Self-restriction of Medications Due to Cost in Seniors without Prescription Coverage

A National Survey

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OBJECTIVE: Little is known about patients who skip doses or otherwise avoid using their medications because of cost. We sought to identify which elderly patients are at highest risk of restricting their medications because of cost, and how prescription coverage modifies this risk.

DESIGN AND PARTICIPANTS: Cross-sectional study from the 1995–1996 wave of the Survey of Asset and Health Dynamics Among the Oldest Old, a population-based survey of Americans age 70 years and older.

MEASUREMENTS: Subjects were asked the extent of their prescription coverage, and whether they had taken less medicine than prescribed for them because of cost over the prior 2 years. We used bivariate and multivariate analyses to identify risk factors for medication restriction in subjects who lacked prescription coverage. Among these high-risk groups, we then examined the effect of prescription coverage on rates of medication restriction.

MAIN RESULTS: Of 4,896 seniors who regularly used prescription medications, medication restriction because of cost was reported by 8% of subjects with no prescription coverage, 3% with partial coverage, and 2% with full coverage ($P < .01 for trend). Among subjects with no prescription coverage, the strongest independent predictors of medication restriction were minority ethnicity (odds ratio [OR], 2.9 compared with white ethnicity; 95% confidence interval [95% CI], 2.0 to 4.2), annual income <$10,000 (OR, 3.8 compared with income ≥$20,000; 95% CI, 2.4 to 6.1), and out-of-pocket prescription drug costs >$100 per month (OR, 3.3 compared to costs ≤$20; 95% CI, 1.5 to 7.2). The prevalence of medication restriction in members of these 3 risk groups was 21%, 16%, and 13%, respectively. Almost half (43%) of subjects with all 3 risk factors and no prescription coverage reported restricting their use of medications. After multivariable adjustment, high-risk subjects with no coverage had 3 to 15 times higher odds of medication restriction than subjects with partial or full coverage ($P < .01).

CONCLUSIONS: Medication restriction is common in seniors who lack prescription coverage, particularly among certain vulnerable groups. Seniors in these high-risk groups who have prescription coverage are much less likely to restrict their use of medications.

KEY WORDS: insurance, pharmaceutical services; health services accessibility; prescriptions, drug; fees, pharmaceutical; aged.


Prescription drug costs are growing faster than any other segment of health care. In turn, many anecdotal reports have surfaced of elderly patients forced to skip doses of their medications, or avoid these medications altogether, because they lack adequate prescription drug coverage and cannot afford the high cost of modern pharmaceuticals. These stories, and the media interest they have generated, have stimulated calls for a prescription drug benefit for Medicare.

However, the extent to which different groups of elderly patients skip, avoid, or otherwise restrict their use of prescription medications because of cost is largely unknown. Recent studies show that patients who lack prescription coverage receive fewer prescription medications than those with coverage. However, it remains unclear to what extent these disparities reflect differential prescribing by physicians, preferential enrollment of sicker patients into plans that provide coverage, or patients restricting their own use of medications because of cost. Moreover, little is known about which groups of underinsured patients are at the greatest risk of restricting their use of medications because of cost, and how prescription coverage may attenuate that risk.

We studied these questions in a large, nationally representative cohort of older Americans. First, we compared the rate of medication restriction in patients with...
different levels of prescription insurance. Next, we determined which seniors who lacked prescription coverage were at highest risk of restricting their use of medications because of cost. Finally, to examine how prescription coverage modified the risk of medication restriction among these vulnerable groups, we compared rates of medication restriction in high-risk seniors who had no, partial, or full coverage.

**METHODS**

**Population**

We studied elders who participated in the second wave (1995–1996) of the Survey of Asset and Health Dynamics Among the Oldest Old (AHEAD). AHEAD is a nationally representative, longitudinal survey of noninstitutionalized elders who were at least 70 years old at the cohort’s inception in 1993. African-American and Hispanic persons and residents of Florida were oversampled within a multi-stage area probability sample.10.11 Of 6,237 persons age 70 years and older in the second wave of AHEAD, we limited our analytic sample to the 4,935 who stated that they regularly used prescription medications. An additional 39 were excluded because they did not answer questions about medication restriction, did not state their level of prescription coverage, or had a pharmacy claim under dispute. This left a final sample size of 4,896 subjects.

**Measures**

Our primary outcome variable was medication restriction because of cost, assessed by the question: “At any time in the last 2 years have you ended up taking less medication than was prescribed for you because of the cost?” Independent (predictor) variables included prescription drug coverage, demographic characteristics, several measures of health status, and monthly out-of-pocket spending on prescription drugs.

Subjects reported whether their insurance covered the costs of their prescription medications not at all, partly, or completely. We measured comorbidity by the number of self-reported diagnoses from a list of 7 conditions (hypertension, diabetes mellitus, cancer, chronic lung disease, ischemic heart disease or heart failure, cerebrovascular disease, psychiatric problems, and arthritis or “rheumatism”). We defined independence in activities of daily living (ADL) as needing no assistance with bathing, dressing, eating, transferring in or out of bed, and toileting.

Income, total assets, and monthly out-of-pocket costs for prescription medications were assessed by self-report. Subjects unable or unwilling to state their exact earnings or out-of-pocket prescription drug costs were given an option of choosing from among several ranges of income and cost.

Ethnicity was determined by self-report. In most of our analyses, point estimates for Hispanic subjects were similar to those of African-American subjects, but were unstable given the low number of Hispanic subjects in the sample. As a result, we collapsed both groups into the ethnic category “minority.” One percent of subjects belonged to other ethnic groups, and were not included in the analysis. Marital status was defined as “spouse at home” for those with a spouse or partner living with them, and “no spouse at home” for all others.

**Analyses**

For each analysis, we adjusted for survey weights intended to make the AHEAD sample representative of the noninstitutionalized U.S. population age 70 and older.10 This involved the use of 1) sample weights to adjust for the systematic oversampling of select groups and for interviewee nonresponse, and 2) design weights to account for variance intrinsic to the multistage sampling technique used to identify survey households. Repeating the analyses with unweighted data yielded similar results.

We first compared characteristics of subjects who reported no, partial, and full prescription coverage. Continuous variables were compared using 1-way analysis of variance (ANOVA) or the Kruskal-Wallis ANOVA, and categorical variables were analyzed using the χ² test (modified for trend where appropriate). Using the same bivariate analytic techniques, we evaluated which of the subjects who lacked prescription coverage were at increased risk of restricting their medications. We then performed stepwise logistic regression of all variables (see Table 2) (P < .05 to enter, P < .10 to stay, P < .05 to report) to identify independent predictors of medication restriction in subjects with no prescription coverage. We included indicator variables for income (169 subjects) and comorbidity (151 subjects) when data were missing.

Our next set of analyses assessed how prescription coverage modified the risk of medication restriction in groups found to be at high risk in the absence of coverage. First, for each of these high-risk groups, we used independent samples t tests to compare the rate of medication restriction in subjects with no coverage to the rates in those with partial and full coverage. To determine the independent association between prescription coverage and medication restriction, within each high-risk group we developed a logistic regression model in which the dependent variable was medication restriction, the major independent variable was degree of prescription coverage, and the other independent variables were those found on our prior analyses to be independently associated with medication restriction (excluding out-of-pocket prescription drug costs). We excluded out-of-pocket prescription drug costs from the models because these costs are likely to be a major causal mechanism by which prescription coverage affects medication restriction. Including this causal mechanism would have overadjusted our models, with subsequent misestimation of the true effect of prescription coverage on medication restriction. To evaluate the magnitude of this