Racial and Ethnic Disparities in Prescription Coverage and Medication Use

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This study compared drug coverage and prescription drug use by race and Hispanic ethnicity for Medicare beneficiaries with three chronic conditions: diabetes, hypertension, or heart disease. We found that among beneficiaries without any drug coverage black persons and Hispanics used 10 to 40 percent fewer medications, on average, than white persons with the same illness, and spent up to 60 percent less in total drug costs. Having drug coverage somewhat lessened these differences although the effect was consistent with only M+C prescription benefits. Substantially lower medication use remained for dually eligible black beneficiaries and Hispanics with employer-sponsored drug benefits.

INTRODUCTION

This study examines the access that black and Hispanic Medicare beneficiaries have to prescribed drugs for chronic conditions. We know little about how race and ethnicity influences medication use despite substantial research showing that, for most health care services, minority beneficiaries use fewer services compared with white persons (Gornick, 1999, 2000, 2003; Gornick et al., 1996; Gornick, Eggers, and Riley, 2001; Murray, 2000). One exception to this pattern—and a possible indicator of

medication underuse—is a higher than average need for procedures used to treat the complications of chronic illnesses. For instance, elderly black beneficiaries are three to four times more likely than white beneficiaries to undergo amputations of lower limbs or implantations of shunts for renal dialysis due to uncontrolled diabetes (Gornick, 1999, 2000; Gornick et al., 1996). Such differences have been generally interpreted as evidence of widespread insensitivity in the acute care setting (Mayberry, Mili, and Ofili, 2000). An alternative explanation is that minority beneficiaries may be facing persistent problems in getting necessary medications that eventually lead to the most debilitating effects of unmanaged chronic illness.

Black and Hispanic Medicare beneficiaries may be particularly susceptible to medication underuse for economic reasons because outpatient prescription drugs will not be included under the traditional Medicare benefit until 2006. Until then, beneficiaries must negotiate some form of drug benefits or else pay out-of-pocket for their medication expenses. Options for gaining drug coverage include earning comprehensive retiree health benefits, buying personal insurance, enrolling into M+C plans with a drug coverage option, or qualifying for public assistance (e.g., Medicaid or State pharmaceutical assistance programs). Some of these avenues may be less accessible to minority populations, while other types place considerable demands on personal income and savings. For example, private drug plans often require

substantial cost sharing in the form of copayments for each prescription fill, deductibles, and monthly premiums. Access to employer-sponsored drug coverage depends on consistent employment opportunities in industries offering retiree benefits. Enrollment into M+C plans with drug coverage has becoming increasingly limited for residents of Southern States where many minorities live. Similarly, only three States offer substantial drug assistance programs for Medicare beneficiaries, and they are all in the Northeast (New Jersey, New York, and Pennsylvania). For chronically-ill black and Hispanic beneficiaries with regular medical needs and scarce personal resources, inadequate drug coverage may translate to disparities in medication use.

Few studies have compared racial disparities in medication use by drug insurance status despite the intuitive relationship between affording drug therapies and managing disease (Espino et al., 1998; Fillenbaum et al., 1993; Fillenbaum et al., 1996; Nelson, Norris, and Mangione, 2002; Svetkey et al., 1996; White-Means, 2000). We used the wide variation in prescription drug coverage among Medicare beneficiaries to study prescription spending and use by race and Hispanic ethnicity for three groups with persistent medication needs— those with diabetes, hypertension, or heart disease. Cardiovascular disease and diabetes are two of three chronic conditions (the third is HIV/AIDS) identified as targets for Federal initiatives to eliminate racial/ethnic disparities in health (U.S. Department of Health and Human Services, 1999). We also examined beneficiaries with hypertension as a condition commonly identified as sensitive to race and ethnicity, in terms of disease prevalence, treatment selection, and health care use (Sung et al., 1997). All three conditions are commonly treated with drug therapy to minimize the debilitating effects of progressive disease. Our main objective was to distinguish whether drug coverage lessens or eliminates racial and ethnic differences in the use of medications for chronic conditions, and whether certain types of coverage are more effective at improving access.

METHODS

Data

We used data from the 1999 MCBS Cost and Use File to study prescription drug coverage, expenditures, and use across different race and ethnic groups. The MCBS is a longitudinal panel survey of a representative national sample of the Medicare population conducted under the auspices of CMS. Beginning in fall 1991, more than 12,000 Medicare beneficiaries have been interviewed three times a year using computer-assisted personal interviewing. Each respondent is followed for up to 4 years. MCBS interviewers collect extensive information on individuals' use and expenditures for health services including source of payment, as well as information on health insurance, access to care, health and functional status, socioeconomic status, and demographic characteristics. Prescription drug utilization data in the MCBS are based on self-reports of each prescription filled and refilled during the year. To assure accurate recall, respondents are asked to keep bill records and prescription containers to show interviewers during the three yearly interviews.

Sample

Our sample consisted of non-institutionalized Medicare beneficiaries age 65 or over who identified their race and Hispanic ethnicity in the survey. American Indians,

Asians, or Pacific Islanders were excluded because their sample sizes were insufficient to provide reliable estimates. In addition, we excluded persons who did not provide specific racial/ethnicity information. We created three mutually-exclusive racial and ethnicity groups: non-Hispanic white, non-Hispanic black, and Hispanic. These categories conform to recommendations by minority health task groups to identify Hispanic Americans independently from race (Zambrana and Carter-Pokras, 2001). We used self-reports of diseases to identify individuals with diabetes, hypertension, or heart disease. Prior study has shown that accuracy of self-reported health varies by medical conditions, but is generally not sensitive to race or ethnicity (Bergmann et al., 1998). In comparing our three disease groups, we found a large overlap among hypertensive beneficiaries who also reported heart disease and/or diabetes. Thus, our analysis of persons with hypertension excludes those who also had heart disease or diabetes. Our unweighted samples sizes are: 4,355 beneficiaries with heart disease (*n*=3,760 white persons, *n*=334 black persons, *n*=261 Hispanics), 1,568 with diabetes (*n*=1,196 white persons, *n*=218 black persons, *n*=154 Hispanics), and 2,157 with hypertension (*n*=1,762 white persons, *n*=235 black persons, *n*=160 Hispanics).

Statistical Analysis

Our analysis examined five measures of prescription use and expenditures: (1) annual number of prescriptions filled, (2) total prescription cost, (3) average unit price (ratio of total prescription cost over number of prescription filled), (4) out-of-pocket costs, and (5) use of medications from broad therapeutic classes commonly recommended in the management of the study condition. These include oral hypo-

glycemic drugs and hormones such as insulin for diabetes, and cardiac agents, cardiovascular drugs and diuretics for hypertension and heart disease. Our main study variables were indicator variables of race and Hispanic ethnicity. We further classified each group by source of prescription drug coverage. For covariates we included socioeconomic traits (age, sex, and income relative to the FPL) and several measures of health status: self-rated health status, number of comorbidities, and limitations in daily living activities or instrumental activities of daily living.

We calculated descriptive statistics of selected personal characteristics, prescription use, and expenditures for each disease group stratified by race and ethnicity and source of drug coverage. In our bivariate analyses, we tested for statistically significant differences in prescription use of black persons relative to white persons and Hispanics relative to white persons. For the multivariate models, we limited our sample to people with any drug use and one of four types of drug coverage: no drug coverage, Medicaid, employer-sponsored plans, or M+C. (Our models excluded persons with Medigap drug plans or other public drug assistance programs due to small sample sizes.) We then estimated four identically specified linear and logistic regressions:

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + e$$

where (*y*) in the linear form takes the logged form of the number of medications, total medication costs, and out-of-pocket costs, (α) is the constant, (x_1) is a set of dummy indicators for black persons and Hispanic ethnicity, (x_2) is a set of covariates previously described, and *e* is an error term. For the logistic regression, (*y*) is a binary variable indicating whether beneficiaries

received recommended drug treatments and (x_1) and (x_2) are the same as in the linear regressions.

Each set of models was run separately for each disease group and stratified by major type of drug coverage for a total of 48 models (three disease groups by four drug coverage types by four outcome measures). This approach was taken to isolate any racial or ethnic disparities in medication use among people with the same disease and same type of drug coverage. Preliminary analyses showed that the average effect of insurance status varied considerably by race/ethnicity and type of illness, which prohibited simple pooled regressions. In each model we examined the relative differences in prescription expenditures and utilization of black persons and Hispanics compared with white persons. Diagnostic tests included an overall Chow test for statistically different coefficients and variance for the three racial/ethnic groups (F=6.11, p <0.001). All regressions were statistically significant, and the R-squared ranged from 8 to 19 percent). (Regression outputs are available from the authors upon request.) All analyses used survey estimator modules in STATA® Software Version 7 (Stata, College Station, TX) to estimate standard errors in the population weighted analyses.

RESULTS

Sample Description

In 1999, the size of the Medicare population age 65 or over and living in the community numbered approximately 31 million people (26.6 million white persons, 2.3 million black persons, and about 2.0 million Hispanics) (Table 1). Among them, nearly one-half (43.6 percent) reported having some form of heart disease, another 20 percent had uncomplicated hypertension, and 16 percent had diabetes. The prevalence of heart disease and hypertension was roughly similar across the three racial/ethnic groups except for diabetes which is far more common in minority beneficiaries: one in four black and Hispanic beneficiaries reported having diabetes compared with only 15 percent of white beneficiares. The rest of this table shows how beneficiaries with chronic illnesses (especially those with heart disease and diabetes) had socio-economic and health disadvantages compared with the general Medicare population. Beneficiaries with heart disease, hypertension, or diabetes were generally older than the average beneficiary, and they more often had incomes below the FPL. About one-third of beneficiaries with heart disease and diabetes described their health as fair or poor compared with about one-fifth of the total group. Lastly, the vast majority (97 to 82 percent) of the three disease groups had other chronic illnesses in addition to their study condition.

Prescription Drug Coverage

Table 2 describes the different sources of drug coverage for beneficiaries with diabetes, hypertension, or heart disease. Although most white, black, and Hispanic Medicare beneficiaries maintained some form of prescription drug coverage in 1999, the type of coverage differed greatly. In general, minorities relied far more heavily than the white individuals on public programs for assistance with prescription drug costs. Between 25-29 percent of Hispanic and black beneficiaries received drug benefits from Medicaid—through either traditional Medicaid or the Qualified Medicare Beneficiary Plus (QMB+) programs—compared with only 5 percent of white persons. Other public drug coverage was more comparable across the three

Table 1

Select Characteristics of Medicare Beneficiaries, by Chronic Conditions: 1999

Characteristic	All	Diabetes	Heart Disease[1]	Hypertension[2]
Total (in Millions)	30.656	4.916	13.485	7.052
Percent by Race/Ethnicity				
White	85.6	78.0	87.1	82.7
Black	7.6	12.0	7.0	9.5
Hispanic	6.7	10.0	5.9	7.8
Age				
65-69 Years	25.0	22.8	20.3	22.8
70-74 Years	26.5	30.6	24.5	26.3
75-79 Years	22.8	24.0	25.2	24.4
80 Years or Over	25.6	22.6	30.0	26.5
Sex				
Female	57.8	53.9	54.8	63.5
Income as Percent of FPL				
≤100	20.4	24.9	21.1	19.6
101-200	31.5	34.1	33.4	31.3
>200	48.1	41.0	45.5	49.1
Self-Reported Health Status				
Poor	6.7	10.3	8.7	3.0
Fair	16.9	23.9	22.0	13.0
Good/Excellent	78.2	65.8	69.3	84.0
Burden of Chronic Conditions[3]				
1	16.4	3.3	4.3	18.1
2	23.8	12.2	16.3	42.0
3 or More	51.2	84.5	79.4	39.9

[1] Includes individuals reporting they have been told they have angina/coronary heart disease, myocardial infarction, atherosclerosis, or other heart disease.

[2] Includes individuals reporting they have been told that they have hypertension. It excludes hypertensive individuals with diabetes and/or heart disease.

[3] Chronic conditions include self-reported conditions of hypertension, stroke, heart disease (angina/coronary heart disease, myocardial infarction, atherosclerosis, other heart disease), diabetes, arthritis (osteoarthritis, rheumatoid arthritis), Alzheimer's disease, osteoporosis, mental disorder, lung disorder (emphysema, chronic obstructive pulmonary disease, asthma), and cancer.

NOTE: Excludes beneficiaries with end stage renal disease entitlement.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

Table 2

Prescription Drug Coverage of Medicare Beneficiaries with Chronic Conditions[1], by Race/Ethnicity: 1999

	Beneficiaries		
Coverage[2]	White	Black	Hispanic
		Percent	
M+C	17.7	**21.1	**25.2
Medicaid	5.0	**24.9	**29.3
Employer Sponsored	38.2	**25.9	**12.6
Medigap	15.6	** 7.3	** 6.7
Other[3]	12.5	**17.0	**15.6
No Coverage	23.7	**21.3	**23.1

** *p*<0.05 black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

[1] Chronic conditions: diabetes, hypertension, or heart disease.

[2] Categories are not mutually exclusive.

[3] Includes other public (such as State-funded prescription assistance program and Department of Veterans Affairs) and unknown source.

NOTE: *n*=22.6 million.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

groups through sources such as the Department of Veterans Affairs and State-funded pharmacy assistance programs, which ranged from 12 to 17 percent.

Conversely, minority beneficiaries were less likely to have private sources of drug coverage. For instance, in 1999 only 12 percent of Hispanics and 25 percent of black

Table 3

Prescription Use and Expenditures for Medicare Beneficiaries with Diabetic Conditions[1], by Drug Coverage and Race/Ethnicity: 1999

Coverage[2]	Beneficiaries		
	White	Black	Hispanic
Total (in Millions)	3.84	0.6	0.47
No Coverage			
Average Annual Drug Use	31.2	25.2	25.2
Average Unit Price	$37.50	**$28.40	$31.70
Average Out-of-Pocket Cost	$1,095.40	**$670.5	$889.53
Percent Out-of-Pocket to Total Cost	97.8	93.7	100.0
Percent Prevalence of Any Diabetic Drug Use[2]	69.9	**45.0	**52.3
Medicaid			
Average Annual Drug Use	51.6	39.6	39.6
Average Unit Price	$32.00	$35.10	$33.50
Average Out-of-Pocket Cost	$334.80	*$182.50	$181.90
Percent Out-of-Pocket to Total Cost	27.9	19.2	18.2
Percent Prevalence of Any Diabetic Drug Use[2]	71.20	**49.5	**73.2
Employer Sponsored			
Average Annual Drug Use	34.8	*28.8	*26.4
Average Unit Price	$56.40	$53.30	$71.83
Average Out-of-Pocket Cost	$463.40	$411.80	$363.93
Percent Out-of-Pocket to Total Cost	29.4	*35.3	26.23
Percent Prevalence of Any Diabetic Drug Use[2]	68.8	**54.9	51.83
M+C			
Average Annual Drug Use	32.4	30.0	33.6
Average Unit Price	$31.70	$28.40	*$38.50
Average Out-of-Pocket Cost	$464.40	$456.50	$353.30
Percent Out-of-Pocket to Total Cost	53.0	51.5	42.2
Percent Prevalence of Any Diabetic Drug Use[2]	73.6	**55.5	**60.5

** $p<0.05$ black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

 * $p<0.10$ black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

[1] Includes individuals reporting they have been told that they have diabetes.

[2] Includes hormone such as insulin and oral hypoglycemic drugs.

NOTES: n=4.9 million. Unweighted n=1,196 white; n=218 black; n=154 Hispanic.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

beneficiaries obtained drug coverage from employer-based insurance, compared with over 38 percent of white beneficiaries. White persons are also far more likely to have Medigap drug coverage, at rates two and three times higher than black persons and Hispanics, respectively. Only M+C coverage favors minority populations: Hispanics and black persons more often had drug coverage from Medicare HMOs than white persons (25.2 and 21.1 percent versus 17.7 percent).

Prescription Use and Expenditures by Diseases

In Table 3, we see how drug coverage influences the medication use and spending of diabetic beneficiaries by race and ethnicity. Without any drug coverage, white persons used one-third more medications, on average, than black persons and Hispanics, and spent 20 to 40 percent more, respectively. Hispanic beneficiaries tended to fill more expensive medications although white persons had the best access to diabetic agents: nearly 70 percent took insulin or oral diabetic agents during the year compared with only about 50 percent of black persons ($p<0.05$) or Hispanics ($p<0.05$). Having drug coverage somewhat lessened these differences although the effect was consistent with only managed care benefits. For minority beneficiaries with Medicaid drug benefits, medication use remained much lower than for white beneficiaries, although average prescription

Table 4

Prescription Use and Expenditures for Medicare Beneficiaries with Heart Disease[1], by Race/Ethnicity: 1999

Coverage[2]	Beneficiaries		
	White	Black	Hispanic
Total (in Millions)	11.75	0.95	0.80
No Coverage			
Average Annual Drug Use	27.6	24.0	**20.4
Average Unit Price	$36.70	$31.10	** $46.8
Average Out-of-Pocket Cost	$944.60	**$677.7	$752.60
Percent Out-of-Pocket to Total Cost	93.6	93.1	100.0
Percent Prevalence of Any Heart Disease Drug Use[2]	76.7	** 79.4	** 67.2
Medicaid			
Average Annual Drug Use	44.4	39.6	*38.4
Average Unit Price	$36.20	$31.80	$34.40
Average Out-of-Pocket Cost	$324.10	** $168.6	**$200.2
Percent Out-of-Pocket to Total Cost	27.8	**19.9	**15.5
Percent Prevalence of Any Heart Disease Drug Use[2]	85.1	**87.8	**89.1
Employer Sponsored			
Average Annual Drug Use	31.2	27.6	27.6
Average Unit Price	$55.30	*$46.5	** $41.2
Average Out-of-Pocket Cost	$422.00	$347.50	$307.60
Percent Out-of-Pocket to Total Cost	31.6	34.1	32.9
Percent Prevalence of Any Heart Disease Drug Use[2]	81.7	** 84.2	**85.5
M+C			
Average Annual Drug Use	29.3	30.0	29.3
Average Unit Price	$33.40	$32.20	$32.40
Average Out-of-Pocket Cost	$386.20	$409.10	$308.70
Percent Out-of-Pocket to Total Cost	50.3	48.3	44.6
Percent Prevalence of Any Heart Disease Drug Use[2]	77.6	** 88.6	** 78.2

**$p<0.05$ black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

*$p<0.10$ black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

[1] Includes individuals reporting they have been told that they have hypertension. It excludes hypertensive individuals with diabetes and/or heart disease.

[2] Includes cardiac drugs, cardiovascular drugs, and diuretics.

NOTES: n=13.5 million. Unweighted n=3760 white; n=334 black; n=261 Hispanic.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

prices dropped to relatively similar levels. Out-of-pocket expenses also declined considerably although dually eligible white beneficiaries paid about twice as much for their medications compared with Hispanics ($p>0.05$) or black persons ($p<0.05$). Access to diabetic agents became more similar between white and Hispanic persons with Medicaid, but not for black persons. Employer-sponsored drug benefits showed little ability to reduce racial/ethnic disparities in drug use except in out-of-pocket costs. With M+C coverage, we see a leveling out of prescription use and spending across the three groups. Average drug use is comparable between white persons and Hispanics and only 10 percent lower for black persons ($p>0.05$). Average unit drug prices also look alike, although Hispanics still used slightly more expensive medications. Out-of-pocket costs and generosity of coverage are nearly identical for white and black persons with M+C coverage, although Hispanics have slightly less generous coverage ($p>0.05$). Access to diabetic agents is still problematic, though, as white persons are about 30 to 12 percent more likely to use these medications than black persons or Hispanics, respectively ($p<0.05$).

In Table 4, we see similar patterns of higher spending and medication use for white beneficiaries with heart disease compared with Hispanic and black persons with the same condition, except for those with M+C drug coverage. Without any prescription plan, white persons filled four to seven more prescriptions during the year

Table 5

Prescription Use and Expenditures for Medicare Beneficiaries with Hypertension[1], by Race/Ethnicity:1999

Coverage[2]	Beneficiaries		
	White	Black	Hispanic
Total (in Millions)	5.83	0.66	0.54
No Coverage			
Average Annual Drug Use	16.8	14.4	12.0
Average Unit Price	$39.30	$33.20	*$31.4
Average Out-of-Pocket Cost	$659.00	*$486.30	$526.10
Percent Out-of-Pocket to Total Cost	98.2	99.5	100.0
Percent Prevalence of Any Hypertensive Drug Use[2]	75.1	**71.6	** 58.8
Medicaid			
Average Annual Drug Use	31.2	**21.6	**21.6
Average Unit Price	$31.40	$34.20	**$39.6
Average Out-of-Pocket Cost	$190.10	$110.30	**$80.4
Percent Out-of-Pocket to Total Cost	22.3	18.1	*13.0
Percent Prevalence of Any Hypertensive Drug Use[2]	78.8	**67.2	**73.8
Employer Sponsored			
Average Annual Drug Use	21.6	14.4	25.2
Average Unit Price	$55.40	$47.10	$46.80
Average Out-of-Pocket Cost	$326.80	$261.00	$457.40
Percent Out-of-Pocket to Total Cost	33.6	32.7	36.4
Percent Prevalence of Any Hypertensive Drug Use[2]	76.6	** 80.8	**75.3
M+C			
Average Annual Drug Use	21.6	*16.8	19.2
Average Unit Price	$32.70	$30.70	$35.90
Average Out-of-Pocket Cost	$294.00	$201.50	$222.30
Percent Out-of-Pocket to Total Cost	51.2	47.3	*42.6
Percent Prevalence of Any Hypertensive Drug Use[2]	69.7	**73.7	**58.4

**p<0.05 black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

*p<0.10 black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

[1] Includes individuals reporting they have been told that they have hypertension.

[2] Includes hormones such as insulin and oral hypoglycemic drugs.

NOTES: n=7.0 million. Unweighted n=1762 white; n=235 black; n=160 Hispanic.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

and spent 20 percent more compared with black persons ($p>0.05$) and 28 percent more compared with Hispanic persons ($p<0.05$). Uninsured Hispanic beneficiaries tended to fill more expensive medications, but their access to common heart therapies was the lowest: only 67 percent took cardiac agents, cardiovascular medications, or diuretics during the year compared with 77 to 79 percent of white and black persons. Having Medicaid drug coverage improved overall access to heart disease drugs for all groups, but the average number of medications filled was still much higher for white persons compared with the other beneficiaries. Employer-sponsored coverage consistently favored white persons except in overall access to heart drugs, which was relatively similar

(ranging from 81 to 85 percent). With M+C coverage, disparity between racial and ethnic groups appeared to nearly disappear, across measures of average use, average unit price, out-of-pocket spending, and access to any heart drugs.

The M+C benefit observed previously for minority beneficiaries is mixed in our last example, those with hypertension uncomplicated by diabetes or heart disease (Table 5). Here too, white beneficiaries without drug coverage used more medications, spent more on their drug therapies, and had more access to hypertensive agents than the minority groups. Medicaid coverage still tends to favor white beneficiaries in terms of higher average drug use and better overall access to medications related to the disease, although

Hispanic and black persons had lower out-of-pocket expenses. Employer-sponsored coverage improved the number of filled prescription for both white and Hispanic persons, but not for black persons. However, black persons with retiree drug benefits paid the least out-of-pocket and had the best access to hypertensive drugs. With M+C drug coverage, the measures of medication use fluctuated across the groups and show no discernable pattern. White persons with hypertension had the highest average mediation use, Hispanics took the most expensive drugs, but black persons managed the best overall access to antihypertensives.

In Table 6, we tested whether the differences in medication use, spending and access previously observed were due to underlying population dissimilarities in demographics, economic status, or health status. After adjustment for these factors, black and Hispanic persons still generally filled fewer medications and spent less on them than white persons, although some differences narrowed with certain types of drug coverage and diseases. Not having drug coverage is particularly problematic for black persons with diabetes who were far less likely than white persons to fill any diabetic agents (OR: 0.39). On average, black beneficiaries overall medication use was 63 percent lower ($p<0.10$) and drug spending was 69 percent less ($p<0.05$). In contrast, uninsured black beneficiaries with heart disease or hypertension experienced about the same levels of drug use and spending as white beneficiaries, and access to condition-specific medications appeared slightly better, although not statistically significant. Medicaid coverage exerted surprisingly negative impacts for chronically ill black beneficiaries. Black Medicaid recipients with diabetes used substantially fewer medications than white recipients and had far lower access to

insulins or oral hypoglycemics. Neither did Medicaid improve medication use for black persons with heart disease whose patterns are comparable to those without any drug insurance, while access substantively worsened for those with hypertension. Having M+C or employer-sponsored drug coverage closed many gaps in medication use and out-of-pocket spending between black and white persons, across all three conditions. Neither insurance type could improve the compromised access that black persons had to diabetic agents, although both did increase the use of heart medications and hypertensive agents.

The impact of drug insurance on the medication use of Hispanics is also sensitive to condition type, although in ways that are unique from that of black individuals. Not having drug coverage decreases overall medication use, spending, and access for Hispanics relative to white persons, although particularly for those with hypertension or heart disease. Medicaid coverage does not appear to lessen the disparities, except for out-of-pocket drug costs: dually eligible Hispanic beneficiaries pay two to three times less than white beneficiaries. Under employer sponsored and M+C, gaps in medication use and expenditure have closed between Hispanic and white persons with hypertension. However, differences persist in those with diabetes and heart disease. Among the diabetics, Hispanics with employer-sponsored coverage had lower medication use compared with white persons. Similarly among the diabetics, Hispanics with M+C had lower access to drugs specific to diabetes compared with white persons. Among those with heart disease, out-of-pocket costs for Hispanics with employer sponsored and M+C were one-third lower than white persons. Total spending was significantly lower in Hispanics with employer-sponsored coverage compared with white persons.

Table 6

Adjusted Prescription Use and Out-of-Pocket Spending, by Drug Coverage and Race/Ethnicity: 1999

| | Beneficiaries | | | | | | | |
| | Black | | | | Hispanic | | | |
Chronic Condition and Drug Use	No Coverage	Medicaid	Employer Sponsored	M+C	No Coverage	Medicaid	Employer Sponsored	M+C
Diabetes								
Percent Difference in Use	*-38	**-31	-11	-12	-20	**-37	**-37	6
Percent Difference in Total Cost	**-59	-31	-14	-2	-33	**-41	-19	25
Percent Difference in Out-of-Pocket Cost	**-66	33	-3	-21	-30	**-250	-25	-13
Probability of Filling Any Anti-Diabetic Drug[1]	**OR: 0.39	**OR: 0.36	**OR: 0.46	**OR: 0.40	OR: 0.57	OR: 0.92	OR: 0.41	**OR: 0.36
Heart Disease								
Percent Difference in Use	-13	-14	-9	-7	**41	-17	-17	-15
Percent Difference in Total Cost	-20	-22	*-25	-8	*-40	-16	**-41	-12
Percent Difference in Out-of-Pocket Cost	*-29	19	-19	-15	*-37	**-277	**-30	**-32
Probability of Filling Any Heart Disease Drug[2]	OR: 1.41	OR: 1.49	OR: 1.03	**OR: 2.92	OR: 0.61	OR: 1.39	OR: 1.03	OR: 1.02
Hypertension								
Percent Difference in Use	-1	**-52	8	-8	**-41	*-27	14	-5
Percent Difference in Total Cost	-11	**-51	-11	-10	**-59	5	7	8
Percent Difference in Out-of-Pocket Rx Cost	-2	-59	-7	-19	**-50	**-303	14	-21
Probability of Filling Any Hypertensive Drug[2]	OR: 1.20	OR: 0.66	OR: 1.72	OR: 2.33	OR: 0.88	OR: 0.81	OR: 1.39	OR: 0.91

* *p*<0.10 black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

** *p*<0.05 black non-Hispanics compared with white non-Hispanics and Hispanics compared with white non-Hispanics.

[1] Includes hormones such as insulin and oral hypoglycemic drugs.

[2] Includes cardiac drugs, cardiovascular drugs, and diuretics.

NOTES: *n*=22.6 million. Adjusted for age, sex, income, self-reported health status, and number of comorbidities.

SOURCE: Centers for Medicare & Medicaid Services: Data from the Medicare Current Beneficiary Survey Cost and Use File, 1999.

DISCUSSION

The Medicare Program has dramatically improved the health of older and disabled persons by removing many financial barriers, yet we know that some populations have fared better than others by most measures of medical care use and outcomes. Differences in the care of minority Medicare beneficiaries have been puzzling to understand as a problem of economic barrier given the near-universal enrollment into the program and uniformity of the benefit (Mayberry, Milli, and Ofili, 2000). Recent evidence in younger adult populations has confirmed the view that health insurance alone does not eliminate racial/ethnic disparities and in fact may play a rather modest role in ameliorating the differences. Investigations into the primary drivers of unequal use of medical services have found that insurance influences access, but much about racial/ethnic differences remains unexplained (Weinick, Zuvekas, and Cohen, 2000; Zuvekas, 1999; Zuvekas, and Taliaferro, 2003). Nevertheless, drug coverage status is far from uniform in the Medicare population and we know type of insurance strongly influences medication use (Stuart, Shea, and Briesacher, 2000). That black and Hispanic Medicare beneficiaries use fewer or less expensive medications than white beneficiaries may still be a problem grounded in socioeconomic causes with far-reaching consequences. Not being able to afford necessary medications may explain, at least in part, why black and Hispanic persons more often than white persons experience some of the worst effects of chronic illnesses. One study that has linked drug coverage to racial/ethnic differences in use of other medical care services comes from an analysis of patients who gained Medicare coverage through the ESRD program (Daumit et al., 1999). Medicare beneficiaries with ESRD entitle-ment are among the few to receive Medicare reimbursement for critical outpatient medications—erythropoietin for anemia and immunosuppressants. Daumit et al. (1999) found that a three-fold differences in the use of clinical procedures by patient ethnicity nearly disappeared following the acquisition of the special ESRD Medicare coverage. The researchers attributed the decline largely to the Medicare benefit and concluded that equity in care may be attainable for all Medicare beneficiaries if coverage is truly comprehensive, including for necessary prescription drugs.

Our study also detected statistically significant and sometimes large differences in the drug use and spending patterns of chronically-ill Medicare beneficiaries by race and ethnicity. These findings showed wide variation that persisted even among individuals with the same disease and same type of prescription coverage. As with studies of other medical services, we found that minority beneficiaries tend to get less of chronic medications compared with the majority of beneficiaries who are white. Drug coverage from M+C plans was the most successful in eliminating the differences although some remained, particularly use of any diabetic agents by black beneficiaries. What might explain the improved equity in drug use associated with M+C drug coverage? Speculations include the mandatory assignment of a primary care doctor and disease management programs, although the research is mixed. Hargraves, Cunningham, and Hughes (2001) did not find that managed care policies such as gatekeeper requirements reduced racial/ethnic disparities in having a usual source of care or visiting a physician in the last year. Haas et al. (2002) found some improvements in preventive care services for Hispanic persons in managed care plans relative to FFS enrollees, but not for black persons. Lastly, Schneider,

Zaslavsky, and Epstein (2002) noted more equitable use of β-blockers by race with M+C enrollment, but only in plans with better overall quality standards.

This study has several limitations. First, we used broad therapeutic classes in analyzing medication use. A more refined therapeutic classification may provide more information on the underlying pattern differences observed here. Similarly, analyzing access to new therapies could provide a better marker for studying issues on disparities because they are generally perceived to be superior compared with older therapies.

Second, our models explained less than one-third of the variation in medication use and access, which means other critical factors influence this behavior that were not considered here. Notably, we did not control for differences in geography. We know that Medicare minorities more often live in urban areas (white persons 75 percent, black persons 81 percent, Hispanics 86 percent) and in the south (white persons 33 percent, black persons 53 percent, Hispanics 56 percent), while Hispanics reside disproportionately in the west (white persons 19 percent, black persons 6 percent, Hispanics 25 percent). As a related limitation, we categorized our sample into three racial/ethnic groups and this classification may not accurately capture variation in culture, biology, or values (LaVeist, 1994). Lastly, we do not know if white Medicare beneficiaries are overusing medications, especially expensive branded products, and it may be that behavior which contributes to the large racial/ethnic differences.

Notwithstanding these limitations, we have shown that access to prescription drugs is compromised for black and Hispanic Medicare beneficiaries with consistent need for medicines. Having some form of drug coverage may help in easing out-of-pocket burden, especially for people with few personal resources, but it alone will not eliminate racial/ethnic disparities. Even Medicaid, the most generous of coverage, could not erase the different medication use patterns experienced by minorities relative to white persons. We can only speculate about the other potential causes of disparity. A policy implication of our findings is that the future Medicare expansion into universal drug coverage should programmatically address closing the gaps in medication use by race and ethnicity. Surely one starting point is to more closely study the features of M+C drug coverage that appeared to create more equitable access to drug therapy. Having a usual source of care (either physician or clinic) may be a promising first step as access to primary care has been linked to less disparity in other medical services (Williams, Flocke, and Strange, 2001). Identifying the mechanisms of managed care that promote more equitable access is especially important as black and Hispanic persons enroll into these types of plans at higher rates than do white persons (Cunningham and Kohn, 2000) Lastly, our finding that Hispanic beneficiaries tended to use more expensive medications is puzzling and requires more study, perhaps whether preferences for branded medications are related to ethnicity.

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