans with incomes of more than \$20,000 per year, and veterans whose home VAMCs were teaching hospitals. Hispanic veterans were more likely to use VHA pharmacy services than either African American or white veterans. Surprisingly, distance to the closest VHA facility was not predictive of VHA pharmacy use in our multivariable model, possibly because of the heavy use of VHA mail-order pharmacy services, and because MSA status and HMO versus non-HMO county residence may have served as proxies for distance.

Predictors of Total VHA Pharmacy Costs Among VHA Pharmacy Users

Medicare managed care enrollees accounted for 8.9% of all VHA pharmacy costs attributable to Medicare-enrolled veterans. The average unadjusted cost to the VHA pharmacy service in CY 2002 for veterans enrolled in fee-for-service (FFS) plans and using VHA pharmacy services was substantially greater than the average cost for HMO enrollees (Table 2). Unadjusted costs for veterans living in areas not served by HMO plans were similar to those for FFS veterans.

In our multivariable model (Table 3; Figure 2), veterans enrolled in plans with high pharmacy benefit levels had total annual costs that were approximately 5% lower than those for veterans in HMO plans with no pharmacy benefits (\$50 less), veterans enrolled in Medicare FFS (\$63 less), or veterans living in counties not served by HMO plans (\$67 less). Veterans with high HMO benefit levels also had lower costs than those in plans with low benefit levels (\$35 less), but a post hoc comparison indicated that this difference was not statistically significant.

DISCUSSION

Our work shows that Medicare managed care plan pharmacy benefits may affect demand for VHA pharmacy services, with the effect on demand concentrated among enrollees in plans with the highest level of pharmacy benefits. In CY 2002, VHA-Medicare dually enrolled veterans enrolled in HMO plans with high levels of pharmacy benefits were less likely to use any VHA pharmacy services and had lower total pharmacy costs when they did use VHA pharmacy services. These associations were robust to adjustment for enabling and predisposing factors previously shown to affect VHA service use. In this study, we had information about levels of non-VHA pharmacy coverage among Medicare HMO enrollees only. If similar information had been available for Medicare FFS-enrolled veterans, we believe that we would have seen a similar pattern among veterans with differing levels

Table 2. Percent VHA Pharmacy Users and Mean Annual Pharmacy Costs by Medicare Enrollment Status and Demographic Groups

Characteristic	% VHA Rx Users	Mean VHA Rx User Costs, \$
Overall	63.8	1037
HMO status		
HMO without Rx benefits	62.5	819
HMO with low Rx benefits	61.5	862
HMO with high Rx benefits	48.5	859
FFS: HMO county	60.5	1113
FFS: non-HMO county	67.5	1054
Age, y		
<65	71.9	1713
65-74	62.2	900
75+	62.0	901
Income, \$		
<20,000	70.2	1144
20,000-34,999	63.9	1050
35,000+	57.0	967
Race		
White	63.0	1025
Black	68.9	1281
Hispanic	71.3	1180
Sex		
Male	64.1	1047
Female	53.1	1351
Buy-in status		
No	64.0	1036
Yes	60.6	1341
Priority status		
1	82.6	1841
2-6	68.2	1072
7-9	52.7	698
Distance, miles		
<5	63.4	1081
5-20	62.3	1044
20+	66.9	1041
HCC (quintiles)		
1	41.0	551
2	47.4	658
3	57.9	773
4	81.0	1001
5	96.8	1696
MSA		
No	67.7	1030
Yes	62.4	1064
Teaching hospital		
No	64.2	984
Yes	63.6	1078

FFS indicates fee-for-service; HCC, hierarchical condition category; MSA, metropolitan statistical area; Rx, pharmacy; VHA, Veterans Health Administration.

■ **Table 3.** Use and Total Cost of VHA Pharmacy Services

Characteristic	Use (Yes/No) of VHA Pharmacy Services (N = 3,424,699)		Total Cost of VHA Pharmacy Services, \$ (N = 2,183,808)	
	OR	95% CI	Beta	SE
Intercept	5.04	3.93, 6.47	1340.91	2728
HMO status				
HMO without Rx benefits	Reference	—	Reference	—
HMO with low Rx benefits	0.83	0.70, 0.98 ^a	-14.94	13.98
HMO with high Rx benefits	0.53	0.38, 0.73 ^b	-50.27	17.16 ^c
FFS: HMO county	0.70	0.59, 0.82 ^b	13.07	11.62
FFS: non-HMO county	0.83	0.69, 1.01	16.54	15.42
Age, y				
<65	Reference	—	Reference	—
65-74	0.66	0.64, 0.69 ^b	-417.21	10.06 ^b
75+	0.16	0.15, 0.16 ^b	-648.05	13.10 ^b
Income, \$				
<20,000	Reference	—	Reference	—
20,000-34,999	0.91	0.86, 0.95 ^b	5.83	4.64
35,000+	0.89	0.82, 0.95 ^c	14.29	8.15
Race				
White	Reference	—	Reference	—
Black	1.05	0.99, 1.12	-8.62	10.67
Hispanic	1.36	1.25, 1.47 ^b	-46.98	14.51 ^b
Sex				
Male	Reference	—	Reference	—
Female	0.89	0.80, 0.98 ^a	144.01	11.50 ^b
Buy-in status				
No	Reference	—	Reference	—
Yes	0.20	0.19, 0.21 ^b	-89.87	8.81 ^b
Priority status				
1	Reference	—	Reference	—
2-6	0.61	0.57, 0.65 ^b	-469.59	15.32 ^b
7-9	0.43	0.39, 0.48 ^b	-544.64	17.69 ^b
Distance				
Miles to closest facility/10	0.99	0.97, 1.01	-0.18	1.61
HCC (quintiles)				
1	Reference	—	Reference	—
2	3.53	3.42, 3.65 ^b	271.54	6.16 ^b
3	5.00	4.84, 5.17 ^b	311.51	5.79 ^b
4	21.27	19.90, 22.72 ^b	546.94	9.99 ^b
5	186.61	164.19, 212.09 ^b	1154.94	20.30 ^b
MSA				
No	Reference	—	Reference	—
Yes	0.90	0.86, 0.94 ^b	2.64	5.54
Teaching hospital				
No	Reference	—	Reference	—
Yes	0.66	0.53, 0.83 ^b	-33.47	17.25 ^a

CI indicates confidence interval; FFS, fee-for-service; HCC, hierarchical condition category; MSA, metropolitan statistical area; OR, odds ratio; Rx, pharmacy; VHA, Veterans Health Administration.

^aP < .05.

^bP < .001.

^cP < .01.

of coverage from other forms of supplemental insurance.

Implementation of Medicare Part D has greatly increased the availability of non-VHA pharmacy services for Medicare beneficiaries. Geographic areas that have historically not had access to HMO plans, accounting for almost half of the VHA-Medicare dually enrolled population, now have access to stand-alone PDPs, as well as other Medicare managed care plans that include PDPs. At the end of the first official enrollment period in May 2006, enrollment in PDPs was widespread, with voluntary enrollment rates exceeding 15% in more than 90% of all US counties. Average enrollment rate across all US counties was about 30%.

When the Government Accountability Office estimated the cost of the new Medicare prescription drug benefit, they assumed that prior VHA pharmacy users would continue to use the VHA for their medications and that they would not switch to PDPs to any meaningful extent.¹⁷ However, veterans' responses to Medicare Part D are unlikely to be that straightforward. Historically, VHA-using veterans have enrolled in available HMO plans at about the same rate as the general population. Their decisions to enroll (or not) in a Part D PDP are likely to be driven by their access to VHA care (eg, their priority category), the availability and benefit levels of the PDP plans, their income and demographic characteristics, and their history of VHA use.

Our analyses have several notable limitations. We did not have access to non-VHA pharmacy records. Now that Medicare Part D has become active, a centralized database of Medicare enrollees' pharmacy utilization is expected to become available to researchers. We also did not have access to Medicare utilization records for Medicare HMO enrollees. As a consequence, our HCC severity score was calculated based solely on VHA utilization data and likely underestimates, and may introduce bias into, the true HCC severity scores for the veterans examined in this study. For example, HMO enrollees overall had an average of 2 fewer VHA diagnoses during the study period than FFS enrollees overall did (5.4 ± 7.6 diagnoses vs 7.5 ± 9.5 diagnoses, respectively) and were less likely to be in the highest HCC severity score category (16.2% vs 20.4%). Whether this reflects a true difference in health status or preferential use of non-VHA healthcare by HMO enrollees is unclear.

We used each veteran's VHA priority level as a covariate to partially adjust for their level of access to VHA pharmacy services. VHA pharmacy access is a complex issue and is affected by a variety of factors, including overall extent of ser-

vice-connected disability, income level, whether pharmacy care is specifically for a service-connected condition, prisoner-of-war status, and whether pharmacy care is for other specifically authorized conditions. These factors affect both the level of copayments and the out-of-pocket maximum veterans incur. Our 3 specific priority level groupings were chosen to broadly capture variability in VHA pharmacy access (see also Stroupe et al¹⁵), and successfully differentiated among all 3 groupings in terms of overall likelihood of use and total pharmacy cost among VHA pharmacy users (Table 3).

For HMO enrollees, we assigned the pharmacy benefit level associated with the basic plan for the veterans' managed care contract. In cases where contracts offered multiple plans, this assignment may have underestimated the pharmacy benefits available to the enrolled veterans. This underestimation would likely reduce the differences among our HMO enrolled groups (ie, with high, low, and no pharmacy benefits), suggesting that our findings may be conservative.

Finally, our study is cross-sectional. Veterans who enroll in different types of Medicare plans may be fundamentally different in their illness burden or preferences for receiving care. We controlled for many individual characteristics in these analyses that previously were related both to veterans' utilization of VHA care and their selection of healthcare plans. Consequently, we feel that the potential for bias in our analyses was ameliorated.

Despite these limitations, our work has immediate and significant relevance in the context of the recent major programmatic changes in Medicare. According to the 2006 Medicare Payment Advisory Commission report, *Report to the Congress: Increasing the Value of Medicare*,¹⁸ the majority of new PDP plans offered under Medicare Part D would have qualified as high-benefit plans using the definition in our analyses. Consequently, increased enrollment in PDPs by VHA-Medicare dual enrollees may have profound and immediate implications for the VHA pharmacy service. First, the availability of PDPs may significantly reduce the demand for VHA pharmacy services among current VHA users, as

Take-Away Points

To determine how Medicare benefits affect veterans' use of Veterans Health Administration (VHA) pharmacy services, we did a retrospective analysis of veterans dually enrolled in the VHA and Medicare healthcare systems.

- In 2002, 64% of VHA and Medicare-enrolled veterans (5% of all Medicare enrollees) received some or all of their medications from the VHA.
- Medicare managed care plan pharmacy benefits appeared to reduce demand for VHA pharmacy services, with the effect on demand greatest in plans with the highest level of pharmacy benefits.
- Medicare pharmacy coverage through Part D may significantly reduce the demand for VHA pharmacy services, particularly in geographic regions previously underserved by Medicare managed care plans.

well as lessen the likelihood that current nonusers will turn to the VHA system as their provider of pharmacy care. On the other hand, a substantial percentage of veterans who do enroll in PDPs are likely to exceed the cap on the initial standard pharmacy benefit (\$2250 for CY 2006). This is particularly likely to be true for veterans with complex medical conditions. These veterans will then become responsible for 100% of the next \$2400 in their medication costs and will have a strong incentive to turn to the VHA for these pharmacy services. Alternatively, these veterans may be the VHA users most likely to split their pharmacy care, obtaining some medications from the VHA and the rest from their Medicare PDP, in order not to exceed their cap. Either of these cases affects the pattern and magnitude of VHA pharmacy use and may increase the potential for disjointed continuity of care. Further work is needed to examine the impact of the new Medicare coverage on actual medication use by veterans.

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