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Implementation of the Medicare Part D Prescription Drug Benefit is Associated with Antiretroviral Therapy Interruptions

Moupali Das-Douglas

Department of Medicine, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Center for AIDS Prevention Studies, University of California, San Francisco, CA 94105, USA

HIV Prevention Section, AIDS Office, San Francisco Department of Public Health, 25 Van Ness, Suite 500, San Francisco, CA 94102, USA

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Positive Health Program, San Francisco General Hospital, University of California, San Francisco, CA 94143, USA

Elise D. Riley

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Kathleen Ragland

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

David Guzman

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Richard Clark

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Margot B. Kushel

Division of General Internal Medicine, San Francisco General Hospital, University of California, San Francisco, CA 94143, USA

David R. Bangsberg

Department of Medicine, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Epidemiology and Prevention Interventions Center, San Francisco General Hospital, Division of Infectious Diseases, University of California, San Francisco, CA 94143, USA

Positive Health Program, San Francisco General Hospital, University of California, San Francisco, CA 94143, USA

Abstract

Antiretroviral (ARV) treatment interruptions are associated with virologic rebound, drug resistance, and increased morbidity and mortality. The Medicare Part D prescription drug benefit, implemented on January 1st, 2006, increased consumer cost-sharing. Consumer cost-sharing is associated with decreased access to medications and adverse clinical outcomes. We assessed the association of Part D implementation with treatment interruptions by studying 125 HIV-infected homeless and marginally housed individuals with drug coverage receiving ARV therapy. Thirty-five percent of respondents reported Medicare coverage and 11% reported ARV interruptions. The odds of ARV interruptions were six times higher among those with Part D coverage and remained significant after adjustment. The majority of Part D-covered respondents reporting ARV interruptions cited increased cost as their primary barrier. Directed interventions to monitor the long-term effects of increased cost burden on interruptions and clinical outcomes and to reduce cost burden are necessary to avoid preventable increases in morbidity and mortality.

Keywords

HIV/AIDS; Medicare; Adherence; Treatment interruption; Cost-sharing; Cost-related medication nonadherence

Introduction

Interruptions in antiretroviral (ARV) therapy have been associated with virologic rebound (El-Sadr et al. 2006; Ruiz et al. 2007), drug resistance (Parienti et al. 2004; Ruiz et al. 2007), and increased morbidity and mortality (Ananworanich et al. 2006; Danel et al. 2006; El-Sadr et al. 2006; Ruiz et al. 2007). Virologic suppression requires continued exposure to sustained drug levels; suboptimal exposure can result from either missed doses secondary to poor adherence or from treatment interruptions related to drug supply or drug access (Bangsberg et al. 2006). Although drug supply is usually adequate in resource-rich settings, health insurance and prescription drug coverage are crucial to ensuring uninterrupted access to ARVs (Reif et al. 2006).

Recent secular trends in health insurance benefit design featuring increased consumer cost-sharing (Robinson 2002, 2004) such as increased co-payments (Ellis et al. 2004; Rector and Venus 2004; Stuart and Zacker 1999; Tamblyn et al. 2001) and formulary preferred drug lists (Headen et al. 2006; Wilson et al. 2005), have created barriers in access to prescription drugs. A RAND review demonstrated that cost-sharing increases of 10% would be associated with a 2–6% decline in prescription drug use (Goldman et al. 2007). Increasing drug costs and capping prescription benefits (Hsu et al. 2006) have limited access to essential drugs, resulting in increased emergency department (ED) visits, hospitalizations, and long-term care admissions (Adams et al. 2001; Cox et al. 2001; Goldman et al. 2007; Mojtabai and Olfson 2003; Rector and Venus 2004; Shih 1999; Tamblyn et al. 2001; Tseng et al. 2004). Although increased consumer cost-sharing has been shown to decrease prescription drug use and result in adverse health outcomes in chronic illnesses such as congestive heart failure (Cole et al. 2006), lipid disorders (Gibson et al. 2006a, b), diabetes (Mahoney 2005), depression (Bambauer et al. 2007) and schizophrenia (Soumerai et al. 1994), little is known about the influence of increased consumer cost-sharing on antiretroviral therapy use or clinical outcomes in HIV-infected patients.

Medicare is a significant source of insurance coverage for people living with HIV: Medicare accounted for 26% of federal spending on HIV in fiscal year 2006 (Kaiser Family Foundation 2006a), and is estimated to cover, mostly in conjunction with Medicaid, almost one in five (19%) or approximately 100,000 people with HIV in care in the United States (Bozzette et al. 1998). After the implementation of the Medicare Part D prescription drug

benefit on January 1, 2006, all Medicare beneficiaries became eligible for the prescription drug benefit and Medicare became a significant source of prescription drug coverage for those with HIV (Kaiser Family Foundation 2006b). Medicare also replaced Medicaid (referred to as MediCal in California) as the primary source of drug coverage for “dual-eligibles”—low-income and disabled people with both Medicare and Medicaid (Kaiser Family Foundation 2006a).

The Medicare Part D prescription drug benefit requires increased consumer cost-sharing. In 2006, the standard benefit had a deductible (\$265) and a 25% co-insurance up to an initial coverage limit (\$2,400) in prescription drug costs, followed by a coverage gap, referred to as the “doughnut hole,” where beneficiaries pay 100% of their prescription drug costs until the catastrophic coverage threshold (\$5,451) is reached (Kaiser Family Foundation 2006b). After reaching the catastrophic coverage threshold, the beneficiary pays 5% of the prescription drug costs. Certain low-income beneficiaries are eligible for low-income assistance under the Medicare drug benefit or are eligible for supplemental assistance through the AIDS Drug Assistance Program (ADAP) of the Ryan White CARE Act.

Recent estimates of the average cost of a typical antiretroviral regimen range from \$1,140 per month for a first-line regimen to \$3,770 per month (in 2004 dollars) for a salvage regimen (Schackman et al. 2006). An analysis of three common and representative antiretroviral regimens projected that beneficiaries receiving such regimens would reach the “doughnut hole” in two to 3 months (Kaiser Family Foundation 2006a). It is unclear how different jurisdictions would allow ADAP or other programs to mitigate this financial burden.

HIV providers and policy analysts projected that the Medicare Part D prescription drug benefit would lead to ARV interruptions due to both initial transition turmoil and increased consumer cost-sharing. Possible transition-related problems that could result in ARV interruptions include administrative barriers and documentation delays resulting in lapses in coverage, lack of transparency regarding formulary coverage of ARVs, and inadequacy of formulary coverage for ARVs despite requirements for coverage of all FDA-approved classes of antiretroviral medications (Kaiser Family Foundation 2006a). Increased consumer cost-sharing due to tiered pricing strategies, specialty tier placement for antiretroviral medications, the “doughnut hole” and new co-payments for dual-eligibles shifting coverage from Medicaid to Medicare could also limit access to ARV medications (Kaiser Family Foundation 2006a) and result in interruptions (Kaiser Family Foundation 2006c).

We hypothesized that persons covered by Medicare Part D would report more ARV interruptions than those with other prescription drug coverage after the implementation of the policy on January 1st, 2006, but not prior to the change. We also suspected that continuity of health insurance, access to medical care, or continuity of health care provider would not differ between persons covered by Medicare Part D and those with other prescription drug coverage because other aspects of Medicare coverage such as coverage for outpatient medical care visits or inpatient hospitalizations did not change due to the addition of the new Medicare Part D prescription drug benefit.

Methods

Participants

We studied participants who were part of an observational cohort study of HIV-infected homeless and marginally housed individuals: the Research on Access to Care in the Homeless (REACH) cohort. The REACH cohort was assembled using a multi-stage cluster sample with stratification as has been previously described (Robertson et al. 2004; Zolopa et

al. 1994). Recruitment of the cohort occurred in 1996, 1998, 2000, and 2002. Study participants undergo structured quarterly interviews that focus on health status, use of and adherence to antiretroviral medications, health service use, housing, and health-related behaviors including substance use. Participants are reimbursed \$15 for each quarterly interview. Overall current retention in the REACH cohort is 73%. This corresponds to 9 people lost per 100 person-years.

We administered a three-part cross-sectional supplemental questionnaire nested in the REACH longitudinal cohort study of all participants presenting for their first quarterly interview of 2006. The initial insurance section characterized insurance and prescription drug coverage status over the past 12 months. The second section assessed interruptions in ARV, access to health care, continuity of enrollment in health insurance, and continuity of health care provider among all participants over the past 12 months. The third section asked respondents covered by Medicare Part D about their baseline knowledge, attitude, and response to Medicare Part D implementation. We asked participants who answered yes to the outcome questions to elaborate with follow-up semi-structured questions and opportunity for open-ended responses. No additional reimbursement was given for the supplemental interview.

We included all REACH participants who reported having any type of prescription drug coverage and who were also currently on ARV therapy.

Measures

Medicare Part D Coverage Status—We defined the Medicare Part D-covered group as all persons who would be automatically enrolled or require enrollment into Medicare Part D prescription drug plans: this includes both dual-eligibles and those covered by Medicare managed care. The comparison group contained participants who reported any other form of prescription drug coverage.

Socio-demographic Covariates—We ascertained sex, income, race (white, African-American, and other), age at baseline interview, incarceration in the past year, and housing status in the past year. We categorized housing status as homeless (slept on the street or in a homeless shelter at least one night) or marginally housed (slept in a single room occupancy hotel, but not on the street or in a shelter.)

Health Status and Health Care Utilization Covariates—We examined participants' CD4 count, viral load, the Short Form 36 (SF-36) physical health composite score (Hays et al. 1993) and the Beck Depression Inventory Scale II (BDI) score (Storch et al. 2004). We categorized respondents as depressed if the BDI score was equal to or greater than 14. We also included the following health care utilization covariates: hospitalization or emergency department (ED) visits in the past year and receiving primary care which was defined as two or more visits to primary care doctor in the past year.

Substance Use and Treatment Covariates—We asked about any crack or powder cocaine use, any methamphetamine use, or any intravenous drug use during the previous year. We also asked participants whether they had received methadone therapy during the previous year.

ARV Treatment Interruptions and Health Service Utilization Characteristics—Our primary outcome was self-reported ARV treatment interruptions of at least 48 h. This outcome was chosen because of the demonstrated relationship between self-reported 48 h treatment interruption and virologic rebound (Parienti et al. 2004; Spacek et al. 2006) and

drug resistance (Oyugi et al. 2007; Parienti et al. 2004). We defined interruption as “trouble getting your ARV medications” or “being unable to get the medications” to distinguish inability to obtain ARVs from missed doses due to non-adherence. We asked about interruptions in the past 3 months and in the past year (excluding the past 3 months). We also asked participants if they had trouble keeping insurance, obtaining needed medical care, or had to change health care providers due to insurance in the past 3 months and past year.

Data Analyses

We examined if the odds of our outcomes—self-reported treatment interruptions, continuity in health insurance, continuity of medical care and continuity of health care provider—differed significantly by Medicare Part D prescription drug coverage status both after implementation of the program and during the year prior to implementation. We determined independent predictors of the primary outcome of treatment interruptions with multivariable logistic regression. The final model was developed using a backward stepwise approach based on recommendations of Hosmer and Lemeshow (Hosmer 1989) in which bivariate predictors with a P -value of 0.20 or less were included in the initial multivariate model, and variables were eliminated in order of their P -values, until all remaining parameter estimates had P -values less than 0.05. Assumption checking revealed linear relationships between log odds of the outcome (treatment interruption) and all continuous variables. Type I error was set at <0.05 for all hypothesis testing.

Results

Baseline Demographic Characteristics

All of the 251 consecutive participants of the REACH cohort who presented for their first quarterly interview of 2006 consented to answer the supplemental questionnaire. Of these, 125 participants met the inclusion criteria: prescription drug coverage and receiving ARV therapy. Table 1 lists the demographic, clinical and insurance characteristics of the study participants.

The study sample was over two-thirds male, mostly of non-white race, with high rates of homelessness and a median income of \$892/month (Table 1). Almost half of the participants reported injection drug use, while approximately one-third reported crack or powder cocaine use and less than 15% reported methamphetamine use in the past year. Forty percent of the participants were classified as depressed by BDI score. Nine percent had been incarcerated in the past year. Almost two-thirds of the study sample had a suppressed viral load (<50 copies).

Medicare Part D Coverage Status

Over one-third of the study participants reported Medicare Part D prescription drug coverage: 41 dual-eligibles (Medicare-MediCal), two persons with Medicare who reported possible prescription drug coverage through a Medicare managed care plan, and one person with Medicare who did not report the source of prescription drug coverage. Results did not change appreciably when the dual-eligibles were examined separately (data not shown).

The Medicare Part D-covered and other prescription drug coverage groups were similar in terms of age, median income, health status and health care utilization. However, the Medicare Part D-covered group had a greater proportion of male respondents (86.4% compared to 60.5%, $P = 0.003$) and a smaller proportion were non-white (50% compared to 74.1%, $P = 0.02$) compared to the group with other prescription drug coverage.

ARV Treatment Interruptions

Fourteen of the 125 participants (11.2%) reported ARV interruptions of 48 h. Of these, 10/14 (71.4 %) were covered by Medicare Part D and 3/14 (21.4%) had other prescription drug coverage. The unadjusted odds of a self-reported ARV interruption of 48 h (Table 2) were nearly six times higher among Medicare Part D-covered respondents as compared to those with other prescription drug coverage in the past 3 months (OR = 5.66, 95% CI 1.48, 26.10) but not in the year preceding the implementation of Medicare Part D (OR = 0.23, 95% CI 0.00, 5.79). No statistical differences in unadjusted odds between the prescription drug coverage groups were found with respect to insurance discontinuity (OR[3-months] = 1.81, 95% CI 0.24, 13.77; OR[past year] = 0.88, 95% CI 0.08, 6.34), inability to obtain needed medical care (OR[3-months] 0.43, 95% CI 0.01, 4.50; OR[past year] = 1.20, 95% CI 0.10, 10.70), or discontinuity of health care provider (OR[3-months] 1.57, 95% CI 0.02, 134.40; OR[past year] = 0.89, 95% CI 0.01, 17.26) in the past 3 months or in the past year.

Correlates of ARV Treatment Interruptions

In unadjusted analyses, ED visit in the past year (OR = 3.20, *P*-value = 0.050), being homeless (OR = 4.04, *P*-value 0.04), and BDI score (OR = 1.07 per scale point, *P*-value = 0.010) were significantly associated with self-reported treatment interruptions (Table 3). While there was a trend for methamphetamine users and recently incarcerated persons to report interruptions, neither of these variables, nor the remaining substance use variables were significantly associated with ARV interruptions. The strength and precision of association between Medicare Part D coverage and ARV interruption (AOR = 7.50, *P* = 0.003) as well as BDI score and ARV interruption (AOR = 1.08, *P* = 0.005) remained similar in magnitude and direction in adjusted analysis.

Knowledge and Behavior Among Medicare Part D-covered Participants

In the analysis of participants covered by Medicare Part D (*n* = 44), 90.9% were taking other prescription drugs. While 61.4 % of this group had heard about Medicare Part D, only a quarter of participants had discussed Medicare Part D with their medical provider. About one-fifth received an extra supply of drugs from a health care provider to supply them throughout the transition. Almost sixty percent of participants on antiretroviral therapy who were enrolled in the new Medicare Part D prescription drug plan (PDP) reported increased expenditures on prescription drugs.

Reasons Reported for ARV Treatment Interruptions

Nine of the ten Medicare Part D-covered participants reporting ARV treatment interruptions cited an aspect of the new Medicare Part D PDP as a reason for the interruption. Six reported that the interruption was due to new co-payments and two reported filling other prescription drugs over ARV medications because of new co-payments. Other Medicare Part D PDP-related reasons for interruption included lack of coverage of ARV therapy by new PDP, lack of pharmacy participation in new PDP, exceeding medication limit in new PDP, and lack of a PDP card.

Discussion

In this community-based sample of HIV-infected marginally housed and homeless adults with prescription drug coverage, we found that having Medicare Part D prescription drug coverage was independently associated with a greater than seven fold increased odds of ARV treatment interruptions since implementation. In the year prior to Part D implementation, there was no significant association between Medicare coverage and ARV

treatment interruptions. This suggests a link between Medicare Part D implementation and ARV treatment interruptions.

We controlled for factors known to be associated with poor adherence which may have affected ARV interruptions such as substance use and depression (Ammassari et al. 2004; Ammassari et al. 2002; Cook et al. 2002, 2006; Starace et al. 2002; van Servellen et al. 2002). The odds of ARV interruptions for methamphetamine users were three fold higher than those not reporting use, but the estimate was not statistically significant. Depression was independently associated with antiretroviral treatment interruptions, which is consistent with prior work (Li et al. 2005).

Although the Part D benefit expanded access for some groups such as seniors without prior prescription drug coverage (Kaiser Family Foundation 2006b; Neuman et al. 2007), we did not find similar benefits among our study population. Low-income dual-eligible beneficiaries were entitled to reduced co-payments. However, the majority of respondents reported that interruptions were due to new co-payments incurred as a result of the transition from MediCal to Medicare Part D. One or three dollar co-payments are a significant cost burden for dual-eligibles who have an average of ten more prescriptions than other Medicare beneficiaries (Kaiser Family Foundation 2005). Faced with new co-payments, some respondents reported prioritizing other prescriptions over antiretroviral medications.

The adverse impact of increased consumer cost-sharing on access to ARV medications and HIV health outcomes has not been specifically studied; however, a recent study of dual-eligibles demonstrated that the implementation of Medicare Part D resulted in treatment interruptions due to restrictive formularies, higher out-of-pocket costs, and documentation delays (Hall et al. 2007). Increased consumer cost-sharing is not simply a problem of the transition to Medicare Part D but will continue as Part D co-payments are indexed and likely to rise each year (Hall et al. 2007). Our findings are consistent with a recent nationally representative community-based survey, which reported that while the average Medicare beneficiary experienced decreased cost-related medication nonadherence following implementation of Medicare Part D, non-elderly disabled beneficiaries, those in poor health, and those with multiple morbidities did not share this benefit of decreased cost-related medication nonadherence (Madden et al. 2008).

Our study has several limitations. We relied on self-reported interruptions in ARV therapy and insurance status and did not collect the exact dates of expected pharmacy refills and treatment interruptions, which may have led to misclassification and been subject to recall bias. However, we have no reason to suspect that interruptions or insurance status would be reported differently by persons with Medicare coverage compared to those without, so any effects from differential reporting were likely minimal. We adjusted for the known demographic differences between the Medicare Part D-covered and the other prescription drug coverage groups; however, we cannot exclude the possibility of uncontrolled confounding by unknown or unmeasured differences. We did not examine the association of treatment interruptions and viral suppression because the interview was not contemporaneous with viral load determination. However, self-reported treatment interruption of ≥ 48 h has been associated with virologic rebound (Parietti et al. 2004; Spacek et al. 2006) and drug resistance (Oyugi et al. 2007; Parietti et al. 2004). The timing of our study limited our examination to the immediate effects of implementation of Medicare Part D and respondents' recall bias may have highlighted problems due to Medicare Part D transition turmoil. However, nine of the ten Medicare Part D-covered participants reporting an interruption cited features of the new prescription drug benefit as the reason for the interruption. Our small sample size and cell sizes may be associated with instability in the obtained estimates. Although the magnitudes of the associations we do

detect are large, these results will need to be replicated to increase confidence that the association of Medicare Part D with ARV interruptions is representative of the REACH cohort, a diverse group of people living with HIV/AIDS. Since the REACH cohort is composed of relatively homogeneously indigent HIV-infected homeless and marginally housed individuals, there was not enough variability in income to look at the correlation between level of income and treatment interruptions. However, when asked about reasons for interruptions, the majority cited increased cost of new co-payments. Lastly, it is important to note that the indigent REACH cohort participants are likely to be more sensitive to increased cost-sharing than the other HIV-infected patients in care (Goldman et al. 2007). Therefore, our findings may not be generalizable to other HIV patients affected by Medicare Part D in the United States. However, a recent survey of HIV clinical care providers, 26% of whom were in private practice, found that a majority of providers responded that their patients experienced ARV treatment interruptions, reported increased out-of-pocket costs, and had more unscheduled medical visits or other adverse health consequences due to Medicare Part D implementation (HIV Medicine Association 2007).

Despite these limitations, our study of the association of Medicare Part D and ARV treatment interruptions in this community-based sample of HIV-infected dual-eligibles has important policy implications. The implementation of the Medicare Part D prescription drug benefit was a missed opportunity to use drug benefit design as an important public health tool to promote the use of cost-effective, evidence-based medications for chronic health conditions. Despite attempted safeguards, the increased cost sharing required by the Medicare Part D drug benefit, may have resulted in an undue and significant consumer cost burden for society's most vulnerable: low-income dual-eligible HIV-infected patients. While some of the transition turmoil due to one-time implementation of Medicare Part D may improve with time, the coverage gap ("doughnut hole"), indexed co-payments and the vagaries of the private drug plan formularies will continue to increase consumer cost sharing. There is also uncertainty about coverage for recently approved potentially lifesaving ARVs.

Directed interventions will be required to reduce transition difficulty as new beneficiaries become eligible for Medicare Part D and to improve navigation through the Part D program. Ongoing monitoring will be necessary to evaluate the long-term effect of increased consumer cost burden on access to antiretroviral therapy and clinical outcomes in patients receiving ARV therapy. Efforts to reduce the cost burden for Medicare Part D beneficiaries should be actively pursued.

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Table 1

Characteristics of HIV-infected homeless and marginally housed adults reporting prescription drug coverage and receiving antiretroviral therapy

Variable <i>N</i> (%) or Mean/Median $\pm$ SD	Study population <i>N</i> = 125	Medicare Part D covered <i>N</i> = 44	Other drug coverage <i>N</i> = 81	Test ^a
<i>Demographic</i>				
Biologic sex				
Male	87 (69.6%)	38 (86.4%)	49 (60.5%)	9.02 ^{**}
Race/Ethnicity				
White	43 (34.4%)	22 (50.0%)	21 (25.9%)	
African-American	50 (40.0%)	15 (34.1%)	35 (43.2%)	
Other	32 (25.6%)	7 (15.9%)	25 (30.9%)	7.89 [*]
Age at baseline				
Mean years	43.3 $\pm$ 8.0	45.2 $\pm$ 8.7	42.3 $\pm$ 7.4	-1.96 [*]
Income				
Median	892 $\pm$ 12.3	923.0 $\pm$ 205.0	846.0 $\pm$ 92.0	3.78 [*]
Housing Status				
Homeless in the past year	111 (88.8%)	39 (88.6%)	72 (88.9%)	<0.01
Clinical status and health care utilization				
CD4 nadir mean	215 $\pm$ 189	219 $\pm$ 183	213 $\pm$ 194	-0.16
CD4 count mean	406 $\pm$ 308	434 $\pm$ 355	392 $\pm$ 281	-0.68
Viral Load—suppressed	76 (60.8%)	28 (66.7%)	48 (62.3%)	2.24
SF-36 physical composite score mean	40.8 $\pm$ 11.1	39.5 $\pm$ 12.3	41.5 $\pm$ 10.5	0.98
Beck depression inventory severity scale mean	12.5 $\pm$ 10.5	12.2 $\pm$ 9.8	12.7 $\pm$ 10.9	0.27
Hospitalizations in past year	24 (19.2%)	9 (20.5%)	15 (18.5%)	0.07
ER in last year in past year	49 (39.2%)	21 (47.7%)	28 (34.6%)	2.07
Primary care (2 or more visits in past year)	118 (94.4%)	41 (93.2%)	77 (95.1%)	0.19
Drug use and treatment				
Crack cocaine or powder cocaine use in past year	33 (26.4%)	12 (27.3%)	21 (25.9%)	0.03
Methamphetamine use in past year	17 (13.6%)	8 (18.2%)	9 (11.1%)	1.21
Any injection drug use in past year	61 (48.8%)	24 (54.6%)	37 (45.7%)	0.90
On methadone therapy in past year	25 (20.0%)	7 (15.91%)	18 (22.22%)	0.71
Incarceration				
Incarceration in past year	11 (8.8%)	4 (9.1%)	7 (8.6%)	0.01
Enrolled time				
Mean years ($\pm$ SD)	4.5 (3.1)	5.2 (3.1)	4.1 (3.1)	-1.90

^aTest statistics used were chi-square for frequencies, Student's *t*-test for means, and Wilcoxon *Z* tests for medians used to compare participants who were covered by Medicare Part D with those with other prescription drug coverage.

* *P* < .05,

** *P* < .01

Table 2

Unadjusted associations between Medicare Part D coverage and health service utilization characteristics among HIV-infected homeless and marginally housed adults in San Francisco ($N = 125$)

Outcome	Odds ratio	95% CI (Exact)
Trouble keeping insurance in past 3 months	1.81	0.24, 13.77
Trouble keeping insurance in past year	0.88	0.08, 6.34
Trouble obtaining medical care in past 3 months	0.43	0.01, 4.50
Trouble obtaining medical care in past year	1.20	0.10, 10.70
Had to change provider in past 3 months *	1.57	0.02, 134.40
Had to change provider in past year	0.89	0.01, 17.26
Trouble obtaining ARVs (interruption 2 days) in past 3 months	5.66	1.48, 26.10 *
Trouble obtaining ARVs (interruption 2 days) in past year	0.23	0.00, 5.79

* $P < 0.05$

Table 3

Factors associated with self-reported antiretroviral interruptions in the past 3 months among HIV-infected homeless and marginally housed adults in San Francisco ($N = 125$)

Variable	Crude			Adjusted ^a		
	OR	95% CI		AOR	95% CI	
		LCL	UCL		LCL	UCL
Biologic Sex = Male	2.88	0.61	13.55			
Income	1.00	1.00	1.00			
Race (White as baseline)						
African-American	0.16	0.03	0.78			
Other	0.98	0.10	1.58			
Age at baseline	0.98	0.91	1.05			
Physical health score on SF-36	0.97	0.92	1.02			
Hospitalized in the past year	0.68	0.14	3.23			
ER visit in the past year	3.20	1.00	10.19			
Primary care (2 or more visits in past year)	0.74	0.08	6.66			
Beck depression inventory score (OR per scale point)	1.07	1.02	1.12	1.08**	1.03	1.15
Housing status (homeless vs. marginally housed)	4.04	1.07	15.27			
Methadone treatment in past year	0.28	0.04	2.24			
Medicare Part D-covered	5.66	1.66	19.33	7.50**	1.96	28.58
Crack cocaine use	1.13	0.33	3.89			
Methamphetamine use	3.02	0.83	11.02			
Any injection drug use in past year	0.76	0.25	2.35			
Incarceration in past year	3.51	0.81	15.20			

^aFinal multivariable logistic regression model obtained using stepwise regression with $P < 0.2$ to enter and $P < 0.05$ to retain. For the full model: $-2 \text{ Log } L = 55.752$, $df = 10$ and for the reduced model (Medicare Part D-covered and BDI): $-2 \text{ Log } L = 70.574$, $df = 2$. The overall Diff = 14.822, $df = 8$ which is < 15.51 (cut-off for χ^2 with $df = 8$ is 15.51.) By $-2 \text{ log likelihood}$ test, final model is sufficient. The adjusted R^2 for the full and reduced models are 0.4470 and 0.2536, respectively

**
 $P < 0.01$