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Cost-Sharing, Physician Utilization, and Adverse Selection Among Medicare Beneficiaries with Chronic Health Conditions

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Abstract

Pooled data from the 2007, 2009, and 2011/12 California Health Interview Surveys were used to compare the number of self-reported annual physician visits among 36,808 Medicare beneficiaries 65 in insurance groups with differential cost-sharing. Adjusted for adverse selection and a set of health covariates, Medicare fee-for-service (FFS) only beneficiaries had similar physician utilization compared to HMO enrollees but fewer visits compared to those with supplemental (1.04, $p=0.001$) and Medicaid (1.55, $p=0.003$) coverage. FFS only beneficiaries in very good or excellent health had fewer visits compared to those of similar health status with supplemental (1.30, $p=0.001$) or Medicaid coverage (2.15, $p=0.002$). For sub-populations with several chronic conditions, FFS only beneficiaries also had fewer visits compared to beneficiaries with supplemental or Medicaid coverage. Observed differences in utilization may reflect efficient and necessary physician utilization among those with chronic health needs.

Keywords

Access to and utilization of services; Economics; Healthcare Policy; Health Insurance; Medicaid/Medicare

Introduction

Medicare subjects beneficiaries to substantial cost-sharing (MedPAC, 2012). However, supplementary coverage options for Medicare beneficiaries such as Medigap “wraparound,” employer-sponsored retiree, or Medicaid coverage reduce or in some cases eliminate cost-sharing, potentially encouraging overutilization and imposing “externalities,” or higher-than-expected utilization relative to health care needs, onto the Medicare program. To address these externalities, MedPAC has suggested restricting first-dollar coverage provided by certain supplementary insurance plans (MedPAC, 2012) in order to reduce utilization by beneficiaries as well as purchase of supplementary insurance plans. Others have previously suggested altering Medicare cost-sharing by consolidating deductibles, coinsurance, and copayments across Medicare Parts A and B (Zuckerman, Shang, & Waidmann, 2010). Still others have suggested that discretionary service utilization by Medicare beneficiaries depends upon the type of condition being treated and the treatment setting and that, accordingly, Medicare cost-sharing should vary according to setting or to the condition being treated (Koc, 2005; Nyman, 1999).

While cost-sharing is generally known to reduce consumption of a number of different health services (Rice & Matsuoka, 2004), the normative question of whether utilization differences between Medicare beneficiary groups due to moral hazard (whereby the cost of purchasing an additional service is less than the value of the service to the consumer) reflect overutilization or underutilization among those with only FFS coverage has not been resolved. That is, moral hazard may reflect inefficient utilization of services because the value of services are less than the cost to the consumer due to low cost-sharing, or it may represent an efficient transfer of resources from the healthy to those in poor health for whom the marginal cost of necessary, additional services becomes more affordable (Nyman, 1999). It has been shown that increased cost-sharing for prescription drugs is associated with decreased drug utilization (Baicker & Goldman, 2011; Remler & Greene, 2009; Rice & Matsuoka, 2004) and reduced adherence, particularly among the chronically ill (Chernew et al., 2008; Gibson, Ozminkowski, & Goetzel, 2005). In the RAND Health Insurance Experiment, consumers reduced utilization of services in response to increased cost-sharing without regard to effectiveness of services (Chernew & Newhouse, 2008). These prior findings suggest that cost-sharing may in some cases negatively affect necessary service utilization and thus health outcomes—particularly among the elderly who have high levels of chronic illnesses as well as limited economic resources.

To better understand how supplementary insurance may affect utilization patterns due to cost-sharing among Medicare beneficiaries 65 years and older (“older adults”) in different health categories, I compared the number of self-reported annual physician visits across several groups of older Medicare plan enrollees, including those with employer-provided and individually purchased HMO and supplemental insurance plans and those with Medicaid. I hypothesized that those with HMO coverage would have lower while those with supplemental coverage would have greater utilization compared to FFS beneficiaries, after accounting for potential adverse selection. To explore whether supplemental insurance is an efficient use of Medicare resources by increasing potentially needed utilization among those in poor health, I assessed whether health status moderates the relationship between insurance group status and physician utilization.

Background and Conceptual Basis for Study

Roughly 90% of Medicare beneficiaries have some sort of supplementary or alternative coverage, which typically provide assistance with or alter cost-sharing arrangements under traditional, fee-for-service Medicare (Figure A1). Cost-sharing for medical care, emergency care, or prescription drug utilization via deductibles, coinsurance, and/or copayments has generally been shown to reduce utilization (Baicker & Goldman, 2011; Escarce, Kapur, Joyce, & Van Vorst, 2001; Manning et al., 1987; Remler & Greene, 2009; Rice & Matsuoka, 2004), although there may be offsetting effects such that total expenditures are not reduced (Chandra, Gruber, & McKnight, 2010; Escarce, et al., 2001). Cherkin et al. (1989) observed an approximately 8% decrease in the number of total health care visits and 11% of office visits after the introduction of copayments for office visits among beneficiaries in a large health maintenance organization (Cherkin, Grothaus, & Wagner, 1989). Wedig et al. (1988) observed a negative relationship between patient out-of-pocket expenditures and the use of ambulatory physician services (Wedig, 1988). Others have

observed negative relationships between emergency department (ED) cost-sharing (Hsu et al., 2006) and ED use.

In terms of the older adult population, reviewing the literature from 1990 to 2003 on cost-sharing and utilization, Rice et al. (2004) (Rice & Matsuoka, 2004) observed that supplementary coverage reduced cost-sharing for older beneficiaries and increased the likelihood of mammography screenings threefold (Blustein, 1995). More recently, two studies observed that greater cost-sharing was associated with decreased mammography screening among older women in Medicare managed care plans (Trivedi, Rakowski, & Ayanian, 2008) and an increase in copayments for primary and specialty care was associated with fewer annual outpatient visits among Medicare managed care enrollees compared to those in plans without increased copayments (Trivedi, Moloo, & Mor, 2010). Chandra et al. (2010) observed a 17.5% decline in office visits associated with the introduction of a \$10 copayment for office visits (Chandra, et al., 2010). Others found that Medigap coverage increased Medicare spending by 22.2%, with Medigap increasing Part B events, such as outpatient physician visits, by 33.7% over the average number of events among Medicare beneficiaries (Cabral & Mahoney, 2013).

Several studies have examined indirect cost-sharing associated with healthcare utilization and outcomes among Medicare beneficiaries. These studies found that Medicare supplementary coverage, compared with Medicare FFS, is associated with greater prescription drug coverage and lower odds of failure to purchase antihypertensive medications (Blustein, 2000). Medicare supplementary coverage is also associated with lower odds of using statins (Federman, Adams, Ross-Degnan, Soumerai, & Ayanian, 2001) and other prescription medications (Stuart & Grana, 1998). It has further been associated with reduced odds of preventable hospitalization (Culler, Parchman, & Przybylski, 1998) and mortality (Doescher, Franks, Banthin, & Clancy, 2000). Elderly and non-elderly women breast cancer survivors who had private, supplemental health insurance were more likely to receive mammography surveillance compared to those without private, supplemental insurance (Sabatino, Thompson, Richardson, & Miller, 2012).

New Contribution

Most prior studies examining cost-sharing among older Medicare beneficiaries were not able to account for potential adverse selection into supplemental coverage (i.e., where insurance is not exogenous to utilization) (Atherly, 2001; Rice & Matsuoka, 2004), potentially resulting in overestimation of group utilization differences (Coulson, Terza, Neslusan, & Stuart, 1995; Ettner, 1997; Long, 1994). Unmeasurable beneficiary characteristics, i.e., the propensity to use services, may be associated with the purchase of supplementary or HMO coverage. For instance, both Ettner (1997) and Long (1994) found evidence of adverse selection in samples of Medicare beneficiaries. While adjusting for measurable confounders, Trivedi and Moloo et al. (2008), Blustein (2000), Federman and Adams, et al. (2001), Stuart and Grana (1998), and Doescher and Franks, et al. (2000) could not rule out unmeasurable self-selection in their samples.

Additionally, this paper explores whether FFS beneficiaries appear to have restricted access to physician services compared to other sub-populations of Medicare beneficiaries at

varying income levels and across a number of health states—a question that has not been resolved in the health services literature. Poor health status reflects a potential need for ongoing health care in order for the beneficiary to maintain functional independence; accordingly, for those in poor health or with a chronic illness, large utilization differences between those with and without supplemental insurance may indicate access problems for Medicare FFS beneficiaries. Conversely, among those in good health, large utilization differences between insurance groups could reflect unnecessary utilization, such that those with lower cost-sharing use more services than necessary simply because they have “less skin in the game.” This normative question is of policy interest given that the relatively small Medicare FFS population is already subject to substantial cost-sharing for service utilization. Further, some FFS beneficiaries may qualify for, but do not enroll in, Medicaid (Rice & Matsuoka, 2004) and, even among Medicaid enrollees, a non-negligible number do not annually renew coverage (Riley, Zhao, & Tilahun, 2014). Using prior methodology (Ettner, 1997; Long, 1994) with the current dataset, I thus explore this important over/underutilization question while accounting for adverse selection (that controls for unmeasurable potential confounders)—a systematic bias issue neglected in many prior papers.

Methods

Data Source and Study Sample

I used the 2007, 2009, and 2011/12 waves of the California Health Interview Survey (CHIS), a population-based survey conducted every two years since 2001 by the UCLA Center for Health Policy Research. From 2001 to 2009, data were collected biennially. Beginning in 2011, CHIS began collecting data continuously over two-year cycles meaning 2011/12 data were collected in 2011 and 2012. CHIS surveyed 51,048 adults in 2007, 47,614 adults in 2009, and 42,935 adults in 2011/12 in English, Spanish, Chinese (Mandarin and Cantonese), Vietnamese, and Korean. The analytic sample included 36,808 adults ages 65 who had some form of Medicare insurance (i.e., were not uninsured or did not only have non-Medicare coverage). In the sample, 6% were Black, 17% Latino, 12% Asian, and 64% White, 53% had at least some college education, 84% were unemployed, and 50% had household incomes at 300% FPL.

Study Design

A major concern for this type of study is adverse selection (Baicker & Goldman, 2011). Medicare beneficiaries with a high propensity for using care are more likely to enroll in Medicaid, if qualified, or to choose a Medicare Advantage or Medigap plan with low cost-sharing or generous benefits. However, those who sign up for supplementary coverage through an employer or former employer, as opposed to purchasing coverage on their own or through an association, are less likely to purchase that insurance because of a greater propensity to use health care services (Ettner, 1997; Long, 1994). It is supposed that employer-provided coverage is exogenous to utilization, whereas individually purchased coverage is endogenous with utilization (because of respondents' unmeasured propensity to use services). That is, employers provide supplemental coverage (or facilitate the purchase of other coverage) not because employees need additional care due to the propensity to use

services, but rather as a wage supplement. It is also unlikely that individuals select jobs due to a propensity to use health services in older age. Conversely, older adults may purchase additional insurance coverage on their own due to preferences regarding health services utilization, including a desire to use more care due to foreseen illness. Accordingly, utilization differences between an individually purchased supplementary plan and basic, FFS coverage reflect both adverse selection and moral hazard. Conversely, assuming that employer-provided coverage is exogenous, utilization differences between employer-provided and basic, FFS coverage can be interpreted to reflect moral hazard without adverse selection.

For this study, data available in the CHIS included whether a beneficiary's (a) Medigap or other supplemental coverage plan or (b) an HMO was employer-provided or individually purchased (i.e., purchased directly or through a trade association or union). Accordingly, the categories used in this study were: (1) Medicare only ("FFS"), (2) employer-provided supplemental ("Employer Supplemental"), (3) employer-provided HMO ("Employer HMO"), (4) individually purchased supplemental ("Individual Supplemental"), (5) individually purchased HMO ("Individual HMO"), and (6) Medicaid. While Medicaid is typically considered supplemental coverage for Medicare enrollees, groups (2) and (4) are hereafter referred to as "supplemental" plans. Several steps were taken to assess and then control for observable (using measurable respondent characteristics from CHIS) and unobservable self-selection into insurance categories. First, to compare observable differences among respondents across plans, I estimated a weighted multinomial logit (ML) model to assess the odds of having employer-provided or individually obtained HMO or supplemental coverage (including Medicaid) compared to FFS coverage. Then, using two weighted logit models, I estimated the odds of enrollment in supplemental versus HMO plans in subsets of both employer-provided and individually purchased plans and used Wald tests to assess whether respondent health characteristics were jointly significant. These model estimates provide information that can be used to assess observable differences in characteristics between beneficiaries enrolled in FFS only compared to employer-provided and individually obtained supplemental insurance, respectively.

Next, in order to control for unobservable (in addition to observable) respondent differences, I sorted respondents into categories by whether or not they purchased HMO or supplementary insurance individually (or with the help of a trade association or union) or through their employer. By sorting respondents into insurance categories that are either exogenous or endogenous to utilization, I separated the utilization due to selection (the endogenous insurance groups, i.e., those plans that are individually purchased) and moral hazard (the exogenous groups, i.e., those plans that are employer-provided or employer-facilitated). Moral hazard can be measured as the utilization difference between the employer-provided plans and the FFS only group, i.e., groups (2) and (1) (moral hazard associated with supplemental coverage) and groups (3) and (1) (moral hazard associated with HMO coverage) (Ettner, 1997). Adverse selection can be measured as the utilization difference between the individually purchased and the employer-purchased plans, i.e., groups (4) and (2) (adverse selection associated with supplemental coverage) and groups (5) and (3) (adverse selection associated with HMO coverage). For more information, see Ettner (1997), who used four insurance categories both employer-provided and individually

purchased “basic” and “enhanced” Medigap plans, as well as a Medicaid dummy. It is assumed that utilization differences are attributable to adverse selection or moral hazard, where the latter reflects benefit structure characteristics (i.e., cost-sharing) in an insurance plan (Wolfe & Goddeeris, 1991). Due to lower cost-sharing, compared to HMO plans, supplemental plans are likely to be associated with greater service utilization.

This study uses a pooled, cross-sectional analysis. CHIS data have been pooled in prior analyses (Kao, 2010). Formal Chow tests for data heterogeneity (i.e., tests of non-similarity of estimates across datasets) cannot be used with non-linear models and are generally uninformative for analyses with large sample sizes. Thus, I included a year dummy variable in all models and there did not appear to be large differences in model coefficients between survey years. Because of a highly skewed distribution of the dependent variable, annual self-reported physician visits, a negative binomial regression (NBR) model was estimated (Hidayat & Pokhrel, 2010). NBR models estimate incidence rate ratios (IRR), or the change in the expected count of the outcome. For ease of interpretation, predicted probabilities and marginal differences were computed.

Several main models were estimated. The first model included all sample respondents. Due to concern about costs of accessing care among older adults with limited resources (Rice & Matsuoka, 2004), a second model included interaction terms for insurance and poverty dummy variables (as described below) in order to observe associations between income and insurance status in terms of utilization levels. Next, a series of models were specified with interaction terms between insurance and health status indicators: self-rated health, diabetes, disability, asthma, and hypertension. Large utilization differences between those with and without supplementary coverage among those in poor health should reflect efficient moral hazard—meaning that lower cost-sharing is likely allowing those in poor health to access needed services. Conversely, large utilization differences among those in good health should reflect inefficient moral hazard—meaning that lower cost-sharing is allowing for discretionary consumption of less necessary services. In order to combine the survey weights from the three separate surveys, data from the three survey waves were concatenated and the jackknife method with 80 replications was used to estimate variances (CHIS, 2007; Levy, 2013) in the NBR models and bivariate descriptions.

Sensitivity analyses were run estimating utilization differences when (1) not controlling for unobservable selection (i.e., not including the individually purchased HMO or supplemental plans as dummy variables in the model) and (2) not controlling for measurable selection (i.e., not including health covariates in the models). Compared to the main model, the first sensitivity analysis estimated a larger coefficient for the Individual Supplemental and smaller coefficient for the Individual HMO groups, suggesting the presence of selection and indicating that differences would be overestimated for the supplemental coverage group and underestimated for the HMO compared to the FFS group absent the adverse selection adjustment. The second sensitivity analysis found that, compared to the FFS group, HMO respondents are “healthier” with respect to a number of measurable health characteristics (Morrissey, Kilgore, Becker, Smith, & Delzell, 2013). Because of these findings of self-selection, I only include the main model results below.

Measures

The dependent variable is the number of self-reported physician visits in the past year, a continuous variable that includes zero values, and has a maximum value in the sample of 365 visits. To measure the primary predictors of interest, dummy variables were created for the six insurance categories listed above (with Medicare FFS as the omitted reference category).

Control Variables

Dummy variables were used to measure a number of self-reported health categories and behaviors, including general self-reported health (fair or poor, good, very good or excellent), plus binary variables indicating the presence of heart disease, hypertension, diabetes, difficulties with ADLs (i.e., difficulty bathing, dressing, or getting around), asthma, blindness/deafness of severe vision/hearing problems, having a condition limiting physical activity, difficulty learning/remembering/concentrating, difficulty going outside the home alone, disability, and being a current smoker. Body mass index (BMI) was also used. Age (≥ 65) was measured as a continuous variable and gender was included to account for gender differences in health status and health services utilization. In order to proxy for availability of medical services, residency in a rural or urban area was measured using dummy variables for urban, smaller city/suburban, and town/rural residence. These variables reflect population density and proximity to a major metropolitan area as defined by the U.S. Census, with urban centers having high density, smaller city and suburban areas having moderate densities, and town/rural areas having low densities (UCLA CHPR, 2008). To measure time costs associated with obtaining physician care, a dummy variable indicating whether a respondent is currently unemployed was included in models. To measure respondents' ability to navigate the health system, which would affect utilization of services, income and educational level proxies were used. Current monthly income was categorized using four Federal Poverty Level (FPL) classifications: <100%, 100–199%, 200–299%, and 300% FPL. Five educational categories were used: less than high school, high school, some college, and graduate school. A year dummy variable was included to indicate potential trends in utilization over time across the three survey years in the analysis.

Results

Descriptive Statistics and Characteristics Associated with Choice of Insurance Plan

On average, respondents made 5.9 (SD: 0.1) physician visits (Table 1). While 6.4% of respondents were FFS only, 43.5% had HMO coverage, 21.6% had Medicaid coverage, and 38.5% had other, supplemental insurance. Among respondents with HMO or non-Medicaid supplemental insurance, 48.5% and 29.5% obtained coverage individually and through an employer, respectively. As expected, compared to the total sample, dual eligibles were substantially more likely to be non-White (82% vs 36%), have less than a high school education level (43% compared to 18%), have <100% FPL (37% compared to 12%), and reported expected differences in health (50% in poor/fair health compared to 28% of the full sample). Compared to FFS, HMO, and Medicaid respondents, respondents with supplemental coverage were more likely to be White, have higher educational and income levels and live in urban areas.

Adjusted ML model results (Table A2) suggest some observable selection into non-FFS plans. Compared to those with basic FFS, Medicaid enrollees also had greater odds of having heart disease, higher BMI, and having vision/hearing problems compared to FFS enrollees. There was evidence of adverse selection for those in non-FFS plans, with greater odds of hypertension, diabetes, asthma, and activity limitations. By itself, self-reported health status was not significant as a predictor for Medicaid ($p=0.06$), employer ($p=0.46$), or individual ($p=0.48$) plans compared to FFS coverage, but all health covariates taken together were jointly significant (at $p=0.04$ or less) for each insurance type. This suggests that the propensity to consume services due to preexisting health status may be associated with insurance coverage type and utilization of services and controlling for adverse selection by including employer-provided insurance dummy variables is necessary. It also suggests the importance of controlling for measurable health status to control confounding (while recognizing that physician services may affect health status and thus adjustment for health status may actually underestimate the association between health status and service utilization). In logit models estimating the odds of having employer-provided or individually purchased supplemental compared to HMO coverage, there was also some evidence of favorable selection (Table A3). Individuals directly purchasing HMO compared to supplemental plans were more likely to be of minority status, of lower educational level, and less wealthy. Generally, the health status among those with both employer-provided and individually obtained HMO and supplemental plans was similar. Self-reported health status alone was not significant but all health variables were jointly significant in both logit models. Ettner (1997) similarly observed that individuals do not typically self-select into comprehensive compared to less comprehensive, non-FFS insurance plans.

Adjusted Results for Models Examining Moral Hazard and Adverse Selection

After adjustment for sociodemographic, health, and other characteristics, FFS beneficiaries had 1.04 ($p=0.001$) and 1.03 ($p<0.001$) fewer visits compared to those with Employer Supplemental and Individual Supplemental plans, respectively (Table 2 and Figure 1). The relative lack of utilization difference between the employer and individual plans shows that there is not adverse selection into these “better” quality insurance plans and that “better” insurance uniformly resulted in sizeable utilization differences. FFS beneficiaries also had 1.55 ($p=0.003$), or nearly 24%, fewer visits than Medicaid beneficiaries. However, this difference may be overestimated due to adverse selection because Medicaid eligibles may not enroll in Medicaid until requiring care. There was no difference in average visits between HMO and FFS beneficiaries, an expected result given prior findings of relatively low utilization among Medicare HMO beneficiaries (Landon et al., 2012). As expected, individually purchased HMO plans had average utilization greater (0.41 more visits) than that of employer-purchased HMO plans across all models this additional utilization, beyond the 0.28 difference between employer HMO and FFS only is due to adverse selection.

In terms of income levels, results were mixed. Since income is controlled for in the model, the only utilization differences across poverty categories should involve benefit differences such as lower cost-sharing for Medicaid beneficiaries at $<133\%$ FPL unless there are income-related factors associated with utilization that are not controlled for in the model. Also, while monthly Part B premiums vary, co-insurance for Part B services do not vary by

income level. Reassuringly, there were no differences at the lowest income level, even comparing FFS to Medicaid beneficiaries (as this is the level at which dual eligibles typically have no cost-sharing) (Table 2). At slightly higher income levels (100–199% FPL), non-FFS beneficiaries did have greater utilization. Individual HMO beneficiaries had 0.83 ($p=0.01$) more visits while Employer HMO beneficiaries did not have different utilization levels. The differential utilization (0.83 minus 0.47, or 0.36) was due to self-selection into the individually purchased HMO plan. The Employer Supplemental group had 2.44 more visits at 100–199% FPL compared to FFS beneficiaries, a difference attributable to moral hazard and not self-selection. At the highest income level ($\geq 300\%$ FPL), Employer HMO beneficiaries used 0.94 ($p=0.003$) fewer while Employer Supplemental beneficiaries used 0.81 ($p=0.05$) more visits compared to FFS beneficiaries. Others have found that the elasticity of demand for services is the same for low-income and wealthier (non-elderly) populations (Chandra, Gruber, & McKnight, 2014). These current findings suggest, conversely, that cost-sharing among older adults is “felt” less by certain wealthy compared to poorer beneficiaries.

In terms of health status, the results were reassuring in that FFS beneficiaries in poor health did not have fewer visits compared to other Medicare beneficiaries (Table 2 and Figure 1). This suggests that cost-sharing did not hinder FFS beneficiaries from accessing needed care. However, among those in very good or excellent health, both Employer Supplemental and Medicaid beneficiaries had notably more visits (1.30 and 2.15, respectively) compared to FFS beneficiaries. The first difference of 1.30 represents moral hazard after accounting for adverse selection. Even those older adults reporting being in very good or excellent health may still have health needs for which physician visits are beneficial in terms of maintaining health and functional independence. It is not clear then if the findings reflect overutilization for those with lower cost-sharing or underutilization by FFS beneficiaries. FFS beneficiaries in good to excellent health may be more price-sensitive than those in poor or fair health and may consequently neglect health concerns.

Models examining sub-populations with chronic conditions showed similar patterns for utilization among FFS and non-FFS groups to those found in the self-rated health model (Figure 1). Across health conditions, point estimates for the marginal utilization difference between those with HMO and FFS coverage were negative, meaning HMO enrollment was associated with fewer annual visits; however, with the exception of the disabled and hypertension sub-populations for which employer-provided HMO coverage was associated with fewer relative visits, the marginal differences were not statistically significant. Similarly, for sub-populations with diabetes, heart disease, and asthma, there were no statistically significant utilization differences between employer-provided or Medicaid coverage and FFS coverage. However, for disability and hypertension sub-populations, those with employer-provided and individually purchased supplemental coverage and those with Medicaid coverage had significantly more annual visits. The supplemental plan marginal differences for those sub-populations were around one additional visit for the supplemental plans and slightly less than one visit for Medicaid. Among the disabled the Individual Supplementary (MD = 1.24, $p=0.01$) and Medicaid (MD = 0.69, $p=0.01$) groups consumed more than the FFS group, though both groups likely are subject to self-selection

bias. Utilization was lower for the Employer HMO (MD = -0.83, $p = 0.05$) but higher for the Employer Supplemental (MD = 1.16, $p = 0.05$) compared to the FFS group.

Discussion

In this study of older California respondents, Medicare beneficiaries with supplemental or Medicaid insurance coverage that assists beneficiaries with monthly annual deductibles, co-insurance and copayments for outpatient and other physician care reported using 17% to 23% more physician visits than those with basic FFS coverage. Respondents with HMO coverage did not use significantly different amounts of care overall compared to FFS respondents, however. Self-selection was noticeable in the sample, with individuals directly purchasing HMO coverage, compared to those with HMO coverage facilitated by an employer, using additional care. Without controlling for this self-selection, marginal utilization differences between HMO and supplementary insurance groups were biased in the negative and positive directions, respectively. This may be explained by income and, to some extent, health effects in the purchase of supplementary insurance (Wolfe & Goddeeris, 1991). There was also an income effect on utilization as those at higher compared to lower income levels with supplementary and Medicaid coverage generally consumed more care. Accounting for adverse selection and confounding from measurable health characteristics, there was evidence of moral hazard across health conditions, as beneficiaries with supplemental or Medicaid coverage used more care than FFS beneficiaries.

As noted earlier, moral hazard may reflect both over- and under-utilization. One would expect the utility of an additional physician visit to be lower for those respondents in good to excellent compared to poor health and, as such, large utilization differentials for those in better health states may indicate overutilization and this is what the study found, with greater utilization apparent in supplementary and Medicaid insurance compared to FFS among those in good to excellent health. It is worth noting, however, that determinations of health status self-report may be different for this older adult population than for younger populations. Older adults reporting being in very good or excellent health also report having a number of chronic conditions, suggesting that the use of additional physician services for those with lower cost-sharing may actually reflect the use of needed services. There was additional evidence from the study of efficient moral hazard (Nyman, 1999) in that among certain sub-populations in poor health (i.e., those with a disability and those with hypertension), respondents with low presumed cost-sharing had greater utilization than FFS respondents without cost-sharing assistance. (While point estimates for marginal utilization differences were similar for heart disease and asthma, the differences were not statistically significant.) One way to interpret these findings on the whole is that, because of lower cost-sharing, beneficiaries with supplementary or Medicaid coverage receive affordable access to care for conditions that require ongoing, coordinated physician care. Instead of representing unnecessary care purchased at a discount, these additional units of care may reflect an efficient redistribution of resources from those who are not sick to those in poorer health. In other words, excepting situations where respondents are in very poor health, FFS respondents make discretionary choices about care for chronic conditions that result in less care, which may be problematic in terms of beneficiaries' well-being and longer-term Medicare costs.

In the RAND Health Insurance Experiment (Manning, et al., 1987), although higher co-payments were associated with reduced utilization, such reductions were not limited to what experts considered unnecessary services, but rather included a number of necessary services. Many studies show a reduction in the use of essential, as well as non-essential prescription drugs, when cost-sharing increases (Remler & Greene, 2009; Rice & Matsuoka, 2004). The association of increased cost-sharing with decreased rates of recommended preventive care, (Blustein, 1995; Trivedi, et al., 2008), potentially negative effects on health such as increased likelihood of hospitalization (Chandra, et al., 2010; Heisler et al., 2010), and potential access problems among lower-income persons and/or certain racial/ethnic minorities (Hsu, et al., 2006; Remler & Greene, 2009; Trivedi, et al., 2010) raises concerns that cost-sharing can hinder access and affect health outcomes among older Medicare beneficiaries without supplementary coverage. While supplementary coverage may have cost “offsets” for the Medicare program by encouraging the use of marginal medical services and prescription drug utilization, such offsets may be lower than previously estimated (Chandra, et al., 2010) because of improved access and potentially better health outcomes afforded by supplementary insurance. Thus, while it is possible that reduced cost-sharing enables certain Medicare and Medicaid beneficiaries to use more care than is necessary, it may be that there are utilization offsets involving other services for Medicare Only beneficiaries with reduced access to physician care. To that point, this study finds that certain FFS only beneficiaries in poor health are adequately accessing physician services, but for certain chronic conditions, such access is potentially limited due to cost. Less burdensome cost-sharing, at least for certain chronic conditions, may be important both to FFS consumers but also to Medicare, which covers future costs that could result from restricted service utilization in the present. Cost offsets from supplementary (Medigap and employer-sponsored) plans to Medicare may not be large if the extra 20% physician utilization observed here results in lower acute care and rehabilitative Medicare costs.

Accordingly, this study may have several implications for Medicare policy within a rapidly changing health care landscape. Because supplemental coverage may disrupt the incentive structure created by Medicare’s existing cost-sharing provisions, MedPAC has recommended restricting first-dollar coverage (covering or reducing the deductible) for Medigap plans (MedPAC, 2012). Additionally, under the ACA, a number of states are expanding Medicaid coverage to adults with incomes up to 138% FPL, which is likely to positively affect Medicaid take-up rates and thus care utilization among qualifying, lower-income older Medicare beneficiaries. This may create pressure at the state level to impose increased cost-sharing or to increase the use of managed care among Medicaid beneficiaries in order to control budgetary costs. However, current cost-sharing and HMO coverage may already create barriers to access. Older adults often lack the resources to access needed services and of particular concern are older beneficiaries who lack supplemental coverage (Rice & Matsuoka, 2004). Removal of such assistance plus continued lack of assistance for low-income Medicare Only beneficiaries, as well as discontinuation of first-dollar coverage for Medigap plans, may potentially result in cost offsets that are costly to Medicare and potentially restrict needed access to medical care.

Finally, one other potential implication of the findings is that HMOs restrict utilization relative to other types of coverage. The utilization difference between Employer HMO and

FFS (which represents the difference between HMO and FFS after controlling for adverse selection) is not statistically significant for most of the study's models, excepting hypertension. However, point estimates of differences are primarily negative across health categories, suggesting that some combination of gatekeeping, utilization review, and coordinated care in HMO plans can restrict physician utilization among Medicare beneficiaries. Potentially, some of the greater utilization across models for the Medicaid and supplementary groups compared to the FFS group is due to lack of coordination for dual eligibles' and other beneficiaries. This has implications for California's older adult population because the state has begun implementation of the Coordinated Care Initiative (CCI), which creates a managed care benefit for older adults dually enrolled in Medicare and Medi-Cal. Moreover, new care models and financing mechanisms may improve care coordination among the dually eligible (Clemans-Cope & Waidmann, 2011; Frank, 2013), which could potentially reduce physician utilization. Additionally, HMOs appear also to attract healthier patients who are less disposed to use care.

In terms of study limitations, I could not directly estimate utilization associated with actual cost-sharing. The differences across Medicare beneficiary groups in terms of physician utilization were expected, but may simply reflect average associations across beneficiaries with widely varying cost-sharing provisions. However, I controlled for what I considered to be the main drivers of utilization, including a broad set of health covariates and sociodemographic factors that may proxy for health care utilization preferences, knowledge of the health care system, and time costs associated with care-seeking. After controlling for these factors, the factor that still distinguishes utilization among Medicare beneficiaries appears to be cost-sharing. The possibility that utilization differences are due to care coordination differences in insurance plans was discussed. Also, unobserved factors may account both for respondents' enrollment in different insurance categories as well as their utilization of physician services. However, adverse selection was accounted for in this model by separating respondents into employer-provided and individually purchased "basic" and "enhanced" (i.e., HMO and supplemental) insurance groups and by attributing utilization differences between individual and FFS groups. Moral hazard was the utilization difference after including the non-employer group dummy variables in the model.

A sizeable proportion of the dual eligibles in this study reported incomes of greater than 200% FPL, which is unexpected given the eligibility requirements for Medicaid. There are two potential explanations for this (Ponce, 2014). First, income in CHIS is measured income at the household level, so incomes of older adults living with children can be inflated. Second, monthly household income may be different than annual income used for Medicaid eligibility purposes and certain Medicaid beneficiaries may "spend-down" by the end of the year for the purposes of qualifying for Medicaid. Older Medicare and Medicaid beneficiaries may have received financial assistance from family members and had lower than reported individual incomes. Because of this, differences between actual and reported income levels may have resulted in over-estimation of differences in physician utilization between Medicare and Medicaid and other Medicare beneficiaries at higher income levels (i.e., >200% FPL). However, income misclassification (potentially greater among dual eligibles compared to other beneficiaries given greater financial and health needs in this population

compared to among other Medicare beneficiaries) may have underestimated marginal differences at the lower income levels (0–99% and 100–199% FPL).

Because the effect of health status and physician visits is bi-directional, another concern is potential reverse causality that could bias the study's findings. While health status is negatively associated with physician visits, physician visits may be positively associated with health status and thus would reduce the effect of health status on utilization. For this reason, utilization may be understated for all insurance categories due to endogeneity in the model. However, this endogeneity issue would not likely affect relative utilization across insurance categories unless beneficiaries from a given insurance category compared to the other categories are more likely to experience health improvement due to physician utilization.

The study data are self-reported and thus subject to recall bias or misreporting. However, reviews of primary survey and Medicaid administrative data concluded that point-in-time estimates of Medicaid coverage are generally accurate, with only a modest proportion of Medicaid enrollees failing to report coverage (Call et al., 2008; Call, Davidson, Davern, & Nyman, 2008; Mirel, Simon, Golden, Duran, & Schoendorf, 2014) and CHIS estimates for an earlier survey wave were found to be representative of Medicaid counts in administrative data (CHIS, 2003). There was also substantial agreement between self-reported Medicare HMO enrollment and actual HMO enrollment in a study assessing the Medical Expenditure Panel Survey, another large, representative survey (Zuvekas & Olin, 2008). If anything, such bias should result in findings from this study are likely to be conservative. CHIS response rates are also comparable to other large-scale surveys (CHIS, 2011) and do not result in significant non-response bias or affect the data's generalizability (Lee, Brown, Grant, Belin, & Brick, 2009).

Conclusion

Among older Medicare beneficiaries, supplementary coverage is associated with increased physician utilization, likely due to reduced cost-sharing for physician visits. Dual eligibles, the focus of considerable policy attention under the ACA, as well as beneficiaries with Medigap and employer-sponsored supplementary coverage utilize more care than other Medicare FFS only beneficiaries, even after controlling for health and other characteristics and adverse selection into insurance groups. There was some evidence of adverse selection into HMO and supplemental plans by income and health status. After controlling for this self-selection, FFS only respondents in poor health had similar physician visits but those with several chronic conditions had fewer visits compared to those with HMO and supplementary coverage. Given the importance for older individuals' health of outpatient care for managing health and preventing costly health care episodes, these findings suggest that Medicare FFS beneficiaries with chronic health conditions may have some difficulty obtaining health benefits and potentially avoiding emergent care needs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.
Marginal Differences in Physician Visits among Older Medicare Beneficiaries Across Health Status and Health Conditions

Note: * $p < 0.05$. VG = very good.

Table 1
Selected Weighted Descriptive Statistics (Means and Proportions) of Older Adult Respondent Characteristics

	Total	FFS (6.4%)	Empl. HMO (17.3%)	Indiv. HMO (26.2%)	Empl. Supp. (12.2%)	Indiv. Supp. (16.3%)	Medicaid (21.6%)
Visits *	5.89 (0.11)	5.56 (0.46)	4.86 (0.09)	5.29 (0.30)	6.69 (0.18)	6.58 (0.16)	6.58 (0.24)
Female	0.57	0.56	0.58	0.57	0.58	0.59	0.57
Age (65) (SE)	74.56 (0.04)	74.30 (0.21)	74.14 (0.12)	74.89 (0.12)	74.78 (0.13)	74.16 (0.12)	74.73 (0.14)
Race *							
Black	0.06	0.05	0.08	0.02	0.03	0.01	0.11
Latino	0.17	0.15	0.12	0.16	0.08	0.06	0.35
Asian/PI	0.12	0.12	0.10	0.10	0.06	0.06	0.24
White	0.64	0.66	0.68	0.68	0.83	0.85	0.28
Education *							
< HS	0.18	0.15	0.09	0.17	0.07	0.08	0.43
HS	0.29	0.32	0.29	0.33	0.26	0.27	0.25
Some college	0.22	0.25	0.23	0.23	0.25	0.23	0.17
College	0.18	0.17	0.21	0.17	0.22	0.22	0.11
Poverty Level *							
<100%	0.12	0.11	0.04	0.08	0.02	0.04	0.37
100–199%	0.21	0.26	0.12	0.25	0.08	0.12	0.38
200–299%	0.16	0.18	0.17	0.20	0.15	0.16	0.13
300%	0.50	0.45	0.67	0.48	0.75	0.69	0.13
Health *							
Poor/fair	0.28	0.26	0.21	0.26	0.19	0.18	0.50
Good	0.30	0.33	0.31	0.32	0.32	0.30	0.27
VG/EX	0.41	0.42	0.47	0.43	0.49	0.52	0.23
Heart disease	0.21	0.19	0.19	0.20	0.23	0.23	0.22
Hypertension *	0.63	0.61	0.63	0.62	0.61	0.59	0.67
Diabetes *	0.19	0.16	0.19	0.18	0.16	0.14	0.27
Asthma *	0.12	0.09	0.14	0.11	0.14	0.11	0.13

	Total	FFS (6.4%)	Empl. HMO (17.3%)	Indiv. HMO (26.2%)	Empl. Supp. (12.2%)	Indiv. Supp. (16.3%)	Medicaid (21.6%)
BMI * (SE)	26.90 (0.05)	26.39 (0.16)	26.90 (0.10)	26.63 (0.10)	26.64 (0.10)	26.52 (0.09)	27.82 (0.16)
Smoke *	0.07	0.18	0.06	0.07	0.04	0.05	0.10
Disability *	0.52	0.52	0.48	0.53	0.48	0.47	0.62

Note:

* p < 0.05. Empl. = Employee, Indiv. = Individual, HS = high school, VG/EX = very good/excellent

Table 2
Marginal Differences (MD) in Physician Visits among Older Medicare Beneficiaries Across Poverty Levels and Health States

		Federal Poverty Level (FPL)					Health Status		
		All	<100%	100-199%	200-299%	300%	Excellent	Good	Poor
Empl.	MD (SE)	0.28 (0.39)	-1.05 (1.73)	0.47 (0.35)	-0.73 (0.78)	-0.94 (0.31)	-0.07 (1.02)	-0.65 (0.42)	-1.37 (0.21)
HMO	p	0.49	0.54	0.18	0.35	0.003	0.18	0.12	0.74
Indiv.	MD (SE)	0.69 (0.49)	-0.62 (1.73)	0.83 (0.30)	-0.23 (0.74)	-0.63 (0.56)	0.19 (0.44)	-0.40 (0.45)	-0.57 (1.03)
HMO	p	0.16	0.72	0.01	0.76	0.27	0.66	0.38	0.58
Empl.	MD (SE)	1.04 (0.32)	-0.08 (1.96)	2.44 (0.54)	0.82 (0.84)	0.81 (0.42)	1.30 (0.38)	1.00 (0.53)	0.80 (1.02)
Supp.	p	0.001	0.97	<0.001	0.33	0.05	0.001	0.06	0.43
Indiv.	MD (SE)	1.03 (0.28)	0.20 (1.95)	1.69 (0.41)	1.09 (0.77)	0.85 (0.37)	1.04 (0.24)	1.20 (0.46)	1.39 (1.05)
Supp.	p	<0.001	0.92	<0.001	0.16	0.02	<0.001	0.01	0.19
Medicaid	MD (SE)	1.55 (0.51)	0.81(1.69)	1.74 (0.36)	1.33 (1.07)	0.39 (1.18)	2.15 (0.68)	0.94 (0.57)	0.09 (1.05)
	p	0.003	0.63	<0.001	0.22	0.75	0.002	0.10	0.93

Note: n = 38,808. SE = standard error. Empl. = Employer, Indiv. = Individual, Supp. = Supplemental. Results represent the difference in predicted probabilities from a weighted negative binomial regression where the omitted reference category is Medicare FFS. An MD of 0.28 as shown above indicates that there are 0.28 more predicted visits for Employer HMO compared to Medicare FFS only beneficiaries, all else equal. Health status results are from a model that includes a health status interaction term.