REAL-WORLD UTILIZATION PATTERNS OF CYCLOSPORINE OPHTHALMIC EMULSION 0.05% WITHIN MANAGED CARE

Tina H Chiang[1], John G Walt[1], John P McMahon, Jr.[2], James E Mansfield, Jr.[2], Susan Simonyi[3]

[1]Allergan Inc., Irvine, CA, USA, [2]Verispan, Yardley, PA, USA, [3]Allergan Inc., Markham, Ontario

Corresponding Author: Chiang_Tina@Allergan.com

ABSTRACT

Background
Cyclosporine 0.05% ophthalmic emulsion (Restasis®) is a treatment for dry eye disease.

Objectives
To examine patients' cyclosporine 0.05% utilization patterns by analyzing prescription fill data.

Methods
A retrospective analysis with a large de-identified longitudinal patient database was conducted. Participants in the study had 1 prescription fill for cyclosporine 0.05% during a 3-month "enrollment" period from January 1 to March 31, 2004, and at least 1 refill within the following 12 months. Continuing patients had at least 1 cyclosporine 0.05% prescription fill, and new patients had none during 12 months prior to the "enrollment" period. Daily, monthly, and annual utilizations were assessed.

Results
38,164 patients met the inclusion criteria. The majority of patients were female (82%), 50 years or older (77%), and new to therapy (59%). The FDA-recommended use is 2 vials daily (2 trays/month, each tray containing 32 vials) to receive the prescribed dosage of 1 drop in each eye twice daily. Prescription refill patterns demonstrated 73% of patients used 1 tray/month; similarly, 80% of the patients used 11 trays or less per year. Daily utilization differed between continuing and new patients. New patients had a bimodal use pattern. Over 30% were using ≥1.75 vials/day and approximately 55% were using 0.25 to 1.25 vials/day. The majority of continuing patients (approximately 80%), however, used 0.25 to 1.25 vials/day.

Conclusions
Most patients used about 1 vial per day, less than the labeled 2 per day. The cost to managed care for cyclosporine 0.05% ophthalmic emulsion may be less than anticipated.

Key words: *Cyclosporine 0.05% ophthalmic emulsion, longitudinal patient database, cost, utilization*

Dry eye disease is a disease of the ocular surface that is sometimes debilitating. Research has shown that appropriate treatment may improve or stabilize it.[1,2] Cyclosporine 0.05% ophthalmic emulsion (Restasis®) is a safe and effective treatment for dry eye disease, as demonstrated by clinical trials,[3-6] and was approved by the U.S. Food and Drug Administration (FDA) in December 2002.

The action of cyclosporine 0.05% is to reduce the pro-inflammatory mediators of the disease. It decreases pro-inflammatory markers, cells, and cytokines.[3,7-11] As such, cyclosporine 0.05% has been investigated for its effectiveness against several other ocular surface disorders, such as meibomian gland disease, posterior blepharitis, LASIK-derived dry eye, atopy, and contact lens intolerance.[12-17] The FDA - approved prescribing

information recommends twice-daily instillation of cyclosporine 0.05%.[18] It contains no preservative; therefore, is packaged in trays of 32 vials intended for a single use (one drop in both eyes). Two trays provide approximately a 1-month supply.[18]

No published data address the utilization patterns of cyclosporine 0.05%. To assess its usage, this study analyzed prescription fill data from a large claims database. The results suggest that most patients used about one vial per day. Therefore, the cost of treatment with cyclosporine 0.05% may be less than if patients had used the recommended two vials per day.

METHODS

A retrospective analysis within a large de-identified longitudinal patient database was conducted. The database contained integrated pharmacy, medical, hospital, laboratory, and demographic data on approximately 60% of the US population, or approximately 135 million unique patients, and 59,000 pharmacies. Given that the database is so large, data for all types of patients are likely to be captured. Participants in the study met 2 criteria: 1 prescription fill for cyclosporine 0.05% ophthalmic emulsion (Restasis®) during a 3-month "enrollment" period from January 1 to March 31, 2004, and at least 1 refill within the following 12 months.

Continuing patients had at least 1 cyclosporine 0.05% prescription fill during 12 months prior to the 3-month "enrollment" period. New patients had no cyclosporine 0.05% claims during the 12 months prior to the 3-month "enrollment" period. For each participant, all claims for cyclosporine 0.05% ophthalmic emulsion during the 12 months, starting with the first prescription fill during the 3-month "enrollment" period, were included in the analysis.

The total number of cyclosporine 0.05% ophthalmic emulsion trays received for each patient during 12 months was obtained from the claims data. Each tray contains 32 vials. From this, the average number of cyclosporine 0.05% vials used per day was calculated, assuming each patient used all vials received.

RESULTS

A total of 38,164 patients met the inclusion criteria and were included in the analysis. Patients were identified by one fill of cyclosporine 0.05% between January and March of 2004, and at least one refill during the ensuing 12 months. The majority of patients (77%) were over 50 years old, and 82% were female (Table 1). Most (59%) were new to therapy with cyclosporine 0.05% ophthalmic emulsion (Table 1).

TABLE 1 Demographics

N	**38,164**
Age	
19-29 years	2%
30-39 years	6%
40-49 years	15%
50-59 years	26%
60-69 years	20%
70-79 years	19%
80+ years	12%
Gender	
Female	82%
Male	18%
Previous use of cyclosporine 0.05%	
New to therapy	59%
Continuing therapy	41%

We first analyzed claims in the database showing how many trays per refill that each patient received. Note that each tray contains 32 vials, with 2 trays intended to treat 1 month. Trays per refill were calculated from all claims throughout the one-year period. The analysis showed that 73% of patients received 1 tray of cyclosporine 0.05% ophthalmic emulsion when filling their prescription, whereas 27% received more than one (Figure 1).

We next analyzed how many trays were used annually, among patients who received one tray of cyclosporine 0.05% per refill. Among such patients, 80% used 11 trays or fewer; whereas, 20% used 12 trays or more in 12 months (Figure 2). For reference, 11 trays per year would correspond to 0.96 vials of cyclosporine 0.05% per day.

We then analyzed how many vials per day patients new to therapy and continuing therapy used, as calculated from prescription fills over a 12-month period. Among patients new to therapy, 55% used between 0.25 and 1.25 vials of cyclosporine 0.05% per day, 10% used 1.26 to 1.75 vials per day, and 32% used 1.75 vials or more per day (Figure 3). Among patients continuing therapy, 80% averaged between 0.25 and 1.25 vials per day, 11% used 1.26 to 1.75 vials per day, and 6% used 1.75 vials or more per day (Figure 4).

FIG. 1 Trays (with 32 vials) per Prescription Fill Dispensed to Patients (N=38,164)

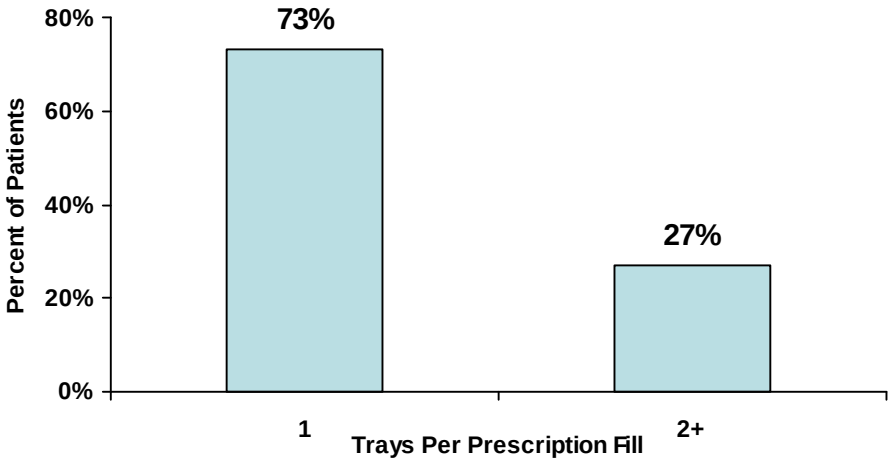


FIG. 2 Trays (with 32 vials) per Year Dispensed to Patients (N=27,860)

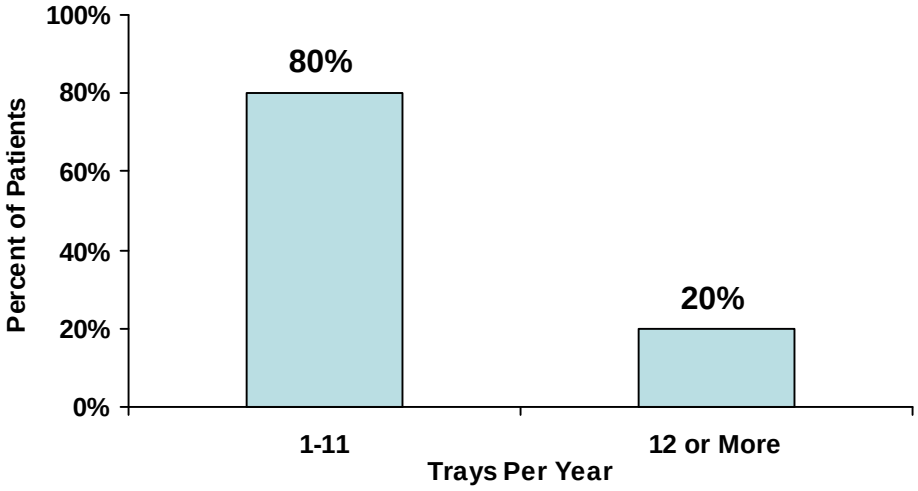


FIG. 3 Daily Dosing of Cyclosporine 0.05% for New to Therapy (N = 22,361)

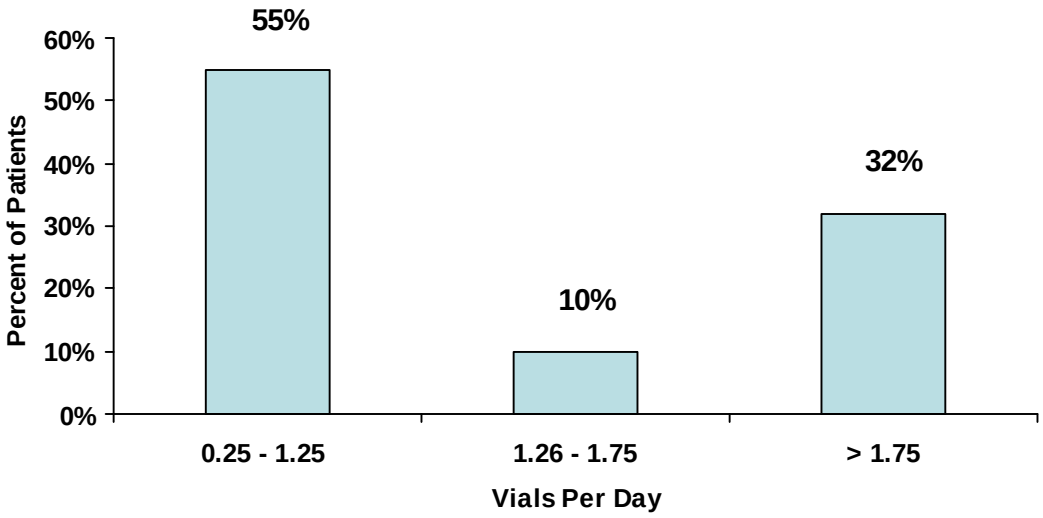
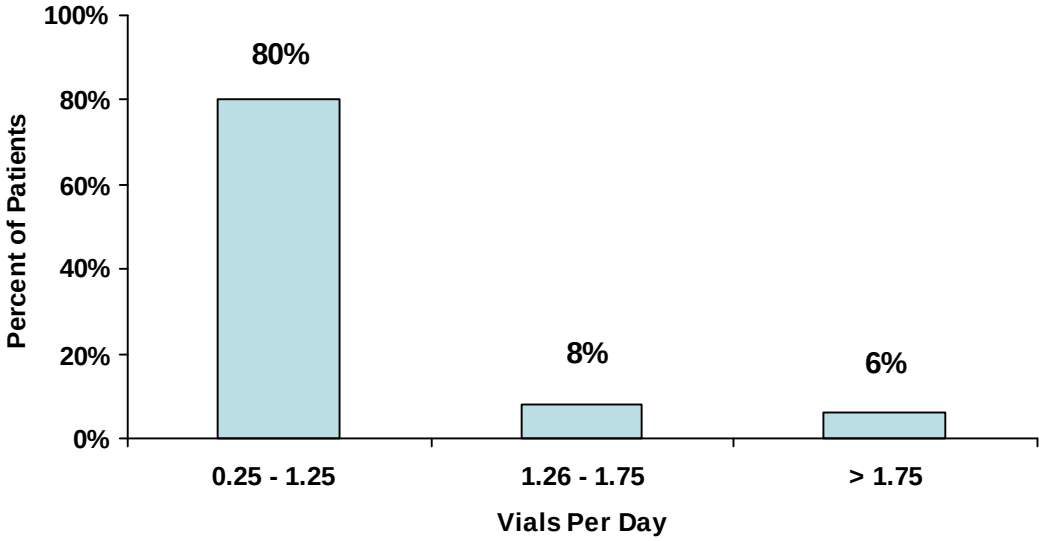


FIG. 4 Daily Dosing of Cyclosporine 0.05% for Continuing Patients (N=15,803)



DISCUSSION

This study analyzed prescription fills of cyclosporine 0.05% in a large claims database. It revealed that most patients received 1 tray per prescription refill, which if refilled monthly, would only meet about half the FDA recommended dose of two vials per day. Consistent with this, most patients who received one tray per refill used 11 trays or less per year, which works out to 0.96 vials per day, or about half the recommended dose.

There was a dichotomy between patients new to therapy and those continuing therapy. Patients new to therapy were more likely to use it according to the FDA approved dosing regimen of 2 vials per day (32%). Patients continuing therapy were less likely (6%). On the other hand, patients continuing therapy were more likely to use 0.25 - 1.25 vials per day (80%). Patients new to therapy were less likely to use 0.25-1.25 vials per day (55%).

A limitation to this study is that it does not allow assessment of clinical benefit. For example, we would not know if patients were using less, because less is working, or for some other reason. Another limitation is that the study design does not monitor actual instillation of the drops. The reasons for the observed utilization pattern may include under-dosing, re-use of vials, or other reasons that cannot be determined from claims data; therefore, additional research is required. If patients adhered to the prescribed regimen of 1 drop twice a day per affected eye, this suggests re-use of vials.

In summary, most patients used about 1 vial of cyclosporine 0.05% ophthalmic emulsion per day, less than the recommended regimen of 2 vials per day. The cost impact of topical cyclosporine treatment for dry eye disease on managed care budgets may be significantly less than that originally estimated from the recommended regimen.

Acknowledgements

The authors gratefully acknowledge John Keener, PhD, for his assistance with the writing of this manuscript. This research was supported by Allergan Inc.

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