



White Paper

# Medicare Part D and Reductions in Cost-Related Non-Adherence

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April 2012



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# Executive Summary

The Medicare Part D program, which went into effect on Jan. 1, 2006, was designed to increase the affordability of prescription medicines for elderly and disabled Medicare beneficiaries.

One of the expectations of the program was that reductions in out-of-pocket prescription costs would decrease the number of beneficiaries experiencing cost-related non-adherence (CRN). While several studies have documented the positive impact Part D has had on the general Medicare population, little research has focused on how Part D has affected low-income seniors. This study looks at the experience of a sample of Medicare beneficiaries, including seniors receiving the low income subsidy (LIS), who participated in three telephone interviews in 2005, 2006, and 2007. The findings show that prior to enrolling in a Medicare Part D plan, about 20 percent of LIS seniors experienced CRN. By 2007, only 8.1 percent of LIS seniors reported CRN, a statistically significant reduction. Both the previously uninsured who did not receive the LIS and beneficiaries with previous insurance also experienced significant decreases in CRN after enrolling in a Medicare Part D plan.

While several prior studies have explored the impact of Medicare Part D on beneficiary cost-related non-adherence, these data provide one of the first looks at the subgroup of beneficiaries without prior prescription drug coverage who receive the LIS under Part D. Our results show that following the implementation of Part D, CRN decreased significantly for all groups, but particularly for the LIS group. Furthermore, the decrease in CRN occurred despite the fact that beneficiaries had more chronic conditions and were taking more medications in 2007 than they were in 2005. At the same time, however, overall adherence remained suboptimal. These data provide another reminder that medication non-adherence is a multifaceted problem and that additional attention focusing on non-cost-related drivers of non-adherence is critical for improving the health of our seniors.

## Introduction

Adherence to prescribed medications has been shown repeatedly to result in better health outcomes and lower healthcare resource utilization. Current research further demonstrates that good adherence to prescription medications can lower total healthcare costs by reducing spending on otherwise avoidable medical and surgical care. Medication non-adherence among the elderly raises particular concerns because many seniors have multiple chronic conditions requiring different medications, face constrained incomes, and historically have had limited access to insurance with prescription drug coverage.

The role of medication cost as a driver of non-adherence among the elderly gained widespread attention partially because it is one driver directly amenable to policy intervention. Several studies reporting high rates of CRN were the impetus for the Medicare Prescription Drug, Improvement, and Modernization Act (MMA), which established the new prescription drug benefit (Medicare Part D) for Medicare beneficiaries beginning on Jan. 1, 2006. One of these studies, a 2003 survey of more than 17,000 Medicare beneficiaries, found that 26.3 percent of respondents experienced CRN during the prior year. A second study analyzed CRN using the Medicare Current Beneficiary Survey (MCBS) and found a smaller share of beneficiaries, approximately 13 percent, reporting CRN during the survey year; however rates approached 40 percent for those with five or more comorbid conditions.

In addition to improving patient access to prescription medications, the implementation of Part D was seen as a mechanism for improving patient adherence to medications by reducing beneficiaries' out-of-pocket expenditures. Preliminary evidence from MCBS suggests that CRN did improve following Part D, dropping from 14.1 percent in 2005 to 11.5 percent in 2006. No studies, however, have reported whether seniors receiving the LIS similarly benefited and whether those results were sustained through the second year of the program.

This paper examines cost-related and overall medication non-adherence among previously uninsured Medicare beneficiaries, including those qualifying for the LIS, before and after enrollment in the new drug program. We follow the same cohort of beneficiaries from 2005 through the first two full years of experience with the prescription drug program in 2006 and 2007. This research presents some of the first data capturing 2007 experiences while allowing an examination of change at the individual level for a nationally representative sample of community-living beneficiaries.

## Methods

This analysis focuses on a panel of 628 Medicare beneficiaries who participated in a 35-minute telephone interview in 2005, 2006, and 2007. Respondents were categorized into three groups according to their coverage history across the entire survey:

**LIS Previously Uninsured** — No drug coverage in 2005; enrolled in a Part D plan and receiving the LIS in 2006 and 2007

**Non-LIS Previously Uninsured** — No drug coverage in 2005; enrolled in a Part D plan and not receiving the LIS in 2006 and 2007

**Previously Insured** — Drug coverage in 2005, 2006, and 2007

Previously insured beneficiaries who had prescription drug coverage in 2005, 2006, and 2007 received drug coverage through a Medicare Advantage plan in 2005 and continued with prescription coverage under Part D in both 2006 and 2007. Respondents were determined to have received the LIS if they were enrolled in a Part D plan in 2006 and 2007; reported income at 150 percent or less of the federal poverty level; and met at least two of the four criteria for receiving a subsidy based on reported monthly premium, deductible, generic copays, and brand copays.

The survey included questions about type of current prescription drug coverage, use of prescription medications, chronic medical conditions, adherence with current medications, and reasons for non-adherence. The chronic health conditions specifically asked about included depression, respiratory conditions (COPD, asthma, and emphysema), osteoporosis, diabetes, arthritis, high cholesterol, and high blood pressure. Adherence was assessed by asking whether, in the past 30 days, the respondent had skipped a dose, stopped taking a medication completely, delayed filling a prescription, or took a smaller dose than prescribed. Respondents were then asked the reason for each type of non-adherence reported. Responses were provided in an open-ended fashion and were coded into the following groups: need for the medication, experience with the medication, forgetting, cost, and convenience. The same survey instrument was used in 2005, 2006, and 2007.

## Results

Previously uninsured beneficiaries receiving the LIS were in worse health than other beneficiaries in the sample. Those receiving the LIS were almost twice as likely to report being in fair or poor health as were the other groups, and reported more activity of daily living limitations (ADLs) in 2005 (Table 1).

As expected with an elderly population, the number of chronic medical conditions reported increased slightly over the three-year period (Table 1). Although the increase was, on average, less than one more chronic condition by 2007, the increase was statistically significant for each group of beneficiaries. Consistent with the increase in chronic conditions, small albeit significant increases in the number of medications being taken were also noted by all three groups. On average, each group reported taking 0.5 more prescriptions in 2007 than they did in 2005 (Table 1).

**Table 1: Demographic and Health Characteristics**

	LIS Previously Uninsured	Non-LIS Previously Uninsured	Previously Insured
<b>Demographics</b>			
Number of Beneficiaries	74	371	183
Mean Age in 2005 (Std. Dev.)	69.3 (10.0)	72.2 (8.1)	72.8 (7.2)
Percent Female	81.1	63.9	74.9
<b>Health Status in 2005 (%)</b>			
Excellent/Very Good	29.7	51.6	52.8
Good	31.1	29.1	27.5
Fair/Poor	39.2	19.3	19.8
% With Worse Health in 2007	20.3	24.3	27.5
% With Better Health in 2007	28.4	17.4	18.7
Mean ADLs in 2005 (Std. Dev.) (Activity of Daily Living Limitations)	1.0 (1.5)	0.5 (1.0)	0.7 (1.2)
<b>Mean Number of Chronic Conditions (Std. Dev.)*</b>			
2005	2.7 (1.8)	2.3 (1.6)	2.6 (1.8)
2006	3.1 (1.8)	2.5 (1.6)	2.9 (1.9)
2007	3.2 (1.9)	2.7 (1.6)	3.0 (1.9)
<b>Mean Number of Medications (Std. Dev.)**</b>			
2005	4.7 (3.4)	3.9 (3.2)	4.5 (3.3)
2006	4.9 (3.6)	4.1 (3.0)	4.7 (3.1)
2007	5.1 (3.4)	4.4 (3.2)	5.0 (3.2)

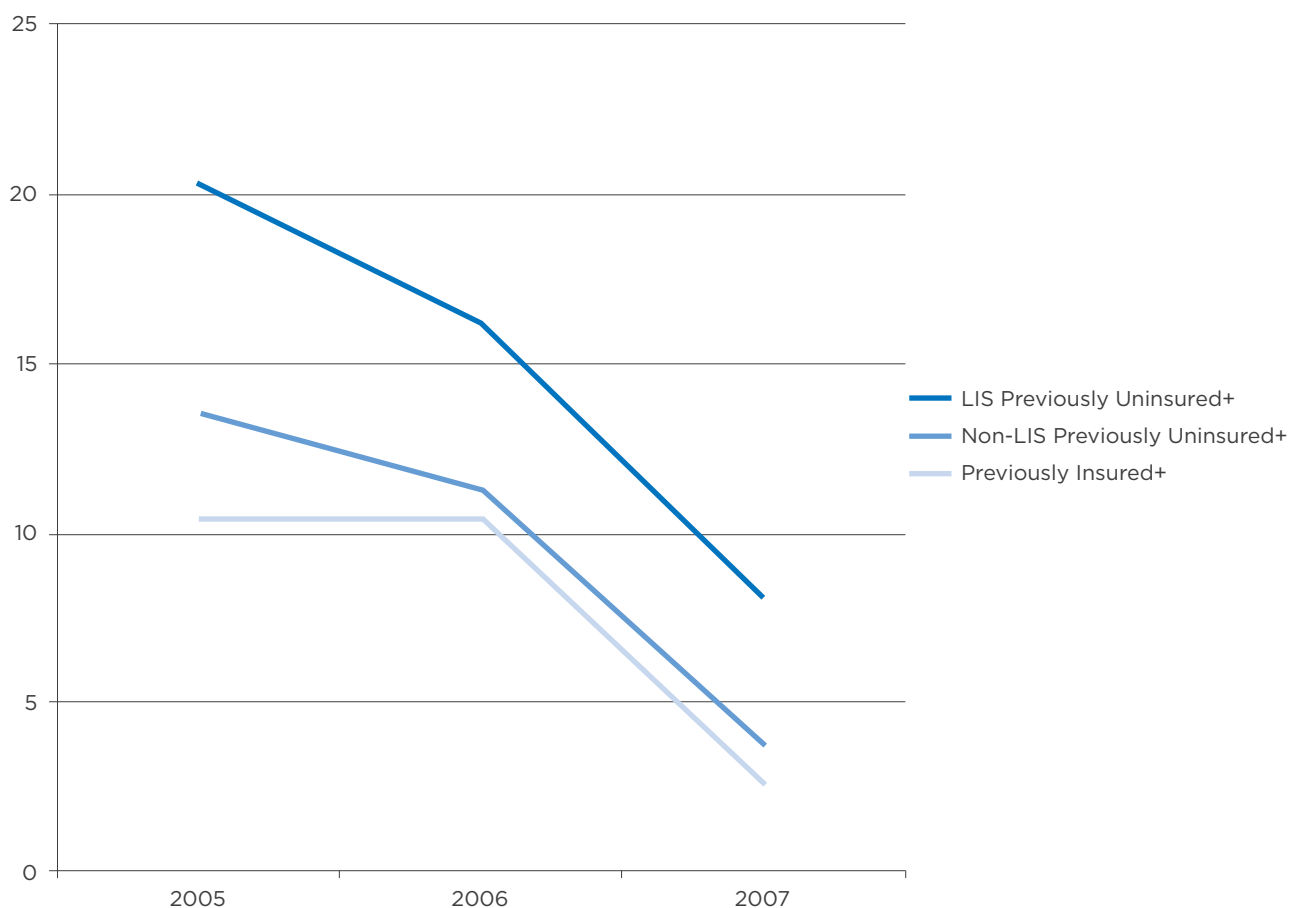
\*Beneficiaries were asked if their doctor told them or if they were currently being treated for any of the following conditions: arthritis (other than rheumatoid), respiratory condition, skin or other cancer, congestive heart failure, depression, diabetes, high blood pressure, high cholesterol, stroke, Parkinson's disease, osteoporosis.

\*\*Beneficiaries were asked how many medications they were currently taking including, but not limited to, for chronic conditions.



Changes in self-reported CRN over the 3 years are shown in Figure 1. For previously uninsured beneficiaries receiving the LIS, CRN dropped by more than half, from 20.3 percent in 2005 to 8.1 percent in 2007 ( $p < 0.05$ ). Both the non-LIS previously uninsured and previously insured beneficiaries also experienced statistically significant decreases in CRN with fewer than 4 percent of either group reporting CRN in 2007. Changes in overall non-adherence, however, were much smaller and did not achieve statistical significance. Overall, adherence to medicines remained suboptimal, with nearly 40 percent of the previously uninsured LIS recipients and more than a quarter of the non-LIS previously uninsured and previously insured beneficiaries reporting one or more types of non-adherence in 2007.

**Figure 1: Percentage of Beneficiaries Reporting Cost-Related Non-Adherence, 2005-2007**



+ Change from 2005 to 2007 statistically significant at  $p < 0.05$

### **Discussion and Policy Implications**

While several prior studies have explored the impact of Medicare Part D on beneficiary cost-related non-adherence, these data provide one of the first looks at the subgroup of beneficiaries without prior prescription drug coverage who receive the LIS under Part D. Our results show that following the implementation of Part D, CRN decreased significantly for all groups, but particularly for the LIS group. Furthermore, the decrease in CRN occurred despite the fact that beneficiaries had more chronic conditions and were taking more medications in 2007 than they were in 2005. Prior analyses conducted on these same beneficiaries found that the LIS group experienced substantial improvements in economic well-being from 2005 and 2007, with a 55 percent reduction in out-of-pocket medication costs. The findings of the current analysis suggest that these reductions in out-of-pocket costs contribute to reductions in CRN.

Our finding that low-income seniors are particularly sensitive to medication costs is seen in other studies of CRN following the implementation of Part D. Using the MCBS, one study found that CRN decreased from 22.1 percent in 2005 to 14.3 percent in 2006 among Part D enrollees who had not had prior prescription drug coverage. A similar study that examined the overall population of seniors enrolled in Part D found a decrease in CRN from 14.1 percent to 11.5 percent between 2005 and 2006, confirming that those without prior coverage experienced a greater decrease in CRN.

While Part D dramatically increased the affordability of prescription medications for the LIS group and reduced CRN, our data also demonstrate that there are significant opportunities for improving overall adherence. Overall non-adherence in our study remained unchanged, suggesting that cost is just one of the many factors that influence adherence. A recent study by Zhang and colleagues on the impact of Part D also noted that overall medication adherence remains suboptimal for many seniors. Patient perceptions of the risks and benefits of a medication, patient-provider communication, comorbid conditions, and mental illness are all important factors in shaping how well a patient adheres to prescribed medications.

## Limitations

Although this study did include Medicare beneficiaries under age 65 who are disabled, we were not able to include those of any age who are institutionalized. Therefore, these results are generalizable only to the non-institutionalized Medicare population. In addition, those aged 75 and over in our study appear to be somewhat healthier than MCBS participants of the same ages. This difference is likely due to the use of telephone survey in our study which requires that the participant be capable of listening and responding to questions over the phone, whereas the MCBS is conducted in person. As a result, our study may underestimate the use of prescription medications among those age 75 and over. The overall comparability in demographics and health status between our sample and the 2002 and 2003 MCBS samples, however, supports the generalizability of this study population to the national population of non-institutionalized Medicare beneficiaries. Lastly, we were not able to take assets into account when determining eligibility for the LIS. However, in addition to the income cut-off, we required that the reported deductible, premium, and copays be consistent with the LIS program criteria.

## Conclusion

Part D resulted in a significant decrease in cost-related non-adherence across the board for Medicare beneficiaries from 2005 to 2007. Beneficiaries receiving the LIS reduced their CRN by 60 percent. At the same time, however, overall adherence remained suboptimal. These data provide another reminder that medication non-adherence is a multifaceted problem and that additional attention focusing on non-cost-related drivers of non-adherence is critical for improving the health of our seniors.

This work was sponsored by the Pharmaceutical Research and Manufacturers of America (PhRMA).

## Appendix A: Detailed Description of Methods

### Study Sample and Survey

A 35-minute telephone interview was conducted between September and November in 2005, 2006, and 2007. Approximately 24,000 Medicare beneficiaries over age 65 or under 65 and disabled, who had previously participated in a nationally representative survey and had given permission to be contacted for future surveys, made up the sampling frame for this study. Respondents were initially selected using random-digit dialing of both listed and unlisted residential telephone numbers. The initial survey was stratified by region to ensure representative geographical dispersion. The response rate to the initial survey in the fall of 2005 was 43.5 percent, resulting in the original sample of 6,212. In the fall of 2006, 69 percent of the 2005 sample responded and 73 percent of the 2006 respondents completed the 2007 survey. Overall, 50 percent of the original sample completed all three surveys.

The 2005, pre-Part D characteristics of the sample were benchmarked to the respondents of the 2002 and 2003 Medicare Current Beneficiary Survey (MCBS). Across drug coverage groups (no prescription coverage, Medicare Advantage, and Medicaid), our sample was comparable to the MCBS sample in terms of demographics (age, sex, income, marital status, poverty level), overall health status, functional limitations, prescription fills, number of medications taken, and out-of-pocket expenses. The older participants in our study, however, were healthier in terms of self-reported health status and prevalence of certain chronic conditions.

### Statistical Analyses

The implementation of the Part D program provided a natural experiment, allowing each person to be used as his or her own control for assessing changes in cost-related medication non-adherence between 2005 and 2007. Weighted least squares repeated measures Chi-Squares were conducted to compare the marginal proportions at 2005 against those of 2006 and 2006 against 2007.

## Sources

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2. Madden J, Graves A, Zhang F, Adams A, Ross-Degnan D, Briesacher B, Gurwitz J, Pierre-Jacques M, Safran D, Alder G, Soumerai S. “Cost-related medication nonadherence and spending on basic needs following implementation of Medicare Part D.” *JAMA.* 2008;299(16):1922-1928.
3. The 2,508 beneficiaries not included in the analyses consisted of 38 percent with consistent employer coverage through 2007, 22 percent with Medicaid or other state prescription coverage in 2005, 12 percent with Medigap, 15 percent with inconsistent coverage through an employer or a Medicare Advantage plan, and 12 percent who had no coverage in 2005 and either continued with no coverage through 2007 or had inconsistent coverage across 2006 and 2007.
4. To be considered as receiving the LIS in 2006, we required that at least two of four conditions were met in addition to meeting the income requirement: reported deductible of \$0 or \$50, premium of \$0 if at 135 percent or less of the federal poverty level and less than \$33 if income was between 135 percent and 150 percent of the federal poverty level, and generic and brand copays of between \$0 and \$5. We used similar criteria to evaluate whether these respondents were still receiving the LIS in 2007 and excluded 11 cases in which the respondent reported no longer meeting the income requirement or described cost-sharing features that were inconsistent with receipt of the LIS. An additional 18 respondents who met the LIS criteria for 2007, but not 2006, were also excluded from the analyses.
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7. Zhang Y, Lave J, Donohue J, Fischer M, Chernew M, Newhouse J. “The impact of Medicare Part D on medication adherence among older adults enrolled in Medicare-Advantage products.” *Med Care* 2010;48: 409–417.

8. An analysis of the beneficiaries who were lost to follow-up by 2007 indicates that these individuals were in somewhat worse health (24.8 percent reported being in fair or poor health in 2005 relative to 17.8 percent of the sample analyzed in this paper), were more likely to be non-white (9.5 percent versus 5.9 percent of the final sample), and were more likely to have had a stroke (5.5 percent vs. 4.1 percent, respectively) or congestive heart failure (12.7 percent vs. 9.8 percent, respectively). The final sample was similar to the overall 2005 sample and the loss to follow-up cohort with regard to age, sex, average out-of-pocket expenses, percent with monthly out-of-pocket expenditures greater than \$100, and the prevalence of most other chronic conditions.
9. The 2002 and 2003 MCBS were the most recent survey data published at the time of our data collection and analysis.
10. Among those age 75-84 and 85 plus, the percent reporting poor or fair health status in this study was 18 percent and 16 percent, respectively compared to 25 percent and 27 percent among the same age groups in the 2002 MCBS (see the Medicare ChartBook 2005 [Kaiser Family Foundation] Figure 1.3).





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