

**Substantial nondrug costs result from switching prescribed medications in response to changes in insurance coverage, and many nonreimbursed costs shift to providers and patients.**

## **Evaluating the Nondrug Costs of Formulary Coverage Restrictions**

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**Purpose:** Clinicians often are required to switch prescribed therapy for their patients in response to health plan initiatives for controlling drug expenditures. To explore the effect of these initiatives, we sought clinicians' feedback regarding their practices and processes for switching patients' medications to accommodate insurance coverage.

**Design:** Self-administered Intranet-based survey of clinicians at an urban, tertiary-care hospital.

**Methodology:** Using survey responses, we calculate nondrug costs induced by formulary cost-saving measures.

**Principal findings:** A total of 91 responses were received from 569 providers who were sent a request to complete the questionnaire via electronic mail (18 percent response rate). It took an average of 11.1, 18.9, and 16.4 minutes for physicians, nurses, and nurse practitioners/physician assistants, respectively, to make the medication switch. The mean number of switches per month ranged from 10.6

to 36.9. More than half the time spent on these switches is not directly reimbursed. Specific switch-induced intervention costs differed for different drug types. The effect on clinician workload tended to be an inconvenience. While the majority of physicians and nurse practitioners/physician assistants did not feel this process damaged patient-provider relations, most nurses did.

**Conclusions:** In response to formulary restrictions, other costs are induced and incurred by providers and patients. The extent of patient costs, including those from adverse drug reactions, needs further study. More research is needed to elucidate costs and burden shifts as all parties involved evaluate and modify plans to moderate prescription drug expenditures.

**Key words:** Formulary, cost, nondrug, insurance, benefits

### **INTRODUCTION**

Coverage for prescription medications is an important component of most health insurance programs, as exemplified by recent interest in providing a prescription drug benefit for Medicare members (Altman 2004, Bush 2004, Iglehart 2004). The cost of prescription drugs is a significant and rapidly increasing proportion of health care spending. Health plans are responding with a growing focus on strategies to better control outpatient drug usage (Merck-Medco 2000, Benedetto 2000, Goldfarb 1999). Formulary restrictions and multitiered copayment systems ex-

emplify cost-control initiatives used more frequently by health plans nationwide. Such initiatives help to reduce the direct costs of drugs for the health plan and for physicians who share the financial risk based on medication expenditures. Implementation of such "cost-cutting" plans, however, may result in an added burden for prescribers and for health plan members. One feature of many drug cost-reduction strategies is to change formulary medications as the price options to the purchaser change. For participants in health plans, this can mean a need to switch from a current medication to another equivalent or "similar" therapy, to avert an increase in the prescription copayment.

Preliminary evidence suggests that health plan restrictions on drug benefits may lead patients to withdraw from managed care plans (Rector 2000) and may cause some physicians to manipulate the reimbursement rules to provide expanded "coverage" for their patients (Wynia 2000). Yet, drug-restriction initiatives may affect nondrug costs, such as laboratory testing, office visits, time, and convenience (or hassle). These nondrug costs may be unaccounted for when health plans make decisions regarding formulary restrictions. Further, it appears that little published data exist on these nondrug costs (Hamel 2004).

We were interested in quantifying these nondrug costs and initially chose to explore the overall effect of formulary restrictions on provider

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practices. We conducted a pilot survey of health care providers' prescribing practices and responses to switching prescribed medications because of changes in health plan medication coverage. Based on these results, we estimated the nondrug costs associated with these prescribed medication changes. This information may be of use when health plans or other third-party payers make formulary changes or implement new prescription benefit programs. It also may be important for providers and patients as they respond to these programs.

## METHODS

Surveys were designed for physicians, nurses, nurse practitioners, and physician assistants. In addition to questions on the demographics of the participants and their practices, clinicians were asked about the frequency with which, and the process by which, they changed their patients' prescribed medications in response to changes in insurance drug-coverage criteria. Responses to scenarios involving switches for three specific classes of medications (angiotensin-converting enzyme [ACE] inhibitors, HMG-CoA reductase inhibitors, and selective serotonin reuptake inhibitors [SSRIs]) were used to obtain detailed information on additional interventions deemed necessary (e.g., laboratory tests, follow-up visits) when making a prescription drug change. Clinicians assessed the difficulty of making various types of medication switches and the effect of these changes on providers and the provider/patient relationship.

Survey questions focused on outpatient, insurance-mandated switches, and not on automatic drug-dispensing substitutions such as the mandatory generic interchanges that occur in some states. At the time of the survey, and as is still the case today, most insurance prescription benefit plans classify medications within tiers and require higher copayments by mem-

bers for medications from higher tiers. Implementation of such plans to effect a change in drug utilization is achieved through pharmacy benefit manager activities and at individual pharmacies at the time of prescription processing. We did not delineate the program details in our survey, but most insurance plans in the region had similar formulary-coverage plan designs at the time of our study.

The surveys were sent by e-mail to 569 clinicians (physicians, nurse practitioners, physician assistants, and nurses) in primary care and medical subspecialties at a single academic, tertiary-care hospital located in the Northeastern United States. For anonymity, when a survey response was returned, it was automatically dissociated from the e-mail address. Each returned e-mail address then was removed from the survey reminder mailing list. A total of four survey notices/reminders were sent out between April 2002 and June 2002 to encourage completion of the questionnaire. No remuneration was provided to participants.

**Cost calculations.** Survey responses were used to estimate the average costs associated with making medication switches. Cost estimates were calculated for professional time and for case-specific interventions as follows:

**Professional time costs.** Monthly direct time cost = (average no. of Rx changes/day) x (30 days/mo.) x (avg. min./change) x (avg. \$/min.). Average cost per minute was calculated based on 48 weeks/year and 40 hours/week, using average salaries of \$100,000, \$80,000, and \$60,000 for physicians, nurse practitioners/physician assistants, and nurses, respectively.

**Monthly "consulting" time costs.** Costs of assisting others with medication switches were calculated as: Cost = (avg. no. of Rx changes/day) x (30 days/mo.) x (avg. % changes not carried out alone) x (avg. min./change) x (avg. \$/min.).

## Case-specific intervention costs.

Nondrug costs for specific drug-class switches were calculated as costs of interventions (laboratory tests, office visits) plus average time cost for each specific drug-class switch made. These estimates were based on the percentages of respondents and the average number and type of intervention(s) they deemed necessary:

- Laboratory testing costs = (laboratory test cost) x (avg. no. of tests) x (% deeming the test necessary). Prices were based on laboratory test charges for 2002.
- Visit cost = (visit costs by level and diagnosis) x (avg. no. of visits).  
Visit costs were based on established patient-visit charges for 2002. A blood pressure check was assumed to be a level 2 visit (\$150/visit) and a depression follow-up visit was assumed to be a level 3 visit (\$188/visit). The same visit charges were used in calculating costs for all provider types.
- Time cost for the class specific switches = (cost/min.) x (avg. time/switch for the specific drug class).

**Response comparisons and correlations.** The number of switches per month reported by primary care and other physicians were compared using both parametric (t-test) and nonparametric (Wilcoxon rank sum) methods. Correlations between respondents' involvement in switching medications (i.e., estimated no. of switches/mo., time/switch, and overall time spent on switches [no. of switches/mo. x time/switch]) and the assessed personal impact, workload impact, and effect on provider-patient relationships due to switching medications were each determined using Spearman (rank) correlation coefficients.

**Databases and statistics software.** Web-based survey responses were programmed to enter directly into a database for analyses. Database management and descriptive and com-

parative statistics were performed using Microsoft Access 97 SR-2, Microsoft Excel 97 SR-2, and SAS system for Microsoft Windows – V.8e.

**RESULTS**

One hundred and two surveys (18 percent) were returned. Of these, 11 were not filled out and therefore were excluded, leaving 91 surveys (16 percent) for analyses. Demographics of the survey respondents and their practices are summarized in Table 1. Also included are the frequencies of, and processes by which, they reported making prescribed medication switches. Although the majority of respondents (71/91, 78 percent) were physicians, the highest volume of medication switches was reported by registered nurses. A large proportion of switches were performed via telephone and by other nonvisit modes. Among physician respondents, the number of primary care physicians was low (17 percent). We determined the average number of switches per month for primary care physicians (mean 8.3, range 0–60) and for other physician types (mean 11.0, range 1–150). Given that there was no statistically significant difference in the mean ( $P=.72$ ) or median ( $P=.93$ ) estimates, we did not separate these physician groups for our analyses.

Table 2 summarizes the average costs per month for medication switches by provider type. We separately list the costs that are attributed to the time spent consulting with other providers making medication changes and to nonreimbursed costs incurred by making switches by telephone or by means other than office visits.

**Drug-class-specific results.** Recommended interventions in response to the three scenarios for switching class-specific medications are presented in Table 3. In the case of switching an ACE inhibitor, the vast majority of respondents agreed on the need for a follow-up visit after the medication change. In the case of

switching SSRIs, the majority in all clinician groups indicated that they would prefer not to switch the current antidepressant despite the increased cost to the patient.

Clinicians were asked to estimate the average time for making a medication switch (Table 1), as well as the time needed to switch several different types of commonly prescribed medications (Figure 1). Actual and relative time estimates varied widely for the different drug classes and between provider types. Not surprisingly, the time estimated to switch a drug belonging to a unique class of medications was longer than all other types of switches across all provider types.

These class-specific estimates of switch times were used in calculating the costs (Table 4) for the interventions and for the time spent beyond the visit (e.g., telephone time, test ordering).

*Effect of coverage-driven medica-*

*tion switching.* Eighty-eight participants (97 percent) rated the effect of medication switching due to changes in insurance coverage on provider-patient relationships. Figure 2 shows the clinicians' assessments. The majority of the registered nurses, who perform the bulk of the switches, indicated that this worsens patient-provider relations. Only three respondents (two physicians and one nurse practitioner; 3.4 percent of survey participants for this section) indicated that relations are improved. Regarding the effect of these switches on providers' workloads, on a scale of 1–10 (1=no impact at all, 10=a very large impact) the overall estimated effect was  $4.6\pm 2.3$ . When asked to assess if these switches "made life easier" (1) or "were a major hassle" (10), the overall assessment was  $7.0\pm 1.7$ .

The correlation between assessed impact on workload and personal impact was 0.55 ( $P<.001$ ). Neither of these assessments correlated highly

**TABLE 1 Demographics of survey respondents**

	MD	RN	NP/PA
Total number	71	13	7
Primary care clinicians	12	4	2
Specialty or unknown	59	9	5
<b>Average:</b>	<b>Mean (range)</b>	<b>Mean (range)</b>	<b>Mean (range)</b>
<b>Practice characteristics:</b>			
Full-time physicians	13.3 (1–140)	5.4 (2–13)	8.2 (2–13)
Part-time physicians	6.0 (0–50)	2.4 (0–6)	2.5 (1–4)
Full-time RNs	4.2 (0–40)	5.3 (1–31)	6.7 (1–15)
Part-time RNs	1.5 (0–7)	1.1 (0–3)	2.3 (1–3)
<b>Medication switches:</b>			
Changes per month	10.6 (0–150)	36.9 (1–300)	12.1 (2–60)
Minutes per switch	11.1 (1–45)	18.9 (5–45)	16.4 (5–30)
Percent done by self	80.1 (0–100)	35.0 (0–100)	91.4 (75–100)
Minutes consulting w/others	4.9	6.4	3.3
<b>How switches are made:</b>			
Percent by phone	55	83	49
Average minutes	9.9 (2–45)	12.3 (5–20)	12.5 (10–20)
Percent by visit	37	13	44
Average minutes	8.6 (2–40)	15.8 (0–30)	7.2 (3–15)
Percent by other (e.g., mail, fax)	8	4	7
Average minutes	11.3 (2–30)	20.6 (0–45)	21.7 (10–45)

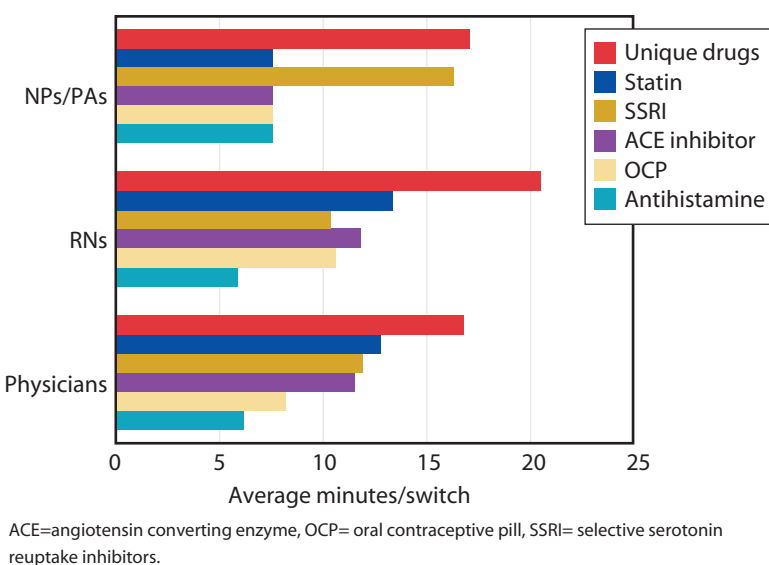
NP/PA=nurse practitioner/physician assistant, RN=registered nurse.

with the respondents' estimates of the volume of monthly switches, time spent per switch, or overall time expended on these activities (data not shown). Additionally, correlations between the effect on patient-physician relationships with the effect on workload or with personal impact were low (0.32 [ $P=.003$ ] and 0.39 [ $P<.001$ ], respectively).

**Application of the results.** Applying our results to a hypothetical large primary care practice, we estimated the annual physician, nurse practitioner/physician assistant, and registered nurse costs required to keep up with requested medication switches (Table 5). Approximately half the estimated costs likely would not be reimbursed. Nonreimbursed costs would shift to providers and patients. Our models are based on provider data and do not incorporate patient costs in terms of time, copayments, and other costs (financial or otherwise) resulting from switch-related actions or interventions.

Using our drug class-specific estimates we also can calculate the potential cost impact of a change in a

**FIGURE 1 Average time estimates for making specific medication switches**



health plan formulary. Assume *statin A* is a medication prescribed for the majority of health plan patients requiring lipid-lowering therapy in our geographic region. In the event that the health plan were to stop covering this agent in favor of an alternative,

*statin B*, the estimated nondrug cost for physicians making 100 such switches would be \$35,715 (\$357.15/switch x 100). In a health plan with 2000 patient members currently receiving *statin A*, it would cost approximately \$714,300 (\$357.15/switch x 2000) to change all these patients to *statin B*. This cost would be incurred each time a formulary switch in the statin class is made. Only a portion of these costs is reimbursed. Unless the cost savings provided from the differences in the direct drug costs are greater than this figure, such a change may not make sense from the plan's fiscal perspective. If the plan were to make subsequent changes to coverage of drugs in this class, the current switch might be even less desirable. In our region, health plans make changes to their list of covered drugs on at least an annual basis. Unless the cost savings from the medication switch are passed on to patients and practitioners, they may only be seeing the resultant nondrug, nonreimbursed costs induced by the medication switch. For physician practices with pharmacy risk-sharing contracts,

**TABLE 2 Cost of switching medications\***

Average:	MD	RN	NP/PA
<b>Costs for time spent</b>			
Switches per month	10.55	36.91	12.14
Minutes per switch	11.14	18.91	16.43
Cost per month	\$102.25	\$363.53	\$138.51
Percent not carried out alone			
Minutes consulting with others	19.87	65.00	8.57
Cost of time spent consulting with others	4.88	6.42	3.29
	\$8.88	\$80.18	\$2.37
<b>Total cost</b>	<b>\$111.13</b>	<b>\$443.71</b>	<b>\$140.89</b>
<b>Nonreimbursed costs</b>			
Minutes per month not reimbursed (i.e., switched via phone or by some means other than an office visit)	67.06	407.23	92.77
Nonreimbursed cost/month (nonvisit time)	\$58.22	\$212.10	\$64.43

NP/PA=nurse practitioner/physician assistant, RN=registered nurse.

\* All costs are in U.S. dollars.

**NONDRUG COSTS OF COVERAGE RESTRICTIONS**

**TABLE 3 Recommended switch-induced interventions for three specific types of drugs**

<b>Case 1 – Statin switch</b>	<b>n (%) MD</b>	<b>n (%) RN</b>	<b>n (%) NP/PA</b>
Responders (N) would:	29	6	2
Order lab test(s)	25 (86)	6 (100)	1 (50)
Liver functions	28 (97)	5 (83.30)	2 (100)
Average no. of times	1.29	1.25	1.50
Lipid profile	28 (97)	4 (66.70)	2 (100)
Average no. of times	1.33	1.25	1.50
Other	5 (17)*	1 (16.7)†	0
Average no. of times	2.20	unknown	0
Schedule follow-up visit	7 (24)	2 (33.30)	0
With RN	0	0	0
With NP or PA	2 (7)	0	0
With MD	7 (24)	2 (33.30)	0
Average no. of visits	1.00	1.50	0
Perform other action	8 (28)§	1 (16.70)†	1 (50)†
Average no. of times for other action	1.60	1.00	4.00
<b>Case 2 – ACE inhibitor switch</b>	<b>MD</b>	<b>RN</b>	<b>NP</b>
Responders (N) would:	34	5	3
Order lab test(s)	19 (56)	5 (100)	2 (67)
Serum creatinine	21 (62)	5 (100)	1 (33)
Average no. of times	1.25	1.20	1.00
Serum potassium	22 (65)	5 (100)	1 (33)
Average no. of times	1.24	1.20	1.00
Other	1 (3)¶	1 (16.70)‡	0
Average no. of times	1.00	1.50	0
Schedule follow-up/BP-check visit	30 (88)	5 (100)	2 (66.70)
With MD	15 (44)	0	0
With NP or PA	3 (9)	1 (20)	2 (66.70)
With RN	5 (17)	4 (80)	0
With other	7 (21)	0	0
Average no. of visits	1.40	1.00	1.50
Perform other action	1 (3)‡	0	0
Average no. of times for other action	2.50	0	0
<b>Case 3 – SSRI switch</b>	<b>MD</b>	<b>RN</b>	<b>NP</b>
Responders (N) would:	37	5	4
Continue current prescription	27 (73)	3 (60)	3 (75)
Switch to different SSRI	7 (19)	1 (20)	1 (25)
Schedule follow-up visit w/self	19 (51)	3 (60)	1 (25)
Average no. of visits	1.68	1.30	2.00
Perform other action	2 (5)	2 (40)	3 (75)
Average no. of times for other action	1.50	1.00	2.00

ACE=angiotensin-converter enzyme, BP=blood pressure, NP/PA=nurse practitioner/physician assistant, RN=registered nurse, SSRI=selective serotonin reuptake inhibitor.

\* Creatinine kinase (3), complete blood count (1), BUN/creatinine (1).

† Education.

‡ BUN or BUN/creatinine.

§ Follow-up.

¶ Complete blood count.

some portion of drug-cost savings might be realized. For patients, the realized drug-cost savings might only be not paying a copayment for a higher-tiered drug.

**DISCUSSION**

This pilot survey of practitioners at a single institution suggests that there are substantial costs associated with changes in formulary coverage other than the actual drug costs. Formulary restrictions aim to reduce pharmacy spending but might be adding and shifting costs simultaneously. The nondrug costs calculated from our survey primarily involve those pertaining to provider practices. Even for providers, the extent of nonreimbursed services is likely to have been underestimated in our study.

The time estimates for making a medication change may not have included the time for switch-induced interventions (ordering and reading laboratory tests, scheduling follow-up visits, etc.). Much of the time devoted to prescription-switching activities occurs outside an office visit, such as changing a medication via telephone or by some other means (e.g., e-mail or fax). Having a large percentage of medication switches conducted in this manner, a service that currently is not reimbursed, is an important consideration in an environment of fiscal restraint. This costly use of provider time may be spent more appropriately on direct patient-care activities.

Patients' nondrug costs that were induced by the medication switch, such as time and the cost of outcomes resulting from changes in medication adherence (including potential gaps in drug use), were not integrated into our equations. Previous studies suggest that drug payment limits and other cost-shifting initiatives might reduce drug costs, but they might also negatively affect patient adherence to therapy as well as health outcomes (Soumerai 1987, 1991; Goldman 2004, Huskamp 2003; Joyce 2002).

**NONDRUG COSTS OF COVERAGE RESTRICTIONS**

**TABLE 4 Cost calculations for the three specific drug cases\***

Averages per switch	MD	RN	NP/PA
<b>Case 1: Statin</b>			
Intervention and visit costs	\$346.09	\$308.83	\$330.00
Time cost	11.06	6.91	5.18
<b>Total cost</b>	<b>\$357.15</b>	<b>\$315.74</b>	<b>\$335.18</b>
<b>Case 2: ACE inhibitor</b>			
Costs <sup>†</sup>	\$219.86	\$206.14	\$164.06
Time cost	9.96	6.09	5.21
<b>Total cost</b>	<b>\$229.82</b>	<b>\$212.23</b>	<b>\$169.27</b>
<b>Case 3: SSRI</b>			
Costs <sup>†</sup>	\$175.18	\$143.44	\$94.00
Time cost	10.32	5.35	11.28
<b>Total cost</b>	<b>\$185.50</b>	<b>\$148.80</b>	<b>\$105.28</b>

ACE=angiotensin-converter enzyme, RN=registered nurse, NP/PA=nurse practitioner/physician assistant, SSRI=selective serotonin reuptake inhibitor.

\* All costs are in U.S. dollars.

† Intervention and visit costs.

**TABLE 5 Estimated costs of medication-switching activities for hypothetical practice**

<b>Annual costs</b>						
20 PCPs	×	\$111.13/mo.	×	12 mos.	=	\$26,671/year
5 RNs	×	\$443.71/mo.	×	12 mos.	=	\$26,623/year
5 NPs or PAs	×	\$140.89/mo.	×	12 mos.	=	\$ 8,453/year
<b>Total</b>						<b>\$61,747/year</b>
<b>Nonreimbursed costs</b>						
20 PCPs	×	\$58.22/mo.	×	12 mos.	=	\$13,973/year
5 RNs	×	\$212.10/mo.	×	12 mos.	=	\$12,726/year
5 NPs or PAs	×	\$64.43/mo.	×	12 mos.	=	\$ 3,866/year
<b>Total</b>						<b>\$30,565/year</b>

NP=nurse practitioner, PA=physician assistant, PCP=primary care practitioner, RN=registered nurse.

Among elderly and low-income persons, implementation of cost-sharing programs reportedly reduces drug use — a decrease that is associated with higher rates of serious adverse effects and emergency room visits (Tamblyn 2001). If a patient stops taking needed medication in the switching process, this further reduces the health plan medication expenditures — perhaps at an added cost to the quality of health care delivered and a patient's health out-

comes. Further data are needed about these patient factors that are likely to increase the total cost of making a medication switch.

The effect of potential adverse reactions occurring on switching to a new agent within a given class also was not enumerated in our cost assessments beyond the possible need for a second switch, given the challenges in quantifying the true incidence of adverse events with any given drug. Adverse reactions neces-

sitating interventions (e.g., possible development of myalgia or rhabdomyolysis when a patient is switched to a different statin) would increase cost further.

Table 6 summarizes the reported premarketing incidence rates for side effects from available statins (PDR 2005, Thompson 2003). While the overall incidence appears similar and low (MRC/BHF 2002, Cannon 2004), evidence has shown that the frequency may differ between agents (Abourjaily 2003, Graham 2004). Recent postmarketing data (Abourjaily 2003, Graham 2004) and, in general, the likely low reporting of adverse events for drugs once they reach the market (Moore 1998) suggest the rates of reactions may be higher than reported from premarketing studies.

After switching a prescribed ACE inhibitor, a large number of providers felt a follow-up office visit to be necessary. This is likely driven by uncertainties with dose conversions, given the variable dose ranges between agents. We are aware of no formal guidelines to aid in making such conversions. Not directly examined in our survey, but of potential importance, are additional possible concerns that mortality benefits observed with some ACE inhibitors and with some statins might not be class effects (Pilote 2004, Cannon 2004). In a time of increasing awareness of adverse drug events and of patient-response variation, these important factors together with patient feedback are needed to enable accurate calculations of switching-related patient costs and deserve further attention in future models.

According to recently released data (Shrank 2005), most physician leaders appear to agree that managing patient's out-of-pocket costs for medications is important and that drug choices should be based on the drug that minimizes costs to the patient, provided the choices are equally safe and effective. The finding in our study that the majority of providers

would prefer to continue patients on certain medications (e.g., an SSRI) in spite of an increase in patient copayment bears particular notice. Controversy exists as to whether SSRIs are interchangeable (Elliott 2002, Simon 2001). While some evidence supports similar efficacy within the class (Kroenke 2001), other data have demonstrated efficacy and side effects to be patient-specific (Thase 1997). The potential for drug interactions also varies between agents (Nemeroff 1996).

Patient preferences might influence adherence to antidepressant treatment and, thereby, to outcomes (van Schaik 2004). These clinical concerns may affect a prescriber's recommendation to continue on an established drug. Although the prescriber's intent in such decisions might be maintaining optimum patient care, the long-term financial implications nonetheless might lead to reduced patient adherence and potentially poorer outcomes for those unwilling or unable to afford continued treatment with the current drug that now necessitates a higher copayment.

More difficult to quantify are the subjective, personal costs. Based on clinician ratings of the effect of switching on patient relations, most providers feel this has either no effect or may in fact worsen the relationship. That this was particularly true for nurses responding to the survey is perhaps no surprise, given the relatively large proportion of switches these providers conduct. For clinicians, the mean estimated effect on workload was intermediate (4.6/10 points), but the more subjective effect (ease vs. hassle) was somewhat higher (7.0/10 points).

Reports that physicians' inability to obtain services for their patients is a predictor of reduced job satisfaction (Landon 2003) could be contributing to this latter increased effect.

We recognize this pilot survey is quite limited in scope and that re-

**TABLE 6** Reported rates of selected adverse effects from premarketing trials with statins

	Myalgia	Rhabdomyolysis
Atorvastatin (10 mg/day)	3.2% (vs. 1.1% placebo)*	NR <sup>†</sup>
Fluvastatin (dose unknown)	5% (vs. 4.5% placebo)	NR
Lovastatin (40 mg twice daily)	3% (vs. 1.7% placebo)	NR
Pravastatin (dose unknown)	2.7% (vs. 1.0% placebo)	NR
Rosuvastatin (dose unknown)	2.8% (vs. 1.3% placebo)	<1%
Simvastatin (20-40 mg/day)	1.2% (vs. 1.3% placebo)*	<0.1% <sup>†</sup>

NR= not reported.

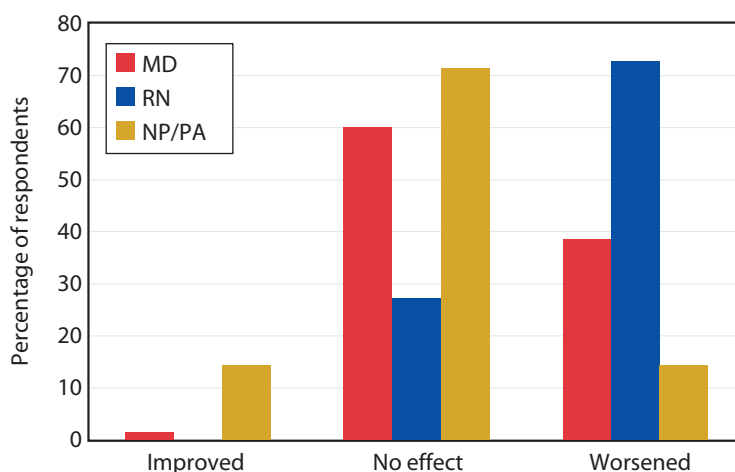
\* Reported postmarketing event rates suggest 309 and 167 events of myalgia per 10<sup>6</sup> dispensed pills of atorvastatin and simvastatin, respectively (Abourjaily 2003).

† Reported postmarketing event rates suggest 27 and 88 events of rhabdomyolysis per 10<sup>6</sup> dispensed pills of atorvastatin and simvastatin, respectively (Abourjaily 2003).

SOURCES: PDR 2005, Thompson 2003

**FIGURE 2** Effect of medication switching on provider-patient relations

Number of respondents: MD=70, RN=10, NP/PA=7.



No. of respondents: MD=70, RN=10, NP/PA=7.

NP/PA=nurse practitioner/physician assistant, RN=registered nurse.

sponses perhaps reflect specific practice structures and patterns among a small group of providers. Potentially, even within our cohort, individual clinicians' knowledge about and direct financial risk from formulary restrictions differ considerably — details that we did not explore in our analyses. Nonetheless, the results help to initiate a focus on these important considerations in drug-switch induced costs and cost-shifting. Some

may argue that the typical management fees paid by insurers to physician groups on a per-member per-month basis help offset the providers' costs required to make medication changes. These payments typically are small (usually <\$1.00 PMPM), however, and not designed for the sole purpose of reimbursing expenses associated with making medication switches.

Our results demonstrate that the

cost of making a medication change is not solely the cost of the drug and also highlight the need for further evaluation of the effects of medication switching. Additionally, it is recognized that multiple factors may affect health plan formulary structure when the contracts for purchasing medications are negotiated with the drug industry. For example, a given pharmaceutical manufacturer could bundle its offers, giving health plans more attractive pricing for one drug when there is also favorable health plan acceptance of other drugs from that same manufacturer. This could result in lack of insurance coverage of competing manufacturer's product within a given category of medications. For patients, however, treatment decisions and payment for them are focused on each individual drug.

In this study, we examine nondrug costs based on clinicians' responses. We have not focused on the designing of drug-benefit plans and their implementation by insurers. Health plans need to consider drug costs from a more global perspective when deciding on formulary restrictions. It is quite likely that in using their available data, such consideration will provide more accurate information on the calculated cost-to-savings ratio. A more comprehensive evaluation may support drug-coverage plan designs in which some formulary restrictions would not be included. This is especially true for drug classes where covered medications change frequently or where finding optimal treatment is challenging.

Clearly, cost determinations (saving or expense) depend on the perspective taken. Physician practices need to consider how they can work together with insurers and patients to inform and manage the effect of drug-switch policies and rising drug costs. This includes further evaluations of the effects of medication switching. As we look to the overall societal issue of providing drug cov-

erage for those in need, a more comprehensive investigation of all affected components of health care delivery is necessary.

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