Medicare Beneficiaries' Knowledge of Part D Prescription Drug Program Benefits and Responses to Drug Costs

John Hsu, MD, MBA, MSCE
Vicki Fung, PhD
Mary Price, MA
Jie Huang, PhD
Richard Brand, PhD
Rita Hui, PharmD, MS
Bruce Fireman, MA
Joseph P. Newhouse, PhD

Context
Medicare Part D drug benefits include substantial cost sharing.

Objective
To determine beneficiaries' knowledge of benefits and cost responses.

Design, Setting, and Participants
Telephone interviews were conducted in 2007 in a stratified random sample of community-dwelling Kaiser Permanente-Northern California Medicare Advantage beneficiaries aged 65 years or older, with a gap in coverage if they exceeded $2250 in drug costs (N=1040; 74.9% response rate). Half were selected to have reached the gap in 2006. In the source population of Medicare Advantage Prescription Drug plan beneficiaries, 8% entered the coverage gap in 2006. Models were adjusted for individual characteristics and weighted for sampling proportions.

Main Outcome Measures
Knowledge of cost sharing including awareness of the coverage gap, gap start and end amounts, and drug cost sharing before, during, and after the gap. Cost-related responses including cost-coping behaviors (eg, switching to lower-cost medications), reduced adherence (eg, not refilling prescriptions), and financial burden (eg, going without necessities).

Results
An estimated 40% (95% confidence interval [CI], 35%-45%) of beneficiaries were aware that their drug plan in 2006 included a coverage gap; knowledge of the gap was greater among individuals who reached the gap during the year. Approximately 36% (95% CI, 32%-41%) of beneficiaries reported at least 1 of the following responses to drug costs: cost-coping behavior (26%), reduced adherence (15%), or experiencing financial burden (7%). In multivariate analyses, beneficiaries with lower household income more frequently reported cost responses (difference of 14.5 percentage points for $40 000/y vs $40 000/y [95% CI, 3.6-25.4 percentage points]). Compared with beneficiaries who were unaware of having a coverage gap, those who were aware more frequently reported any cost response (difference of 11.3 percentage points [95% CI, 0.8-21.9 percentage points]), but had fewer reports of borrowing money or going without necessities (difference of 5.5 percentage points [95% CI, 1.1-10.0 percentage points]).

Conclusions
Beneficiaries in this Medicare Advantage plan have limited knowledge of Part D cost sharing and often report behavioral responses to drug costs. Limited knowledge is associated with fewer reports of cost responses overall, but more reports of financial burden.

JAMA. 2008;299(16):1929-1936
www.jama.com

©2008 American Medical Association. All rights reserved.
care Advantage Prescription Drug plans included a coverage gap, meaning that beneficiaries were responsible for all of their drug costs during the gap. In addition, 91% of stand-alone prescription drug plans and 93% of Medicare Advantage Prescription Drug plans in 2006 had tiered cost sharing prior to the coverage gap, under which beneficiaries paid more for higher-tier drugs such as brand-name medications. Failure to understand these complex benefit structures may limit beneficiaries' abilities to anticipate or manage their medication costs.

Cost sharing may affect patients' use of drugs in both favorable and unfavorable ways. Studies conducted prior to the introduction of Part D indicate that Medicare beneficiaries reduced use of both essential and less essential drugs during uncovered periods (gaps), such as after reaching annual benefit caps, and that these drug use changes resulted in worse clinical outcomes. Moreover, many beneficiaries have limited incomes and substantial medication use, and previously have reported that drug costs created financial burdens.

Reports of beneficiaries' early experiences with Part D are limited and mixed. Some reports suggest that beneficiaries' experiences under Part D are positive and that the coverage may be associated with lower out-of-pocket expenditures and greater drug use. Many beneficiaries, however, also report dissatisfaction and confusion with their benefits. A recent national survey found that Part D beneficiaries were more likely to report not filling or delayed filling of a prescription due to cost compared with beneficiaries with employer-sponsored benefits.

This study investigated beneficiaries' knowledge of their Part D benefit structures, including their awareness of the coverage gap, after their first full year in the program. A range of self-reported responses to drug costs was examined, including decreased adherence to prescribed drug use, use of other cost-coping mechanisms, and reports of financial burden among beneficiaries of a large Medicare Advantage Prescription Drug plan.

**METHODS**

**Setting**

Kaiser Permanente-Northern California is an integrated delivery system with more than 3 million members, including 200,000 individual Medicare Advantage Prescription Drug plan subscribers. In 2006, the Medicare Advantage Prescription Drug plan included co-payments of $10 for generic drugs and $40 for brand-name drugs (ie, a 2-tier formulary) for a 30-day supply, until beneficiaries' total annual drug costs reached $2250. All beneficiaries had a coverage gap (ie, no coverage) after their total drug costs exceeded $2250 until their cumulative out-of-pocket drug expenditures reached $3600, after which they paid co-payments of $3 for generic drugs and $10 for brand-name drugs for up to a 100-day supply. There also was a mail-order incentive during the initial coverage period, wherein beneficiaries could obtain a 100-day supply for $20 (generic drugs) and $80 (brand-name drugs). In 2005, 99% of the source population also were individual Kaiser Permanente-Northern California Medicare Advantage subscribers and had generic-only benefits (pre-Part D); they paid $10 for up to a 100-day supply of generic drugs and full-member price for brand-name drugs.

Beneficiaries in this health system received multiple types of Part D benefit information including annual mailings describing their benefits; monthly pharmacy mailings with information on their individual drug costs, cumulative expenditures, and coverage gap information; and prescription receipts indicating their cumulative annual drug expenditures.

**Study Population**

The study included individual subscribers who were continuously enrolled in Kaiser Permanente-Northern California's Medicare Advantage Prescription Drug plan throughout 2006, aged 65 years or older as of January 1, 2006, not eligible for Medicaid (ie, dual-eligible), and did not receive a low-income cost subsidy. Dual-eligible and low-income subsidy beneficiaries were excluded because they did not have a coverage gap. Using an SAS random number generator (SAS version 9.1.3, SAS Institute Inc, Cary, North Carolina), a stratified random sample of 2000 members was obtained from the target population of 135,297 total eligible members; half of whom had reached the coverage gap in 2006 and half of whom had not reached the gap based on automated pharmacy data. The sampling was further stratified based on total drug costs in 2006 to improve our statistical power to detect differences across various levels of drug spending. Three cost strata were below the coverage gap threshold: $0 to $750 (n=334), $751 to $1300 (n=333), and $1301 to $2250 (n=333). Two cost strata were above the coverage gap threshold: $2251 to $3500 (n=500) and $3501 and above (n=500). All strata were defined on the basis of total drug costs; the highest cost stratum (>$3501) did not correspond with the start of catastrophic coverage, which began after $3600 in cumulative out-of-pocket expenditures. Total drug costs as of December 31, 2006, were obtained from the health plan's automated pharmacy databases. The total drug cost was determined as the amount that patients would pay if they had no drug coverage and included the drug acquisition cost and a dispensing fee.

**Recruitment and Interview Protocol**

Starting in January 2007, individuals received a letter in the mail introducing the study, the questionnaire, a prepaid reply postcard, and a return envelope. Recipients could decline participation via postcard or telephone, or complete the questionnaire and return it by mail. Trained interviewers contacted potential participants via telephone and obtained verbal consent. Interviewers also called individuals who returned written surveys to complete missing items. The Institutional Review Board of the Kaiser Foundation Research Institute approved the study protocol and materials.
Beneficiaries were ineligible if they did not speak English (n=88), had a cognitive impairment or illness (n=187), or had hearing difficulties (n=50). Beneficiaries also were excluded if deceased (n=54), not living in the community (eg, nursing home residents) (n=47), they left Kaiser Permanente-Northern California in 2007 before the interview (n=46), they could not be reached by telephone after 15 or more attempts (n=93), and those for whom we had inaccurate contact information (n=47). Of 1388 eligible beneficiaries between January and May 2007, 1040 (74.9%) participated in the study, 78.6% of whom entered the coverage gap and 71.9% of whom did not. Respondents were similar to nonrespondents with respect to characteristics captured in our automated databases: sex, age, race/ethnicity, and comorbidity level.

Comorbidity levels were assessed using the diagnostic cost group score. During the interviews, individuals also were asked about self-reported race/ethnicity and other socioeconomic characteristics because of the relevance of these characteristics in studies about health care costs and access.

Knowledge Measures
To assess whether beneficiaries knew that their plan included a coverage gap, interviewers defined the meaning of a coverage gap and then asked respondents whether their drug plan included such a gap in 2006. For those who reported having a gap, beneficiaries were asked at what amount of drug spending their gap began and ended, and how much they paid (full cost, co-payment, or no cost) for a month’s supply of generic and brand-name medications before, during, and after the gap. For beneficiaries who reported having a co-payment during any of these periods, the co-payment amount was requested.

Behavioral Responses to Costs
To assess beneficiaries’ responses to their drug costs, they were asked whether they engaged in any of 13 behaviors because of the amount they had to pay for medications in 2006. These items were grouped based on conceptual similarity into 3 categories: (1) cost-coping behaviors (ie, split or skip pills with their physician’s advice, switched to a cheaper medication, received free medication samples, received help paying through an assistance program, borrowed a prescription medication, used an over-the-counter medication instead); (2) decreased adherence (ie, split or skip pills without their physician’s advice, did not fill a new prescription, did not refill an existing prescription); and (3) financial burden (ie, borrowed money to pay for medications, went without some necessity). Among beneficiaries who reported reaching their coverage gap, they were asked whether they engaged in these behaviors before and/or after they reached their gap.

Analysis
To examine beneficiaries’ knowledge of their Part D cost sharing, we calculated the percentage of participants who correctly reported having a coverage gap, the thresholds for the coverage gap’s beginning and end (±$250 for the start and ±$400 for the end), and their generic and brand-name drug costs before, during, and after the gap. For each stratum, the percentage of participants with accurate cost-sharing knowledge is reported. Using standard methods for stratified sampling, the estimated percentage of individuals in the target population with accurate knowledge also is reported. These percentages are weighted by the inverse of the sampling fraction to represent the membership population of Medicare beneficiaries with the coverage gap. Similarly, we estimated the percentage of members in the target population who reported each of the 13 cost responses, any cost response, and each of the 3 categories of responses.

Multivariate logistic regression (svy: logistic in Stata 9.2, StataCorp, College Station, Texas) was used to assess the associations between individual characteristics and either knowledge of the coverage gap or cost responses as outcomes. Multivariate logistic regression also was used to assess the association between knowledge of the gap (as the predictor) and cost responses (as the outcome), with adjustment for individual characteristics. Finally, we tested for interactions between knowledge and drug-cost level with respect to cost responses.

The individual characteristics were age and sex, and the self-reported measures obtained in the questionnaire were general health status in 2006 (excellent or very good vs good, fair, or very poor), marital status (married or living with partner vs other), race/ethnicity (nonwhite vs white), education (≤high school graduate vs ≥some college), annual household income in 2006 (<$40,000 vs ≥$40,000), and having a regular primary care physician (yes vs no). Indicators for drug-cost level also were included in all of the models.

Because the odds ratios that result from the logistic regression can be difficult to interpret, we used the fitted models to compute the direct-adjusted percentage responses for each category for the variables of interest and to examine the differences in the percentages between categories. The standard population used in the direct-adjustment procedure was the mix of covariable values in the target population. Standard errors and 95% confidence intervals (CIs) were obtained using the delta method. The a priori level of statistical significance for all analyses was P≤.05.

RESULTS

Individual Characteristics
In 2006, 8% of all Kaiser Permanente-Northern California Medicare Advantage Prescription Drug beneficiaries with a coverage gap entered the gap and 1% exited the gap (ie, in the entire plan population, not the stratified sample drawn for the survey). Table 1 displays the characteristics of the study participants. Self-reported health status in 2006 differed substantially across the drug-cost strata; an estimated 54% of all beneficiaries reported annual
household incomes below $40,000 (the mean number of persons per household was 1.6).

Knowledge of Part D Cost Sharing
An estimated 40% (95% CI, 35%-45%) of beneficiaries knew that their drug plan included a coverage gap (Table 2). Awareness of the gap increased with 2006 drug costs: 49% (95% CI, 41%-56%) of beneficiaries with costs between $1301 and $2250, 75% (95% CI, 70%-80%) with costs between $2251 and $3500, and 89% (95% CI, 85%-93%) with more than $3500 in total drug costs correctly reported that they had a coverage gap. In contrast, the majority of beneficiaries with lower costs, who did not reach the coverage gap, were unaware that their plan included a gap.

Among beneficiaries who were aware of the coverage gap, knowledge of additional cost-sharing details was limited (Table 2). For example, only 50% (95% CI, 43%-58%) knew when their coverage gap started within ±$250, and only 21% (95% CI, 15%-26%) knew when the gap ended within ±$400. Five percent of respondents mistakenly reported that there was no end to the gap (ie, they had no coverage for the rest of the year regardless of their spending level). The majority of beneficiaries (70% [95% CI, 63%-77%]) across all spending strata were aware that they paid co-payments for brand-name and generic drugs before they reached the coverage gap; however, only 19% (95% CI, 12%-26%) of beneficiaries who reported paying co-payments also correctly identified the generic and brand-name drug co-payment amounts.

Beneficiaries who reached the coverage gap in 2006 were more knowledgeable about their cost-sharing requirements during the gap and the catastrophic coverage period than beneficiaries who did not. For example, among beneficiaries with between $2251 and $3500 in total drug costs, 71% (95% CI, 65%-78%) correctly reported having no coverage during the gap for generic and brand-name drugs compared with 53% (95% CI, 41%-64%) of patients with between $1301 and $2250 in drug costs. Even among beneficiaries who reached the gap, however, less than half knew that they had co-payments for generic and brand-name drugs after reaching the catastrophic coverage threshold (eg, 40% [95% CI, 33%-47%] of beneficiaries with $2251-$3500 in drug costs).

After adjusting for age, sex, health status, marital status, educational level, race/ethnicity, having a primary care physician, and income, beneficiaries who entered the coverage gap were much more likely to be aware of having a coverage gap compared with those who did not reach the gap (difference of 40.3 percentage points [95% CI, 33.4-47.1 percentage points] for strata 4-5 vs 1-3).

### Table 1. Individual Beneficiary Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%) of Beneficiaries by Total Drug Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did Not Reach Coverage Gap in 2006</td>
</tr>
<tr>
<td></td>
<td>$0-$750 (n = 172)</td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
<td></td>
</tr>
<tr>
<td>Household size, mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Female sex</td>
<td></td>
</tr>
<tr>
<td>Had a regular primary care physician</td>
<td></td>
</tr>
<tr>
<td>Excellent or very good health status</td>
<td></td>
</tr>
<tr>
<td>Married or living w/partner</td>
<td></td>
</tr>
<tr>
<td>White race</td>
<td></td>
</tr>
<tr>
<td>Household income &lt;$40,000/y</td>
<td></td>
</tr>
<tr>
<td>≥5 Prescription drugs used in 2006</td>
<td></td>
</tr>
<tr>
<td>Chronic disease</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: CI, confidence interval.

aSampling strata based on total drug costs in 2006; the $2250 corresponds to the start of the coverage gap; $3500 in total drug costs, however, is not synonymous with the start of catastrophic coverage that begins at $3600 in cumulative out-of-pocket drug expenditures. All information listed in the rows is based on self-report except for age, sex, and chronic diseases (based on membership in health plan disease registries). The percentage missing for each characteristic was 3% each for primary care physician, health status, marital status, and race; 4% for education level; 17% for household income; and 0.1% for number of prescription drugs.

bUnless otherwise indicated.

The results in this column are weighted for differences in sampling proportions and give the estimated percentage (or mean) for the target population rather than for the sample.

cP-values represent tests of independence across the 5 sample strata.

dThe other races that were reported were black or African American, Hispanic or Latino, Asian, Native Hawaiian or Pacific Islander, American Indian or Alaskan Native, and other.
Responses to Out-of-Pocket Drug Expenditures

Table 3 displays estimated self-reported responses to drug costs among all beneficiaries. Thirty-six percent (95% CI, 32%-41%) of all members reported changing their behavior because of costs; 26% (95% CI, 22%-30%) reported any cost-coping behavior; 15% (95% CI, 11%-18%) reported decreasing adherence; and 7% (95% CI, 5%-10%) reported experiencing financial burdens. Overall, 22% (95% CI, 18%-26%) of beneficiaries reported engaging in 1 behavioral category; 9% (95% CI, 6%-12%) in 2 behavioral categories; and 2% (95% CI, 1%-4%) in all 3 behavioral categories.

The most frequently reported cost-coping behavior was switching to a cheaper drug (15% [95% CI, 12%-18%]). Among adherence changes, the most frequently reported behavior was not refilling a prescription (8% [95% CI, 6%-11%]). Finally, the most frequently reported behavior consistent with financial burden was going without a necessity (5% [95% CI, 3%-7%]).

The frequency of these responses increased as beneficiaries’ 2006 drug costs increased. For example, 28% (95% CI, 21%-35%) of beneficiaries with annual drug costs of between $0 and $750 reported any cost response compared with 57% (95% CI, 49%-64%) with costs of $3500 or greater. In multivariate analyses, beneficiaries with annual household incomes below $40,000 were substantially more likely to report engaging in behaviors in all 3 categories compared with beneficiaries with incomes of $40,000 or higher (eg, difference of 14.5 percentage points for any cost response [95% CI, 3.6-25.4]; difference of 8.7 percentage points for...

---

Table 2. Percentage of Participants With Accurate Knowledge of Part D Cost-Sharing Structures

<table>
<thead>
<tr>
<th>Beneficiaries by Total Drug Costs</th>
<th>Did Not Reach Coverage Gap in 2006</th>
<th>Reached Coverage Gap in 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate for Target Population, %b</td>
<td>$0-$750 (n = 172)</td>
<td>$751-$1300 (n = 182)</td>
</tr>
<tr>
<td>Knowledge of Coverage Gap Among All Beneficiaries</td>
<td>161</td>
<td>172</td>
</tr>
<tr>
<td>Reported plan included gap, % (95% CI)</td>
<td>40.1 (35.4-44.9)</td>
<td>32.9 (25.6-40.2)</td>
</tr>
<tr>
<td>Knowledge of gap start and end thresholds</td>
<td>50.3 (43.0-57.6)</td>
<td>48.1 (34.5-61.7)</td>
</tr>
<tr>
<td>Reported correct gap start (± $250), % (95% CI)</td>
<td>52</td>
<td>67</td>
</tr>
<tr>
<td>Knowledge of drug coverage before reaching gap</td>
<td>51</td>
<td>65</td>
</tr>
<tr>
<td>Reported having co-payment, % (95% CI)</td>
<td>70.1 (63.1-77.0)</td>
<td>66.7 (53.7-79.6)</td>
</tr>
<tr>
<td>Knowledge of drug coverage during gap</td>
<td>51</td>
<td>65</td>
</tr>
<tr>
<td>Reported no coverage, % (95% CI)</td>
<td>50.0 (42.6-57.4)</td>
<td>35.3 (22.1-48.4)</td>
</tr>
<tr>
<td>Knowledge of drug coverage after exiting gap (catastrophic coverage)</td>
<td>33.5 (26.6-40.5)</td>
<td>31.4 (24.6-41.1)</td>
</tr>
</tbody>
</table>

Abbreviation: CI, confidence interval.

### Notes
- aSampling strata based on total drug costs in 2006; the $2250 corresponds to the start of the coverage gap; $3500 in total drug costs, however, is not synonymous with the start of catastrophic coverage that begins at $3600 in cumulative out-of-pocket drug expenditures. Among beneficiaries who did not report having a coverage gap, 89% reported having a generic drug copayment and 70% reported having a brand-name drug copayment with no significant difference in the percentage reporting a copayment (brand-name or generic drug) across strata.
- bThe results in this column are weighted for differences in sampling proportions and give the estimated percentage for the target population of all Medicare Advantage Prescription Drug plan beneficiaries rather than for the sample.
- cP values represent tests of independence across the 5 sample strata.
- dThe number of patients who answered the question may be less than the total number who were asked the question because of missing responses or patients’ refusal to answer the question.

©2008 American Medical Association. All rights reserved.
decreased adherence [95% CI, 1.7-15.8 percentage points]).

**Association Between Cost-Sharing Knowledge and Cost Responses**

Table 3 presents the association between having knowledge of the coverage gap and reporting cost responses. Beneficiaries who were aware that their plan included a coverage gap were more likely to report any cost response compared with beneficiaries who were unaware of the gap (difference of 11.3 percentage points [95% CI, 0.8-21.9 percentage points]). In particular, those with knowledge of the gap were more likely to report switching to a cheaper drug (difference of 7.4 percentage points [95% CI, 0.2-14.6 percentage points]), and less likely to report experiencing financial burdens (difference of 5.5 percentage points [95% CI, 1.1-10.0 percentage points]). The associations between knowledge of the coverage gap and cost responses were similar across the drug-cost strata (ie, there were no significant interactions between knowledge and drug-cost level on behaviors).

**COMMENT**

The addition of outpatient prescription drug benefits represents the most significant change to Medicare since its inception. While Part D provides important coverage for many beneficiaries who previously lacked drug benefits, it also includes high levels and complex forms of cost sharing, most notably a coverage gap. In this population of Medicare Advantage beneficiaries, we found that beneficiaries had limited knowledge of their Part D cost sharing, including limited awareness of the coverage gap. More than 1 in 3 beneficiaries reported cost-related responses, such as switching to a generic drug or reducing their adherence, although this ratio may have been larger before Part D. Beneficiaries who were aware of the coverage gap were more likely to report cost-related responses and were less likely to report financial burdens associated with their drug costs.

The majority of beneficiaries were unaware that their drug benefits included a coverage gap. Not surprisingly, awareness of the coverage gap increased with higher drug costs and was highest among those who actually experienced the gap. Beneficiaries also had limited benefit knowledge beyond basic awareness of their coverage gap. Many appeared to be unaware of the details of their cost sharing unless they experienced them directly. Importantly, we assessed benefit knowledge within a single Medicare Advantage plan offered by an integrated delivery system in which efforts by the plan to educate members on their benefits and pa-

---

**Table 3. Percentage Reporting Cost Responses Overall and by Knowledge of the Coverage Gap**

<table>
<thead>
<tr>
<th>Estimated Behavioral Responses</th>
<th>All Beneficiaries</th>
<th>By Knowledge of Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Participants</td>
<td>Total (95% CI), %</td>
</tr>
<tr>
<td>Any behavioral change 980</td>
<td>980</td>
<td>36.2 (31.5-40.9)</td>
</tr>
<tr>
<td>Any cost-coping behavior</td>
<td>980</td>
<td>25.9 (21.7-30.1)</td>
</tr>
<tr>
<td>Switched to a less expensive drug 976</td>
<td>14.7 (11.6-17.9)</td>
<td>950</td>
</tr>
<tr>
<td>Split pills under physician’s advice 979</td>
<td>7.2 (4.9-9.5)</td>
<td>951</td>
</tr>
<tr>
<td>Went to a non-Kaiser Permanente pharmacy 976</td>
<td>5.9 (3.4-8.5)</td>
<td>950</td>
</tr>
<tr>
<td>Used over-the-counter drugs 976</td>
<td>3.7 (1.9-5.6)</td>
<td>950</td>
</tr>
<tr>
<td>Received free samples 976</td>
<td>2.0 (0.4-3.6)</td>
<td>950</td>
</tr>
<tr>
<td>Borrowed drugs 976</td>
<td>0.7 (0.3-1.1)</td>
<td>950</td>
</tr>
<tr>
<td>Received help from a pharmacy assistance program 976</td>
<td>0.3 (0.0-0.6)</td>
<td>950</td>
</tr>
<tr>
<td>Any decreased adherence behavior 980</td>
<td>14.5 (11.4-17.6)</td>
<td>952</td>
</tr>
<tr>
<td>Did not refill prescription 972</td>
<td>8.2 (5.8-10.7)</td>
<td>946</td>
</tr>
<tr>
<td>Took less than prescribed 979</td>
<td>6.5 (4.6-8.5)</td>
<td>951</td>
</tr>
<tr>
<td>Did not fill new prescription 970</td>
<td>4.9 (2.9-6.8)</td>
<td>944</td>
</tr>
<tr>
<td>Any financial burden behavior 976</td>
<td>7.3 (4.9-9.6)</td>
<td>950</td>
</tr>
<tr>
<td>Went without necessities 975</td>
<td>4.8 (2.8-6.8)</td>
<td>950</td>
</tr>
<tr>
<td>Borrowed money to pay for drugs 976</td>
<td>4.4 (2.5-6.3)</td>
<td>950</td>
</tr>
</tbody>
</table>

Abbreviation: CI, confidence interval.

98 The adjusted percentages among participants aware and unaware of the gap were estimated for the target population using logistic regression models weighted for differences in sampling proportions and adjusted for strata, sex, health status, race/ethnicity, educational level, marital status, income level (including an indicator for unknown income), and age. The models also included an indicator for gap knowledge. Respondents reported if they engaged in each of the behavioral responses any time during 2006.

99 Indicates the number of participants that answered the question.

100 The estimated percentages in this column are weighted for differences in sampling proportions but are not adjusted for patient characteristics.

101 Indicates the number used to estimate the model.

102 Participants were considered to have any behavioral change if they reported engaging in any of the 13 specific behaviors listed in this table.

103 The most frequently reported other behaviors were having a job or continuing to work (n = 23), using money from savings (n = 21), and budgeting other expenses (n = 16) because of the cost of their prescription drugs.
Behavioral changes were greater among beneficiaries who were aware vs unaware of having a coverage gap across all drug-cost levels. Beneficiaries who were more knowledgeable about their plan's cost sharing were significantly more likely to report switching to a lower cost medication and less likely to report financial burdens compared with less knowledgeable beneficiaries. This important finding suggests that engaging beneficiaries in discussions or informing them about the actual costs and clinical benefits of their medication treatment options could increase the value of the Part D program for beneficiaries, while helping to avoid some preventable financial burdens. There also were higher levels of treatment nonadherence among knowledgeable beneficiaries, which suggests a need for mechanisms to help beneficiaries make clinically appropriate choices concerning their medication therapy.

Because we conducted these interviews after beneficiaries had experienced a full year in the program, we only know that more knowledgeable beneficiaries responded differently to their drug costs compared with less knowledgeable beneficiaries. Whether improving beneficiary knowledge would result in different responses is unknown. It is possible that the beneficiaries who sought and retained information about their drug benefits were more likely to act on it. If so, efforts to provide concrete follow-up steps to guide patients' drug choices would be needed. Nearly all of the Medicare Advantage Prescription Drug plan members in this study were members in the same Medicare Advantage plan in 2005; nationwide, an estimated 80% of the 6 million Medicare Advantage Prescription Drug plan enrollees as of June 2006 were previously enrolled in the same Medicare Advantage plan in 2005. In contrast, beneficiaries who did not have any drug benefits in 2005 and who actively chose a new Part D plan might have had either greater knowledge or greater confusion as a result of their efforts. Future prospective studies are needed to evaluate interventions that provide beneficiaries with more information on their cost-sharing requirements and the availability of other treatment options.

Our study was limited to community-dwelling beneficiaries who could complete a telephone interview in English. Severely ill beneficiaries, beneficiaries in care facilities, and those with language barriers could have different levels of knowledge and cost responses. Beneficiaries in lower drug-cost strata were less likely to participate, thus raising concerns about a response bias; however, response rates were relatively high across all strata (≥68%), which lessens these concerns. Beneficiaries' reports of their cost responses also could be subject to recall error; and we have not assessed the clinical impact of their behavioral changes. Lastly, the cross-sectional interview design provides limited information on temporal relationships between drug costs, knowledge, and cost responses.

CONCLUSION

We found that this population of Medicare Advantage beneficiaries had limited knowledge of their prescription drug cost sharing in the first year of the program. Beneficiaries frequently reported changing their behavior in response to drug costs under their new...
plans, and a small proportion reported financial hardships related to drug costs. These findings suggest the need to closely monitor clinical outcomes under Part D, especially with respect to the coverage gap. Cost-related responses appear to be more common among patients with better knowledge of their benefits and reports of financial burden were fewer. Greater education and decision support by Medicare may improve beneficiaries’ understanding of their Part D plans and individual drug choices and mitigate potential adverse effects.

Author Contributions: Dr Hsu had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Hsu, Fung, Brand. Acquisition of data: Hsu, Fung, Huang. Analysis and interpretation of data: Hsu, Fung, Price, Huang, Brand, Hui, Fireman, Newhouse. Drafting of the manuscript: Hsu, Fung, Price, Brand. Critical revision of the manuscript for important intellectual content: Hsu, Huang, Brand, Hui, Fireman, Newhouse. Statistical analysis: Hsu, Fung, Price, Huang, Brand, Fireman, Newhouse. Obtained funding: Hsu, Fung. Administrative, technical, or material support: Hsu, Fung. Study supervision: Hsu, Newhouse, Fung. Financial Disclosures: Dr Newhouse is a director of and holds equity in Aetna. None of the other authors reported any disclosures.

Funding/Support: The National Institute on Aging (grant R01 AG029316), the Agency for Healthcare Research and Quality, the National Institute on Aging (grant R01 HS013902), the Alfred P. Sloan Foundation, and the Kaiser Foundation Research Institute provided funding for this study.

Role of the Sponsors: The organizations funding this study had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript.

REFERENCES