Medicare & Medicaid Research Review
2012: Volume 2, Number 4

A publication of the Centers for Medicare & Medicaid Services, Center for Strategic Planning

Medicare Beneficiary Knowledge of the Part D Program and Its Relationship with Voluntary Enrollment

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Background: The 2003 Medicare Modernization Act established the Part D drug benefit in 2006. Because the benefit involves a voluntary enrollment process with numerous plan options, there has been concern about whether beneficiaries have adequate knowledge of the program, but research on this issue has been limited.
Objectives: To examine Medicare beneficiary knowledge of the Part D program and estimate how knowledge affected voluntary enrollment decisions at the program's outset.
Methods: We linked data from the 2005 Medicare Current Beneficiary Survey with CMS administrative data regarding beneficiary 2006 drug coverage and market characteristics. We estimated a multivariate logistic regression model to explore the relationship between Part D knowledge and beneficiaries' voluntary enrollment in a Part D plan.
Results: At the inception of the Medicare Part D benefit, no single knowledge test question was correctly answered by more than three-fourths of beneficiaries. Correct responses to five knowledge test questions were positively associated with enrollment: "everyone has plan choices" (adjusted odds ratio = 1.4); "plans can change costs once per year" (aOR = 1.2); "beneficiaries must use plan pharmacies" (aOR = 1.5); "beneficiaries must pay a penalty if they enroll late" (aOR = 1.3); "assistance is available for low income beneficiaries" (aOR = 1.2).
Conclusion: Beneficiary understanding of the Part D program in early 2006 was limited. Beneficiary knowledge of Part D program details was associated with enrollment in Medicare Part D. Efforts to educate Medicare beneficiaries about Part D may improve rates of prescription drug coverage.

Keywords: Medicare Coverage Decisions, Medicare, Access / Demand / Utilization of Services

doi: http://dx.doi.org/10.5600/mmrr.002.04.a03

Introduction

The introduction of the Part D prescription drug benefit in 2006 was one of the most sweeping reforms to Medicare in the program's 40-year history. The Part D benefit was implemented through the creation of a private drug plan market. Individual enrollment is voluntary and beneficiaries select from multiple competing plans to obtain coverage. This market-oriented, choice-based approach to providing public insurance coverage is quite different from the traditional fee-for-service Medicare program. In addition to creating the Part D program, the Medicare Modernization Act of 2003 also contained provisions to increase the number of private managed care options in Medicare Part C.

The introduction of Medicare Part D increased prescription drug coverage among Medicare beneficiaries from about 76% before the start of the program to between 90% and 93% (Heiss, McFadden, & Winter, 2006; Levy & Weir, 2010; Neuman et al., 2007; Safran et al., 2010). However, in spite of these gains, some beneficiaries ultimately have not enrolled in a Part D plan. Recent research points to several potential contributing factors. First, some studies indicate that beneficiaries who did not enroll in Part D plans were in better health, used fewer prescription drugs, and experienced fewer difficulties in financing prescription medications before the start of the program than those who did enroll, suggesting that healthier beneficiaries may have strategically delayed enrollment (Heiss et al., 2006; Levy & Weir, 2010; Neuman et al., 2007; Safran et al., 2010; Maciejewski, Farley, Hansen, Wei, & Harman, 2010; Davidoff et al., 2010). Further, surveys of beneficiaries indicate that decisions not to enroll may have been driven by concerns about high premiums, perceptions of adequate coverage, or little perceived need for prescription medications (Levy & Weir, 2010; Davidoff et al., 2010). Other studies, however, have reported a lack of coverage among potentially vulnerable beneficiaries, suggesting potential access problems (Neuman et al., 2007; Davidoff et al., 2010; Safran et al., 2005).

It is possible that knowledge about the various aspects of the Medicare Part D program may have also influenced beneficiaries' voluntary enrollment decisions. One of the major concerns prior to the Part D Program implementation was that the complex decisions associated with numerous coverage options might impede beneficiaries' ability to successfully navigate the program to enroll in a plan suited to their health needs (Iyengar & DeVoe, 2003; Iyengar & Lepper, 2000; Schwartz, 2004; Schwartz, 2000; Hanoch & Rice, 2006; Cummings, Rice, & Hanoch, 2009; Biles, Dallek, & Nicholas, 2004; Hibbard, Slovic, Peters, Finucane, & Tusler, 2001; Gazmararian et al., 1999; Rice, Graham, & Fox, 1997; Rice, McCall, & Boismier, 1991; Rice & Thomas, 1992; McWilliams, Afendulis, McGuire, & Landon, 2011).

A lack of knowledge may contribute to a Medicare beneficiary's decision to not enroll in a prescription drug plan in two main ways. First, enrollment could be impacted through the direct effect of knowledge about the Part D program on the general desire to enroll. Beneficiaries with limited knowledge of the Part D program may simply be unaware of the opportunity to

enroll or unacquainted with the potential benefits of enrollment. Second, enrollment decisions could be impacted through an indirect effect, where knowledge about the program interacts (either positively or negatively) with one's underlying desire to obtain coverage. For example, if there is adverse selection into Part D plans by sicker beneficiaries, it may be more pronounced among those who are aware that beneficiaries can choose any plan regardless of their health status, relative to other beneficiaries who may incorrectly believe they could be excluded from a plan based on poor health. Similarly, awareness of the late enrollment penalty may have a more pronounced effect on obtaining coverage for healthy beneficiaries than for sicker beneficiaries, because the former may have a stronger incentive to delay enrollment in the absence of a late enrollment penalty.

There has been only limited work to date examining beneficiary knowledge of Part D and its relationship with beneficiary enrollment decisions (Polinski, Bhandari, Saya, Schneeweiss, & Shrank, 2010). In one study, Heiss et al. found that the proportion of beneficiaries with no source of creditable drug coverage was slightly lower among those reporting knowing "a great deal, a fair amount, or just some" about the Part D benefit than among those reporting knowing "very little or nothing" [11.4% versus 12.7%] (Heiss et al., 2006). In a second study, Skarupski, de Leon, Barnes, and Evans found that 13.2% of Black non-enrollees and 2.4% of White non-enrollees reported that they "did not know about the program" and that 12.9% of Black non-enrollees and 1.4% of White non-enrollees reported that the "program was too difficult to understand," although analogous questions were not asked of enrollees (Skarupski et al., 2009). In a third study, Davidoff et al. similarly found that non-enrollees commonly reported a lack of knowledge about plans and that poor understanding about how to enroll contributed to the failure to enroll (Davidoff et al., 2010). In a fourth study, Rudolph and Montgomery found that beneficiaries who were auto enrolled into a Part D plan because they were eligible for the Low Income Subsidy (LIS) were less knowledgeable about the benefit than those who self-enrolled (Rudolph & Montgomery, 2010).

While certainly informative, all of these studies, except for the work by Rudolph and Montgomery, were limited by reliance on measures of beneficiary's *perceived* knowledge about Part D rather than their actual knowledge. Further, no study that we could identify attempted to relate measures of beneficiary knowledge with subsequent Part D enrollment decisions. Our study builds upon the literature to date by presenting objective measures of beneficiary knowledge of Part D at the time of the initial Part D open enrollment period (i.e., specific true-or-false factual questions about the Part D benefit), and empirically examines the relationship between these objective measures of beneficiary knowledge and the decision to voluntarily enroll in a Part D plan.

Methods

Data Sources and Sample

Our analysis relied upon three linked data sources. First, we drew from the 2005 Access to Care Module of the Medicare Current Beneficiary Survey (MCBS), a nationally representative survey of Medicare beneficiaries, to describe beneficiary knowledge of the Part D Program at its inception, along with other key beneficiary characteristics (Adler, 1994; Centers for Medicare & Medicaid Services, 2009). Second, we ascertained 2006 prescription drug plan enrollment using Centers for Medicare & Medicaid Services (CMS) administrative files that combine data from CMS, the Department of Defense, the Office of Personnel Management, and the department of Veterans Affairs to track sources of creditable drug coverage. Finally, we used aggregated county-level data on Part D plans maintained by CMS to identify the number of plan options available to beneficiaries in their local market.

We focused on two different subsets of participants. First, we compiled descriptive data about knowledge of Medicare Part D for all community-dwelling beneficiaries who responded to the 2005 MCBS and were still alive at the 2006 enrollment deadline. Beneficiaries residing in institutions were not administered the supplemental survey modules containing the knowledge questions and were therefore excluded, as were proxy respondents to community-dwelling beneficiaries. Of the 15,769 respondents to the 2005 MCBS, 12,059 met these selection criteria. We stratified these beneficiaries into four enrollment categories: those who had no known coverage (N=1,839), those who voluntarily enrolled in a Part D plan (N=4,619), those who were auto-enrolled in a Part D plan due to enrollment in the Medicaid program (N=1,813), and those with another source of creditable drug coverage (N=3,788). Other sources of creditable coverage included coverage from the VA, Tricare, Federal Employees Health Benefit Program, current or former employers, and State Pharmaceutical Assistance Programs.

Second, we examined the relationship between knowledge of Medicare Part D and beneficiary coverage decisions among the subset of beneficiaries who would have needed to voluntarily enroll in a Part D Plan in order to gain prescription drug coverage. For this analysis, we excluded beneficiaries who were either automatically enrolled in a Part D plan via enrollment in the Medicaid Program or who had little incentive to consider voluntary enrollment, because of existing creditable drug coverage from other sources, leaving a sample of 6,458 beneficiaries. We employed multivariate logistic regression models to examine the outcomes of either having no known prescription drug coverage or having voluntarily enrolled in a Part D plan by the time of the 2006 deadline.

Study Measures

We assessed beneficiary knowledge of the Part D benefit with seven true/false knowledge statements describing objective features of the Part D Program (Exhibit 1). Beneficiaries could respond that they either thought the statement was true, thought the statement was false, or did

not know whether the statement was true or false. The majority of instances when respondents lacked knowledge of particular provisions were because the beneficiary responded that he or she did not know the correct answer.

Exhibit 1: Knowledge Test Statements from the 2005 MCBS

"Everyone with Medicare can choose to enroll in the voluntary Medicare Prescription drug coverage regardless of their income or health." (True)
"Everyone in Medicare has at least two Medicare Prescription drug plans to choose from." (True)
"Medicare prescription drug plans can change the costs of prescription drugs only once per year." (False)
"If you join a Medicare prescription drug plan, you must go to pharmacies that are part of the plan." (True)
"Medicare prescription drug plans can change the list of prescription drugs that they cover at any time during the year." (True)
"Most people with Medicare must choose a Medicare prescription drug plan by May 15, 2006, or pay a penalty if they choose to join later." (True)
"If you have limited income and resources, you may get extra help to cover prescription drugs for little or no cost to you." (True)

SOURCE: 2005 Medicare Current Beneficiary Survey

For our multivariate analysis of the relationship between beneficiary knowledge and Part D voluntary enrollment, we included measures of beneficiary socioeconomic, demographic, and insurance demand/supply characteristics as control variables. Socioeconomic status was measured by household income (greater than $25,000 per year) and educational attainment (high school diploma or higher). Demographic characteristics included age (under 65, 65–84, and 85+), race/ethnicity (White, Black, Hispanic, and Other), gender, and current marital status. Insurance demand characteristics included fair/poor self-reported health and counts of the number of chronic disease diagnoses (none, 1 or 2, or 3 or more; Wolff, Boult, Boyd, & Anderson, 2005). Demand for prescription drug coverage was also measured using beneficiary satisfaction with out-of-pocket costs for health care and whether the beneficiary reported missing a medication in 2005 due to cost (Madden et al., 2008). We also included whether the beneficiary reported receiving help with coverage decisions and whether the beneficiary was enrolled in a Medicare HMO that covered prescription drugs in 2005. Our measure of insurance supply in the market was based on the total number of plan options (i.e., both standalone Part D plans and Medicare Advantage plans) available in the beneficiary's county, delineated by quartiles (1st quartile: 38–51 plans, 2nd quartile: 51–57 plans, 3rd quartile 57–64 plans, 4th quartile: 64–94 plans).

Statistical Analyses

We examined the association between beneficiary knowledge and plan enrollment by fitting a series of logistic regression models to the subsample of 6,458 community-dwelling beneficiaries, who either had no known drug coverage or who voluntarily enrolled in a Part D plan; i.e., we excluded those who were auto-enrolled via Medicaid or who had other creditable coverage. First, we modeled Part D enrollment as a function of beneficiary responses to each of the seven knowledge test items alone (without the control variables) to gain an understanding of their baseline unadjusted effects. Next, we fit the full model to gain a more complete understanding of how knowledge of Medicare Part D was associated with plan enrollment, after adjusting for potentially confounding factors.

Finally, we examined whether knowledge of three specific features of the Part D program modified the relationship between health and other factors influencing beneficiary demand for drug coverage and voluntary enrollment; two of these features could exacerbate adverse selection while one of these features was added to mitigate adverse selection. To do so, we stratified our multivariate analyses first by whether the beneficiary correctly indicated that "everyone can choose to enroll regardless of their income or health" and that "multiple plan options were available" (i.e., correct responses to both versus incorrect responses to one or both). We then stratified our analyses by awareness that "beneficiaries must pay a penalty if they enroll late." As noted above, we hypothesize that beneficiary knowledge of "non-discrimination" (by income or health) and multiple plan options should strengthen the relationships between these demand characteristics and the likelihood of enrollment (i.e., exacerbate adverse selection). Conversely, we hypothesize that knowledge of the enrollment penalty should attenuate the relationships between these demand characteristics and the likelihood of enrollment (i.e., mitigate adverse selection).

We assessed statistical significance of model coefficients at the $P < .05$ confidence level and assessed statistically-significant differences between coefficients in the stratified analyses via a two-sided T test. We used population weights in conjunction with the Taylor Linear method in all analyses to account for the complex variance structure of the MCBS survey data. Because responses to individual knowledge test items may be correlated, we examined the variance inflation factors generated by the various covariates in our model to check for co-linearity. We found no indication that correlations in response patterns would unduly affect the ability of our model to detect statistically significant results. All analyses were conducted using Stata version 9 (Stata Data Analysis and Statistical Software, Version 9).

Results

Beneficiary knowledge of the Part D program was examined by source of drug coverage in 2006 (Exhibit 2). Among all community-dwelling Medicare beneficiaries, 15.7% had no known drug

coverage, 39.0% voluntarily enrolled in Part D, 12.5% were auto-enrolled via Medicaid, and 32.8% had other creditable coverage. At the inception of the Medicare Part D benefit, no single item was correctly answered by more than three-fourths of beneficiaries. Beneficiaries were more likely to correctly endorse items indicating that "any beneficiary could enroll" (69.1% correct), "everyone has at least two plan options" (52.5%), "beneficiaries must use pharmacies that are part of their plan" (56.6%), "beneficiaries must pay a penalty to join later" (63.3%), and "there is assistance available for beneficiaries with low incomes" (62.7%). Two items were correctly endorsed by less than half of beneficiaries: "plans can change costs only once per year" (15.5%) and "plans can change their list of covered drugs at any time" (41.8%).

Exhibit 2: Beneficiary Knowledge by Prescription Drug Coverage

	No Known Drug Coverage (95% CI)	Part D Self Enrolled (95% CI)	Part D Auto Enrolled (95% CI)	Other Creditable (95% CI)	Total (95% CI)
N	1,839	4,619	1,813	3,788	12,059
% of respondents	15.7	39.0	12.5	32.8	100
Knowledge of the Part D Program					
Any beneficiary can enroll	66.8 † (63.3, 70.2)	73.5 (71.0, 75.8)	51.9 (48.8, 55.0)	71.5 (68.8, 74.1)	69.1 (66.9, 71.2)
Everyone has PDP choices	46.9 (43.9, 49.9)	57.9 (55.2, 60.6)	45.8 (42.7, 49.0)	51.1 (48.6, 53.7)	52.5 (50.4, 54.5)
Plans can change cost only once per year	14.0 (12.1, 16.3)	18.3 (16.6, 20.0)	12.9 (11.0, 15.1)	14.0 (12.5, 15.6)	15.5 (14.3, 16.9)
Must use pharmacies that are part of plan	51.4 (48.2, 54.7)	64.5 (61.9, 67.1)	56.1 (52.1, 59.9)	49.8 (47.3, 52.3)	56.6 (54.6, 58.6)
Plans can change list of covered drugs	39.2 (36.3, 42.2)	46.0 (43.4, 48.5)	38.1 (35.0, 41.3)	39.5 (37.0,42.1)	41.8 (40.0, 43.6)
Must pay a penalty to join later	65.0 (61.9, 67.9)	73.9 (71.5, 76.2)	47.4 (44.7, 50.2)	65.1 (62.6, 67.6)	66.3 (64.4, 68.2)
Assistance available for low incomes	58.4 (54.8, 61.9)	68.7 (66.1, 71.1)	61.9 (58.5, 65.2)	58.0 (55.6, 60.5)	62.7 (60.6, 64.8)

† Percent of beneficiaries correctly responding to knowledge test item.
N=12,059 respondents who resided in the community, self responded to the survey, and were still alive at the 2006 enrollment deadline.
SOURCE: 2005 Medicare Current Beneficiary Survey

Exhibit 3: Odds of Enrollment in a Part D Plan in 2006 Among Those with a Choice

	Means			Unadjusted Odds Ratio	Adjusted Odds Ratio
	No Coverage	Part D Enrolled	All	(95% CI)	(95% CI)
Knowledge of the Part D Program					
Any beneficiary can enroll	66.8	73.5	71.6	1.4 (1.2, 1.6) *	0.9 (0.8, 1.2)
Everyone has PDP choices	46.9	57.9	54.8	1.6 (1.4, 1.8) *	1.4 (1.2, 1.6) *
Plans can change cost only once/year	14.0	18.3	17.1	1.4 (1.1, 1.6) *	1.2 (1.0, 1.5) *
Must use plan pharmacies	51.4	64.5	60.8	1.7 (1.5, 2.0) *	1.5 (1.2, 1.7) *
Plans can change list of covered drugs	39.2	46.0	44.1	1.3 (1.2, 1.5) *	0.9 (0.8, 1.0)
Must pay a penalty to join later	65.0	73.9	71.4	1.5 (1.3, 1.8) *	1.3 (1.1, 1.6) *
Assistance available for low incomes	58.4	68.7	65.8	1.6 (1.3, 1.8) *	1.2 (1.0, 1.4) *
Socioeconomic Status					
Income greater than $25,000	46.1	42.0	43.2	0.8 (0.7, 1.0)*	0.7 (0.6, 0.9)*
High school diploma or higher	75.0	75.1	75.1	1.0 (0.9, 1.2)	1.0 (0.9, 1.2)
Demographics					
Less than 65	17.1	9.6	11.7	0.5 (0.4, 0.6) *	0.4 (0.3, 0.6) *
65–85 (referent)	70.6	81.2	78.2	-	-
85 and Above	12.3	9.2	10.1	0.7 (0.6, 0.8) *	0.7 (0.6, 0.9) *
White (referent)	81.8	81.1	81.3	-	-
Black	6.8	7.6	7.4	1.1 (0.9, 1.4)	1.2 (1.0, 1.6)
Hispanic	6.8	7.9	7.6	1.2 (0.8, 1.6)	1.1 (0.8, 1.4)
Other	4.6	3.4	3.7	0.7 (0.5, 1.0)	0.7 (0.5, 1.0) *

Exhibit 3 (cont).

	Means			Unadjusted Odds Ratio	Adjusted Odds Ratio
	No Coverage	Part D Enrolled	All	(95% CI)	(95% CI)
Demographics (cont)					
Male	36.9	38.3	37.9	1.1 (0.9, 1.2)	1.2 (1.0, 1.4) *
Married	53.4	54.7	.543	1.1 (0.9, 1.2)	1.0 (0.9, 1.1)
Beneficiary Health					
Self-Reported health fair or poor	22.6	20.9	21.4	0.9 (0.8, 1.0)	1.0 (0.8, 1.2)
No chronic conditions (referent)	15.2	11.5	12.6	-	-
1 to 2 chronic conditions	52.2	50.1	50.7	1.3 (1.1, 1.5) *	1.3 (1.1, 1.6) *
3 or more chronic conditions	32.6	38.4	36.7	1.6 (1.3, 1.9) *	1.7 (1.4, 2.0) *
Demand for Prescription Drug Coverage					
Dissatisfied with out of pocket costs	16.5	20.3	19.2	1.3 (1.1, 1.5) *	1.3 (1.1, 1.6) *
Missed medication due to cost	11.9	15.9	14.8	1.4 (1.2, 1.7) *	1.5 (1.2, 1.8) *
Help with Medicare Coverage Decision					
Had help	34.9	36.3	35.9	1.1 (0.9, 1.3)	1.2 (1.0, 1.5) *
Prior HMO Drug Coverage					
Covered	3.7	24.7	18.7	8.7 (6.5, 11.6) *	10.0 (7.2, 13.9) *
Total Number of Plan Options					
1st Quartile (38 to 51)	22.8	21.6	21.9	-	-
2nd Quartile (51 to 57)	26.7	24.1	24.8	1.0 (0.7, 1.2)	0.9 (0.7, 1.1)
3rd Quartile (57 to 64)	28.9	26.1	26.9	1.0 (0.8, 1.2)	0.7 (0.6, 0.9) *
4th Quartile (64 to 94)	21.6	28.3	26.4	1.4 (1.1, 1.8) *	1.0 (0.8, 1.3)

NOTES. * P< 0.05' N=6,458 community-dwelling respondents who either had no known drug coverage or voluntarily enrolled in a Part D prescription drug plan.
SOURCE: 2005 Medicare Current Beneficiary Survey

Beneficiaries who self-enrolled in a Part D plan had a better understanding of the program than those with no known coverage, those who were auto-enrolled in a Part D plan, and those with other creditable sources of drug coverage. For example, 73.9% of Part D self-enrollers correctly reported that beneficiaries must pay a penalty to join later compared to 65.0% of those with no known source of coverage, 47.4% of those who were auto-enrolled, and 65.1% of those with other sources of creditable coverage. We observed a similar response pattern across all the knowledge test items that were examined in this study, with self-enrollers scoring the best and auto-enrollers scoring the worst. It is important to note that beneficiaries who were auto-enrolled in Part D plans typically had a much lower socioeconomic status than beneficiaries obtaining coverage from other sources. It is possible that these beneficiaries may have lacked the educational, social, and time resources necessary to obtain an understanding of the Part D program.

We additionally present analyses for the sub-sample relevant to voluntary plan enrollment (Exhibit 3). These include descriptive statistics for the analytic sub-sample (i.e., the 6,458 community-dwelling beneficiaries who either had no known drug coverage or who voluntarily enrolled in a Part D plan) and the results of our unadjusted and adjusted logistic regression analyses of voluntary plan enrollment. Five of the seven knowledge questions were positively associated with voluntary Part D enrollment; these include correctly reporting that "everyone has at least two plan choices" (aOR=1.4; 95% CI: 1.2–1.6), that "plans are not limited to changing costs only once per year" (aOR=1.2; 95% CI: 1.0–1.5), that "beneficiaries must use pharmacies that are part of their plan" (aOR=1.5; 95% CI: 1.2–1.7), that "beneficiaries must pay a penalty if they choose to join later" (aOR=1.3; 95% CI: 1.1–1.6), and that "there is assistance available for beneficiaries with low incomes" (aOR=1.2; 95% CI: 1.0–1.4). Two of the seven knowledge questions were not associated with voluntary Part D enrollment; these include correctly reporting that "any beneficiary can enroll" and that "plans can change their list of covered drugs at any time." The model appeared to be well specified as the control variables generally behaved as expected. For instance, having income under $25,000, having three or more chronic conditions, being dissatisfied with out-of-pocket costs in the prior year, missing medications due to cost, having help with coverage decisions, and having prior HMO drug coverage were all positively associated with voluntary Part D enrollment.

We finally present results from our adjusted logistic regression analyses of voluntary plan enrollment, stratified by whether beneficiaries were aware of the provisions that could either exacerbate adverse selection (i.e., coverage is available regardless of income or health with multiple plan options) or mitigate adverse selection (i.e., the late enrollment penalty).

We found only weak support for the hypothesis that the positive relationship between chronic disease and plan enrollment would be stronger for those who were knowledgeable about Part D's non-discrimination and plan options (Exhibit 4). The adjusted odds of enrollment for beneficiaries with one or two chronic conditions were 1.6 for those who were knowledgeable and 1.1 for those who were not knowledgeable, but the difference between these two odds ratios was

only marginally significant (p-value of 0.069). Likewise, the adjusted odds of enrollment for those with three or more chronic conditions were 2.1 for those who were knowledgeable and 1.4 for those who were not, but this difference was also only marginally significant (p-value of 0.054). The differences between the two subsample's odds ratios were insignificant for the three other health/demand measures.

Exhibit 4: Selected Odds of 2006 Part D Enrollment Stratified by Beneficiary Knowledge of Non-discrimination the Availability of Plan Options

Subsample:	Knowledgeable about non-discrimination and plan options (N=3,112)	Not knowledgeable about non-discrimination and options (N=3,346)	
	Adjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	T-Stat for Difference in Odds Ratios (p value)
Beneficiary Health			
Self-Reported health fair or poor	1.1 (0.8, 1.4)	1.0 (0.8, 1.3)	0.26 (0.79)
No chronic conditions (referent)	-	-	-
1 to 2 chronic conditions	1.6 (1.2, 2.0)*	1.1 (0.8, 1.5)	1.82 (0.07)
3 or more chronic conditions	2.1 (1.6, 2.7)*	1.4 (1.0, 1.9)*	1.93 (0.05)
Demand for Prescription Drug Coverage			
Dissatisfied with out of pocket costs	1.5 (1.2, 2.0)*	1.2 (0.9, 1.5)	1.36 (0.17)
Missed medication due to cost	1.4 (1.1, 1.9)*	1.6 (1.2, 2.0)*	-0.41 (0.68)

NOTES: * P<.05 N=6,458 community dwelling respondents who either had no known drug coverage or voluntarily enrolled in a Part D prescription drug plan. The "Knowledgeable about the availability of Part D coverage and plan options" subsample correctly identified these two statements as true: "*Everyone with Medicare can choose to enroll in the voluntary Medicare Prescription drug coverage regardless of their income or health*" and "*Everyone in Medicare has at least two Medicare Prescription drug plans to choose from.*" The "Not knowledgeable about the availability of Part D coverage and options" subsample incorrectly identified one or both of these two statements as false.
SOURCE: 2005 Medicare Current Beneficiary Survey

We found no support for the hypothesis that the positive relationship between chronic disease and plan enrollment would be weaker for those who were knowledgeable about Part D's late enrollment penalty (Exhibit 5). None of the five differences in odds ratios between the two subsamples were statistically significant.

Exhibit 5: Selected Odds of 2006 Part D Enrollment Stratified by Beneficiary Knowledge of the Late Enrollment Penalty

	Subsample: Knowledgeable about the late enrollment penalty (N=4,542)	Subsample: Not knowledgeable about the late penalty (N=1,916)	
	Adjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	T-Stat for Difference in Odds Ratios (p value)
Beneficiary Health			
Self-Reported health fair or poor	0.9 (0.8, 1.1)	1.1 (0.8, 1.6)	-0.98 (0.33)
No chronic conditions (referent)	-	-	-
1 to 2 chronic conditions	1.2 (0.9, 1.5)	1.7 (1.1, 2.4) *	-1.33 (0.18)
3 or more chronic conditions	1.6 (1.2, 2.0) *	2.1 (1.3, 3.1) *	-1.03 (0.30)
Demand for Prescription Drug Coverage			
Dissatisfied with out of pocket costs	1.3 (1.0, 1.6) *	1.5 (1.1, 2.1) *	-0.75 (0.45)
Missed medication due to cost	1.6 (1.2, 2.1) *	1.3 (0.9, 2.0)	0.85 (0.40)

NOTES: * P<.05 N=6,458 community-dwelling respondents to the 2005 Medicare Current Beneficiary Survey who either had no known drug coverage or voluntarily enrolled in a Part D prescription drug plan. The "Knowledgeable about the late enrollment penalty" subsample correctly identified this statement as true: "*Most people with Medicare must choose a Medicare prescription drug plan by May 15, 2006, or pay a penalty if they choose to join later*." The "Knowledgeable about the late enrollment penalty" subsample incorrectly identified this statement as false.
SOURCE: 2005 Medicare Current Beneficiary Survey

Sensitivity Analysis

Although a strength of our study is the linkage of the MCBS to administrative enrollment data from CMS, it is possible that some beneficiaries classified as having no known coverage in the analysis may have in fact derived creditable coverage from a source not captured in these data. For example, CMS data on sources of drug coverage did not include information on beneficiaries covered by the Indian Health Service, by privately purchased drug plans (such as legacy Medigap policies), or by all employer sponsored plans. In order to test whether our results were sensitive to how we defined coverage status, we repeated our analyses on a subset (N=4,488) of respondents, for whom the administrative enrollment records were supplemented with survey reports of creditable coverage from the middle of 2006. The results of these analyses can be found in Appendix Exhibits A–C. Interestingly, this refinement yielded a "no known

coverage" rate of 11.8% rather than 15.7%. However, the relationships between measures of beneficiary knowledge and enrollment identified in the multivariate analyses, though attenuated, were generally still positive and significant when the alternative coverage measures were applied.

Discussion

Our study results indicate that beneficiary understanding of important details regarding Part D program structure was limited at the time of the initial open enrollment period. These findings suggest that beneficiary enrollment decisions may have been initially made without full understanding. These results are consistent with a broader body of literature indicating that beneficiaries do not always make optimal Part D enrollment selections (Gruber, 2009; Jackson & Axelsen, 2008) due to the challenges imposed by program complexity. (Hanoch & Rice, 2006). That beneficiary knowledge of the Part D program was positively associated with voluntary enrollment suggests that poor understanding of the program may have been a barrier to enrollment for some beneficiaries. While our findings are only directly relevant to the Medicare Part D program's implementation in 2006, there may be some implications beyond Part D, to new state health insurance exchanges operating in 2014, for the nonelderly population under the Affordable Care Act of 2010. A lack of knowledge about the structure of the exchanges could be a barrier to enrollment.

Our finding that Medicare beneficiaries who received help with coverage decisions were more likely to voluntarily enroll in a Part D plan suggests that social support is relevant to beneficiaries' enrollment decisions. This finding is consistent with other research showing positive associations between social support and health behaviors (Gallant, 2003). Given the considerable knowledge required to navigate complex Part D enrollment choices at the program's outset, it is not surprising that beneficiaries may have consulted with family members or friends to discuss their decisions.

Our study has several limitations worth noting. First, we cannot make direct causal inferences from these observed associations between beneficiary knowledge and enrollment. Although we did attempt to control for multiple factors that would influence a beneficiary's demand for drug coverage in our analytic model, it is possible that greater understanding of the Part D Program was the result of a greater a priori desire to enroll. Second, our analysis reflects the information Medicare beneficiaries had, and the enrollment decisions they made, in 2006 at the inception of the program. It is possible that awareness of the Part D program has changed over time as the program has matured. Third, as noted above, while a strength of our analysis is the linkage of the MCBS to CMS administrative enrollment data, some beneficiaries classified as having no known coverage in the analysis may have in fact derived creditable coverage from a source not captured in these data. However, our sensitivity analysis using survey reports of creditable drug coverage to supplement the administrative measures for a subset of beneficiaries

yielded consistent results. Fourth, while model diagnostics found no evidence of multi-collinearity among the individual knowledge test items in our adjusted analyses, it is possible that our estimates of the significance of these individual items may be understated as the response patterns for these questions are somewhat correlated.

Overall, we find that beneficiary knowledge of the Part D Program in early 2006 was somewhat limited and that greater understanding of specific aspects of the Part D program was positively associated with voluntary enrollment. Although awareness of the program has likely increased over time, CMS should consider continuing to work on educating beneficiaries about the Part D program to ensure that beneficiaries are both making the most informed coverage decisions possible and to ensure that they are effectively utilizing their coverage.

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Acknowledgements

We thank Gerard Anderson, Emily Agree, Stephen Wegener, Chad Boult, and two anonymous referees for their helpful suggestions. Dr. Howell is grateful for funding from the National Institute on Aging's T32 training grant and support from the Centers for Medicare & Medicaid Services.

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Appendix

Exhibit A1: Odds of enrollment in a Part D plan in 2006 among those with a choice, using survey enhanced enrollment data.

	Means			Unadjusted Odds Ratio	Adjusted Odds Ratio
	% No Coverage	% Part D Enrolled	% All	(95% CI)	(95% CI)
Knowledge of the Part D Program					
Any beneficiary can enroll	64.9	74.1	71.9	1.1 (0.8, 1.3)	1.0 (0.8, 1.2)
Everyone has PDP choices	45.8	58.0	55.1	1.2 (1.0, 1.5)*	1.4 (1.2, 1.7)*
Plans can change cost only once/year	13.2	18.5	17.2	1.3 (1.0, 1.7)*	1.3 (1.0, 1.7)*
Must use plan pharmacies	52.3	65.2	62.0	1.3 (1.0, 1.6)*	1.4 (1.1, 1.7)*
Plans can change list of covered drugs	38.5	46.0	44.2	0.9 (0.8, 1.2)	0.9 (0.7, 1.1)
Must pay a penalty to join later	62.1	74.9	71.8	1.4 (1.1, 1.7)*	1.5 (1.2, 2.0)*
Assistance available for low incomes	57.5	68.4	65.8	1.1 (0.9, 1.4)	1.1 (0.9, 1.3)
Socioeconomic Status					
Income greater than $25,000	40.9	41.1	41.1	1.0 (0.8, 1.2)	0.8 (0.6, 1.0)*
High school diploma or higher	71.3	74.9	74.1	1.2 (1.0, 1.4)*	1.2 (1.0, 1.4)
Demographics					
Less than 65	19.7	10.0	12.3	0.4 (0.3, 0.5)*	0.4 (0.3, 0.6)*
65–85 (Referent)	67.9	81.4	78.2	-	-
85 and Above	12.5	8.6	9.5	0.6 (0.5, 0.7)*	0.7 (0.5, 0.9)*
White (Referent)	81.0	81.2	81.2	-	-
Black	6.9	7.3	7.2	1.0 (0.8, 1.4)	1.2 (0.9, 1.7)
Hispanic	7.0	8.1	7.9	1.2 (0.8, 1.7)	1.2 (0.8, 1.7)
Other	5.1	3.3	3.7	0.6 (0.4, 0.9)*	0.6 (0.4, 1.0)

Exhibit A (cont.)	Means			Unadjusted Odds Ratio	Adjusted Odds Ratio
	% No Coverage	% Part D Enrolled	% All	(95% CI)	(95% CI)
Demographics (cont.)					
Male	40.3	38.3	38.8	0.9 (0.8, 1.1)	1.1 (0.9, 1.3)
Married	52.5	55.0	54.4	1.1 (0.9, 1.3)	1.0 (0.8, 1.2)
Beneficiary Health					
Self-Reported health fair or poor	23.3	21.5	21.9	0.9 (0.8, 1.1)	1.1 (0.9, 1.3)
No chronic conditions (referent)	18.3	12.1	13.6	-	-
1 to 2 chronic conditions	52.6	50.8	51.3	1.5 (1.2, 1.8)*	1.5 (1.2, 1.9)*
3 or more chronic conditions	29.0	37.0	35.2	1.9 (1.5, 2.4)*	2.0 (1.5, 2.7)*
Demand for Prescription Drug Coverage					
Dissatisfied with out of pocket costs	18.8	21.0	20.5	1.1 (0.9, 1.4)	1.2 (0.9, 1.5)
Missed medication due to cost	11.5	16.7	15.5	1.5 (1.2, 1.9)*	1.8 (1.4, 2.3)*
Help with Medicare Coverage Decisions					
Had help	34.0	36.8	36.2	1.1 (1.0, 1.3)	1.3 (1.1, 1.6)*
Prior HMO Drug Coverage					
Covered	3.7	25.2	20.2	8.3 (5.5, 12.6)*	9.4 (6.0, 15.0)*
Total Number of Plan Options					
1st Quartile (38 to 51)	23.3	21.6	22.8	-	-
2nd Quartile (51 to 57)	28.0	23.9	24.9	0.9 (0.7, 1.2)	0.8 (0.6, 1.1)
3rd Quartile (57 to 64)	28.4	25.8	26.4	1.0 (0.8, 1.2)	0.7 (0.6, 0.9)*
4th Quartile (64 to 94)	20.3	28.5	26.6	1.5 (1.1, 2.0)*	1.0 (0.8, 1.4)

NOTES. * P<.05

N=4,488 community-dwelling respondents who either had no known drug coverage or voluntarily enrolled in a Part D prescription drug plan.

SOURCE:2005 Medicare Current Beneficiary Survey

Exhibit A2: Selected odds of 2006 Part D enrollment, stratified by beneficiary knowledge of non-discrimination and the availability of plan options, using survey enhanced enrollment data.

	Subsample: Knowledgeable about non-discrimination and plan options (N=2,182)	Subsample: Not knowledgeable about non-discrimination and options (N=2,306)	
	Adjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	T-Stat for Difference in Odds Ratios (p value)
Beneficiary Health			
Self-Reported health fair or poor	1.2 (0.9, 1.7)	1.1 (0.8, 1.5)	0.65 (0.52)
No chronic conditions (referent)	-	-	-
1 to 2 chronic conditions	1.8 (1.3, 2.5)*	1.2 (0.8, 1.8)	1.55 (0.12)
3 or more chronic conditions	2.8 (1.8, 4.3)*	1.6 (1.0, 2.4)*	1.86 (0.06)
Demand for Prescription Drug Coverage			
Dissatisfied with out of pocket costs	1.3 (0.9, 1.8)	1.1 (0.8, 1.5)	0.85 (0.40)
Missed medication due to cost	1.7 (1.1, 2.5)*	1.8 (1.3, 2.7)*	-0.42 (0.67)

NOTES. * P<.05 N=4,488 community dwelling respondents who either had no known drug coverage or who voluntarily enrolled in a Part D prescription drug plan. The "Knowledgeable about the availability of Part D coverage and plan options" subsample correctly identified these two statements as true: "*Everyone with Medicare can choose to enroll in the voluntary Medicare Prescription drug coverage regardless of their income or health*" and "*Everyone in Medicare has at least two Medicare Prescription drug plans to choose from.*" The "Not knowledgeable about the availability of Part D coverage and options" subsample incorrectly identified one or both of these two statements as false.
SOURCE: 2005 Medicare Current Beneficiary Survey

Exhibit A3: Selected odds of 2006 Part D enrollment, stratified by beneficiary knowledge of the late enrollment penalty, using survey enhanced enrollment data.

	Subsample: Knowledgeable about the late enrollment penalty (N=3,174)	Subsample: Not knowledgeable about the late penalty (N=1,314)	
	Adjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	T-Stat for Difference in Odds Ratios (p value)
Beneficiary Health			
Self-Reported health fair or poor	1.0 (0.8, 1.3)	1.2 (0.8, 1.8)	-0.66 (0.51)
No chronic conditions (referent)	-	-	-
1 to 2 chronic conditions	1.3 (1.0, 1.8)	1.9 (1.2, 3.1)*	-1.15 (0.25)
3 or more chronic conditions	1.9 (1.4, 2.6)*	2.3 (1.3, 4.0)*	-.53 (0.59)
Demand for Prescription Drug Coverage			
Dissatisfied with out of pocket costs	1.1 (0.8, 1.5)*	1.3 (0.9, 2.1)	-0.72 (0.47)
Missed medication due to cost	2.0 (1.4, 2.8)*	1.5 (0.9, 2.4)	0.91 (0.37)

NOTES. * P<.05 N=4,488 community-dwelling respondents to the 2005 Medicare Current Beneficiary Survey who either had no known drug coverage or who voluntarily enrolled in a Part D prescription drug plan. The "Knowledgeable about the late enrollment penalty" subsample correctly identified this statement as true: "*Most people with Medicare must choose a Medicare prescription drug plan by May 15, 2006, or pay a penalty if they choose to join later*." The "Knowledgeable about the late enrollment penalty" subsample incorrectly identified this statement as false.
SOURCE: 2005 Medicare Current Beneficiary Survey

Medicare & Medicaid Research Review
2012
Volume 2, Number 4

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Medicare & Medicaid Research Review is a peer-reviewed, online journal reporting data and research that informs current and future directions of the Medicare, Medicaid, and Children's Health Insurance programs. The journal seeks to examine and evaluate health care coverage, quality and access to care for beneficiaries, and payment for health services.

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Published by the Centers for Medicare & Medicaid Services

SSN: 2159-0354
doi: http://dx.doi.org/10.5600/mmrr.002.04.a03