

Physician–Patient Communication About Prescription Medication Nonadherence: A 50-State Study of America’s Seniors

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CONTEXT: Understanding and improving the quality of medication management is particularly important in the context of the Medicare prescription drug benefit that took effect last January 2006.

OBJECTIVE: To determine the prevalence of physician–patient dialogue about medication cost and medication adherence among elderly adults nationwide.

DESIGN: Cross-sectional survey.

PARTICIPANTS: National stratified random sample of community-dwelling Medicare beneficiaries aged 65 and older.

MAIN OUTCOME MEASURES: Rates of physician–patient dialogue about nonadherence and cost-related medication switching.

RESULTS: Forty-one percent of seniors reported taking five or more prescription medications, and more than half has 2 or more prescribing physicians. Thirty-two percent overall and 24% of those with 3 or more chronic conditions reported not having talked with their doctor about all their different medicines in the last 12 months. Of seniors reporting skipping doses or stopping a medication because of side effects or perceived non-efficacy, 27% had not talked with a physician about it. Of those reporting cost-related nonadherence, 39% had not talked with a physician about it. Thirty-eight percent of those with cost-related nonadherence reported switching to a lower priced drug, and in a multivariable model, having had a discussion about drug cost was significantly associated with this switch (odds ratio [OR] 5.04, 95% confidence interval [CI] 4.28–5.93, $P < .001$).

CONCLUSIONS: We show that there is a communication gap between seniors and their physicians around prescription medications. This communication problem is an important quality and safety issue, and takes on added salience as physicians and patients confront new challenges associated with coverage under new Medicare prescription drug plans. Meeting these challenges will require that more attention be devoted to medication management during all clinical encounters.

KEY WORDS: physician–patient relations; Medicare; pharmaceutical services; patient compliance.

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INTRODUCTION

Seniors who need prescription medications face several challenges. Rates of chronic illness are increasing.¹ Not surprisingly, prescription drug costs are rising too, outpacing inflation.^{2–4} Data from a number of sources suggest that seniors often receive poor quality medication management. Problems include relatively high rates of preventable adverse drug events,⁵ failures to appropriately prescribe and monitor indicated medications,⁶ and frequent use of drugs considered inappropriate for elderly patients.^{7,8} Recent work shows that cost-related nonadherence with prescriptions is a large and growing problem.^{9–12}

Timely and focused physician–patient communication will be required to address these cost and quality challenges, but relatively little is known about physician–patient communication about prescription medications. Some recent studies suggest that physicians and patients often do not discuss medication costs,^{13,14} but the generalizability of these findings to seniors in the United States, particularly low-income seniors, is not known. Understanding the extent of dialogue between seniors and their physicians about medications and medication adherence is essential, particularly in light of the new Medicare drug benefit (Medicare Part D) that was implemented in January of 2006. Whereas the benefit should help seniors better afford prescription medications,¹⁵ it is also likely to create new problems. Among these are the need to change medication regimens as prescription drug plan (PDP) formularies change, or when seniors change plans, and challenges posed by the “donut hole” (many seniors will be responsible for 100% of drug costs between \$2,250 and \$5,100 of total costs).¹⁶ Negotiating these and other medication-related issues will be a tremendous communications challenge for seniors and their health care providers.¹⁷

To better understand the frequency with which seniors and their physicians communicate about medication costs and medication adherence, we surveyed 17,000 community-dwelling Medicare beneficiaries 65 years and older in all 50 states, over those residing in low-income neighborhoods. This paper has two main objectives. First, we describe rates at which Medicare beneficiaries discuss nonadherence and cost-related

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nonadherence with a doctor. Second, to evaluate the clinical impact of physician–patient dialogue about medication costs, we analyze the relationship between physician–patient dialogue about medication costs and switching to lower cost medicines.

METHODS

Patients

Data for sampling were provided by the Centers for Medicare and Medicaid Services (CMS). For each state, CMS provided a 1% probability sample of noninstitutionalized Medicare beneficiaries aged 65 or older. To identify high-poverty neighborhoods, we linked the CMS file to the 2000 U.S. Census data through geocoding. This involved using 9-digit ZIP codes to assign individuals to specific census block groups. We defined high-poverty neighborhoods as those in which 13% or more of residents age 65 and older had incomes below 100% of the federal poverty level using the 2000 Census classifications. We then sampled from three strata (1) beneficiaries with full Medicaid benefits, (2) beneficiaries without Medicaid benefits who reside in a high-poverty neighborhood, and (3) beneficiaries without Medicaid benefits who do not reside in a high-poverty neighborhood. In each state, we randomly sampled from within each stratum, with a fixed allocation from each, over sampling Medicaid enrollees and seniors in low-income neighborhoods. The starting sample included 36,901 Medicare beneficiaries. The Tufts–New England Medical Center institutional review board approved all protocols.

Data Collection

We administered the survey in English and Spanish between July and October of 2003 using a standard 5-stage mail and telephone survey protocol,¹⁸ with a response rate of 51% ($N=17,569$). Compared with respondents, nonrespondents were slightly older (76.3 vs 74.9 years, $P<.001$), less likely to be white (82.6% vs 88.0%, $P<.001$), and more likely to have Medicaid (10.9% vs 6.1%). Mean family income in census block groups from which beneficiaries were sampled was \$54,540 for respondents and \$53,350 for nonrespondents ($P=.01$). There were no differences in sex or HMO membership ($P>.05$).

Variables

The survey instrument focused on prescription drug coverage, drug use, and out-of-pocket spending on drugs. It also included additional questions on health status, income, and sociodemographic characteristics. To assess chronic disease burden, we asked patients whether they had ever been told by a doctor that they had hypertension, heart attack, congestive heart failure, asthma/emphysema/COPD, diabetes, rheumatoid or osteoarthritis, cancer, or depression.¹⁹ Approximately 10% of respondents were missing income data, and for these income was imputed using Buck's method.²⁰ We used a 6-item subset of the Medical Outcomes Study Short Form 36-item Survey to measure health status, and calculated physical component and mental component summary scores.²¹

All adherence questions referenced experiences over the past 12 months. Factor analysis confirmed our conceptual model of 3 types of nonadherence: (1) cost-related nonadher-

ence, (2) nonadherence because of medication experiences (e.g., side effects); and (3) nonadherence because of self-assessed need for particular medications. A summary indicator of “any nonadherence” was defined to denote nonadherence in one or more of these areas.

We evaluated cost-related nonadherence with questions about the following 3 behaviors: not filling a prescription because of cost, skipping doses to make a prescription last longer, and taking smaller doses than prescribed to make a prescription last longer (see [Appendix](#) for exact wording). We assessed experience-related nonadherence by asking whether the respondent had skipped doses or stopped taking a medicine because it was making them feel worse and/or they did not think the medicine was helping them. We assessed nonadherence because of self-assessed needs by asking whether respondents had failed to fill a prescription because they felt they were taking too many medicines and/or they did not think they needed the medicine.

To understand physician–patient dialogue about medications and medication nonadherence, we asked participants if their doctors had asked them about all of the different medications they were using, if they had talked with any of their doctors about the cost of their prescription medications, and if they had talked with any of their doctors about changing one of their prescription medicines because it was making them feel worse or was not working. In addition, we asked whether any of their doctors had switched them from one prescription medicine to a different one that would cost them less (see [Appendix](#)).

Analyses

To understand how medication nonadherence and physician–patient dialogue about nonadherence are related to beneficiaries' clinical complexity, we determined rates of different types of medication nonadherence, rates of physician–patient dialogue about nonadherence, and rates of switching to lower cost medicines for those with 0, 1, 2, and 3 or more chronic conditions. To assess the statistical significance of trends in responses by number of chronic conditions, we used logistic regression to regress each dependent variable on the chronic disease variable, which takes a value from 0 to 3, and tested the coefficient with a likelihood ratio (chi-square) test.

We examined rates of physician–patient dialogue in the following subgroups: no nonadherence, any nonadherence, any cost-related nonadherence, number of types of cost-related nonadherence (1, 2, or 3), and nonadherence because of experiences. Using t tests, we compared rates of physician–patient dialogue about medication costs between those with and without cost-related nonadherence, and among those with 1, 2, and 3 types of cost-related nonadherence; physician–patient dialogue about skipping or stopping because the beneficiary felt worse or the medicine was not helping in those who did and did not report this type of nonadherence; and rates of switching to lower cost medications among those with and without cost-related nonadherence.

We used multivariable logistic regression to determine whether having had a discussion about medication costs was associated with switching to a lower cost medication. Covariates included clinical characteristics (disease count, number of prescription medications, and number of different types of

cost-related nonadherence), sociodemographic characteristics (age, sex, marital status, education, and race), health variables (physical and mental component scores from the 6-item Short-Form Health Survey), physician-patient relationship quality measures (duration of physician-patient relationship and whether the patient felt the doctor usually spent enough time with them during visits), and economic variables (income, prescription drug coverage, and out-of-pocket costs for prescription medications). We used the missing indicator method to account for missing values.²² Prescription drug coverage was not included in the final model because it was highly collinear with having a discussion about medication costs. Those without drug coverage were much more likely to talk about cost, so models that included both variables resulted in an uninterpretable beta coefficient for drug coverage.

We weighted all analyses to account for sampling and design factors. Probability sampling weights were applied to all analyses to correct for unequal sampling probabilities across states and strata. The statistical software used (STATA 7.0) takes these weights into account when computing standard errors.

RESULTS

Sociodemographic Characteristics and Medication Use

Seniors' mean age was 74.9 years, 58.7% were female, 12.0% were nonwhite, and 27.3% had no prescription drug coverage (Table 1). Thirty-two percent reported 3 or more chronic conditions and 41.0% used 5 or more prescriptions. Of those on 1 or more medications, 53.6% had 2 or more prescribing physicians and 35.7% used 2 or more pharmacies. Thirty-two percent of spent more than \$100 per month out of pocket for prescription medications.

Nonadherence and Dialogue About Nonadherence

Forty percent of beneficiaries reported some kind of nonadherence, including 26.3% with some type of cost-related nonadherence and 28.2% nonadherence not related to cost (Table 2). Two thirds (68.2%) reported that they had, in the last 12 months, talked with their doctor about all of the different medications they use, but only about one third (30.9%) had discussed medication costs with a doctor.

Medication nonadherence increased linearly for all types of nonadherence as the number of chronic conditions increased ($P < .001$). For simplicity, Table 2 shows only rates for those with 3 or more chronic conditions. Among those with 3 or more chronic conditions, 52.1% reported medication nonadherence of some kind, including 34.9% with cost-related nonadherence. Similarly, rates of dialogue between patients and physicians increased linearly as the number of chronic conditions increased (Table 2, $P < .001$ for trend for all rows in the table). However, despite this trend, fully 24% of those with 3 or more chronic conditions had not talked with their personal doctor about all of the different medicines they were using in the last 12 months. As context, 71% of patients with 3 or more chronic conditions were taking 5 or more medications, and 67% received medications from 2 or more physicians (data not shown).

Table 1. Sample Characteristics

Characteristic	Total
Age (mean (SD), median)	74.9 (7.0), 74
Sex (% female)	58.7
Race (% white)	88.0
Education (% less than high school)	25.2
Income per month (%)	
<\$700	9.1
\$700–1,000	14.9
\$1,001–2,000	33.2
>\$2,000	42.9
Prescription drug coverage (% with none)	27.3
Duration of physician-patient relationship (%)	
Less than 1 year	10.9
1 to 5 years	38.4
More than 5 years	50.7
Number of chronic conditions	
0	12.5
1	27.8
2	27.2
3 or more	32.5
Number of medications (%)	
0	11.0
1–2	22.8
3–4	25.2
5 or more	41.0
Those on 1 or more medication	
Medication types (%)	
Pills	97.6
Injections	9.0
Inhalers	16.9
Eye drops	16.3
Creams	14.0
Number of prescribing physicians (%)	
1	46.4
2 or more	53.6
Number of pharmacies (%)	
1	64.3
2 or more	35.7
Monthly prescription drug costs, mean \$ (SD) median	111 (133), 63
0	9.1%
<\$20	16.8%
\$21–50	19.5%
\$51–75	13.0%
\$76–100	10.1%
\$101–300	23.7%
>\$300	7.8%

We applied sampling weights to all results to correct for difference in sampling probabilities across the strata. The observed sample size was 17,569, of which 15,445 were on one or more medications.

Rates of physician-patient dialogue among those reporting different types of medication nonadherence are shown in Table 3. Column 1 examines dialogues about changing a medicine because it was making them feel worse or was not working. Of those with this type of nonadherence, 72.9% had talked with a physician about it, leaving 27.1% who had not. Column 2 of Table 3 shows rates of dialogues about medication costs. Of those reporting any cost-related nonadherence, 61.0% had talked with a physician about it, leaving 39.0% who had not. Of those reporting 3 types of cost-related nonadherence, 78.4% had talked with a physician about it, leaving 21.6% who had not.

Switching to a Lower Cost Medication

Column 3 of Table 3 examines rates at which patients were switched to lower costing medications. In the full sample,

Table 2. Medication Nonadherence and Physician–patient Dialogue (All Items Refer to the Last 12 Months)

	Total	3+ Chronic conditions (35.2%)*
Rates of medication nonadherence (%)		
Any nonadherence [†]	40.1	52.1
Any cost-related nonadherence	26.3	34.9
Not filling prescription because of cost	18.3	24.9
Skipping doses to make prescription last longer	15.8	21.8
Taking a smaller dose to make prescription last longer	12.4	18.5
Any nonadherence not related to cost	28.2	37.4
Nonadherence because of experiences [‡]	24.4	33.8
Nonadherence because of self-assessed need [‡]	14.5	18.8
Physician–patient dialogue (% yes)		
Did your doctor talk with you about all your medicines?	68.2	75.8
Did you talk with any of your doctors about prescription medicine costs?	30.9	41.3
Did you talk with any of your doctors about changing a medicine because it was making you feel worse or was not working?	28.9	41.9

We applied sampling weights to all results to correct for difference in sampling probabilities across the strata. The total observed sample size was 17,569, of which 5,739 had 3 or more chronic conditions.

*For each row, we examined the trend for 0, 1, 2, and 3 or more chronic conditions, and for each the trend was significant, $P < .001$. For simplicity, we present only the rates for 3 or more conditions.

[†]“Any cost-related nonadherence” refers to beneficiaries who reported nonadherence on any of the cost or noncost items (items 1–3 and 5–8 in the Appendix).

[‡]These rows each summarize 2 survey items.

22.3% reported their doctors advised them to switch to a lower cost medication in the last 12 months. Nearly 40% (38.1%) of those with any cost-related nonadherence, and over half (51.1%) of those with 3 types of cost-related nonadherence had been switched to a lower cost medication.

Multivariable analyses showed that having had a discussion about medication cost was strongly associated with switching to a lower cost medication (Table 4, odds ratio [OR] 5.04, 95% confidence interval [CI] 4.28–5.93, $P < .001$). Of those who reported a physician–patient discussion about cost, 41% had switched to a lower cost medication, compared to 12% for those who did not have such a discussion. Having 2 or more chronic conditions (OR 1.66, 95% CI 1.40–1.98, $P < .001$), taking 2 or more prescription medications (OR 1.44, 95% CI 1.13–1.83), and exhibiting more different types of cost-related nonadherence (OR 1.38, 95% CI 1.11–1.70; $P = .004$ for 1 type compared to none; OR 1.48, 95% CI 1.14–1.93, $P < .004$ for 2 types compared to none; and OR 2.05, 95% CI 1.57–2.67, $P < .001$ for 3 types compared to none) were also independently associated with switching to a lower cost medication.

DISCUSSION

This study had three important findings. First, 27% of seniors who skipped doses or stopped taking a medicine because of side effects or poor perceived efficacy did not tell their physician. Second, 39% of seniors who reported cost-related

nonadherence had not talked with their physicians about it. Third, physician–patient dialogue about medication costs was associated with patients’ being switched to lower cost medications.

Recent data suggest that patients often do not report medication-related symptoms to physicians, and that physicians do not always respond when they do.^{23,24} We show that this problem is widespread among U.S. elderly. The confluence of the factors we describe—multiple chronic conditions, use of numerous medications, a variety of prescribing physicians, lack of regular review of medications, and poor communication about medication side effects and perceived efficacy—places seniors at risk for both suboptimal clinical outcomes and adverse drug events. We believe that it is important for

Table 3. Rates of Physician–patient Dialogue About Medication Nonadherence Among those with Different Types of Nonadherence

Type of reported prescription medication nonadherence (%)	During the last 12 months, was there physician–patient dialogue about:		
	(1) Changing a medicine because it was making you feel worse or was not working? (% yes)	(2) Medication costs? (% yes)	(3) Did any of your doctors switch you to a different one that would cost less? (% yes)
Full sample	28.9	30.9	22.3
Taking medication as prescribed (no nonadherence, 60.0%)	13.4*	17.9*	14.1*
Any medication nonadherence (40.0%)	51.9	50.4	34.7
Any cost-related nonadherence (26.3%)	–	61.0	38.1
Number of types of cost-related nonadherence [†]	–		
1 (12.8%)	–	51.0	31.7
2 (7.1%)	–	62.8	38.5
3 (6.1%)	–	78.4	51.1
Nonadherence because of experiences (skipped doses or stopped taking because of side effects/not helping, 24.4%)	72.9	– [‡]	–

We applied sampling weights to all results to correct for difference in sampling probabilities across the strata. The total observed sample size was 17,569.

*Compared with the row “taking medication as prescribed (no medication nonadherence),” all subsequent rows were statistically significantly different ($P < .001$ for all).

[†]The three types of cost-related nonadherence were not filling a prescription because of cost, skipping doses to make a prescription last longer, and taking smaller doses than prescribed to make a prescription last longer.

[‡]The empty cells in the table are cases for which the cross-tabulation is not applicable. For example, it is not meaningful to show the rate of cost-related dialogue among those who skipped doses or stopped taking because of side effects/not helping.

Table 4. Significant Multivariable Correlates of Switching to Another Medication that Would Cost Less (Odds Ratios (P Values))

Variable	Odds ratio (95% CI)	P value
2 or more chronic conditions	1.66 (1.40–1.98)	<0.001
2 or more prescription medications	1.44 (1.13–1.83)	
Number of types of cost related nonadherence		
None	Reference	–
1	1.38 (1.11–1.70)	0.004
2	1.48 (1.14–1.93)	0.004
3	2.05 (1.57–2.67)	<0.001
Discussion about cost (1=yes, 0=no)	5.04 (4.28–5.93)	<0.001

Nonsignificant covariates included age, sex, education, marital status, race, physical health, mental health, number of prescription medications, income, out-of-pocket medication costs, duration of physician–patient relationship, and whether the patient felt the physician spends enough time with them during office visits.

physicians to routinely initiate discussions about medication adherence and problems paying for medications, and for patients to routinely volunteer such information, even if not asked.

We^{10,12,25} and others⁹ have previously shown that cost-related medication nonadherence is common among seniors. However, only 2 studies have examined physician–patient dialogue about cost-related nonadherence. Alexander et al.¹⁴ found that although physicians and patients are willing to discuss medication costs, only 35% of physicians and 15% of patients report doing so. Piette et al.¹³ conducted an online survey of persons over age 50 participating in a web-based consumer information and marketing network, and found that 35% of those reporting cost-related nonadherence had not discussed it with their physician. The rates of physician–patient dialogue about cost-related medication nonadherence that we report are similar to those found by Piette et al.,¹³ but we sampled Americans 65 years and older in all 50 states, and sampled seniors from low-income neighborhoods, making our results generalizable to community-dwelling elderly nationwide.

The finding that physician–patient dialogue about costs was associated with switches to lower cost medications suggests that such discussions are worth having. Many of these switches may have been generic substitutions and others may have been therapeutic substitutions. Whereas patients sometimes do not want to be changed to generic drugs,^{26–28} the FDA guarantees the therapeutic equivalence of generics²⁹ and generic substitution is a safe way to reduce costs. Physicians have a number of other cost-reducing strategies at their disposal, including within-class drug switches, between-class drug switches, dose reductions, and use of samples. In addition, physicians can help patients prioritize which medications are most important and help design safe and effective, or at least optimal, alternative strategies. None of these strategies, however, can be implemented if physicians and patients are not routinely discussing medication use and medication costs.

There are several study limitations. Our response rates were lower than anticipated, and respondents were more likely than nonrespondents to be white and to have higher incomes. Piette et al.¹³ found that neither race nor income was associated with physician–patient adherence–dialogue, and we do not suspect that nonresponse biased our analytic findings. Because of social desirability effects (the desire not to admit socially undesirable behaviors such as nonadherence), the levels of nonadherence and dialogue about nonadherence that we

report may underestimate true levels. Finally, given the cross-sectional nature of our data, we cannot definitively know the temporal ordering of events related to medication discussions and switching to lower cost medications. It is possible that in some cases, a switch leads to medication discussion rather than the reverse. A longitudinal study design would be needed to verify the sequencing of these effects.

In conclusion, the suboptimal physician–patient communication about medications identified in this study is an important clinical backdrop against which the new Medicare drug benefit will be implemented. Prescription drug plans will have to employ similar cost-containment techniques to those currently used by commercial health insurance plans, including formularies, premiums, deductibles, copays, and drug tiers. Physicians will need to work closely with seniors and their families to identify clinically appropriate substitutes if available plans do not cover the drugs patients are currently using. Whereas collaboration with pharmacists may be useful because of a paucity of well-designed studies, relatively little is known about the effectiveness of this strategy.^{30–32} These and other challenges will require not only that physicians and patients educate themselves about the new drug benefit and coverage rules of the new Medicare PDPs, but will also require that substantial time and effort be dedicated to physician–patient communication about medication management.

Early experiences with Part D have been mixed.³³ With technical problems caused problems with the automatic enrollment of some dual eligibles (those eligible for both Medicaid and Medicare) into PDPs,³⁴ there have been reports of seniors being unable to obtain key medications.^{35,36} Early anecdotal reports suggest that seniors are using a variety of sources to obtain information and for informed decision making, including calling Medicare, surfing the internet, and asking relatives, friends, pharmacists, and health care providers.¹⁷ However, with these challenges come new opportunities. It should be possible for plans to use pharmacy claims to inform physicians about patients' medication use and adherence. For example, drug plans could provide physicians with both medication lists and refill rates in the hopes of triggering more timely and effective discussions about coping with complex drug regimens.

These findings paint a sobering picture of prescription medication taking for America's seniors. Most seniors have multiple chronic diseases, take multiple prescription medication, have more than one prescribing physician, and use multiple pharmacies. In these circumstances the need for improved physician–patient communication about medications is pressing. Technology aimed at improving the accuracy and timeliness of medication information, such as electronic medical records and electronic prescribing, can support the efforts of physicians and patients in this effort. But more and better talk is urgently needed. Quality measurement and quality improvement initiatives that focus on prescription-medication-related communication might speed progress in this area.

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APPENDIX

Medication adherence items (response options for 2–8 were yes, often; yes, sometimes; and no, never).

1. During the last 12 months, how many times did you decide not to fill a prescription because it was too expensive? Response options were none, 1 time, 2 times, 3–4 times, 5–9 times, 10 or more times.
2. During the last 12 months, have you skipped doses of a medicine to make the prescription last longer?
3. During the last 12 months, have you taken a smaller dose of medicine so that the prescription would last longer (for example, by cutting pills in half)?
4. During the last 12 months, have you spent less on food, heat, or other basic needs so that you would have enough money for your medicines?
5. During the last 12 months, did you decide not to fill a prescription because you felt you were taking too many medications?
6. During the last 12 months, did you decide not to fill a prescription because you didn't think you needed the medicine?
7. During the last 12 months, have you skipped doses or stopped taking a medicine because it was making you feel worse?
8. During the last 12 months, have you skipped doses or stopped taking a medicine because you didn't think it was helping you?

Physician–patient dialogue items (response options were yes and no).

1. During the last 12 months, did your personal doctor talk with you about all of the different medicines you are using, including medicines prescribed by other doctors?
2. During the last 12 months, did you talk with any of your doctors about the cost of your prescription medicines?
3. During the last 12 months, did you talk with any of your doctors about changing one of your prescription medicines because the medicine was making you feel worse or was not working?
4. During the last 12 months, did any of your doctors switch you from one prescription medicine to a different one that would cost you less?

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