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Cost-related medication nonadherence among beneficiaries with depression following Medicare Part D

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Abstract

Context—Cost-related medication nonadherence (CRN) was problematic for Medicare beneficiaries with depressive symptoms prior to Medicare Part D.

Objective—To estimate changes in CRN and forgoing basic needs to pay for drugs among Medicare beneficiaries with and without depressive symptoms following Part D implementation.

Design and Setting—We compared changes in outcomes between 2005 and 2006 before and after Part D with changes between 2004 and 2005 using logistic regression to control for demographic characteristics, health status, and historical trends.

Participants—The community-dwelling sample of the Medicare Current Beneficiary Survey (n=24,234).

Main Outcome Measures—Self-reports of CRN (skipping or reducing doses, not obtaining prescriptions) and spending less on basic needs to afford medicines.

Results—The unadjusted annual prevalence of CRN among beneficiaries with depressive symptoms was 27% (2004), 27% (2005), and 24% (2006), compared to 13%, 12%, and 9% among beneficiaries without depressive symptoms. The annual prevalence of spending less on basic needs was 22% (2004), 23% (2005), and 19% (2006), compared to 8%, 9%, and 5% among beneficiaries without depressive symptoms. Controlling for historical changes and demographic characteristics, CRN did not decline among beneficiaries with depressive symptoms compared to beneficiaries without depressive symptoms (ratio of Part D changes 0.98; 95% CI, 0.73-1.32). Respondents with depressive symptoms appeared less likely to spend less on basic needs compared to individuals without depressive symptoms (0.70; 95% CI, 0.49, 1.01), however this difference was not statistically significant.

Conclusions—Despite a Medicare Part D goal to improve medication adherence among mentally ill beneficiaries, the disparity in economic access to medications between beneficiaries with and without depressive symptoms did not improve after the start of Part D.

Keywords

depression; Medicare Part D; cost-related nonadherence to medications

Introduction

The initiation of the Medicare Part D prescription drug benefit in 2006 was the largest change in coverage since Medicare's inception in 1965.(1) Prior to the availability of the prescription drug benefit, cost-related medication nonadherence (CRN) was a significant problem for many Medicare beneficiaries, particularly those who lacked prescription medication coverage.(2-6) Recent research has indicated that there have been improvements in CRN since the implementation of Medicare Part D in 2006; however, those with poor health or multiple somatic illnesses had higher rates of CRN before Part D implementation and experienced no declines in CRN associated with Part D drug coverage.(3)

CRN was found to be particularly problematic prior to Part D among Medicare beneficiaries reporting depressive symptoms.(7-9) These beneficiaries were more likely to be women and to report lower incomes, lower functional status, more comorbidities, and fair or poor health status.(7) Given the importance of medication adherence for health outcomes and well-being,(10-13) there were concerns about how patients with mental illness would fare once Part D began.(14, 15) As a result, the Department of Health and Human Services exempted most medications for mental illness from formulary exclusions.(16)

Using data from the Medicare Current Beneficiary Survey (MCBS),(17) two years before and one year after the initiation of Part D (2004-2006), we sought to determine the annual prevalence and changes in CRN among Medicare beneficiaries with and without depressive symptoms after initiation of Medicare Part D).

Methods

Sample and data source

The MCBS is a nationally representative, longitudinal survey of disabled and elderly Medicare beneficiaries. Respondents are selected in rotating three-year panels, including four fall interviews, and participate based on Medicare enrollment files from the Centers for Medicare and Medicaid Services (CMS) using a stratified area-probability design.(18) Each fall, approximately 15,700 beneficiaries are surveyed. Additional details about MCBS sampling techniques and data collection are available elsewhere.(2, 3)

Measures

CRN was our primary outcome measure of interest, and was based on responses to questions developed in our prior research and implemented in the MCBS since 2004.(2, 5, 6, 19) These measures have been shown to be valid and reliable measures of cost-related nonadherence to medications.(2, 3, 19) As in these previous studies, we constructed a summary indicator of CRN for analysis that took the value “yes” if a respondent indicated yes/ever during the current year on any of the following: “skipped doses to make the medicine last longer”; “taken smaller doses of a medicine to make the medicine last longer”; or “any medicines prescribed for you that you did not get” in combination with “(a reason or the main reason) you did not obtain the medicine was you thought it would cost too much” or “decide not to fill or refill a prescription because it was too expensive.” We also examined a separate question that asked beneficiaries if they “spent less money on food, heat, or other basic needs so that [they] would have money for medicine.”(2)

Depressive symptoms, our key independent variable of interest, were measured using two questions in the MCBS that address specific DSM-IV criteria,(20) namely sadness and anhedonia, both known as strong indicators of depression.(21) The following two items formed the basis for our study's composite depressive symptom indicator: (1) "In the past 12 months, how much of the time did you feel sad, blue, or depressed?" and (2) "In the past 12 months, have you had 2 weeks or more when you lost interest or pleasure in things that you usually cared about or enjoyed?" Based on previously published methods,(7, 22) those responding "all of the time" or "most of the time" to the first item ("time depressed") and/or responding affirmatively to the second item ("lost interest") were classified as having depressive symptoms.

We also examined demographic and clinical characteristics from the MCBS that could potentially influence medication adherence including: sex, age group (<55, 55-64, 65-74, 75-84, 85), income (<\$25,000 and \$25,000), race (black, white, or other), Hispanic ethnicity, educational attainment (above high school, high school diploma, no diploma), a count of self-reported comorbid medical conditions (0-1, 2-3, 4), a count of limitations in functional status or activities of daily living (ADL: 0, 1-2, 3), a measure of self-rated health (excellent, very good, or good versus fair or poor), and an indicator of prescription drug coverage.

All measures were determined in each study year, thus a respondent's status on time varying characteristics could change during the study period.

Statistical analysis

First, we estimated the rates of demographic and clinical characteristics among Medicare beneficiaries with and without depressive symptoms in 2004, 2005, and 2006, which were weighted to represent the entire non-institutionalized Medicare population using annual cross-sectional survey weights provided in the MCBS.(23) Next, we examined the relationship between depressive symptoms and the unadjusted annual prevalence of CRN and spending less on basic needs in 2004, 2005, and 2006 using Chi-square statistics.

As in a previous study,(3) we used separate logistic regression models to predict the odds of CRN and spending less on basic needs respectively, by year. We stratified our analyses by the presence of depressive as defined above. The key covariates in these models were two indicators for response year (2006 and 2005, with 2004 as the reference year). Additional covariates controlled for sex, age group, income, race, number of morbidities, self-rated health, and number of years' participation(3) in MCBS. We calculated a ratio of two odds ratios (namely 2006 versus 2005 relative to 2005 versus 2004) for beneficiaries with and without depressive symptoms, controlling for historical year-to-year changes in the absence of Part D.(3) Finally, we calculated a ratio of changes in outcomes following Part D among the beneficiaries with versus without depressive symptoms. All of the models used MCBS survey weights and controlled for clustering at the sampling unit, which is part of the MCBS study design,(18) and for repeated measures (e.g. non-independence of responses) over time.

We chose to use a population-based approach to examine changes in CRN regardless of coverage status, which had the advantage of avoiding selection biases due to the likelihood that beneficiaries who enrolled in a prescription drug plan either before or after Part D were sicker.(24, 25) This approach also controlled for changes within specific types of drug coverage (e.g. HMO, employer) concurrent with and closely related to Part D implementation.(3) However, we examined (in data not shown) whether including an indicator of whether or not a beneficiary had any type of prescription drug coverage, or a specific type of drug coverage and found that this approach had little to no impact on estimates of changes in CRN and spending less on basic needs after Part D implementation.

In additional sensitivity analyses, we examined whether there was a differential impact of Part D on disabled (age <65) versus elderly (≥65) beneficiaries with and without depressive symptoms. Given that the disabled group with depressive symptoms was relatively small (less than 7% of our sample) we thought it would be unlikely that we would detect CRN differences and changes in spending less on basic needs in this population. However, the overall Part D effects were similar in both the disabled and elderly groups (with all results from the elderly population being almost identical to the overall population) so we chose to present the more parsimonious findings from the entire Medicare population as a whole, while using age groups in our adjusted analyses.

All statistical analyses were conducted using Stata version 10 (StataCorp LP, College Station, Texas). This study was approved by the Human Subjects Committee of Harvard Pilgrim Health Care.

Results

Our sample included 14,500 Medicare beneficiaries who were interviewed as part of the MCBS in 2004, 14,701 in 2005, and 14,732 in 2006. Of these, 2,662, 2,611, and 2,662 (18% in all years) were classified as having depressive symptoms in 2004, 2005, and 2006 respectively. As shown in Table 1, people with depressive symptoms were more likely than those without depressive symptoms to be female, nonelderly disabled, poor, and sick (in terms of comorbid medical conditions, number of ADL limitations, and self-rated health). For example, in all years, more than 55% of beneficiaries with depressive symptoms reported their self-rated health as fair or poor, whereas only approximately 20% of beneficiaries without depressive symptoms reported fair or poor health.

The unadjusted, weighted annual prevalence of CRN among beneficiaries with depressive symptoms was 27% in 2004, 27% in 2005, and 24% after Part D implementation in 2006, compared to 13%, 12%, and 9% among beneficiaries without depressive symptoms (Figure 1). The annual prevalence of spending less on basic needs was 22% in 2004, 23% in 2005, and 19% in 2006, compared to 8%, 9%, and 5% among beneficiaries without depressive symptoms. Thus, the disparity between CRN among beneficiaries with and without depressive symptoms, expressed as a simple ratio of rates, was 2.1 in 2004, 2.3 in 2005, and 2.7 in 2006, and the disparity for spending less on basic needs between beneficiaries with and without depressive symptoms was 2.6 in 2004 and 2005, and 3.7 in 2006.

Table 2 shows the adjusted changes in CRN and spending less on basic needs after the implementation of Part D among beneficiaries with and without depressive symptoms. Controlling for historical changes (2005 versus 2004) and demographic characteristics, there were significant decreases in spending less among beneficiaries with depressive symptoms (ratio of ORs, 0.72; 95% CI, 0.52, 0.99, df=82, Wald t-test=-2.04), but there were no significant changes in CRN among beneficiaries with depressive symptoms (ratio of ORs, 0.85; 95% CI, 0.65-1.12, df=82, Wald t-test=-1.17). Among beneficiaries without depressive symptoms, there were greater decreases in spending less on basic needs (ratio of ORs, 0.50; 95% CI, 0.40, 0.63, df=82, Wald t-test=-5.95) and significant decreases in CRN (ratio of ORs 0.83; 95% CI, 0.70, 0.97, df=82, Wald t-test=-2.32).

Comparing changes in outcomes before and after the drug benefit between respondents with and without depressive symptoms (which were non-significant for those with depressive symptoms and significant for those without depressive symptoms; see Table 2), there were no significant differences in rates of CRN among beneficiaries with versus without depressive symptoms (ratio of Part D changes 0.98; 95% CI, 0.73-1.32, df=82, Wald t-test=-0.13). Respondents with depressive symptoms appeared to experience smaller declines in

spending less for basic needs after Part D than did those without depressive symptoms, though this difference was not statistically significant (ratio 0.70; 95% CI, 0.49, 1.01, $df=82$, Wald t -test=-1.94).

Comment

Part D was hailed as(26) a contributor to increased access to prescription medications for Medicare beneficiaries. In 2004, 23% of elderly beneficiaries lacked prescription drug coverage, whereas in 2006, less than 10% lacked coverage. More than 6 million beneficiaries newly acquired coverage as a result of Part D.(24, 27, 28) However, despite increased coverage, previous research has indicated that overall rates of cost-related medication nonadherence and spending less on basic needs improved only somewhat after Part D began, and that there was no decline in CRN and spending less on basic needs among sicker beneficiaries.(3)

In this study, we found that rates of CRN did not decrease significantly among beneficiaries with depressive symptoms, while they did among beneficiaries without depressive symptoms. Furthermore, while spending less on basic needs declined among beneficiaries with and without depressive symptoms after Part D, this decline was somewhat greater among beneficiaries without depressive symptoms. Beneficiaries with depressive symptoms experienced substantially higher overall rates of CRN and spending less on basic needs that persisted after the implementation of Part D, and the disparities between rates of CRN and spending less on basic needs among those with compared to those without depressive symptoms actually increased slightly between 2004 and 2006.

There are a number of possible explanations for the different experiences of beneficiaries with and without depressive symptoms. Although our models controlled for poorer health at baseline among beneficiaries with depressive symptoms, there may be residual differences in health status that contribute to our findings. Specific coverage policies may also play a role. For example, beneficiaries who were dually eligible for Medicare and Medicaid were automatically switched from prior Medicaid drug coverage to a Part D plan, and Part D plans may have had less generous access to antidepressant medications than Medicaid plans.(29) While Part D excluded antidepressants from formulary restrictions, antidepressants were more often subject to prior authorization policies which are known to reduce access to these medications, which could have also led to an increase in CRN.(30, 31) Beneficiaries with depressive symptoms may have been more likely to have Medicaid coverage prior to Part D, as they had lower income levels. Furthermore, for beneficiaries who either switched from another drug coverage plan (e.g., Medicaid or employer-based) to Part D, or who had no prior drug coverage and did not enroll in Part D, rates of CRN and spending less on basic needs would not be expected to have declined substantially.

Beneficiaries with depressive symptoms use more medications and therefore have higher drug costs given the substantial burden of cost-sharing in Part D plans. The standard plan requires 25% cost-sharing by the patient from the first dollar of benefits, though many “actuarially equivalent” plans have complex tier structures and overall patient cost-sharing greater than 25%. In addition, an unusual feature of Medicare Part D poses special cost burdens for sicker patients in the standard plan's prescription drug coverage gap known as the “doughnut hole” (100% cost sharing after first \$2,250 in total drug costs).(28) The majority of Part D enrollees do not have coverage in the doughnut hole,(32) and many beneficiaries are not even aware of the coverage gap until they suddenly encounter it.(33, 34) Both the ordinary cost-sharing and the coverage gap weigh more heavily on depressed and ill patients, and could lead to CRN and spending less on basic needs. Conversely,

beneficiaries with depressive symptoms may have been less likely to have spending in the doughnut hole if they were eligible for low income subsidies.

These findings from Medicare beneficiaries with depressive symptoms raise questions about progress toward mental health parity in the era of Part D prescription medication coverage. Patient advocates argue that antidiscrimination measures are needed to achieve greater insurance equity across disease groups.(35) In fact, published rules governing access to medications in the Medicare drug benefit attempted to protect most psychotropic drug classes from formulary exclusions.(16) Yet mentally ill beneficiaries are more likely to have greater disease and disability burdens and needs for medication coverage at the same time that they have lower incomes and face higher out-of-pocket drug costs as well as greater challenges accessing medications,(7, 36, 37) such as prior authorization, and fail first policies for psychotropic medications.(38) It appears that the insurance expansion represented by Part D may have helped beneficiaries with depressive symptoms who may have greater medication needs less than beneficiaries without depressive symptoms.(39) It is important to look at not only the overall effect of Part D on CRN and spending less on basic needs but also at relative effects for vulnerable subpopulations to determine whether there are ways for policymakers to ensure reasonable equity in meeting coverage needs.

While these are nationally representative, longitudinal data on CRN and spending less on basic needs among Medicare beneficiaries with depressive symptoms, there are several limitations to discuss. To date, Part D claims data are not available in the MCBS on prescription drug plans and formularies for individual Medicare beneficiaries,(27) so we cannot link individual CRN and spending less on basic needs to coverage of specific medications or classes of drugs including antidepressant medications or other psychotropic medications. Also, we have no information on actual medication utilization among patients with or without depression because the MCBS Cost and Use data files for 2006 are not available yet.(3)

Although our reliable measures of CRN(19) and spending less on basic needs have been available in the MCBS since 2004, a longer pre-policy series would have permitted a stronger assessment of the impact of Part D implementation in 2006, yet this data was not available. Furthermore, this analysis included data from only the first year after Part D implementation. However, the 2006 round of MCBS interviews were conducted in the last three months of 2006, which was after the launch of Part D. These early findings should be followed up over time to determine the longer term implications of Part D coverage on beneficiaries with depressive symptoms.

Conclusions

In conclusion, we found that Medicare beneficiaries with depressive symptoms, who are sicker and may have more intensive medication use than beneficiaries without depressive symptoms, were somewhat less likely to have improved economic access to medications after Part D than beneficiaries without depressive symptoms. Furthermore, the disparity in economic access between beneficiaries with and without depressive symptoms actually grew slightly wider after Part D. While more long-term data may help to shape future Medicare policy, a growing body of research suggests that eliminating the doughnut hole, reducing coinsurance, and automatically extending coverage to the near poor may be worth considering in better meeting the needs of vulnerable populations, such as those with mental illness.

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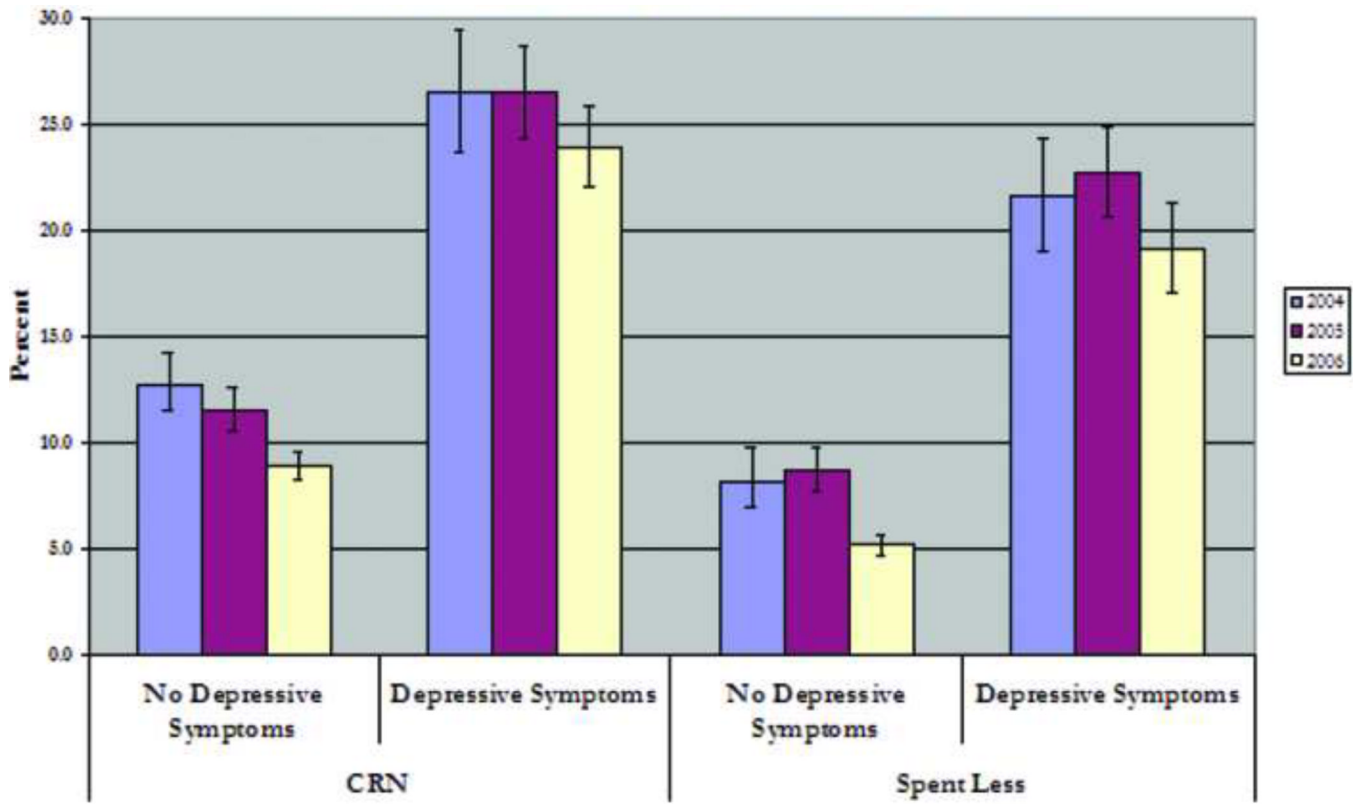
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Error bars represent 95% confidence intervals around rates of CRN and SLBN.

Figure.
Rates of reported Cost-Related Nonadherence (CRN) and Spending Less on Basic Needs (Spent Less) According to Depressive Symptom Status

Demographic and Health Characteristics of Community-Dwelling Medicare Beneficiaries by Self-Reported Depressive Symptom Status^a, 2004-2006^b

TABLE 1

Characteristic	2004, N=14,500				2005, N=14,701				2006, N=14,732			
	Depressive Symptoms N=2,662		No Depressive Symptoms N=11,784		Depressive Symptoms N=2,611		No Depressive Symptoms N=12,019		Depressive Symptoms N=2,662		No Depressive Symptoms N=11,991	
	%	X ²	%	p-value	%	X ²	%	p-value	%	X ²	%	p-value
Female Sex	61.0		54.7	0.0001 ^g	57.8		55.3	0.0864	58.2		54.5	0.0041 ^g
Age, y ^c												
<55	22.4		4.8	0.0001 ^g	21.3		4.9	0.0001 ^g	21.6		5.1	0.0001 ^g
55-64	15.4		5.2		18.9		4.9		18.5		5.2	
65-74	29.8		45.6		28.0		45.5		29.2		45.4	
75-84	24.8		33.7		24.1		34.1		22.4		33.5	
85	7.7		10.6		7.8		10.5		8.3		10.8	
Income, US\$ <\$25,000	73.7		55.7	0.0001 ^g	70.7		54.6	0.0001 ^g	68.7		52.1	0.0001 ^g
Race												
Black	11.6		9.3	0.0006 ^g	11.0		9.0	0.0088 ^g	10.5		9.2	0.0110
White	80.3		84.6		81.2		85.0		81.4		84.6	
Other	8.1		6.1		7.8		6.0		8.1		6.2	
Hispanic Ethnicity	10.8		7.2	0.0002 ^g	11.1		6.9	0.0126	10.7		7.2	0.0032 ^g
Education												
>High school	33.4		42.7	0.0001 ^g	35.4		43.6	0.0009 ^g	36.4		44.0	0.0001 ^g
High school diploma	29.8		30.5		29.4		30.7		29.9		31.0	
No high school diploma	36.8		26.8		35.2		25.7		33.7		25.1	
No. of physical morbidities ^d												
0-1	22.4		32.9	0.0001 ^g	22.6		31.0	0.0001 ^g	22.1		30.2	0.0001 ^g
2-3	47.5		49.7		45.7		49.9		45.2		50.1	

Characteristic	2004, N=14,500				2005, N=14,701				2006, N=14,732			
	Depressive Symptoms N=2,662		No Depressive Symptoms N=11,784		Depressive Symptoms N=2,611		No Depressive Symptoms N=12,019		Depressive Symptoms N=2,662		No Depressive Symptoms N=11,991	
	%	X ²	p-value	%	%	X ²	p-value	%	%	X ²	p-value	%
4	30.2			17.4	31.7			19.2	32.7			19.7
No. of limitations in ADL ^e												
0	49.6		0.0001 ^g	75.2	47.2		0.0001 ^g	74.8	46.4		0.0001 ^g	74.9
1-2	29.2			18.8	30.6			19.1	29.6			18.5
3	21.2			6.0	22.2			6.1	24.0			6.6
Self-reported health status												
Excellent, very good, or good	43.9		0.0001 ^g	79.3	44.0		0.0001 ^g	79.3	44.6		0.0001 ^g	79.5
Fair or poor	56.1			20.7	56.0			20.7	55.4			20.5
Medication coverage												
None	31.4		0.0001 ^g	29.0	27.2		0.0001 ^g	26.7	9.6		0.0001 ^g	9.5
Partial	22.1			27.5	24.6			29.6	4.6			6.4
Employer	25.3			34.5	27.2			35.2	22.4			31.3
Medicaid/Part D ^f	21.2			9.0	21.1			8.6	63.4			52.8

^aDepression symptoms defined as answering all or most of the time to “In the past 12 months, how much of the time did you feel sad, blue, or depressed?” or answering yes to “In the past 12 months, have you had 2 weeks or more when you lost interest or pleasure in things that you usually cared about or enjoyed?”

^bPercentage bases exclude those with missing values. Values were missing for no more than 2% of respondents per characteristic. Percentages calculated with national survey weights. Race and Hispanic ethnicity were defined by investigators.

^cRespondents younger than 65 years were defined as disabled.

^dPhysical morbidities include cardiac disease, hypertension, cerebrovascular disease, lung disease, cancer, diabetes mellitus, arthritis, dementia, and other neurological conditions. Mental morbidities (psychiatric disorder and depression) are excluded.

^eADL=activities of daily living. Limitations in ADL indicate reduced functional status.

^fMedicaid medication coverage in 2004 and 2005; Part D medication coverage in 2006

^gX² significant at p<0.01

TABLE 2
 Changes in Cost-Related Nonadherence and Spending Less on Basic Needs Following Part D Implementation

Group	Test	Depressive Symptoms				No Depressive Symptoms				Depressive Symptoms / No Depressive Symptoms (Part D effect)
		2005 vs. 2004	2006 vs. 2005	2006-2005 vs. 2005-2004	2005 vs. 2004	2006 vs. 2005	2006-2005 vs. 2005-2004	2006-2005 vs. 2005-2004		
Cost-related nonadherence	OR (95% CI)	1.01 (0.84, 1.21)	0.86 (0.75, 0.98)	0.85 (0.65, 1.12) p=0.244	0.89 (0.82, 0.96)	0.74 (0.65, 0.84)	0.83 (0.71, 0.97)	0.98* (0.73, 1.32) p=0.896		
	Wald t-test (df)	0.09 (99)	-2.23 (99)	-1.17 (82)	-3.06 (99)	-4.62 (99)	-2.32 (82)	-0.13 (82)		
Spent less on basic needs	OR (95% CI)	1.08 (0.88, 1.32)	0.77 (0.65, 0.92)	0.72 (0.52, 0.99) p=0.044	1.09 (0.95, 1.24)	0.55 (0.46, 0.65)	0.50 (0.40, 0.63) p<0.001	0.70* (0.49, 1.01) p=0.055		
	Wald t-test (df)	0.73 (99)	-2.92 (99)	-2.04 (82)	1.20 (99)	-7.02 (99)	-5.95 (82)	-1.94 (82)		

* Models adjusted for sex, age group, income level, race, general health status, number of physical morbidities, and number of years' participation in MCBS

† Significant at p<0.05

‡ Ratios < 1 suggest the decline in CRN among those with depressive symptoms is less than the decline among those without depressive symptoms