



Improving Glaucoma Patient Compliance

SLT reduces intraocular pressure and the need for medications.

“Drugs don’t work in patients who don’t take them.” This statement, made by former U.S. Surgeon General C. Everett Koop, MD, resonates among physicians who provide care for patients with glaucoma. On one hand, landmark clinical trials show that lowering IOP and keeping it consistent are key to preventing vision loss. On the other hand, we’re increasingly aware of how challenging it can be for patients to fully comply with the necessary treatment regimens, medications in particular, that we prescribe. (See “What Exactly is Compliance?” on S-2)

For example, while 67% of patients report that they follow their physicians’ instructions “extremely closely,” 75% admit to some form of noncompliant behavior, 33% don’t fill their prescriptions, and nearly 50% discontinue prescribed drops within 6 months.¹⁻³ Furthermore, poor patient compliance isn’t bound to income or socioeconomic levels, and with glaucoma, we have the additional challenge of racial disparities in disease characteristics and care. (See “Racial Disparities in Glaucoma Care” on S-3)

In this article, I discuss reasons why patients are noncompliant and what we as physicians can do about it, including using selective laser trabeculoplasty (SLT) as primary, adjunctive or replacement therapy.

Obstacles to Patient Compliance

Viewed from a broad perspective, we find a variety of factors that contribute to glaucoma patient noncompliance with prescribed medication regimens (Figure 1). We see poor provider-patient communication. As a result, patients may not understand their disease and the importance of using their medications. We see problems with physician interaction with the healthcare system, such as a lack of knowledge about drug costs and a lack of awareness of insurance coverage and different formularies. We also see issues related to patient interaction with the healthcare system in terms of issues, such as access to care or the pharmacy or missed clinic appointments.

More specifically, from the patient’s perspective, obstacles to compliance can be social/environmental, for example a major life event such as the death of a spouse. Major life events take the patient’s focus away from using their medications. We often hear that patients forget to take their medications on vacation. Other obstacles to compliance may be regimen-related. Patients may forget to refill their glaucoma prescriptions or struggle to follow a complicated regimen, especially when they’re taking medications for diabetes, hypertension and so on.

Side effects pose a problem for some patients, too. Red or

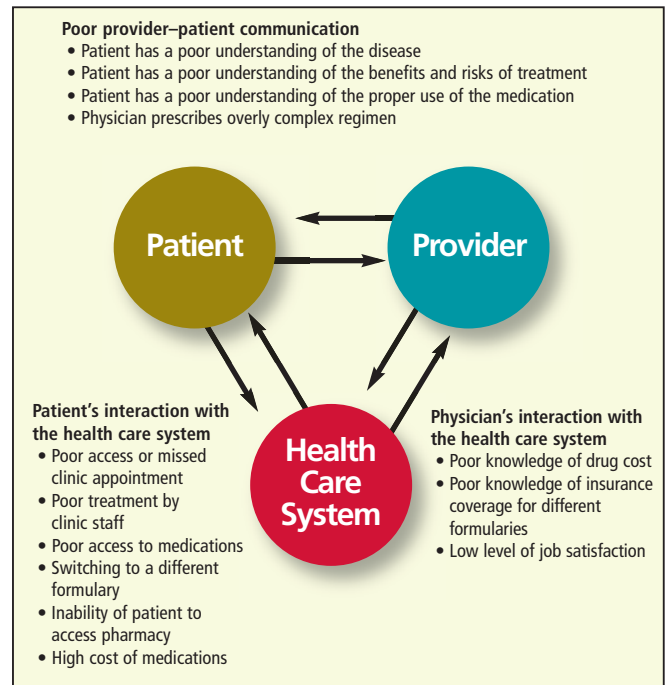


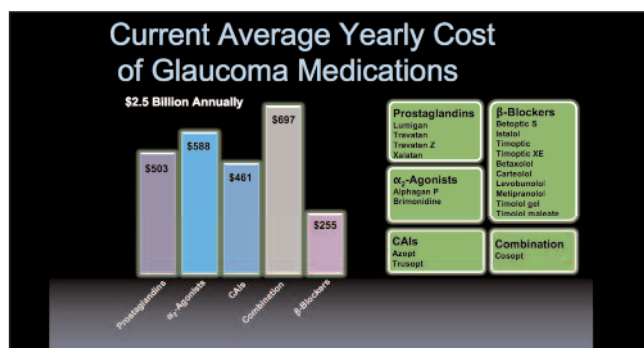
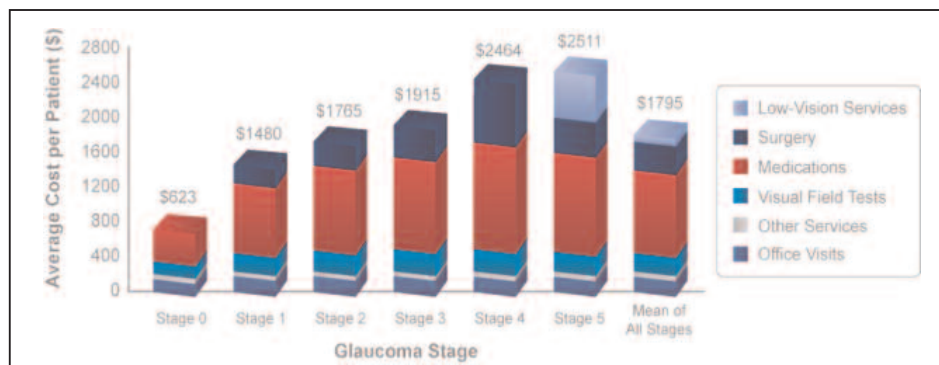
Figure 1. Issues related to provider-patient communication, physician interaction with the healthcare system and patient interaction with the healthcare system all contribute to poor patient compliance with recommended glaucoma medication treatment regimens.

burning eyes often lead to medication discontinuation. In addition, it’s difficult for many patients to self-administer their drops. They struggle to direct the bottle, causing drops to miss the eye, or they simply can’t squeeze the bottle properly or at all. Both problems interfere with proper dosing, because too much or too little medication is being delivered to the eye.

Among the biggest barriers to compliance, especially in these difficult economic times, is the cost of medications. Those costs are a major factor in the total direct cost of glaucoma (Figure 2).⁴ In one study,⁵ over 5 years, laser trabeculoplasty was associated with the lowest total costs compared with treatment by medication alone or by filtering surgery for patients who weren’t adequately controlled by two medications. The average yearly cost of medication ranges from approximately \$255 in the beta blocker category to approximately \$697 in the combination drug category (Figure 3).⁶ Furthermore, we all know glaucoma patients take an average of 2-3 medications, not just one.

When it comes to insurance coverage, today’s patients face two relatively new situations: rising copays and the “doughnut hole” in Medicare Part D. In the latter scenario, many patients

Glaucoma Costs



Figures 2 and 3. Medications account for a large portion of the cost of glaucoma care.

What Exactly is Compliance?

The terms “compliance,” “adherence,” and “persistence” are used to characterize a patient’s behaviors with respect to a physician’s recommendations and prescriptions. Physicians and researchers often rely solely on the term “compliance.” However, to be compliant, a patient must also be adherent and persistent, as defined here.

- **Compliance:** extent to which a patient takes a prescribed medication^{1,2}
 (“Yes, I am taking my medication.”)
- **Adherence:** extent to which a patient self administers medication exactly as prescribed
 (“Yes, I am taking my medication as prescribed, the correct number of drops in the correct eye, at the correct time of day.”)
- **Persistence:** length of time over which a patient continues to take a medication correctly¹⁻³
 (“Yes, I have been taking my medication for the past 6 months as prescribed.”)

1. Cramer JA. Effect of partial compliance on cardiovascular medication effectiveness. *Heart.* 2002;88:203–206.
 2. Chen PP. Blindness in patients with treated open-angle glaucoma. *Ophthalmol.* 2003;110:726–733.
 3. Dasgupta S, Oates V, Bookhart BK, Vaziri B, Schwartz GF, Mozaffari E. Population-based persistency rates for topical glaucoma medications measured with pharmacy claims data. *Am J Manag Care.* 2002;8:S255–S261.

find themselves paying out of pocket for all of their medications for extended periods of time. As a result, they may be forced to discontinue treatment. In other cases, patients are losing their insurance coverage altogether because they’ve lose their jobs.

Improving Patient Compliance

Physicians can improve the extent to which patients follow treat-

ment recommendations by improving education and communication. First, we need to continually reinforce why taking medication is so important. Second, we shouldn’t assume patients know how to instill their drops. We should instruct them about proper usage while they’re in our offices. Take-home illustrated brochures, such as those available from the American Academy of Ophthalmology, can help. We can also provide printed schedules, so patients can check off medications as they take them each morning, afternoon and evening.

To ensure our educational efforts are working, we can ask patients to bring their medication to appointments so they can show us how they instill their drops, and we can ask which ones they use at which times of day. I try to help patients think about activities they do at specific times of day, then suggest they couple those activities with using their drops. Enlisting family members who accompany patients to appointments to either provide reminders or actually help instill drops is also a good strategy.

At every visit, I make sure I’m restating key educational points for patients and reviewing options that may boost their compliance. When ocular side effects are a concern, for example, we discuss how punctal occlusion or artificial tears might help.

SLT as Part of the Solution

In addition to efforts aimed at modifying patient behavior through better education and communication, physicians can utilize SLT to mitigate problems with compliance. SLT is indicated for the reduction of IOP in patients with open-angle glaucoma. It’s effective as primary therapy, adjunctive therapy (for patients already on medications who need further IOP control) and replacement therapy (for patients with controlled IOP who want to reduce medications).

The treatment is delivered using a Q-switched, 3-nanosecond pulsed, frequency-doubled, Nd:YAG 532-nm green laser (Selecta II, Selecta Duet, Selecta Trio, Lumenis, Santa Clara, Calif.). It provides the IOP-lowering benefits of argon laser trabeculoplasty (ALT) without the coagulative damage that leads to scarring of the trabecular meshwork.⁷ Using a significantly lower energy per pulse than ALT (0.6-1.2 mJ compared with

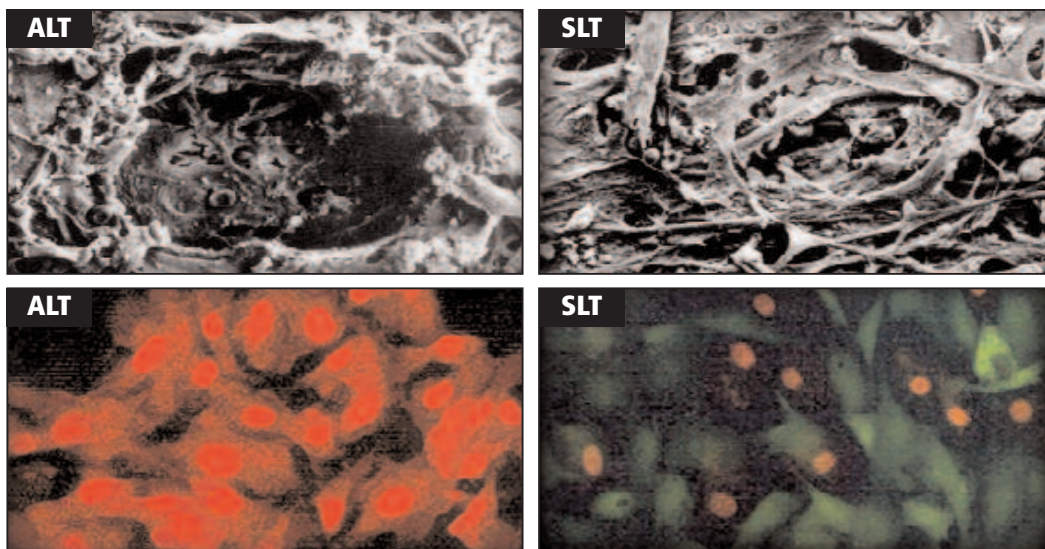


Figure 4. SLT treatments don't cause the coagulative damage to the trabecular meshwork that is associated with ALT. While ALT has high thermal absorption in all cells, SLT selectively targets pigmented cells.

40-70 mJ), SLT specifically targets pigmented cells, leaving trabecular meshwork intact (Figure 4). Therefore, SLT is believed to improve aqueous outflow and regeneration of the trabecular meshwork. It stimulates the natural mechanisms of the body to recruit macrophages and cytokines that “clean out” the trabecular meshwork, lowering IOP. The larger spot size of SLT (~400 µm) evenly distributes the laser energy and makes focusing much less of an issue than it is with ALT.

SLT as Primary Therapy

Given the gentler, yet effective, mechanism of action of SLT, I recommend it as primary therapy for most of my glaucoma

patients. Whenever I'm planning to start patients on topical medications, I offer the SLT option instead.

As primary therapy, SLT provides IOP reduction equivalent to that of medications. In a prospective, multicenter clinical study of patients with newly diagnosed open-angle glaucoma or ocular hypertension, McIlraith and colleagues⁸ found that over 12 months, SLT provided mean IOP reduction of 31%, while latanoprost (Xalatan) provided mean

IOP reduction of 30.6%. Similarly, the SLT MED Study Group⁹ found that after follow-up of at least 8 months, patients randomized to receive SLT achieved mean IOP reduction of 6.7 mmHg and patients randomized to receive medication achieved mean IOP reduction of 7.6 mm Hg. So, again, with SLT we have IOP reduction equivalent to medication with less concern about side effects and patient compliance.

In addition, the treatment effects are long lasting. Studies¹⁰ have shown the IOP-lowering effects of SLT to be sustained for as long as 18 months and 5 years. Jindra and colleagues¹¹ reported a 93% success rate for SLT over a 5-year period, defining success as no further treatment required (Figure 5).

Racial Disparities in Glaucoma Care

To provide the most effective care for patients with glaucoma, physicians must be cognizant of the possibility of patient non-compliance with recommended treatment. In addition, they must be aware of racial disparities in several aspects of the disease and its management.

According to a study by Wang and Javitt¹:

- Blacks are less likely than whites to use eyecare services.
- Blacks with diabetes are less likely than whites with diabetes to receive follow-up eye exams after hospitalization.
- Among users of eyecare services, black patients are 2.2 times more likely to be diagnosed with glaucoma.

From several other studies, including the Baltimore Eye Survey, the Barbados Eye Study and the St. Lucia, West Indies Study we know:

- Blacks are more likely to have POAG.

- Chinese people are more likely to have chronic narrow angle glaucoma.
 - Scandinavians are more likely to have exfoliation syndrome.
- Regarding central corneal thickness:
- African-Americans seem to have thinner corneas and their intraocular pressures tend to appear lower than average.
 - The Ocular Hypertension Treatment Study indicated that individuals with thin central corneal measurements are more likely to develop glaucoma, especially with elevated intraocular pressure.
- In the Advanced Glaucoma Intervention Study:
- Blacks responded more favorably to argon laser trabeculoplasty than to trabeculectomy.
 - Caucasians fared better with trabeculectomy than with argon laser trabeculoplasty after 4 years.

1. Wang F, Javitt JC. Eye care for elderly Americans with diabetes mellitus. Failure to meet current guidelines. *Ophthalmology*. 1996;103:1744-1750.

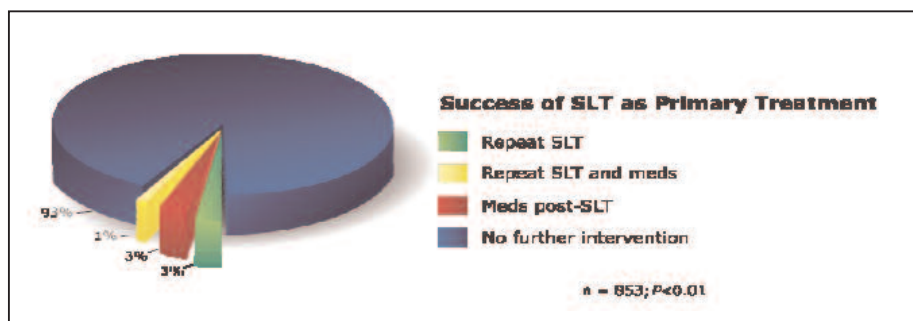


Figure 5. Jindra and colleagues reported a 93% success rate (success defined as no further treatment required) over 5 years with SLT as primary therapy.

SLT as Adjunctive Therapy

Along with our newly diagnosed patients, for whom SLT is an excellent primary therapy, we have those already using topical medication who require further IOP reduction. SLT is effective in this scenario as well. Latina and colleagues¹² studied SLT in patients with open-angle glaucoma who had been treated previously with medication and/or ALT. They found that 70% of all patients treated with SLT had an IOP reduction of at least 3 mmHg. We know the risk of glaucoma progression increases with each 1 mmHg increase in IOP fluctuation. Therefore, the ability to tighten IOP control without the cost and compliance issues of additional medication is a welcome benefit.

In my practice, even when patients declined SLT as primary therapy, I discuss the option with them again before recommending additional medication as part of their treatment regimen.

SLT as Replacement Therapy

We also can consider SLT for patients who express a desire, or financial pressure, to stop taking their medications. In the previously discussed study by Jindra and colleagues,¹¹ more than 50% of patients no longer required medications after receiving SLT therapy. Among patients who had been taking one medication prior to receiving SLT, 86% were able to taper to no med-

ications. The taper rates to no medications for patients previously on two, three and four medications were 62%, 42% and 32% respectively. In another study,¹³ 87% of eyes treated with SLT maintained reduction in medication use by at least one medication at 12 months.

Closer to Ideal Therapy

In general, we can expect glaucoma patients who respond favorably to topical IOP-lowering medications to respond

favorably to SLT. While the highest success rates are achieved when SLT is used as primary therapy, the studies cited in this article, and my personal experience, support its benefits as adjunctive or replacement therapy as well. When compared with other treatment options for our glaucoma patients, SLT is:

- Safe — it's not associated with systemic side effects
- Selective — photothermolysis specifically targets pigmented cells, leaving trabecular meshwork intact
- Smart — cellular photoactivation stimulates the body's natural mechanisms to enhance aqueous outflow, and when used as primary therapy SLT is as effective as ALT and medication
- Sensible — it reduces or eliminates the cost and compliance issues associated with medications.

At some point in the future, physicians treating glaucoma may have additional treatment options, such as injectable treatments or medication-releasing contact lenses or implants, all of which could help improve patient compliance. Until that time, however, the efficacy, tolerability and relatively low cost of SLT make it an excellent choice for helping to safeguard our patients' vision.

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