Medical and Pharmacy Cost and Utilization Outcomes of a Quantity Limit on the 5-HT₁ Agonists (Triptans) by a Managed Care Organization

by Eric J. Culley and Robert T. Wanovich

OBJECTIVE: To determine the overall medical and pharmacy impact on utilization and costs following implementation of a quantity limit on the 5-HT₁ agonists (triptans).

DESIGN: Retrospective review of pharmacy and medical claims data six months before and after implementation of a quantity limit.

SETTING: A managed care organization based in western Pennsylvania.

PARTICIPANTS: Pooled data of more than 11,000 triptan users.

INTERVENTIONS: A quantity limit was placed on the triptans, allowing coverage for maximum doses for four migraines per month.

MAIN OUTCOMES MEASURES: Comparison of utilization and costs of triptans, prophylactic medications, and other analgesics before and after implementation of the quantity limit. Utilization and costs of medical claims for hospitalizations, emergency room (ER), primary care physician (PCP), and neurologist visits for triptan users

were analyzed during the same time periods.

RESULTS: The quantity limit resulted in an overall drug and medical cost savings of \$420,754 during the six months after initiation of the program. The utilization and costs associated with the triptans and other analgesic medications decreased, while the percentage of patients taking prophylactic therapy increased. A small change in utilization and costs of hospitalizations, PCP visits, ER visits, and neurologist visits was noted.

CONCLUSION: Implementation of a quantity limit on the triptans effectively changed the utilization of pharmacologic therapy for migraines with minimal shift in the utilization of other healthcare resources, resulting in an overall healthcare savings of \$12.25 per patient per month (PPPM) for those triptan users.

KEYWORDS: Utilization, Costs, Quantity limits, Triptans

J Managed Care Pharm 2001; 468–75

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ACKNOWLEDGMENT: The authors would like to thank Rachel Hooe for her administrative support and Aidan Palmer for his assistance in data collection.

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Migraine headaches are a common disorder affecting more than 23 million Americans.¹ The estimated annual direct medical costs and indirect costs, including missed workdays and decreased productivity, range from \$13 billion to \$17.2 billion.^{2,3}

Managed care pharmacy departments are under pressure to quantify cost savings and demonstrate a tie-in with medical claims to prevent employers from carving out a particular pharmacy benefit. Furthermore, employers are looking for effective ways of managing a benefit with minimal member disruption and maximum value.

The 5-HT₁ agonists (commonly referred to as triptans) and dihydroergotamine (DHE) nasal spray are only indicated by the U.S. Food and Drug Administration (FDA) to abort acute migraine attacks and cluster headaches (sumatriptan injection only). However, analysis of the managed care organization's (MCO's) claims data suggested daily utilization of these medications by some members. Numerous reports in the literature document that daily triptan use and overuse, as well as other analgesic overuse for migraines, can perpetuate the migraine cycle by causing rebound headaches.^{4–11}

Migraine prophylaxis is typically indicated when a person suffers from three or more migraine attacks per month.^{12,13} A review of the literature illustrates a wide variety of drugs used for preventive therapy for migraines, with varying success. First-line agents include beta-blockers and tricyclic antidepressants. Other medications used include anticonvulsants, selective serotonin reuptake inhibitors (SSRIs), and calcium channel blockers.^{4,12–17} Monoamine oxidase inhibitors and methysergide may also be effective in migraine prophylaxis but are rarely used because of potential drug-drug interactions and frequent adverse effects.^{4,13,15}

A smaller study conducted by a health maintenance organization in 1997 showed decreased pharmacy costs without significantly altering medical costs related to migraine therapy when restricting sumatriptan to four tablets or four injections per month.¹⁸ Since then, several new triptans have become available. This article provides a more current analysis of the results of the implementation of a quantity limit edit to control the use and abuse of triptans and DHE nasal spray by an MCO. Additionally, the program edit emphasized the importance of prophylactic therapy for treating frequent migraine headaches.

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TABLE 1 Triptan Utilization

Pre-Quantity Limit March 1, 1999 to August 31, 1999					
Drug Name	Total Amount Paid	Total Ingredient Cost	Average Quantity per Prescription	Total Prescriptions Filled	Market Share
Dihydroergotamine nasal 4 mg/ml	\$51,322	\$60,893	6.57	631	2.2%
Naratriptan 1 mg	\$3,192	\$3,504	9.39	28	0.1%
Naratriptan 2.5 mg	\$146,186	\$156,455	12.18	955	3.3%
Rizatriptan 5 mg	\$17,180	\$18,787	10.53	149	0.5%
Rizatriptan 10 mg	\$131,306	\$147,547	10.09	1,210	4.2%
Rizatriptan MLT 5 mg	\$12,260	\$13,468	9.86	113	0.4%
Rizatriptan MLT 10 mg	\$126,066	\$139,356	9.73	1,186	4.1%
Sumatriptan 25 mg	\$1,264,547	\$1,349,537	16.98	6,254	21.5%
Sumatriptan 50 mg	\$1,642,149	\$1,766,031	15.12	9,169	31.5%
Sumatriptan injections 6 mg.0.5 ml(kit or refill)	\$824,132	\$878,316	2.95	3,788	13.0%
Sumatriptan nasal spray 5 mg	\$32,447	\$36,316	6.70	332	1.1%
Sumatriptan nasal spray 20 mg	\$260,508	\$289,421	7.11	2,484	8.5%
Zolmitriptan 2.5 mg	\$248,784	\$268,052	13.32	1,694	5.8%
Zolmitriptan 5 mg	\$188,216	\$202,141	12.89	1,158	4.0%
Totals	\$4,948,295	\$5,329,830		29,151	
Post-Quantity Limit September 1, 1999 to February 29, 2000					
Dihydroergotamine nasal 4 mg/ml	\$34,492	\$42,832	5.48	514	1.8%
Naratriptan 1 mg	\$4,143	\$4,369	13.17	23	0.1%
Naratriptan 2.5 mg	\$117,392	\$127,875	10.10	889	3.1%
Rizatriptan 5 mg	\$26,822	\$29,730	10.91	224	0.8%
Rizatriptan 10 mg	\$162,231	\$184,831	9.22	1,633	5.6%
Rizatriptan MLT 5 mg	\$18,579	\$20,675	9.02	187	0.6%
Rizatriptan MLT 10 mg	\$177,161	\$199,867	8.59	1,890	6.5%
Sumatriptan 25 mg	\$1,088,177	\$1,171,495	15.74	5,550	19.2%
Sumatriptan 50 mg	\$1,426,918	\$1,552,763	12.52	9,188	31.8%
Sumatriptan injections 6 mg.0.5 ml(kit or refill)	\$674,678	\$729,130	2.62	3,335	11.5%
Sumatriptan nasal spray 5 mg	\$26,741	\$29,732	6.67	255	0.9%
Sumatriptan nasal spray 20 mg	\$238,021	\$265,037	6.70	2,263	7.8%
Zolmitriptan 2.5 mg	\$225,441	\$246,495	11.85	1,707	5.9%
Zolmitriptan 5 mg	\$144,509	\$161,684	9.34	1,246	4.3%
Totals	\$4,365,307	\$4,766,516		28,904	
Savings	\$582,988	\$563,314		247	

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TABLE 2 Medical and Pharmacy Utilization

	Pre-Quantity Limit March 1, 1999, to August 31, 1999		Post-Quantity Limit September 1, 1999, to February 29, 2000	
Medical	Utilization PTPM	Cost PPPM	Utilization PTPM	Cost PPPM
Primary care physician visits	201.29	\$3.35	204.36	\$3.19
Neurologist visits	42.39	\$3.93	39.18	\$3.69
ER visits with a migraine diagnosis	11.50	\$1.66	10.55	\$1.54
Hospital admissions with a migraine diagnosis	0.49	\$1.19	0.66	\$2.19
Total cost increase				\$0.48
Pharmacy (prescriptions filled)				
Triptans	433.02	\$79.17	405.33	\$66.84
Prophylactic medications (with prescription of a triptan)	333.23	\$15.62	325.35	\$15.54
Acute pain medications (with prescription of a triptan)	379.98	\$8.55	350.16	\$8.23
Total cost savings				\$12.73
Non-migraineurs				
Primary care physician visits	69.01	\$1.35	102.32	\$1.58

Notes: PTPM is per thousand patient months; PPPM is per patient per month.

Objective

The objective of this study was to determine the overall medical and pharmacy impact of limiting quantities of the triptans and dihydroergotamine nasal spray by comparing medical and pharmacy utilization and costs six months before (March 1, 1999, to August 31, 1999) and six months after (September 1, 1999, to February 29, 2000) the implementation of the quantity-level limit.

Methods

Patient Selection

For the purposes of this study, a "member" is any enrollee in the health plan. A "patient" is any member who has had at least one claim for a triptan or dihydroergotamine nasal spray within the time period of the study. For the economic analyses, cost savings are reported specifically for triptan-using members as per patient per month (PPPM).

The MCO provides medical benefits for 2.8 million members and provides prescription drug benefits for 1.9 million members. The migraine program is in place for approximately 1.2 million of those with prescription drug benefits. The migraine program affects all lines of business: health maintenance

organization (HMO), preferred provider organization (PPO), and point of service (POS). The employer who purchases the benefits from the MCO has the option of excluding its group from this program. The migraine quantity limit affects those groups whose pharmacy benefit includes the MCO's Managed Prescription Drug Coverage Program and those patients exceeding the monthly quantity limit for the selected migraine drugs, described below.

Intervention

At the time of program implementation (September 1, 1999), dihydroergotamine nasal spray (Migranal), rizatriptan (Maxalt), and sumatriptan (Imitrex tablets, nasal spray, and injections), were on the MCO's drug formulary. The edit also applied to naratriptan (Amerge) and zolmitriptan (Zomig) for those members who had no formulary restrictions. DHE nasal spray had minimal utilization (less than 1% when compared to the triptans) and for the purposes of this article, the data for DHE nasal spray will be included in the "triptan" data, unless specified otherwise.

The quantity limits were based upon maximum doses for treating four migraine attacks per month as listed in the product labelling.¹⁹⁻²⁵ Safety and efficacy of treating more than four attacks per month have not been established.^{21, 23} The monthly

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TABLE 3 Other Migraine Drug Therapies^{4,12-17}

Prophylactic Medications

- Anticonvulsants: carbamazepine, valproic acid, gabapentin
- Beta blockers: acebutolol, labetalol, metoprolol, nadolol, propranolol
- Calcium channel blockers: verapamil
- SSRIs: citalopram, fluoxetine, fluvoxamine, paroxetine, sertraline
- TCAs: amitriptyline, amoxapine, desipramine, doxepin, imipramine, nortriptyline, protriptyline, trimipramine

Acute Pain Medications

- NSAIDs: diclofenac, etodolac, fenoprofen, flurbiprofen, ibuprofen, indomethacin, ketoprofen, ketorolac, meclofenamate, nabumetone, naproxen, naproxen sodium, oxaprozin, piroxicam, sulindac, tolmetin
- Cox-II inhibitors: celecoxib, rofecoxib
- Opiate agonists/combination products: APAP/codeine, APAP/pentazocine, ASA/codeine, butorphanol, codeine, hydrocodone, hydrocodone/APAP, hydromorphone, meperidine, morphine sulfate, oxycodone, oxycodone/APAP, oxycodone/ASA, propoxyphene, propoxyphene napsylate/APAP, tramadol
- Non-narcotic and narcotic analgesics/barbiturates: APAP/butalbital, butalbital compound, butalbital/APAP/caffeine, butalbital/codeine
- Ergotamine and combination products: APAP/isometheptene/dichloralphenazone, ergotamine/caffeine, methysergide

Notes: SSRI is selective serotonin reuptake inhibitor; TCA is tricyclic anti-depressant; NSAID is nonsteroidal anti-inflammatory drug; Cox is cyclooxygenase; APAP is acetaminophen; ASA is aspirin.

quantity limits were as follows: eight DHE nasal sprays (eight ampules), 20 mg naratriptan, 120 mg rizatriptan, 800 mg sumatriptan tablets, eight nasal sprays or eight injections, and 40 mg zolmitriptan.

When a patient presented a prescription that exceeded the quantity limit, the prescription was denied at the point of sale. The dispensing pharmacist was prompted by the adjudication screen to call the MCO. The MCO's clinical pharmacist then contacted the prescribing physician to determine if it was necessary to start or continue the medication at the current dosing schedule. Additional quantities were granted if the physician justified a reasonable expectation of continued benefit to the patient. The clinical pharmacist may also have provided information and emphasized the importance of prophylactic regimens for migraine sufferers.

A one-time exception was granted to any patient exceeding the limit who presented at a pharmacy with a current migraine.

The physician was then contacted and the case reviewed.

Medical claims and costs of PCP visits, ER visits, neurologist visits, and hospitalizations due to migraine were analyzed to determine if there was any impact due to the quantity limits. Utilization and cost of prophylactic and analgesic medications used to treat migraines were also examined.

Results

Triptans

Roughly 0.5% of the MCO's 2.8 million members had a medical claim with a documented diagnosis of migraine. Of the 1.9 million members with a prescription drug benefit, approximately 0.15% had cases reviewed by the MCO as part of the migraine management program. The number of patients who filled a prescription for a triptan or DHE nasal spray increased by 6% in the post-implementation period.

From March 1 to August 31, 1999, 11,200 patients had a prescription filled for a triptan; 11,885 patients had such prescriptions dispensed from September 1, 1999 to February 29, 2000. Of this latter population, 2,939 (25%) patients had cases, typically phone calls, reviewed directly by the MCO due to the quantity limit.

The majority of cases (2,701 cases, or 91.9%) generated cost savings when the physician agreed that the plan's quantity limits were sufficient and adjusted the prescription accordingly. The remaining 238 cases resulted in 133 approvals (56% of all reviewed cases) for a quantity that exceeded the dosage limit and 105 denials (44% of all reviewed cases).

The total volume and cost of the triptans were analyzed before and after implementation of the quantity limit (see Table 1, page 469). The MCO paid a total amount of \$582,988 less on these medications during the six months after the edit was in place. The total amount paid includes the ingredient (drug) cost, plus the dispensing fees paid to the dispensing pharmacies, minus the patients' copayments.

The ingredient cost, which is determined by the price of the individual drugs, the quantity dispensed, the pharmacy reimbursement rate, and drug mix (market share shift), had an actual decrease of \$563,313. In order to estimate the financial impact of the quantity limit, the change in ingredient cost was adjusted up or down by known factors, other than prescription quantity, that influence ingredient cost. The change in market share from more expensive to less expensive triptans resulted in an estimated savings of \$104,100. The average wholesale price (AWP) increased for each triptan from 2% to 7%, with an average increase of 3.5%, in the post-implementation period. This price increase cost the MCO an estimated \$235,292 in the six months after implementation. The amount the MCO reimbursed the pharmacies (AWP minus the discount percentage)

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TABLE 4 Other Drug Utilization

	Pre-Quantity Limit March 1, 1999, to August 31, 1999		Post-Quantity Limit September 1, 1999, to February 29, 2000	
	Utilization (prescriptions filled)	Cost	Utilization (prescriptions filled)	Cost
Acute-pain medications^a	PTPM	PPPM	PTPM	PPPM
NSAIDs	74.55	\$1.45	65.15	\$1.33
Cox-II inhibitors	16.71	\$1.18	24.65	\$1.90
Opiate agonists/combination products	189.04	\$4.20	170.02	\$3.75
Narcotic and non-narcotic analgesics	79.98	\$0.99	73.20	\$0.94
Ergotamine and combination products	19.70	\$0.43	17.14	\$0.32
Total cost to plan	25,580	\$575,823	24,970	\$586,744
Difference Pre- to Post-Limits			-610	+\$10,921
Total cost savings PPPM				\$0.32
Total cost avoidance (savings)				\$22,956
	Utilization (prescriptions filled)	Cost	Utilization (prescriptions filled)	Cost
Prophylactic medications^a	PTPM	PPPM	PTPM	PPPM
Anticonvulsants	40.05	\$2.83	40.36	\$2.85
Beta blockers	87.05	\$1.68	84.66	\$1.68
Calcium channel blockers	22.47	\$0.38	21.16	\$0.31
SSRIs	111.97	\$10.24	110.55	\$10.28
TCAs	71.69	\$0.49	68.63	\$0.42
Total cost to plan	22,433	\$1,051,306	23,201	\$1,108,164
Difference Pre- to Post-Limits			+768	+\$56,857
Total cost savings PPPM				\$0.08
Total cost avoidance (savings)				\$5,697

^aSee Table 3 for a list of drugs in these classes.

Note: PTPM is per thousand patient months; PPPM is per patient per month.

for the triptans decreased by 0.16%. This resulted in an additional cost savings of \$9,204. Furthermore, there were 247 fewer prescriptions in the post-implementation period, resulting in approximately \$40,732 of additional savings. Taking into consideration all these factors and assuming the decrease in the number of prescriptions was not due to the quantity limit, the savings due to the quantity limit and other miscellaneous factors were calculated as \$644,568.

Finally, the average quantities per prescription for all prescriptions filled decreased, with the exception of rizatriptan 5 mg and naratriptan 1 mg tablets. A shift from a higher dosage strength of a drug to its lower dosage strength was not observed.

Medical Claims

The overall cost of medical claims for all patients who had a prescription filled for a triptan during the six-month period pre- and post-implementation of the quantity limit was examined (see Table 2, page 470). The utilization and cost of ER visits decreased; however, the number and cost of hospital admissions associated with a migraine diagnosis increased. These costs were not adjusted to include inflation or any updated reimbursement rates paid by the MCO to the providers.

The number of primary care physician (PCP) visits for the triptan users increased 1.5%, while PCP visits for all other members not taking triptans increased by 48%. Neurologist vis-

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its and costs associated with those visits decreased for the triptan users. The PCP and neurologist visits were counted regardless of the chief complaint at the time the patient was examined.

The actual cost of all medical claims, PCP, neurologist, emergency room, and hospitalizations increased by \$74,780. Accounting for the additional patients during the second six-month time period and assuming utilization would have remained the same, the estimated cost increase would have been \$40,673, and the maximum dollar cost the quantity limit could have potentially caused was \$34,107.

Prophylactic and Acute Pain Medications

Drug data for six months prior to and after the start of the quantity limit were evaluated for any differences in prophylactic medication usage and other acute pain (abortive) therapy usage for migraines. The medications, classified as prophylactic and acute, are listed in Table 3, page 471. The number and cost of the acute and prophylactic medications for all patients who had a prescription for a triptan and/or dihydroergotamine nasal spray were analyzed.

An increase in the overall number and cost of prophylactic medications after the start of the migraine management program was observed. The number of prescriptions filled for migraine prophylaxis increased by 768, but the cost decreased slightly on a PPPM basis (see Table 4, page 472). The percentage of patients taking prophylactic medication increased from 64.92% to 66.51% after edit implementation.

The volume and cost of the acute pain medications decreased. The number of prescriptions decreased by 610 after the quantity limit implementation. The percentage of patients taking acute pain medication decreased from 98.17% to 92.76%.

Overall, total pharmacy cost for the triptans, prophylactic medications, and acute pain medications decreased by \$12.73 PPPM (an actual decrease of \$495,534) after implementation of the migraine management program.

The total savings after implementing the migraine management program, when considering all drug and medical costs and assuming all the medical cost increase was due to the quantity limit, was \$420,754. The cost savings (including all pharmacy and medical costs) for patients who had a prescription for a triptan filled was calculated as \$12.25 PPPM.

Discussion

The results of this study show that the cost savings of the migraine management program (quantity limit on the triptans and DHE nasal spray) were not offset by additional drug or medical costs. There was a difference in estimated savings versus actual savings. The more conservative estimate, actual decrease in ingredient cost, was used to calculate the PPPM savings. Using ingredient cost versus total amount paid eliminates the influence any change in patient copayments and pharmacy

dispensing fees would have on determining the cost impact of the quantity limit. Ingredient cost also takes into consideration market share shift, drug price (AWP) changes, and pharmacy reimbursement rates. This helps isolate the change due to quantity per prescription. Without any change in quantity, the ingredient cost was forecast to increase by \$81,254 based on the factors stated above.

Although the MCO directly handled 2,939 cases, it is unlikely that these were responsible for the entire savings. The data show that prescribing habits changed across the entire population of triptan users, as evidenced by average quantity per prescription. This indicates that prescription quantities were reduced without direct intervention by the MCO. Furthermore, the cost savings based only on the results of the 2,939 cases handled (approved, denied, and those where the physician agreed to decrease the dose) were estimated to be \$169,414. The actual ingredient cost savings for the triptans was \$563,313, indicating that the quantity limit had a larger impact than those cases handled by the MCO and the limit did effectively change prescribing habits.

The medical claims results indicate the quantity limit had little impact (positive or negative) on medical claims.

There was a concern that limiting the amount of triptans might increase ER and hospital visits for treatment of migraine. However, ER visits and costs showed a slight decrease, perhaps indicating the patients had better control of their migraines. The cost and utilization of hospital admissions associated with a migraine diagnosis showed a slight increase. These increases may be due to the quantity limits, seasonal changes, or a trend toward increasing use of medical benefits by the patients. In addition, the cost data were not adjusted for inflation or changing reimbursement rates, factors that may account for some of the increased expenditures.

PCP visits for triptan users also increased after the implementation of the quantity limit, but costs associated with those visits decreased. This could be due to several factors. First, the six months after the edit was implemented was the peak of the cold/flu season (September 1, 1999, to February 29, 2000). Second, with the quantity limit in place, more patients may have sought the attention of their PCP for additional medical management for their condition. The percentage increase in PCP visits for triptan users was much lower than that observed in the non-triptan-using population, 1.5% versus 48%. These two groups are different demographically, as evidenced by the baseline utilization in PCP visits. However, these data seem to indicate an upward trend in utilization across the plan's entire membership. Despite the increase in utilization, the cost decrease in PPPM could be due to PCPs providing less expensive or fewer billable services.

The number of neurologist visits and the costs associated with those visits decreased, which might imply that the quantity limit did not influence patients or PCPs to seek neurologist

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referrals because of difficulty in managing migraines.

The increased utilization and increased percentage of triptan users taking prophylactic medication was a positive sign. Although not all the medications were necessarily used to prevent migraine, the drugs listed in Table 3 were being taken concurrently with a triptan. This increases the likelihood that the medication was for migraine prophylaxis and not for other indications (e.g., hypertension, seizures, etc.). A decrease in the utilization and percentage of triptan users taking medications used to treat acute pain was also noted, contrary to the expectation that limitations on the triptans could cause an increase in the use of acute pain medications (analgesics, etc.).

Some of the increase in the use of prophylactic medications may be due to the emphasis the migraine management program places on these drugs. In addition, physicians may have been more liberal with the prophylactic medications due to restrictions on triptans. The fact that the percentage of patients on prophylactic medications increased and the number of acute pain medications decreased may indicate that some patients achieved better control of their migraines and required less acute pain medications. This is in accordance with the goal of the MCO's migraine management program, which is to use preventive therapy when indicated and decrease the need for the triptans and other acute pain medications. The increased use of prophylactic medications may also contribute to additional cost savings realized by decreased utilization of triptans.

The quantity limit on the triptans resulted in cost savings (actual and calculated) for the MCO without restricting access to these drugs. The results show the number of patients submitting a claim for a triptan increased by 6%, which indicates that the MCO did not hinder access to these migraine medications. Also, despite the quantity limit, the results did not show an increased cost in other acute pain medications used to treat migraines.

The cost savings generated by the quantity limit were not offset by the slight increase in cost of medical claims. The actual amount saved (\$420,754) on medical and pharmacy claims due to the quantity limit may be an underestimation. Because the limit is based on quantity per month, some of the decrease in the number of prescriptions filled was probably due to the limits. In addition, it is unlikely that all of the increase in medical costs was due to an unwanted effect of the edit. However, these factors were not taken into consideration when calculating the savings in order to avoid potentially overstating the impact of the quantity limits.

Limitations

This study is a pre- and post-analysis; with no control group, statistical testing could not be done. Without such testing, it is not certain that savings can be attributed to the edit. A detailed analysis of all the other factors that influence cost changes was

performed in an effort to explain where the cost savings originated and what portion of the savings was due to the change in quantity per prescription. It is unlikely that the observed prescribing habits and the resulting decreases in quantity per prescription would have occurred to this extent and this rapidly without any intervention.

The MCO's membership is dynamic, so the patient population was not identical in the pre- and post-implementation periods, as demonstrated by the slightly larger patient population in the post-period. Even though the exact influence of the change in membership is unknown, it is unlikely that this change would substantially affect the total savings, either positively or negatively.

Also, it cannot be guaranteed that all prophylactic and acute pain medications analyzed were prescribed for the treatment of migraines. However, the likelihood that these drugs were being used to treat migraines was increased because the medications were being taken concurrently with a triptan.

Finally, even though drug mix (market share shift) resulted in an estimated \$104,100 in savings, this was not a goal of the program. Physicians were not asked to change therapy to a less-expensive triptan.

Conclusion

Implementation of a quantity limit on triptans effectively changed the utilization of pharmacologic therapy for migraines with minimal shift in the utilization of other health care resources, resulting in an overall health care savings of \$12.25 PPPM.

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