Characteristics and Medication Use of Veterans in Medicare Advantage Plans

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ABSTRACT

OBJECTIVES: To compare characteristics, health conditions, and medication acquisition patterns by fee-for-service (FFS) or Medicare Advantage (MA) plan enrollment status for Medicare-eligible veterans.

STUDY DESIGN: Retrospective analysis of all female and a random 10% sample of male veterans.

METHODS: Data were derived from the US Department of Veterans Affairs (VA) and Medicare administrative databases. Demographic, geographic, and RxRisk-V risk classes were ascertained in 2008. Medicare Part D enrollment, medication acquisition, and use of high-risk medications (HRMs) were examined in 2009. A veteran was classified as an MA enrollee if he or she was enrolled in an MA plan for at least 1 month in 2008-2009. Descriptive and regression analyses were conducted to compare veterans' characteristics and medication acquisition patterns by plan enrollment type controlling for veterans' characteristics.

RESULTS: Veterans who resided in urban settings and in the West or Northeast and who had co-payments for their VA medications had greater odds of enrolling in MA programs compared with their counterparts. MA-enrolled veterans were more likely to be dual (32.3% vs 7.0%) or Medicare-reimbursed (31.1% vs 14.5%) pharmacy users and less likely to be VA-only pharmacy users (29.4% vs 48.7%) than FFS enrollees. Higher proportions of MA-enrolled veterans received HRMs compared with those in the FFS sector (17.0% vs 14.3%).

CONCLUSIONS: Providers both inside and outside of the VA should consider that substantial information about the medication use of veterans may be unavailable in their healthcare systems' electronic records.

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The Medicare Advantage (MA) program, introduced in 1982, authorized Medicare to contract with private insurers to provide healthcare coverage for a monthly prospective per enrollee capitated payment. Typically, MA plans offered supplemental benefits, such as prescription drug coverage[1,2] or lower out-of-pocket premiums,[1-3] that exceeded the Medicare entitlement. Studies in age-eligible Medicare beneficiaries showed that beneficiaries who enrolled in MA plans had lower pre-enrollment expenditures, fewer health conditions, lower use of services, and lower postenrollment mortality compared with beneficiaries who remained in the fee-for-service (FFS) sector.[4-6] Studies also showed that MA plans attracted a higher percentage of African American beneficiaries,[7] Latino beneficiaries, and beneficiaries with low education and fewer financial resources.[7] MA plans treated chronic conditions more aggressively once they were diagnosed[8,9] and had fewer disparities in quality of care than the FFS sector.[10] Veterans were more likely to enroll in MA plans if they were nonwhite, had better self-reported functioning, exercised, or did not smoke. However, veterans were also more likely to enroll if they consumed alcohol or had more health conditions.[11]

Many veterans who were dually enrolled in the US Department of Veterans Affairs (VA) healthcare system and in Medicare used both VA and Medicare healthcare.[12] The VA is able to track healthcare use and diagnoses of veterans in the VA system and FFS Medicare facilities using diagnosis-based instruments (eg, diagnosis-related groups,[13] Diagnostic Cost Groups,[14] and Ambulatory Clinical Groups[15]). However, the VA is unable to track healthcare use or diagnoses at MA facilities because MA plans are not required by the federal government to submit encounter-level records. As a result, this data incompleteness underestimates the prevalence of comorbidities for MA-enrolled Medicare-eligible veterans. Therefore, many studies of healthcare and medication use in Medicare-eligible veterans have excluded veterans enrolled in MA plans from their analyses to avoid this measurement error,[16-20] despite the growing numbers of MA-enrolled veterans. In 2011, MA-enrolled veterans represented 21% of all Medicare-eligible VA users.[21]

TAKEAWAY POINTS

We compared patient characteristics, health conditions, and medication acquisition patterns by fee-for-service (FFS) or Medicare Advantage (MA) plan enrollment status for Medicare-eligible veterans.

- MA plan–enrolled veterans differed from FFS sector–enrolled veterans in several important demographic, geographic, and clinical characteristics, as well as in medication use patterns.
- Higher proportions of MA plan–enrolled veterans were dual Medicare and US Department of Veterans Affairs (VA) pharmacy users and received high-risk medications compared with those enrolled in the FFS sector.
- Providers both inside and outside of the VA caring for these veterans should consider that substantial medication information might be unavailable in their healthcare systems' records.

There are limited data from empirical evaluations of the choice between FFS versus MA plans in Medicare-eligible veterans. Also, no previous study has compared medication acquisition patterns, overlapping medications, and receipt of high-risk medications (HRMs) from VA and Part D–reimbursed pharmacies by plan enrollment type. With the implementation of Medicare Part D and availability of prescription data obtained from VA and Medicare Part D–reimbursed pharmacies, this study was able to adjust for comorbidities using a pharmacy-based case mix instrument and assess patient characteristics and health conditions associated with enrollment in an FFS or MA plan by Medicare-eligible veterans during 2008 and 2009. In addition, we examined medication acquisition patterns by MA plan enrollees compared with Medicare FFS enrollees.

METHODS

Subject Selection

The sampling frame for this study consists of all women and a random 10% sample of men from the VA Vital Status file. The Vital Status file contains demographic information and dates of death of individuals who received VA care, were enrolled in the VA system, or received VA compensation or pension benefits since 1992. Veterans were included if they were 65 years or older as of January 1, 2004; alive through December 2009; and enrolled in Medicare. All women veterans were included because they represent a smaller portion of the overall veteran population. Veterans who were enrolled in Part D during some but not all of 2009 were excluded. Participants were also excluded if they had missing or discrepant demographic, geographic, or medication use data.

Data Sources and Measures

Data for this study were derived from the VA and Medicare administrative databases for years 2008 and 2009. Demographic, geographic, and RxRisk-V risk classes were ascertained in 2008. Medicare Part D enrollment and medication acquisition was examined in 2009. Veterans' Part D enrollment status was obtained from Medicare enrollment files. Consistent with previous research, a veteran was classified as an MA enrollee if the veteran was enrolled in an MA plan for at least 1 month from January 1, 2008, through December 31, 2009.[6] Patient demographic characteristics, including age, race, gender, ethnicity, zip code of residence, and socioeconomic status of the veteran's zip code of residence (eg, median household income in the zip code), were obtained from the VA Enrollment file[22] and US Census Bureau data. Veterans' priority categories, indicating which veterans are required to make co-payments for no, some, or all medications from VA pharmacies,[23] were obtained from the VA Enrollment file. The differential distance between the nearest VA and Medicare-reimbursed facility was calculated using zip code information.[12] Rural/urban status was based on Rural Urban Commuting Area Codes derived from zip codes.[24]

We obtained pharmacy use data from the VA Managerial Cost Accounting National Data Extract Pharmacy data sets[25] and the Medicare Part D "Slim" file that contains all prescriptions that have been dispensed and paid through the Part D program. Based on pharmacy use, veterans were classified as 1 of 3 types of pharmacy users: VA only, Part D–reimbursed only, or dual (ie, both VA and Part D–reimbursed). Pharmacy use was measured as the number of 30-day medication supplies (eg, one 90-day supply was equivalent to three 30-day supplies) and the number of drug classes that veterans received from VA and Part D–reimbursed pharmacies.[20] A medication with less than a 30-day supply was coded as one 30-day supply. The drug classes were based on the VA drug classification system that provides general categories of drugs and mostly follows the American Hospital Formulary Service Drug Information drug classification.[26] For dual pharmacy users, overlapping days' supply was defined as drug classes that veterans received from both VA and Part D–reimbursed pharmacies with at least 7 overlapping days.

The RxRisk-V is a pharmacy-based case-mix instrument that has been validated in the veteran population[14] and can address the issue of missing claims data for veterans enrolled in MA plans. The RxRisk-V contains 45 disease categories based on medication classes (listed in **eAppendix Table 1** [eAppendix available at **ajmc.com**]).[27] To construct RxRisk-V scores for a patient population, patient-level pharmacy data are mapped into the RxRisk-V categories. We solicited pharmacist input from our team to review unclassified and new drug classes to identify whether their primary indication is associated with a specific disease state.

The Healthcare Effectiveness Data and Information Set's list of HRMs[28] was used to identify veterans who received HRMs from VA and Part D–reimbursed pharmacies in 2009. HRMs, originally codified by the Beers[29] and Zhan[30] criteria, are medications that should be avoided in patients 65 years or older because either the associated adverse effects outweigh the potential benefits or there are safer alternatives.

TABLE 1. Demographic, Geographic, and Medical Characteristics[a] of Veterans (≥69 years) Associated With MA Versus Medicare FFS Plan Enrollment, 2008-2009 (N = 262,371)

	Unadjusted Analyses			Adjusted Analyses	
	MA (n = 58,648; 22.4%)	Medicare FFS (n = 203,723; 77.6%)		Odds[b] of MA Plan Enrollment	
	%	%	*P*	OR (95% CI)	*P*
Demographic and Other Characteristics					
Male	85.4	81.9	<.001	1.32 (1.28-1.36)	<.001
Age, years					
69-70	6.9	7.8	<.001	Ref	
71-75	27.8	27.4		1.13 (1.08-1.18)	<.001
76-80	27.7	25.5		1.19 (1.14-1.24)	<.001
81-85	24.6	24.2		1.12 (1.07-1.16)	<.001
86-90	11.4	12.9		1.03 (0.98-1.08)	.202
≥91	1.6	2.1		0.92 (0.84-0.99)	.046
Black race	6.7	6.0	<.001	1.12 (1.07-1.17)	<.001
Hispanic ethnicity	2.2	1.4	<.001	1.29 (1.20-1.38)	<.001
VA drug co-payments					
No co-payments	4.4	8.5	<.001	Ref	
Co-payments for some drugs	46.5	44.0		2.25 (2.15-2.35)	<.001
Co-payments for all drugs	49.2	47.5		2.41 (2.30-2.52)	<.001

(continued)

Statistical Analyses

Demographic, geographic, and medication use differences between veterans who obtained Medicare in the FFS sector and those who were enrolled in an MA plan in 2008-2009 were assessed by descriptive and bivariate statistics, including *t* tests and χ^2 tests. We compared the number of 30-day supplies, the number of medication classes, and the most frequently occurring drug classes from VA or Part D–reimbursed pharmacies by Medicare FFS or MA plan enrollment status. We also compared receipt of HRMs from VA and Part D–reimbursed pharmacies by plan type (FFS vs MA) and pharmacy use groups (VA only, Part D–reimbursed only, or dual). Logistic regression analyses were conducted to assess factors associated with MA versus FFS enrollment in 2008-2009, which included veterans' demographic characteristics, health status, and zip code–level factors. All analyses were conducted using Stata version 14.2 (Stata Corp; College Station, Texas). Human subject approval for this research was obtained from the Edward Hines, Jr. VA Hospital Institutional Review Board.

RESULTS

Veterans' Characteristics by Medicare Type

There were 262,371 veterans who met the study inclusion criteria, of whom 203,723 (77.6%) were enrolled in Medicare FFS and 58,648 (22.4%) in MA. A majority (81.3%) of MA-enrolled veterans were enrolled for 12 months in MA plans during the year. The majority of veterans were non-Hispanic white, aged between 76 and 85 years, and residing in an urban location. Descriptive characteristics of veterans by MA enrollment status are presented in **Table 1**. Compared with those in the FFS sector, MA enrollees were more likely to receive medications for the treatment of pain, which had the largest difference between the 2 groups (29.4% vs 23.9%), followed by medications for congestive heart failure/hypertension (59.0% vs 56.7%), diabetes (24.8% vs 22.5%), hyperlipidemia (66.4% vs 63.1%), and benign prostatic hypertrophy (29.4% vs 27.0%).

In the adjusted analyses, compared with those in the FFS sector, MA enrollees had a 2-fold increase in the odds of having VA co-payments for some (odds ratio [OR], 2.25; 95% CI, 2.15-2.35) or all (OR, 2.41; 95% CI, 2.30-2.52) drugs. They also had greater odds of residing in urban settings (OR, 2.01; 95% CI, 1.96-2.06) and in the West (OR, 1.13; 95% CI, 1.10-1.16) compared with all other regions. MA and FFS enrollees differed significantly regarding 9 of the 10 most common clinical conditions in this population (listed in Table 1), excluding hypertension. Pain was the condition most associated with MA enrollment; MA enrollees had 33% (OR, 1.33; CI, 1.30-1.37) greater odds of having pain medication prescribed compared with FFS sector enrollees.

Medication Use by Medicare Type

A higher percentage of MA enrollees were enrolled in Medicare Part D compared with FFS sector enrollees (73.7% vs 24.3%). In **Figure 1**,

TABLE 1. *(Continued)* Demographic, Geographic, and Medical Characteristics[a] of Veterans (≥69 years) Associated With MA Versus Medicare FFS Plan Enrollment, 2008-2009 (N = 262,371)

	Unadjusted Analyses			Adjusted Analyses	
	MA (n = 58,648; 22.4%)	Medicare FFS (n = 203,723; 77.6%)		Odds[b] of MA Plan Enrollment	
	%	%	*P*	OR (95% CI)	*P*
Geographic Characteristics					
Region					
Northeast	23.7	19.0	<.001	Ref	
Midwest	23.1	24.1		0.77 (0.75-0.79)	<.001
South	30.8	39.8		0.62 (0.61-0.64)	<.001
West	22.3	17.1		1.13 (1.10-1.16)	<.001
Urban residence	80.8	70.0	<.001	2.01 (1.96-2.06)	<.001
Differential distance,[c] miles					
<5	49.5	46.1	<.001	Ref	
5-19	25.5	22.2		1.09 (1.06-1.12)	<.001
20-39	13.6	16.3		0.86 (0.83-0.88)	<.001
40-59	6.3	8.3		0.82 (0.79-0.85)	<.001
≥60	5.1	7.0		0.78 (0.74-0.81)	<.001
Percentage of households below the poverty level, mean (SD)	10.5 (6.8)	10.9 (6.8)	<.001	0.98 (0.97-0.98)	<.001
Median household income in zip code, $, mean (SD)	43,676 (14,645)	43,521 (15,925)	.035	0.99 (0.99-0.99)	<.001
Ten Most Common RxRisk-V Class in Veterans Who Used Medications[d]					
Depression	17.5	18.4	<.001	0.94 (0.92-0.97)	<.001
Diabetes	24.8	22.5	<.001	1.08 (1.05-1.10)	<.001
Gastric acid disorder	35.5	36.9	<.001	0.93 (0.91-0.95)	<.001
Ischemic heart disease/hypertension	55.9	54.9	<.001	0.99 (0.97-1.02)	.589
Hyperlipidemia	66.4	63.1	<.001	1.11 (1.08-1.13)	<.001
Hypertension	30.9	30.4	.021	1.01 (0.98-1.03)	.616
Pain	29.4	23.9	<.001	1.33 (1.30-1.37)	<.001
Benign prostatic hypertrophy	29.4	27.0	<.001	1.06 (1.04-1.09)	<.001
Congestive heart failure/hypertension	59.0	56.7	<.001	1.03 (1.01-1.05)	.013
Allergies	19.2	20.3	<.001	0.93 (0.90-0.95)	<.001

FFS indicates fee-for-service; MA, Medicare Advantage; OR, odds ratio; ref, reference; VA, Veterans Affairs.
[a]Demographic and geographic characteristics were assessed in 2008.
[b]Adjusted for the variables listed, medication use (yes/no), and all RxRisk-V classes, including unknown.
[c]Differential distance is the distance to the nearest VA hospital minus the distance to the nearest Medicare-reimbursed hospital.
[d]Accounted for medications acquired from VA or non-VA pharmacies in 2008; 29.6% of Medicare FFS enrollees and 8.0% of MA enrollees did not have medication use in 2008 from VA or Medicare-reimbursed pharmacies.

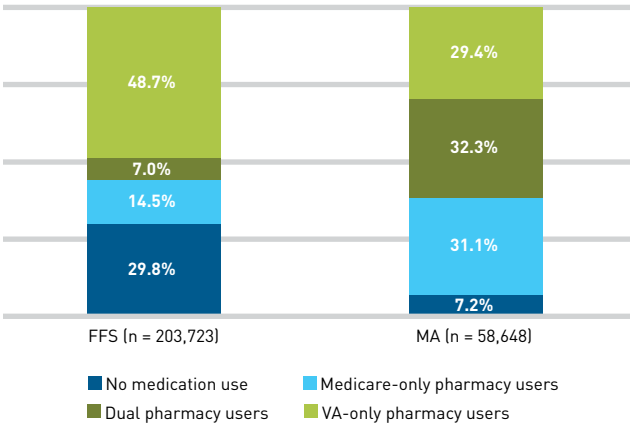
we present unadjusted analyses comparing medication use by MA enrollment status. MA enrollees were more likely to use any VA or Medicare-reimbursed medication (92.8% vs 70.2%) and to be dual (32.3% vs 7.0%) or Medicare-only (31.1% vs 14.5%) pharmacy users. For VA or Medicare-reimbursed medication users, Medicare FFS enrollees and MA enrollees received a similar number of 30-day medication supplies in 2009 (mean [SD], 62.6 [43.9] vs 62.9 [40.9], respectively; $P = .3482$) from VA or Part D–reimbursed pharmacies (data not shown). Medicare FFS enrollees obtained medications from fewer drug classes (mean [SD] = 8.3 [5.2]) compared with MA enrollees (mean [SD] = 8.8 [5.1]; $P < .001$) from VA or Part D–reimbursed pharmacies. A comparison of the prevalence for all the RxRisk-V classes and a detailed comparison of medication use from VA or Part D–reimbursed pharmacies by Medicare plan enrollment status are presented in **eAppendix Tables 1** and **2**.

The 10 most frequently prescribed drug classes by Medicare enrollment status are presented in **Table 2**. In both groups, the most frequently obtained drug class from VA and Part D–reimbursed

pharmacies were antilipemic agents, followed by β-blockers. For example, 38.5% of Medicare FFS enrollees obtained antilipemic agents from VA pharmacies and 12.1% obtained them from Part D–reimbursed pharmacies. Opioid analgesics, quinolones, and antidepressants were drug classes dispensed from Part D–reimbursed pharmacies that were not included in the list of 10 most frequently obtained drug classes from VA pharmacies. The most frequent drug classes that dual pharmacy users obtained with an overlapping days' supply from both VA and Part D–reimbursed pharmacies for more than 7 days are also presented; the list included antilipemic agents, β-blockers, antidepressants, and opioid analgesics, among others (Table 2).

In total, 15.1% of the veterans received HRMs; of these, 6.7% received the medication from VA pharmacies and 7.9% from Part D–reimbursed pharmacies (**Figure 2A**). A higher proportion of MA enrollees received HRMs compared with the FFS sector enrollees (17.0% vs 14.3%; P <.001) (**Figure 2B**). A higher proportion of dual users (24.4%) received HRMs compared with users of Part D–reimbursed (20.7%) or VA-only (10.1%) pharmacies (P <.001)

FIGURE 1. Medication Use[a] of Veterans (≥69 years) by Medicare Plan Enrollment Type in 2008-2009 (N = 262,371)



FFS indicates fee-for-service; MA, Medicare Advantage; VA, Veterans Affairs.
[a]Accounted for medications acquired from VA or non-VA Medicare Part D–reimbursed pharmacies in 2009.

TABLE 2. Most Frequent Drug Classes Acquired by Veterans (≥69 years) From VA and Part D–Reimbursed Pharmacies by MA Versus Medicare FFS Plan Enrollment Status in 2009 (N = 262,371)

	MA (n = 58,648)		Medicare FFS (n = 203,723)	
	Drug Class % (n)	Drug Class % (n)	Drug Class % (n)	Drug Class % (n)
	VA Pharmacy	Part D–Reimbursed Pharmacy	VA Pharmacy	Part D–Reimbursed Pharmacy
1	Antilipemic agents 43.6% (25,591)	Antilipemic agents 33.4% (19,621)	Antilipemic agents 38.5% (78,436)	Antilipemic agents 12.1% (24,615)
2	β-blockers/related 25.6% (15,016)	β-blockers/related 27.5% (16,161)	β-blockers/related 24.6% (50,049)	β-blockers/related 10.5% (21,390)
3	ACE inhibitors 23.8% (13,982)	Opioid analgesics 23.7% (13,919)	ACE inhibitors 22.3% (45,483)	Opioid analgesics 9.1% (18,633)
4	Gastric medications, including PPIs 22.4% (13,143)	ACE inhibitors 22.6% (13,233)	Gastric medications, including PPIs 21.2% (43,299)	ACE inhibitors 7.5% (15,335)
5	Calcium channel blockers 19.1% (11,202)	Gastric medications, including PPIs 17.3% (10,129)	Calcium channel blockers 18.1% (36,884)	Gastric medications, including PPIs 7.0% (14,323)
6	α-blockers/related 16.3% (9579)	Quinolones 16.7% (9776)	α-blockers/related 14.6% (29,684)	Quinolones 6.7% (13,565)
7	Oral hypoglycemic agents 13.4% (7,856)	Calcium channel blockers 15.6% (9126)	Nonopioid analgesics 12.2% (24,789)	Antidepressants, other 6.5% (13,163)
8	Hormones/synthetics/ modifiers, other 11.8% (6908)	α-blockers/related 15.1% (8842)	Oral hypoglycemic agents 11.2% (22,877)	Loop diuretics 6.4% (13,097)
9	Thiazides/related diuretics 11.6% (6812)	Loop diuretics 14.6% (8564)	Thiazides/related diuretics 11.1% (22,660)	Calcium channel blockers 6.1% (12,363)
10	Nonopioid analgesics 11.4% (6711)	Oral hypoglycemic agents 13.2% (7764)	Hormones/synthetics/ modifiers, other 11.1% (22,607)	α-blockers/related 5.4% (10,935)

(continued)

TABLE 2. *(Continued)* Most Frequent Drug Classes Acquired by Veterans (≥69 years) From VA and Part D–Reimbursed Pharmacies by MA Versus Medicare FFS Plan Enrollment Status in 2009 (N = 262,371)

	MA (n = 58,648)	Medicare FFS (n = 203,723)
	Most Frequent Drug Classes *Dual* Pharmacy Users (n = 18,950) Obtained From Both VA and Part D–Reimbursed Pharmacies With Overlapping Days' Supply for >7 Days	Most Frequent Drug Classes *Dual* Pharmacy Users (n = 14,291) Obtained From Both VA and Part D–Reimbursed Pharmacies With Overlapping Days' Supply for >7 Days
1	Antilipemic agents 10.2% (1937)	Antilipemic agents 12.6% (1797)
2	β-blockers 7.1% (1341)	β-blockers 8.6% (1237)
3	Oral hypoglycemic agents 5.8% (1105)	Oral hypoglycemic agents 6.0% (852)
4	ACE inhibitors 5.0% (944)	Gastric medications 5.9% (849)
5	Calcium channel blockers 4.6% (871)	Calcium channel blockers 5.9% (838)
6	Gastric medications 4.5% (856)	ACE inhibitors 5.7% (822)
7	α-blockers 3.7% (699)	Loop diuretics 4.7% (669)
8	Antidepressants 3.0% (561)	Antidepressants 4.5% (643)
9	Thyroid supplements 2.8% (523)	α-blockers 4.3% (614)
10	Loop diuretics 2.7% (511)	Thyroid supplements 3.1% (450)
11	Opioid analgesics 2.2% (426)	Central nervous system medications 3.1% (443)
12	Hormones/synthetics/modifiers 2.0% (386)	Opioid analgesics 3.0% (429)

ACE indicates angiotensin-converting enzyme; FFS, fee-for-service; MA, Medicare Advantage; PPI, proton pump inhibitor; VA, Veterans Affairs.

(**Figure 2C**). The 10 most frequent HRMs that veterans obtained from VA and Part D–reimbursed pharmacies are presented in **Table 3**.

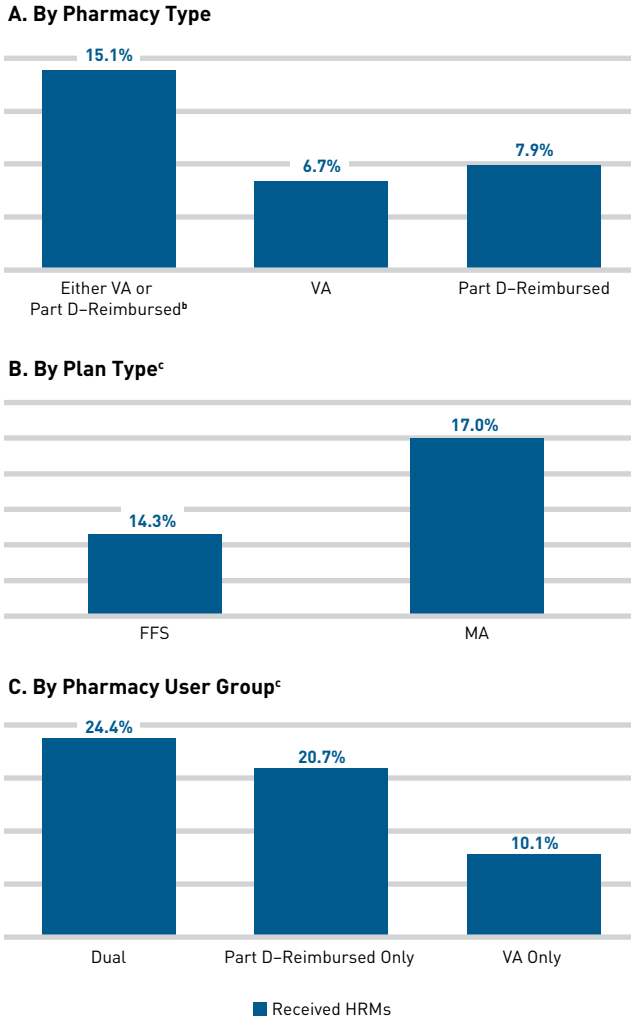
DISCUSSION

Almost one-fourth of Medicare-eligible veterans were enrolled in an MA plan for at least 1 month in 2008-2009, representing more than 1 million veterans enrolled in the VA and Medicare. A higher proportion of MA patients (73.7%) enrolled in Medicare Part D compared with FFS patients (24.3%). Moreover, a significantly higher portion of MA enrollees (17.0%) compared with the FFS enrollees (14.3%) were receiving HRMs. MA plan enrollees also differed from FFS sector enrollees in several of the demographic, geographic, and clinical characteristics that we examined.

The percentage of patients with common clinical conditions differed significantly between MA and FFS enrollees, with the largest percentage difference between the 2 groups being for pain. Veterans with pain had higher odds of enrollment in MA plans versus FFS plans. One possible explanation could be access to pain medications through the Medicare Part D program, with 73.7% of MA enrollees being enrolled in Part D versus just 24.3% of the FFS enrollees. Chronic pain is frequently encountered in the United States; it affects an estimated 20% of the population.[31] Opiates are used routinely for the treatment of pain and frequently overprescribed.[32] Prescriptions for opioids have decreased slightly, but opioid-related overdoses continue to increase and have been associated with an epidemic of opioid abuse, dependence, and overdose.[33] Opioid analgesics were the third most frequent class of medications acquired from Part D–reimbursed pharmacies for both Medicare FFS and MA enrollees. Notably, opioid analgesics were not on the list of frequent classes of medications acquired from VA pharmacies. Since the recent implementation of state-level prescription drug monitoring programs, providers within the VA can henceforth explore the receipt of these medications by veterans from outside the VA system.[34]

We found that MA-enrolled veterans used more medications and were more likely dual or Medicare-only pharmacy users compared with the FFS sector enrollees. In a previous study of FFS-enrolled veterans, results showed that a substantial proportion of veterans

FIGURE 2. Receipt of HRMs[a] by Veterans From VA and Part D–Reimbursed Pharmacies



FFS indicates fee-for-service; HRM, high-risk medication; MA, Medicare Advantage; VA, Veterans Affairs.
[a]Medication use in 2009; data presented for veterans who used medications in 2009 (n = 197,354).
[b]The number of veterans who received HRMs from both VA and Part D–reimbursed pharmacies was negligible (0.4%).
[c]Statistically significant difference between groups based on χ^2 test (P <.0001).

TABLE 3. Ten Most Frequent[a] HRMs Acquired by Veterans (≥69 years) From VA and Part D–Reimbursed Pharmacies in 2009

VA Pharmacy	Part D–Reimbursed Pharmacy
Cyclobenzaprine (muscle relaxant) (18.1%)	Acetaminophen-propoxyphene[b] (narcotic) (24.2%)
Methocarbamol (muscle relaxant) (10.6%)	Nitrofurantoin macrocrystals-monohydrate (urinary anti-infective) (11.9%)
Diphenhydramine (antihistamine) (10.4%)	Cyclobenzaprine (muscle relaxant) (11.0%)
Ketorolac (analgesic) (9.8%)	Promethazine (antihistamine) (9.3%)
Propoxyphene[b] (narcotic) (9.4%)	Hydroxyzine hydrochloride (antihistamine) (7.1%)
Hydroxyzine pamoate (antihistamine) (8.8%)	Atropine-diphenoxylate (belladonna alkaloid) (5.8%)
Diazepam (long-acting benzodiazepine) (8.2%)	Nitrofurantoin macrocrystals (urinary anti-infective) (4.2%)
Promethazine (antihistamine) (5.5%)	Dicyclomine (gastrointestinal antispasmoid) (3.1%)
Atropine (belladonna alkaloid) (3.2%)	Methocarbamol (muscle relaxant) (2.9%)
Dicyclomine (gastrointestinal antispasmoid) (3.1%)	Carisoprodol (muscle relaxant) (2.2%)

HRM indicates high-risk medication; VA, Veterans Affairs.
[a]The frequencies represent the number of unique patients who received the medication calculated from the total number of patients who received HRMs.
[b]Products containing propoxyphene were removed from the market subsequent to this study period.

received their medications from Part D–reimbursed and VA pharmacies.[35] According to the authors, this might pose safety risks if providers in one healthcare system did not know about medications prescribed by providers in another system. Our results showed that the potential safety risks associated with dual pharmacy use among MA-enrolled veterans might be much greater because these veterans are more likely to be dual pharmacy users than those in the FFS sector (32.3% vs 7.0%). Similar to the previous study, we also found that some of the medications filled at Part D–reimbursed pharmacies were drugs that carried a significant drug–drug interaction profile (eg, quinolones) or included narcotics that require cross-system monitoring to control potential abuse and diversion. Antidepressants and opioid analgesics were on the list of most frequent drug classes that dual pharmacy users obtained from both Part D–reimbursed and VA pharmacies with overlapping supply days.

In 2009, a previous study found that 21.5% of MA enrollees received at least 1 HRM.[36] In our study, 15.1% of the veterans received HRMs. The proportion was significantly higher among dual (24.4%) and Part D–reimbursed (20.7%) pharmacy users compared with VA-only pharmacy users (10.1%) (P <.001). Because MA enrollees

were more likely to be dual or Medicare-only pharmacy users, the proportion of HRMs was significantly higher for MA enrollees (17.0%) compared with those in the FFS sector (14.3%) (P <.001). The computerized patient record system at the VA alerts physicians about prescribing HRMs for elderly veterans. Although alert fatigue is a well-documented phenomenon,[37] our data demonstrate that a significant proportion of HRMs are received from outside of the VA system. Other possible reasons for lower receipt of HRMs from VA pharmacies include availability of alternative nonpharmacological treatments at the VA, norms and training practices of VA providers, and availability of onsite pharmacists at the VA.

Limitations

There are limitations to this descriptive study. Due to constraints in VA administrative data, we were not able to assess relevant veteran characteristics, including education level, income, or preference for care, that might impact their choice of Medicare plan. As proxies for these variables, we used the socioeconomic status of the veterans' zip code of residence, veterans' priority categories, and the differential distance between the nearest VA and Medicare-reimbursed facility. Veterans who did not use medications in 2008 from VA or Medicare-reimbursed pharmacies were not classified by the RxRisk-V. This may have decreased the prevalence of the chronic conditions in our population if veterans received medications that are not covered by either VA or Medicare benefits. Also, RxRisk-V assigns disease categories based on treatment for conditions, and plan choice may impact treatment for conditions. Because the VA serves a unique population, which is predominately male and older and has low socioeconomic status, our results demonstrating differences in patient sociodemographic, clinical, and medication use by plan enrollment status may not be generalizable to other settings or populations. Although the data are from 2009, the findings inform current policy discussions because they highlight the importance of coordinating multiple system use, which is a major issue in the current US healthcare system. Finally, although our list of HRMs was specific to the elderly, it did not include all medications with safety concerns (eg, QTc interval prolongation with quinolones or bleeding with warfarin). Therefore, our results regarding the prevalence of HRMs should be considered a conservative estimate of the use of medications with safety concerns in an elderly population.

CONCLUSIONS

Medication reconciliation within health systems can identify medication discrepancies and reduce potential harm.[38] Most electronic health records (EHRs), including VA's health information system, allow providers to add services or medications received outside their health system. However, this process relies on providers asking patients for this information and documenting it in the EHR as non-VA medication orders. According to findings of a previous study, more than 38% of veterans who obtained non-VA medications did not discuss these medications with VA physicians.[39] Studies outside the VA system have also found that doctor–patient communication about drugs was suboptimal.[40]

Our results highlight that MA enrollees were more likely to be dual or Medicare-only pharmacy users compared with the FFS sector enrollees. These veterans acquired many drug classes, such as opioid analgesics, more frequently from Part D–reimbursed pharmacies than from VA pharmacies. Providers both inside and outside of the VA caring for veterans should consider that substantial information about the medication profiles of their patients might be unavailable in their healthcare systems' EHRs, and they should ask patients for this information. ■

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eAppendix Table 1. RxRisk-V Class Prevalence for Veterans (≥69 years) Who Used Medications[a] by MA or Medicare FFS Plan Enrollment Status in 2008-2009 (N = 197,406)

RxRisk-V Class	**MA (n = 53,958)**	**Medicare FFS (n = 143,448)**	
	%	**%**	***P***
1. Pancreatic insufficiency	0.2	0.3	.161
2. End-stage renal disease	1.4	1.3	.087
3. Human immunodeficiency virus	0.43	0.49	.113
4. Anxiety and tension	12.2	11.4	<.001
5. Reactive airway disease	17.1	17.2	.530
6. Bipolar disorder	0.13	0.15	.412
7. Ischemic heart disease/angina	10.8	11.4	.001
8. Anticoagulation	12.1	10.2	<.001
9. Depression	17.4	18.4	<.001
10. Diabetes	24.8	22.5	<.001
11. Epilepsy	3.7	3.9	.045
12. Gastric acid disorder	35.5	36.9	<.001
13. Glaucoma	7.8	7.2	<.001
14. Gout	7.1	6.8	<.001
15. Ischemic heart disease/hypertension	55.9	54.9	<.001
16. Hyperlipidemia	66.4	63.1	<.001
17. Hypertension	30.9	30.4	.021
18. Inflammatory bowel syndrome	1.0	1.0	.8
19. Liver failure	1.2	1.2	.732
20. Malignancies	3.0	3.2	.07
21. Pain	29.4	23.9	<.001
22. pain/inflammation	16.6	14.9	<.001
23. Parkinson disease	3.1	3.2	.365
24. Psychotic illness	2.5	3.3	<.001
25. Hyperkalemia	0.3	0.3	.799
26. Steroid-responsive conditions	11.9	8.6	<.001
27. Hypothyroidism	15.2	14.4	<.001
28. Transplant	0.6	0.6	.945
29. Tuberculosis	0.16	0.14	.326
30. Alcohol dependence	0.03	0.03	.739
31. Migraine	0.3	0.4	.127
32. Psoriasis	0.4	0.5	.028
33. Osteoporosis/Paget disease	7.4	8.3	<.001
34. Malnutrition	1.0	1.1	.002
35. Urinary incontinence	1.3	1.7	<.001
36. Ostomy	3.9	5.2	<.001
37. Hepatitis C	0.01	0.0	.150
38. Dementia	5.5	5.8	.003

39. Benign prostatic hypertrophy	29.4	27.0	<.001
40. Smoking cessation	0.9	1.0	.009
41. Arrhythmias	8.5	8.3	.149
42. Congestive heart failure/hypertension	59.0	56.7	<.001
43. Antiplatelet agents	11.8	11.1	<.001
44. Neurogenic bladder	0.14	0.2	.001
45. Allergies	19.2	20.3	<.001
Unknown[b]	82.4	79.0	<.001
Total number of classes, without unknown, mean (SE)	5.4 (0.01)	5.3 (0.01)	

FFS indicates fee-for-service; MA, Medicare Advantage; VA, Veterans Affairs.

[a]Accounted for medications acquired from VA or non-VA pharmacies in 2008, 29.6% of Medicare FFS enrollees and 8.0% of MA enrollees did not have medication use in 2008.

[b]The unknown category consists of medications that are not categorized into 1 of the 45 Rx-risk categories. A "/" in the name of the RxRisk class means that the drugs associated with the RxRisk class are used to treat the 2 conditions separated by the "/".

eAppendix Table 2. Medication Use[a] of Veterans (≥69 years) by MA or Medicare FFS Plan Enrollment Status in 2008-2009 (N = 262,371)

	MA (n = 58,648)	**Medicare FFS (n = 203,723)**		
			P	***P***
No medication use, %	7.2	29.8		<.001
Medicare only pharmacy users, %	31.1	14.5		
Total number of 30-day supplies, mean (SD)	53.7 (37.4)	61.5 (42.1)	<.001	
Total number of drug classes, mean (SD)	7.9 (4.6)	8.7 (4.9)	<.001	
Dual pharmacy users, %	32.3	7.0		
Total number of 30-day supplies, mean (SD)	75.3 (41.0)	84.7 (45.2)	<.001	
Number from VA pharmacies	46.2 (38.2)	49.8 (41.2)	<.001	
Number from Part D–reimbursed pharmacies	29.1 (28.3)	35.0 (32.0)	<.001	
Total number of drug classes	10.8 (5.1)	12.0 (5.4)	<.001	
Number from VA only Pharmacies	4.7 (4.1)	4.7 (4.2)	.7963	
Number from Part D–reimbursed only pharmacies	4.7 (3.7)	5.5 (4.1)	<.001	
Both VA and Part D–reimbursed pharmacies	1.4 (1.8)	1.7 (2.1)	<.001	
VA only pharmacy users, %	29.4	48.7		
Total number of 30-day supplies, mean (SD)	58.8 (41.1)	59.8 (43.4)	.0045	
Total number of drug classes, mean (SD)	7.5 (5.0)	7.6 (5.1)	<.001	

FFS indicates fee-for-service; MA, Medicare Advantage; VA, Veterans Affairs.

[a]Medication use and Medicare Part D enrollment in 2009, accounted for medications acquired from VA or non-VA pharmacies.