

# Persistence and Adherence With Topical Glaucoma Therapy

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- **PURPOSE:** The present study describes the patterns and predictors of treatment persistence and adherence among patients who are diagnosed with glaucoma or as glaucoma suspects (based on claims codes).
- **DESIGN:** A retrospective cohort study using health insurance claims data.
- **METHODS:** Newly treated individuals with diagnosed glaucoma ( $n = 3623$ ) and suspect glaucoma ( $n = 1677$ ) were obtained from healthcare claims data in the Ingenix Research Database. For each of these two diagnostic groups, we calculated the duration of continuous treatment with the initially prescribed medication (persistence) and the prevalence of use of the initial medication at various time points (adherence). Four drug classes were included:  $\beta$ -blockers,  $\alpha$ -agonists, carbonic anhydrase inhibitors, and prostaglandin analogs.
- **RESULTS:** Nearly one half of the individuals who had filled a glaucoma prescription discontinued all topical ocular hypotensive therapy within six months, and just 37% of these individuals recently had refilled their initial medication at three years after the first dispensing. Prostaglandins were associated with better persistence than any other drug class, which was indicated by hazard ratios for discontinuation of prostaglandins compared with  $\beta$ -blockers of 0.40 (95% confidence interval, 0.35–0.44) for diagnosed patients and 0.44 (95% confidence interval, 0.37–0.52) for patients with suspect glaucoma. Prostaglandins showed a similar advantage in adherence. Furthermore, patients with diagnosed glaucoma were more likely to adhere to therapy than patients with

suspect glaucoma (relative risk = 1.11; 95% confidence interval, 1.05–1.18).

- **CONCLUSION:** Persistence and adherence were substantially better with prostaglandins than with other drug classes, and patients with diagnosed open-angle glaucoma were more likely to adhere to treatment than suspected glaucoma. (Am J Ophthalmol 2005;140:598–606. © 2005 by Elsevier Inc. All rights reserved.)

**A**LTHOUGH THE PREFERRED PRACTICE PATTERN OF the American Academy of Ophthalmology lists medical therapy, laser trabeculoplasty, and surgical treatment as reasonable options for the initial treatment of glaucoma, most patients initially receive topical ocular hypotensives.<sup>1</sup> If topical treatment lowers intraocular pressure (IOP) adequately, the patient is intended to remain on therapy indefinitely to improve outcome.<sup>2</sup> Although recent studies clearly have documented that the lowering of IOP decreases the risk of visual field loss<sup>3,4</sup> and slows progression from ocular hypertension to glaucoma,<sup>5</sup> many patients appear to discontinue their use of topical hypotensive agents.<sup>6–13</sup>

Most studies of persistence with topical glaucoma medications that have been conducted to date have not restricted the study population to patients who were diagnosed with glaucoma or suspect glaucoma.<sup>6–11</sup> Of the two studies that have imposed diagnostic criteria, one study included only suspects,<sup>12</sup> and the other study was fairly small (260 patients in total) and used prescribing records without ascertaining whether the prescriptions were filled.<sup>13</sup> It is important to investigate persistence of treatment within groups of patients with similar diagnostic status; ocular hypotensives that are prescribed for the treatment of primary open angle glaucoma may be used differently from those given for ocular hypertension without optic nerve damage and certainly should be used differently for transient elevations in IOP. In addition, none of the studies that were found in the literature examined both the continuous use of glaucoma medications (persistence) and ongoing use, which allowed for gaps in therapy (adherence). We undertook the present study to investigate the patterns and predictors of treat-

Accepted for publication Apr 22, 2005.

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Supported by Pfizer through a research contract with Ingenix (B.L.N.; A.M.W.) and through an unrestricted grant to Johns Hopkins University (D.S.F.; H.A.Q.). Pfizer provided support for this study through a research contract with Ingenix (B.N. and A.W.). Pfizer also provided an unrestricted grant to Johns Hopkins University (D.F. and H.Q.). One of the authors (E.M.) is employed by Pfizer; he was involved in the study design, interpretation, and writing only as a member of a steering committee; all final decisions were made by the authors not employed by Pfizer.

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# Patient-Reported Behavior and Problems in Using Glaucoma Medications

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**Objective:** The objectives of the current study were to describe the different types of problems patients receiving adjunctive therapy reported having when taking their glaucoma medications and to examine the relationship between patient-reported problems in taking their glaucoma medications and patient adherence.

**Design:** Cross-sectional survey.

**Participants:** A survey was distributed to glaucoma patients in 4 geographically distinct ophthalmology practices. We excluded patients using only 1 glaucoma medication. The survey was completed by 324 patients.

**Methods:** For each patient, average percent adherence to his or her glaucoma medication regimen was calculated. Logistic regression was used to examine how patient characteristics and problems in using glaucoma medications were related to reported adherence.

**Main Outcome Measure:** Whether patients were less than 100% adherent in the previous week.

**Results:** We found that 60% of patients reported 1 or more problems with taking their glaucoma medications. Fourteen percent of patients reported being less than 100% adherent to their glaucoma regimen medications during the previous week. Patients who had difficulty remembering to take their glaucoma medications and those who reported that they had other problems or concerns with their glaucoma medications were significantly less likely to be 100% adherent.

**Conclusions:** Patient adherence to a glaucoma medication regimen could be improved among patients receiving adjunctive therapy. Ophthalmologists and their clinical colleagues should make sure to discuss the problems and concerns that patients may have in taking their glaucoma medications in an effort to improve adherence. *Ophthalmology* 2006;113:431–436 © 2006 by the American Academy of Ophthalmology.

Glaucoma is one of the leading causes of blindness and visual disability. It is estimated that nearly 3 million Americans have glaucoma, whereas approximately 120 000 of them have been blinded by the disease. Between 9% and 12% of all blindness in the United States is attributed to glaucoma.<sup>1</sup> The absence of symptomatology in almost all untreated glaucoma patients increases the risk of nonadherence and other visually related problems among these patients.

Although numerous studies have examined the impact of nonadherence in other chronic disease states (e.g., asthma, hypertension),<sup>2</sup> few have examined nonadherence in glaucoma patients.<sup>3–9</sup> Despite the availability of effective medications for glaucoma, nonadherence to prescribed therapy is a significant problem.<sup>6,10</sup> Gurwitz et al<sup>5</sup> examined the adherence of Medicaid patients with glaucoma who were older than 65 years and who were newly initiated to a single topical agent for glaucoma. Adherence was measured through a retrospective review of prescription records. The study found that 23% of the patients did not receive a refill of their glaucoma medication within a 12-month period after the initiation of therapy.

A British study of 200 patients using eyedrops and receiving care in an outpatient clinic examined the problems encountered by patients during self-administration of eye medications.<sup>10</sup> The most frequent problems reported by patients were the inability to direct the bottle over the eye appropriately, resulting in missed drops (36%), difficulty squeezing the bottle (20%), and the inability to read the bottle labels or to identify the bottle (14%). Another interesting finding was that only 62% of patients administered their own drops. These researchers also found that 78% of the patients were interested in an adherence aid to assist them in managing their glaucoma medications, but that none were aware of any devices that were available.

Taylor et al<sup>6</sup> used qualitative methods to examine the reasons for nonadherence among glaucoma patients. They assembled 2 focus groups and conducted 11 in-depth inter-

Originally received: May 18, 2005.

Accepted: October 24, 2005.

Manuscript no. 2005-427.

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TOP STORIES 3/6/2006

## Number of glaucoma patients will continue to increase, estimate predicts

CHARLESTON, S.C. — In 2010, there will be 60.5 million people with glaucoma worldwide, and that number will increase to nearly 80 million by 2020, said Harry A. Quigley, MD.

Dr. Quigley presented his estimate of the future worldwide prevalence of glaucoma here during the American Glaucoma Society meeting. He noted that these numbers are much higher than previously published estimates.

"You get an idea of all of the world put into one place," Dr. Quigley said in an interview with *Ocular Surgery News*.

"Most of the counts of how many people might have glaucoma were using those kinds of blindness prevalence surveys which are heavily weighted in favor of identifying cataracts, but not glaucoma," he said, referring to an estimate he himself did 10 years ago, as well as others.

His new forecast was based on data only from studies in which the eye was specifically examined for visual acuity and visual field, Dr. Quigley said. The data were divided into those from different ethnic groups, including Chinese, African and those of European descent, he said.

Dr. Quigley said the biggest change in the number of people affected by glaucoma would be detectable in India. He noted that Africans are the most heavily affected by open-angle glaucoma, while angle-closure glaucoma disproportionately affects the Chinese population.

"Angle-closure is one-third as common as open-angle, but blinds almost as many people because it is a more aggressive disease," Dr. Quigley said.

Overall, he said, glaucoma is the second leading cause of blindness worldwide, disproportionately affecting some populations.

As with cataracts and trachoma, "women are also disproportionately affected by glaucoma," he said. "World blindness is a problem that women suffer from much more than men."

Dr. Quigley added that, in the developed world, 50% of glaucoma cases are diagnosed correctly and the patient is properly educated on the disease. In the developing world, "95% of the people have no idea they have glaucoma," he said.

"I knew my previous work was wrong because we didn't have the [power] to do the study, so this is a much better estimate," he said. "I'll stick by this until we have more studies."



# Patient Perspectives in Glaucoma Care: Introduction to the AMERICAN JOURNAL OF OPHTHALMOLOGY Supplement

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THE FUNDAMENTAL GOAL OF TREATMENT FOR GLAUCOMA—indeed for all ocular diseases—is to prevent (and to restore if possible) the loss of visual function. When patients seek our professional input into their condition, they are worried not about what their IOP may be or whether they have a nerve fiber layer defect, but instead if they will go blind,<sup>1</sup> and whether they can continue to drive or to otherwise enjoy their lives. Such concerns should be easy for us to understand, when we place ourselves in the role of patients—a simple reflection of the Golden Rule.

Yet, as physicians, we often make assumptions about patient desires or concerns that turn out to be incorrect, even about something as fundamental as life and death and the extent of heroic measures to undertake in terminal patients. Even family members do not fully understand the preferences or desires of patients. Indeed, when we directly ask patients about their expectations for eye care, we find that patients seek open and honest communications as one of their highest priorities.<sup>2</sup> Years of empirical evidence across all medicines and our own experiences suggest that achieving this goal remains elusive.<sup>3</sup> Indeed, in this special supplement, Herndon and associates<sup>4</sup> find that the leading reason for patients with glaucoma to switch physicians is related to communications difficulties.

To provide “patient-centered care” that better meets the needs of our patients, this supplement seeks to provide information about several key aspects of direct patient concern regarding glaucoma and its care. In so doing, we hope that physicians and readers will gain a greater appreciation of and ability to address five key patient issues. These issues are questions that we all have: (1) what is the effect of glaucoma on our ability to function (“quality of life”); (2) do we understand what glaucoma is so that we can play a role in our own care; (3) what are the side effects we can expect from treatment and how can we better address them; (4) how good are we in using chronic

medications; and (5) how much does it cost to use medications?

First, “quality of life” is a commonly used term to denote the impact of glaucoma on our patients. Yet, what does the term mean? How can we appreciate the impact of glaucoma on our patients? The first article by Spaeth and associates<sup>5</sup> reviews the available literature to present a concise summary of how this term has been conceptualized and operationalized into quantitative measures. They organize a growing literature that can be difficult to synthesize into an approach that is straightforward for the clinician to understand and apply to their interactions with glaucoma patients.

Second, what do patients truly know about glaucoma and what have they retained from what their doctor has told them? Herndon and associates<sup>4</sup> report the results of a survey of a sample of subscribers to the Glaucoma Research Foundation's (San Francisco, California) glaucoma newsletter on what they know about glaucoma. Additionally, the authors investigate patient reports of the side effect profile of their medications, a recommendation of the American Academy of Ophthalmology's Preferred Practice Pattern on Open-Angle Glaucoma<sup>6</sup> but one that is rarely documented in physician charts. While most of these patients—who are motivated more than the average patient by their subscription to the newsletter and their response to the survey—appear to understand the key foundation elements of their care, a significant minority may have a less thorough understanding. Such a finding reinforces the observations of other authors; that we need to have better tools and systems to help us educate patients appropriately.<sup>7,8</sup>

Because glaucoma is a chronic disease, we know that adherence to medications is vital to preventing visual loss and subsequent loss of functioning and quality of life. Prior studies have shown varying levels of adherence to chronic medications across all areas of medicine.<sup>9</sup> In this supplement, Wilensky and associates<sup>10</sup> analyze a pharmaceutical claims database of 1.5 million covered lives from a variety of payment systems to assess adherence (that is, consistent use of prescribed medication over time) and persistence (that is, continued use of prescribed medication over time) with the prostaglandin/prostamide class of agents, revealing some of the difficulties of doing such studies (as well as methods to address such limitations).

Accepted for publication Aug 24, 2005.

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The author has received payment as a consultant to Allergan, Inc, Irvine, California and to Pfizer, Inc. He has also received research support from Allergan, Inc, Irvine, California and Pfizer, Inc, New York, New York. The author has no proprietary interest in any of the study drugs identified in this supplement, although he owns Merck stock.

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