

Sumatriptan for Patients with Migraine: A Cost-Effectiveness Analysis

Lofland JH, Kim SS, Batenhorst AS, et al. Cost-effectiveness and cost-benefit of sumatriptan in patients with migraine. *Mayo Clin Proc* 2001;76:1093-101.

Study Overview

Objective. To determine the cost-effectiveness and cost-benefit of sumatriptan compared to nontriptan medications for acute migraine therapy.

Design. An economic analysis conducted on a prospective, pretest-posttest, observational study of migraine patients treated with sumatriptan. The economic analysis took a societal perspective and used a human capital approach to quantify patient disability. Sensitivity and threshold analyses were performed.

Setting and participants. The setting was a single mixed-model managed care organization. Subjects were eligible if they had a physician diagnosis of migraine, were continuously enrolled in the managed care organization for at least 6 months prior to and following their first sumatriptan prescription, and received their first sumatriptan prescription between October 1994 and August 1996. Information on occupation, employment status, productivity, and missed days from work and usual nonwork activities was collected by self-administered questionnaires at baseline, 3 months, and 6 months after beginning sumatriptan therapy. Patients were asked to report symptoms and missed days that had occurred during the 3 months prior to the survey administration.

Main outcome measures. The primary clinical outcome was total disability time resulting from migraine symptoms. Total disability time was defined as time lost from work and time lost from usual nonwork activities. Baseline disability calculations reflected nontriptan therapy, and 6-month disability calculations reflected the influence of sumatriptan therapy. Total disability during sumatriptan therapy was subtracted from total disability on nontriptan therapy to calculate total disability days averted. Health care costs included migraine-related claims, such as prescription claims and medical claims from physician visits, as well as copayments made by patients. The cost-effectiveness ratios were calculated using standard economic analysis methods. For the

cost-benefit analysis, national wage rates were used to estimate the expense of the patients' disability time. The wage rates were approximated based on a subject's self-reported occupation.

Main results. 178 patients completed the study. The mean age was 39 years, and 90% of the subjects were female. In the 6 months after sumatriptan was initiated, 1898 migraine disability days were averted; 34.9% (662) of these days were workdays. After sumatriptan was initiated, patients experienced 1.8 fewer disability days per month than with nontriptan medications. 6 months after initiating sumatriptan therapy, costs associated with medical claims decreased by \$7841, while migraine-related pharmaceutical costs increased by \$52,652. Patient copayments increased by \$2790. The incremental cost-effectiveness ratio of sumatriptan therapy for migraines was \$25 for each additional disability day averted. When the fewer disability days and increased drug costs were factored into the analysis, the overall economic benefit of sumatriptan therapy versus nontriptan therapy was estimated at a savings of \$2498 per patient per year. The benefit-to-cost ratio was \$5.67 gained for each health care dollar spent. Sensitivity analyses performed on patients' wages, medical reimbursement costs, and costs for nonwork disability time only slightly changed these ratios and did not have an effect on the overall cost-effectiveness on sumatriptan therapy.

Conclusion. Beginning sumatriptan therapy for migraine patients previously taking nontriptan therapy is cost-effective with an overall economic benefit for society.

Commentary

Lofland et al's economic analysis strengthens the existing literature supporting the clinical and economic benefits of triptan therapy for patients with migraine. This study is unique in that it is more comprehensive in its economic analysis and makes special efforts to incorporate nonwork disability and suboptimal performance into the model. These clinically important outcomes contribute to the overall strength of the study. The

model's results changed little with sensitivity analysis, indicating that the authors' assumptions were robust.

A few limitations require mentioning. The most important one is that the study was funded by GlaxoSmithKline, the makers of sumatriptan. With any cost-effectiveness paper, it is important to consider the sponsor and the potential influence it can have on the assumptions made for the model. Furthermore, the underlying initial study was observational, with a pretest-posttest design and no controls. Thus, the reduction of disability days could have been a temporal trend or the result of selection bias (patients volunteering for the study might be more or less likely to have a favorable response). Because patients had to estimate their disability days from the prior 3 months, recall bias is a potential concern.

Also, the authors used a human capital assumption that presumed that the cost for disability time during nonwork activities was equal to the hourly wage rate a patient normally received during work activities. While this assumption is debatable, it was useful for the purpose of this study. Finally, several new triptan drugs are now on the market, and the pharmaceutical costs may no longer be accurate.

Applications for Clinical Practice

Despite higher pharmaceutical costs, initiating sumatriptan therapy for migraine patients on nontriptan therapy reduces disability days and medical visits and is cost-beneficial from a societal perspective.

—Review by Harvey J. Murff, MD

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