Moving From A to Z: Successful Implementation of a Statin Switch Program by a Large Physician Group

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Objective: To describe the implementation and impact of a centralized statin switch program at a large academic medical center.

Methods: Patients on atorvastatin were identified from electronic medical records and pharmacy claims data. Relevant information was sent to physicians for approval of the proposed switches. Approved patients were then contacted via phone and offered the opportunity to switch to simvastatin; those who switched received a new prescription for simvastatin. To assess the independent impact of the active switch process, conversion rates within a single insurance plan were compared for patients who participated in this program versus those who were contacted only by mail.

Results: Physicians approved 3207 of the 3677 patients identified for this program. A total of 1710 approved patients accepted the switch, 704 declined, and 170 became ineligible. Information packets were mailed to 623 patients who could not be contacted. Within the single insurance plan, the generic dispensing rate for statins among the 1867 patients included in our program was significantly higher than that for the 2472 patients in the mail-only group (59.2% vs 35.8%, $P < .001$). Over 8 months, the direct cost of the program was $131,000 with projected annual cost savings of up to $1.14 million to payers and up to $250 for each patient who switched.

Conclusion: A proactive and voluntary statin switch program to promote the use of a lower cost generic alternative can be successfully implemented in a fee-for-service health system setting with benefits to patients, providers, and payers.

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Prescription drug spending has significantly increased in the past decade, totaling $217 billion in 2006 and representing 10.3% of total healthcare expenditures in the United States.[1] Of this amount, 22% was paid by patients out-of-pocket, 34% by public health insurance plans, and 44% by private insurance plans. In addition, prescription drug spending is predicted to increase by 8% to 9% annually through 2016.[2,3]

Targeted medication conversions to more cost-effective alternatives represent a safe and effective way to reduce drug expenditures for patients, providers, and payers. Studies have shown that lower prescription drug copayments are correlated with higher levels of medication compliance for 3-hydroxy-3-methylglutaryl coenzyme-A reductase inhibitors (statins), which are commonly used cholesterol-reducing drugs.[4-7] Gibson et al studied the impact of statin copayments on patient adherence and healthcare expenditures.[4] They found that every $10 increase in copayment resulted in a 1.8% reduction in medication adherence among new users and a 3% reduction among continuing users. The study also found that among continuing users adherent to statins, there was a significantly lower incidence of coronary heart disease–related hospitalization.[4] Similarly, Schultz et al found that a $15 increase in copayment was associated with a 10% decrease in statin compliance in a retrospective analysis of claims data.[6] Results from these and other pharmacoeconomic studies suggest that interventions to reduce patient copayments will improve statin adherence and, in turn, improve outcomes and reduce overall healthcare costs, especially in high-risk populations.[7-10]

All currently available statins have been shown to reduce the incidence of cardiovascular events, which supports the belief that these benefits are class effects.[11,12] Charts comparing doses of statins that provide similar levels of low-density lipoprotein cholesterol (LDL-C) reduction have facilitated the substitution of one statin for another.[13-15]

In June 2006, simvastatin (Zocor) became the third statin available as a generic, and many insurers instituted programs such as tiered copayments and step therapy requirements to promote its use and to encourage their members to switch from brand-name statins, if clinically appropriate. For example, the University of Michigan Benefits Office moved all brand-name statins, except atorvastatin (Lipitor) 80 mg, to the highest copayment level and added a step-therapy edit requiring patients to try a generic statin before

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any other brand-name statin could be covered.[16] When such a change occurs, patients are typically notified via mail and asked to contact their physicians to reassess therapy and adjust medications if necessary. When a patient calls to request a medication change, the new prescription has to be approved and then called in or faxed to the patient's pharmacy. This process involves multiple message relays that require staff and clinician time and effort, which can disrupt clinic workflow and may result in patients being temporarily without their medication. All of this causes additional, avoidable costs to patients, providers, and payers.

To assist our patients and physicians, the University of Michigan Medical School Faculty Group Practice, which includes approximately 1400 physicians who are directly involved in patient care, initiated a voluntary program to switch eligible ambulatory patients from A to Z (atorvastatin [Lipitor] to simvastatin [Zocor]). Although this type of switch program has proven effective in organizations with fixed formularies, such as the Department of Veterans Affairs and Kaiser Permanente, our program is the first we know of that targeted a large multipayer population, including fee-for-service patients, through a physician group.[17-19]

METHODS

This program was implemented at the University of Michigan Health System (UMHS) in Ann Arbor. The UMHS is a nonprofit teaching institution that provides more than 1.6 million outpatient visits annually between 3 hospitals and 30 health centers, which include 120 primary care or specialty clinics. It serves a large multipayer population.

Program Development

The switch program was scheduled to begin approximately 6 months after the introduction of generic simvastatin as the price was expected to drop at that time with multiple manufacturers entering the market. The program was approved by the UMHS Ambulatory Formulary Committee and the Faculty Group Practice. The analysis of the program, reported here, was approved by the University of Michigan Medical School Institutional Review Board.

Patients received letters notifying them about the forthcoming changes in prescription copayments and preferred medications from their respective insurers. Physicians received several e-mail messages informing them about the changes in their patients' prescription copayments, reasons for the switch program, and how it would be conducted. In addition, presentations about the program were given to primary care physicians, cardiologists, and endocrinologists at their departmental meetings. A clinical pharmacist also visited several high-volume clinics to answer any additional physician or staff questions. Health center personnel were informed of the program by their medical and administrative directors.

Patient Selection

Eligible patients were identified from electronic medical records and pharmacy claims data provided by 2 managed care organizations, 1 fee-for-service insurer, Michigan Medicaid, and the University of Michigan Benefits Office. Patients were eligible if as of January 2007, they were (1) on atorvastatin 10, 20, or 40 mg/day, (2) enrolled in a collaborating prescription drug plan, and (3) receiving care from a UMHS primary care physician, cardiologist, or endocrinologist.

All patients enrolled in the University of Michigan Benefits Office's prescription drug plan received identical letters in November 2006 about the coverage changes for statins, but only patients with a UMHS provider were included in the active switch program. Those patients without a UMHS provider served as the control group to help evaluate the benefits of this active switch program over the passive approach of sending patients letters.

All patients on atorvastatin 80 mg/day were excluded from the switch program because we could not obtain similar levels of LDL-C reduction with simvastatin and because there were randomized controlled trials demonstrating benefits of atorvastatin 80 mg/day for certain patient populations. Patients on medications with possible differential response to simvastatin compared with atorvastatin (ie, carbamazepine, cyclosporine, danazol, delavirdine, efavirenz, imatinib, oxcarbazepine, risperidone, verapamil, warfarin) were eligible for the program, but their physicians were notified of these potential drug interactions.

Program Design

An electronic database was created using Microsoft Access 2002 that included (1) pharmacy claims data from participating insurance plans; (2) patient demographics (eg, name, age, sex, address, phone), select medication history, and latest laboratory values (total cholesterol, high-density lipoprotein cholesterol, LDL-C, triglycerides, alanine aminotransferase test) from our health system's electronic data warehouses; and (3) the physician identified for each patient using an algorithm based on the number of clinic visits the patient had in 2006. From the database, reports were produced for each physician with information on each of their eligible patients and, for patients using a mail-order pharmacy service, a preprinted prescription. Physicians reviewed the proposed medication switches, changed the statin dose as needed, and approved or declined their patients to be contacted regarding the switch program. To facilitate this process, clinical pharmacists per-

formed a preliminary review of the reports for 7 high-volume physicians (ie, more than 50 assigned patients, range 55-130), as well as several others who asked for help. A total of 972 (26%) patients were reviewed by 3 clinical pharmacists. Physicians returned their reports to the switch team and the information was entered into the program's database.

It was recommended that patients switch to an equipotent or greater dose of simvastatin, with respect to LDL-C reduction: (1) from atorvastatin 10 or 20 mg to simvastatin 40 mg, based on the published results supporting moderate dosing of statins,[20] and (2) from atorvastatin 40 mg to simvastatin 80 mg.

A computer-aided telephone interview program was developed to guide pharmacy students in their discussions with eligible patients. Using a standardized script, the students informed patients about the program, told them that their physicians had approved the switch, and asked whether patients wanted to switch from atorvastatin to simvastatin. A maximum of 6 attempts were made to contact each patient, including 2 during weekdays, 2 during weeknights, and 2 on Saturdays. An information packet about the program was mailed to patients who could not be contacted.

Patients who elected to switch received a new prescription for simvastatin, which was either called in to their local pharmacy within 24 hours or sent to them if they used a mail-order pharmacy. Patients using mail-order pharmacies had the option of having a 30-day supply of simvastatin called in to a local pharmacy if they had fewer than 28 days of atorvastatin remaining. Each patient also received a letter confirming the medication change and a laboratory requisition form for a fasting lipid profile and serum alanine aminotransferase test, to be drawn approximately 8 weeks after initiating simvastatin. The patients' electronic medical records were updated. At the program's conclusion, physicians were given a report summarizing their patients' switch status.

Effectiveness of Switch Program

We took advantage of a natural experiment and compared the proportion of patients in 1 prescription drug plan who converted from atorvastatin to simvastatin in the active switch program with a similar group of patients in a passive switch program (ie, they received a letter notifying them of the copayment increase for brand-name statins). As in the active switch program, patients in the passive switch program who either were on a brand-name statin other than atorvastatin or were on atorvastatin 80 mg/day were excluded.

Cost Analysis

Total program expenditures include materials/supplies and the salary and benefits of personnel directly involved with the switch program. Personnel included an internist, a clinical pharmacist, a data analyst, a programmer, an administrator, an administrative assistant, and 9 pharmacy and nursing students. The amount of time each individual spent on the program was determined to calculate the number of full-time equivalent staff needed for this program.

Total program savings were calculated from an insurer's perspective and were based on the differences in estimated drug costs for atorvastatin and simvastatin for the patients who switched as part of this program. For a 30-day supply of atorvastatin 20 mg, we used the average wholesale price minus 10%, which was $110 in September 2007.[21] For a 30-day supply of simvastatin 40 mg, we used the maximum allowable cost in Michigan, which was $10 in September 2007.[22]

Statistical Analysis

Descriptive statistics were utilized for the demographic data. The chi-square statistical test was utilized for comparative analyses and a P value of <.05 was considered to be significant. All analyses were performed with STATA version 8.1 (StataCorp, College Station, TX).

RESULTS

In January 2007, 3677 patients met all the inclusion criteria. Baseline characteristics were similar for patients who did and did not switch from atorvastatin to simvastatin (**Table 1**). These patients were assigned to 182 physicians, 154 (84.6%) of whom responded with their decisions on 3336 (90.7%) patients (**Figure 1**). Of the nonresponding physicians, 24 (13.2%) were specialists (cardiologists or endocrinologists), accounting for 114 (3.1%) patients. Physicians approved the proposed switches for 3207 (87.2%) patients; of these patients, 1710 (53.3%) agreed to switch from atorvastatin to simvastatin. A total of 52 (1.4%) patients who initially declined the switch and 37 (1.0%) patients unreachable by phone were subsequently switched by their physicians during clinic visits.

Patients on lower doses of atorvastatin were more likely to switch to simvastatin (P <.01). The average atorvastatin dose of patients who agreed to the switch was slightly lower than that of patients who did not switch (19.0 mg vs 20.4 mg, P <.01). Almost all the switched patients (99.4%) were converted from atorvastatin to an equipotent or greater dose of simvastatin. Only 59 (3.5%) patients who switched were on 1 or more drugs considered to interact specifically with simvastatin; 39 (2.3%) of those patients were on warfarin. These patients were flagged and additional counseling regarding the potential effects of simvastatin on their anticoagulation tests were provided by a clinical pharmacist.

Table 1. Baseline Characteristics of Patients Eligible for the Statin Switch Program[a]

Characteristic	Switched (n = 1710)	Not Switched (n = 1967)	*P*
Mean age, y (± SD)	58.6 (11.0)	57.7 (11.1)	.700
Female	714 (41.8)	812 (41.3)	.771
Indication			.628
Primary prevention	1153 (67.4)	1341 (68.2)	—
Secondary prevention	557 (32.6)	626 (31.8)	—
Atorvastatin dose			<.001
10 mg	739 (43.2)	796 (40.5)	—
20 mg	688 (40.2)	731 (37.2)	—
40 mg	283 (16.5)	440 (22.4)	—
Potential drug interaction(s) with simvastatin[b]	59 (3.5)	129 (6.6)	<.001
Prescription drug plan			<.001
University of Michigan Benefits Office	938 (54.9)	929 (47.2)	—
Blue Cross Blue Shield of Michigan	59 (3.5)	67 (3.4)	—
Blue Care Network	185 (10.8)	174 (8.8)	—
M-CARE	492 (28.8)	678 (34.5)	—
M-CAID (managed Medicaid)	36 (2.1)	119 (6.0)	—
Prescriber[c]			<.001
Specialist	45 (2.6)	165 (8.4)	—
Primary care provider	1665 (97.4)	1802 (91.6)	—

[a]Values are number (percentage) unless otherwise indicated.
[b]Only drug interactions specific to simvastatin were flagged (carbamazepine, cyclosporine, danazol, delavirdine, efavirenz, imatinib, oxcarbazepine, risperidone, verapamil, and warfarin).
[c]Specialist group included cardiologists and endocrinologists; primary care provider group included general medicine, family medicine, and geriatric medicine.

Active Versus Passive Switch

The University of Michigan Benefits Office had the most patients in this study, with a total of 4339 patients on atorvastatin 10, 20, or 40 mg/day. These patients all received a letter notifying them of the copayment increase for brand-name statins. Those University of Michigan employees or their dependents who had an UMHS provider were included in the active switch program (n = 1867) and the passive switch group consisted of the remaining 2472 patients who had a non-UMHS provider.

As shown in Table 2, patients in the active group were younger (58.1 vs 61.1 years old, P <.001) and were less likely to have drug interaction(s) with simvastatin (5.4% vs 8.3%, P <.001). By the third quarter of 2007, generic simvastatin was being used by 59.2% of patients in the active switch program compared with 35.8% of patients in the passive switch group (P <.001; Figure 2). The 23.4% greater generic statin dispensing rate among switch program participants resulted in a $150,000 cost savings by the end of the third quarter of 2007 and an estimated $370,000 in cost savings annually, based on the University of Michigan Benefits Office's prescription drug plan cost structure. Patients saved up to $168 annually due to lower copayment amounts ($7 for simvastatin vs $24 for atorvastatin), excluding any unmeasured indirect costs (eg, time spent to contact a physician regarding this switch program).

The total program cost was approximately $131,000, including $7500 for materials/supplies and $123,500 for the 1.9 full-time equivalents who worked on the program from November 2006 through June 2007. This total does not include the time that physicians and 2 ambulatory care clinical pharmacists spent reviewing patients for this program, although others might wish to include the opportunity costs of this time in such a calculation. This program was funded by the University of Michigan Medical School Faculty Group Practice, which received a nominal monetary amount for each patient converted from atorvastatin to simvastatin from 2 of the insurers to help cover the expenses of providing this service to our patients.

Total projected annual cost savings ranged from $150 to $250 for each patient because of lower copayments and

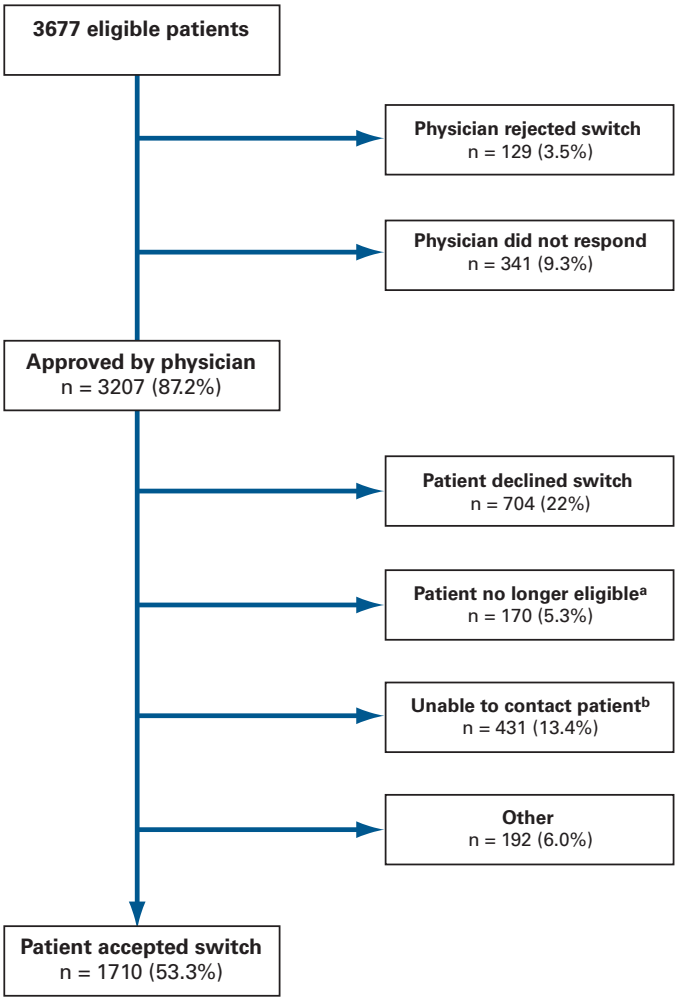
from $670,000 to $1.14 million for the payers because of lower drug costs. The range in cost savings for the payers reflects the savings that might accrue if all payers engaged in a passive approach such as that by the University of Michigan Benefits Office or if none did. Allowing for some variation in drug pricing and assuming that patients get monthly refills, the cost difference between atorvastatin and simvastatin translates to an annual savings of about $1000 per person switched for the payer.

DISCUSSION

Our results demonstrate that physicians in a large academic medical center that serves a diverse patient population can successfully conduct a centralized statin switch program. In contrast to some of the other medication switch programs reported, the voluntary and flexible nature of our program allowed physicians and patients to be in control of the switch process, from approval to dosing to prescription processing.[17,19,23-25]

Our security-enabled computer-aided telephone interview program facilitated the electronic management of our database and allowed us to track the status of our patients from initial data load through every step of the switch process. Dynamic call and print queues were set up based on prespecified algorithms and were automatically updated in real time. Multiple queries and reports were built in

Figure 1. Patient Status Flow Chart



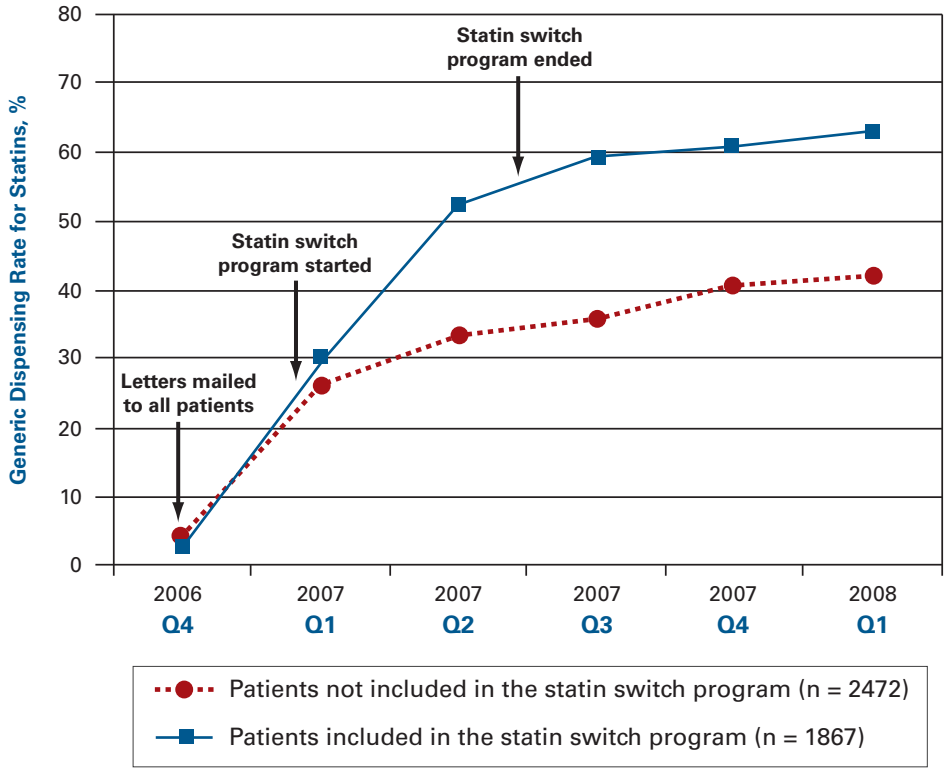
[a]Ineligible patients were those who were no longer taking atorvastatin, whose atorvastatin dose had been increased to 80 mg/day, who were no longer being followed at the University of Michigan Health System, or who were deceased.
[b]Patients who could not be contacted were those who neither responded to 6 phone call attempts nor to mailed information.

Table 2. Baseline Characteristics of Patients Enrolled in the University of Michigan Benefits Office's Prescription Drug Plan by Type of Switch Program[a]

Characteristic	Active Switch Program (n = 1867)	Passive Switch Program (n = 2472)	*P*
Mean age, y (± SD)	58.1 (11.1)	61.1 (12.9)	<.001
Female	821 (44.0)	1119 (45.3)	.396
Atorvastatin dose			.029
10 mg	811 (43.4)	1024 (41.4)	
20 mg	674 (36.1)	988 (40.0)	
40 mg	382 (20.5)	460 (18.6)	
Potential drug interaction(s) with simvastatin[b]	100 (5.4)	205 (8.3)	<.001

[a]Values are number (percentage) unless otherwise indicated.
[b]Only drug interactions specific to simvastatin were flagged (carbamazepine, cyclosporine, danazol, delavirdine, efavirenz, imatinib, oxcarbazepine, risperidone, verapamil, and warfarin).

Figure 2. Comparison of Generic Dispensing Rate for Statins for Members Covered by the University of Michigan Benefits Office's Prescription Drug Plan



to facilitate administrative operations and coordinate staffing needs.

One problem we encountered was that intensive manual data lookup using our electronic medical record system was needed to fill in missing patient information, dosing regimens, and interacting drugs for some patients. Inaccurate patient contact information prevented us from reaching 143 (3.9%) patients. In addition, some patients were assigned to physicians who were no longer seeing them. Some of these problems would not occur with more robust electronic medical records systems (eg, those with coded medication lists) and accurate identification of each patient's physician.

Reviewing the patient reports required a significant amount of physician time and effort. The average number of patients each physician had was 20 (range, 1-305). The top 15 physicians each had 50 or more patients, accounting for 1437 (39.1%) patients. Because this program was not a mandatory part of their responsibilities, leadership support and physician champions were essential. In-service presentations and e-mails emphasized the potential time savings for clinic staff and the financial benefits for patients and payers, which included the University of Michigan. Having a clinical pharmacist facilitate the review process for high-volume physicians helped to significantly increase response rates.

Another problem was that out-of-state mail-order pharmacy service providers required all prescriptions to be signed by the physician (not by a delegated authority) and either faxed directly from the physician's clinic or mailed in by the patient. Our initial reports did not address this requirement adequately, so we revised them to include preprinted prescriptions for the physicians to sign if approving the recommended switches.

We did not complete a formal analysis of physician or patient satisfaction with this program. However, anecdotal staff and patient feedback was mostly positive. Physicians found the reports easy to understand and the laboratory values helpful in determining the appropriate statin dose required. Patients were reassured that the process was voluntary and that their physicians were able to approve, disapprove, or overwrite the dose recommendations. Patients also appreciated the promptness of their prescription processing, as new simvastatin prescriptions were phoned in to pharmacies or mailed to patients within 24 hours of switching.

At this time, we have not assessed the clinical impact of this switch program on our patients. However,

Take-Away Points

A statin switch program was successfully implemented in a fee-for-service patient population by a large physician group in an academic healthcare system setting.

- This collaborative and voluntary program allowed physicians and patients to have complete control of the switch process.
- A centralized switch program saved time and money, while promoting the use of a lower cost generic alternative.
- Over an 8-month period, 1710 of 3677 patients identified for switching from a brand to a generic statin did so at a direct cost of $131,000 with projected annual cost savings of up to $1.14 million to payers because of lower drug costs. In addition, each patient who switched saved up to $250 because of lower copayments.

other published studies have shown equivalent safety and efficacy following similar conversion programs.[17-19,23,24,26]

Our program received significant recognition by our health system's senior management team because we succeeded in promoting cost-effective medication use and increasing our generic dispensing rate for statins. Generic prescribing rates, overall and for statins in particular, are core pharmacy measures on which our physicians are evaluated by health insurers. Atorvastatin market share among UMHS patients enrolled in the collaborating drug plans dropped from 64.2% in the fourth quarter of 2006 to 29.5% in the third quarter of 2007, with a corresponding increase in simvastatin market share (10.8% to 47.7%). Based on the success of this initiative, funding and leadership support were subsequently secured for similar switch programs targeting other classes of medications, including proton pump inhibitors and intranasal corticosteroids.

CONCLUSION

Our statin switch program was a collaborative effort between multiple departments at the UMHS to promote lower cost pharmacotherapy. With the right elements (eg, computer-aided telephone interview program, leadership support, flexible staffing hours, quick turnaround times), such centralized and voluntary medication switch programs can be successfully implemented in a fee-for-service health system setting with benefits to patients, providers, and payers.

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