

Triptan Use and the Economic Impact of Migraine

Based on a presentation by Jeffrey P. Trotter

Presentation Summary

The direct and indirect costs of migraine in the United States alone amount to billions of dollars each year. Clinical evidence suggests that triptans are effective in treating migraine. The possible economic consequences of triptans being efficacious include more controlled use of resources and perhaps even avoidance of resources. Studies done around the time that sumatriptan was introduced to the market have documented fewer outpatient and urgent care visits, improved quality

of life, and improved productivity specifically related to the triptans. Conservative models developed to compare the cost of zolmitriptan with the cost of oral sumatriptan show that zolmitriptan is \$2.62 (6.5%) less expensive per attack; this cost savings translates into \$52.40 per patient per year if 20 attacks per year are assumed. However, naturalistic, real-world research is needed to determine whether there may be an opportunity for greater savings with zolmitriptan vs oral sumatriptan, as was shown in the model.

Economic Impact of Migraine

The economic impact of migraine is severe. The direct and indirect costs in the United States alone amount to billions of dollars each year. Direct costs for migraine itself include emergency room visits, physician office visits, diagnostics, medications (over the counter and prescription), and hospitalization. There are also direct costs related to comorbid conditions such as mental disorders, epilepsy, stroke, digestive disorders, and multiple sclerosis. Scores of studies have estimated the total direct costs to be between \$200 and \$5000 per patient per year.

Furthermore, migraine often is misdiagnosed and undertreated, which can result in increased costs. As many as 25% of undiagnosed migraineurs report severe disability.¹ The economic burden, therefore, is underestimated.

Economic Potential of Triptans

Clinical evidence suggests that the triptans are effective in treating migraine. The possible economic consequences of triptans being efficacious include more controlled use of resources and perhaps even avoidance of resources. What is required is information on how the triptans perform in the real

world. Even for sumatriptan (Imitrex), available since 1993, there is not a lot of information; for a newer drug like zolmitriptan (Zomig), the information is yet to come.

Economic Impact of Migraine Before Triptans:

The United HealthCare Study

United HealthCare Corporation, a national leader in offering healthcare coverage and related services, did a

claims-based retrospective analysis of the economic impact of migraine several years ago.² Retrospective studies, of course, are not controlled. However, in the words of Jeffrey P. Trotter, President, ClinTrials Ovation, Inc., in Highland Park, Illinois, "they're good for taking a snapshot of what's happening out in the real world and looking at utilization and at costs." The focus of the study was the costs associated with migraine patients (n = 1336) vs nonmigraine patients (n = 1336). The average age of the patients was about 38 years; 81% were women. All were managed care patients. The study took place in 1989-1990.

Results suggested that the migraine group had almost twice as many medical claims as the nonmigraine group and three times as many pharmacy claims (Table 1). Patients with migraine also had more emergency room procedures and made more claims for comorbid conditions. In this one study, the direct and comorbid costs for each migraine patient totaled \$1020 per year.

Economic Impact of Migraine After Triptans:

The Ovation/Pharmacy Gold Study

The Ovation/Pharmacy Gold study, like the United HealthCare study, was retrospective in design (unpublished data, ClinTrials Ovation). However, the focus of the Ovation/Pharmacy Gold study was not to study costs for migraine vs nonmigraine patients. Rather, the focus was to "take a more up-to-date snapshot of migraine patients in the triptan era," Mr. Trotter said. There were three diagnostic groups: migraine only (n = 866), headache only (n = 1368), and migraine plus headache (n = 588). The demographics of these patients were similar to those of the patients in the United HealthCare study, although the Ovation/Pharmacy Gold group was slightly older. The study took place in 1995-1996.

"Interestingly enough, we found that the headache-only and the migraine-plus-headache groups cost more on a

Table 1. Economic Impact of Migraine: United HealthCare Study*

Compared with the nonmigraine group (n = 1336), the migraine group (n = 1336) incurred the following:	
■	Almost twice as many medical claims (57,000 vs 33,000)
■	Approximately three times as many pharmacy claims (25,000 vs 8000)
■	Six times greater costs for diagnostic procedures (\$84,000 vs \$13,000)
■	Larger number of emergency room visits (6.2% vs 3%)
■	Significantly more claims for comorbid conditions (26,000 vs 17,000)
■	64% higher overall costs (\$3.4 million vs \$2.1 million)
■	\$320 per patient per year in direct migraine costs
■	\$700 per patient per year in comorbid costs

*The study covered 18 months of data, from January 1989 to June 1990. Costs have been adjusted for inflation to 1996 levels.
Source: ClinTrials Ovation, Inc.

Table 2. Economic Impact of Migraine: Annual Costs From Ovation/Pharmacy Gold Study*

Type of Cost	Amount (\$)
Any index drug	693
Any nonindex drug	421
Medical—diagnosis-related	1292
Medical—not diagnosis-related	457
Total costs†	2863

*The study covered 2 years of data, from January 1995 through December 1996. Costs are for migraine-only patients (n = 866).

†Of the total costs, 69% were migraine related and 31% represented comorbid conditions.

Source: ClinTrials Ovation, Inc.

per-patient basis," Mr. Trotter notes. The implication is that the level of care received by patients without the formal diagnosis of migraine may be even more fragmented and more costly.

The index drugs for the migraine-only patients were determined by noting when the first formal diagnosis of migraine was made and then noting what medication was associated with that diagnosis. A total of 37% of the patients were taking antidepressants, 36% were taking sumatriptan, 20% or so were taking beta-blockers, 4% were taking ketorolac (Toradol), and 2% were taking other drugs (eg, dihydroergotamine, other nonsteroidal anti-inflammatory agents). "Clearly, there's a pretty good penetration for newer drugs here," Mr. Trotter said.

Costs for migraine patients in the Pharmacy/Ovation Gold study are shown in Table 2. These costs are in "stark contrast" to costs for migraine patients in the United HealthCare study. The Pharmacy/Ovation Gold study reported \$2863 in direct and comorbid costs for migraine patients vs \$1020 per year in the United HealthCare study. "I've talked to the people at Pharmacy Gold," Mr. Trotter said. "There is no proactive disease management program for the treatment of migraine, so I can only suggest that while the Pharmacy/Ovation Gold study represents a new era compared with the United HealthCare study, care for migraine is still perhaps as fragmented as care that is being delivered anywhere."

Indirect Costs

Indirect costs can't be measured on a retrospective basis. In addition, "I don't know of any managed care organization that really tracks costs not incurred by managed care organizations anyway," Mr. Trotter said. However, indirect costs are important because they are incurred by members of managed care organizations and by employer customers. Among employed migraineurs, 89% reported that their job performance was negatively affected as a result of mi-

graine; when these people worked with symptoms, their productivity decreased 57%.³ Indirect costs (eg, time lost from work, reduced productivity) have been estimated to be between \$300 and \$4400 per patient per year, or \$5.6 to \$17.2 billion per year, and these costs increase with migraine severity.³ Because of the high indirect costs, patients and employers may be favorably impressed by a managed care organization that can get migraine costs under control.

Benefits of Triptans

Studies done around the time that sumatriptan was introduced to the market have documented fewer outpatient and urgent care visits, improved quality of life, and improved productivity specifically related to the triptans.^{4,5} The implications for managed care are (1) reduced direct costs, (2) increased patient satisfaction, and (3) improved work productivity.

Zolmitriptan vs Sumatriptan

Conservative models are being developed for the cost savings associated with zolmitriptan alone and for the cost savings associated with zolmitriptan vs sumatriptan. Studies must be done to

Table 3. Costs of Zolmitriptan

Costs	Before Triptans*	Percent Reduction [†]	Cost with Zolmitriptan
Direct	\$16 00	66%	\$5.44
Comorbid	\$35 00	20%	\$28.00
Indirect	\$15 00	66%	\$5.10
Aggregate [‡]	\$66 00	42%	\$38.54

*The amounts in this column represent per-attack costs. A total of 20 migraine attacks were assumed to occur per year. The \$16 direct cost and the \$35 comorbid cost are based on amounts in the United HealthCare study (\$320/20 and \$700/20, respectively; see Table 1). The \$15 direct cost is conservatively estimated based on the range of indirect costs shown under "Indirect Costs" in the text (\$300/20).

[†]The 66% reduction for direct and indirect costs is based on 2-hour effectiveness numbers from clinical studies showing that zolmitriptan can control a migraine attack within 2 hours about 66% of the time. The 20% reduction for comorbid costs is a conservative figure based on the fact that indirect costs have not been studied adequately.

[‡]Opportunity for cost savings exists if the cost of the drug is less than \$27.46 per attack (\$66-\$38.54).

determine whether the savings suggested by these models will prove true in real-world situations. Table 3 shows that the opportunity for cost savings exists if the cost of the migraine drug is less than \$27.46 per attack. As the average wholesale prices of both sumatriptan and zolmitriptan are well below that amount (Table 4), both drugs may offer cost savings. Table 5 presents a cost breakdown for zolmitriptan and sumatriptan in the treatment of migraine:

Table 4. Zolmitriptan vs Sumatriptan: Cost per Dose and Success Rate

Category	Sumatriptan PO	Zolmitriptan
Drug dose	50 mg	2.5 mg
Drug cost*	\$14.65	\$13.13
Percent success [†]	61%	66%
Cost of additional drug [‡]	\$5.56	\$4.46
Total drug cost	\$20.21	\$17.59

PO = oral.

*Average wholesale price.

[†]The best level of success at 2 hours based on clinical trials

[‡]Additional drug will be required for 39% of patients receiving sumatriptan and for 34% of patients receiving zolmitriptan.

Table 5. Zolmitriptan vs Sumatriptan: Cost Breakdown

Category	Sumatriptan PO	Zolmitriptan
Total drug cost*	\$20.21	\$17.59
Other direct costs [†]	\$6.24	\$5.44
Comorbid costs [‡]	\$28.00	\$28.00
Indirect costs [§]	\$5.85	\$5.10
Total overall cost	\$60.01	\$56.13

PO = oral.

*Total drug costs are from Table 4.

[†]Direct cost of \$16 (see Table 3 for an explanation of how this cost was determined) has been reduced by the percent success associated with each agent: 61% for oral sumatriptan and 66% for zolmitriptan (Table 4).

[‡]See Table 3 for an explanation of how this cost of \$28 was determined.

[§]Indirect cost of \$15 (see Table 3 for an explanation of how this cost was determined) has been reduced by the percent success associated with each agent: 61% for oral sumatriptan and 66% for zolmitriptan (Table 4).

^{||}There is a 6.5% overall difference in favor of zolmitriptan.

zolmitriptan is shown to be \$2.62 less expensive per attack.

If it is assumed that a patient has 20 migraine attacks per year, the \$2.62 cost savings is multiplied into a \$52.40 cost savings per year for zolmitriptan over oral sumatriptan. On a population basis, assuming that 3000 migraineurs are treated with zolmitriptan, the potential overall cost savings are up to \$157,200 per year.

Summary and Conclusions

The economic burden of migraine is substantial, the prevalence is high, and the potential for patient dissatisfaction is high. The efficacy of the triptans, however, provides an opportunity for effective migraine therapy and effective management of costs. "I think the triptan therapy combined with a disease management approach really focused on stratified care . . . has the greatest potential for cost savings with managed care," Mr. Trotter concluded. Naturalistic, real-world research is needed to determine whether there may be an opportunity for savings with zolmitriptan vs oral sumatriptan, as was shown in the model.

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