
pliant patients to standard practice or an intervention consisting of an educational video about drops and usage, a discussion with a coordinator about the barriers to taking medications and reminder phone calls from nonphysician personnel. Indeed, the patient education intervention improved electronically monitored drop compliance by 19% (baseline proportion of doses taken was 54% and increased to 73%). Given the pressures physicians already face with busy clinics, it may be effective and efficient to train office staff to administer brief surveys and to discuss with patients barriers to drop taking.

What interventions can physicians perform to improve patient adherence to eye pressure lowering therapy? There is no answer in the ophthalmic literature, but if one turns to other chronic medical conditions treated primarily with medications, i.e. hypertension, there appears to be three beneficial strategies: using medications with fewer side effects, using cheaper medications and simplifying the medication regimen. There will always be some patients who fail to take medications as instructed, but, with the combination of targeted education and the anticipated arrival of generic prostaglandins (the first low-cost, once-daily eye drop), medication adherence certainly could be improved.

References

Practical Tips: How to Provide the Best Possible Care for Patients with Glaucoma: Personalize it!

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Core concepts
- The overarching goals in glaucoma care are to restore, maintain or improve the patient’s health and to personalize care.
- There is a diagnostic procedure of choice, a drug of choice and a surgical procedure of choice for each individual person. This is not the same for everyone.
- Five things have to be known for each person: the mechanism and stage of the glaucoma, the rate of change of the stage, the patient’s overall health (function plus quality of life) of each person as an individual.

Introduction
There are two overarching guidelines that apply to caring for patients with glaucoma.
1) Always direct attention towards restoring, maintaining or improving the overall health (function plus quality of life) of each person as an individual.
2) Always personalize care.

There is no other generally appropriate guideline. Specifically, there is NO diagnostic procedure of choice for glaucoma, NO drug of choice for glaucoma, NO surgical procedure of choice for glaucoma. But, there is a diagnostic procedure of choice, a drug of choice and a surgical procedure of choice for each individual person.

Regarding principle number 1 beware of substituting surrogates for the relevant outcome. Lowering intraocular pressure (IOP) and preserving visual field are not the relevant outcomes. They are only some of the measures that a good physician uses to try to achieve the real goal, maximizing health. Regarding principle number 2, personalization, five things have to be known for each person:

a) the mechanism of the glaucoma (gonioscopy answers this)
b) the stage of the glaucoma (ophthalmoscopy answers this)
c) the rate of change of the stage (unbiased evaluation of serial, valid data points answers this)
d) the duration the glaucomatous process will continue (usually the same as Years, Estimated Remaining (YER))
e) the ability of the patient to care for himself / herself.

To elaborate further on the above points:

a) Mechanism – gonioscopy. There is no substitute for gonioscopy at the slit
b) Staging. Get a valid estimate of the stage of the person’s glaucoma. The best indicator in this regard is the nature of the optic disc, not the visual field or the IOP. The thickness of the retinal nerve fiber layer is not sufficient. Cup/disc ratios are a rough approximation but are unsatisfactory because they do not relate validly to the results of field examination and they do not take into account the position of the cup or the size of the disc. The Disc Damage Likelihood Scale (DDLS) is an easy and accurate way to estimate the amount of damage (Figure 1). Knowing whether the patient has mild (green), moderate (orange) or severe (red) damage provides immediate guidelines regarding the type of treatment that is appropriate.

There is rarely any urgency to initiate therapy. There is usually time to evaluate the severity of the glaucoma and establish a rate of change. When the patient is in the yellow zone with moderate damage, treatment is almost always needed. When the patient has advanced disease, any worsening of the condition will be associated with a decrease in quality of life. Therefore, it is usually advisable to try to lower IOP as much as possible without subjecting the patient to undue risks.

c) Establishing rate of change. Patients want to know and doctors need to know what will likely be happening in the future. Establishing this requires valid data points. It is essential to develop a method of establishing as best as possible what is going to happen in the future. Obtaining valid data points regarding glaucoma is difficult and requires great skill, minimization of bias, and willingness to ignore what may be misinformation. Invalid entries on the record are worse than having no entry, because they are used for decision-making, but, because they are wrong, they may lead to wrong decisions. It is far better to say, “I do not know, and we need better information,” then it is to give advice based on faulty information. The practical points are:

- Demand excellent performance from technicians, and demand honesty from yourself, which requires limiting bias and acknowledging conflicts of interest. In this regard, when obtaining data or interpreting data, technicians and physicians should mask themselves to previous data. For example, when measuring IOP on a patient who has had a laser trabeculoplasty, measure the pressure in both eyes without knowing what the earlier pressures were or which eye had the trabeculoplasty. When evaluating a disc, do so before reviewing the previous evaluation and do so in the absence of ancillary information such as the nature of the visual field. “Smoothing” by averaging data points can eliminate “outliers,” but only leads to more valid information when the spread of data follows a Gaussian distribution, which is often not the case. Two truly valid data points are more valuable than ten invalid ones, and much less expensive and time-consuming. The more data points the more false-positive interpretations will occur, leading to incorrect treatment. As trends are more likely to be accurate when data points are averaged, obtain two or three good data points and use the average of them as a baseline, and two or three good data points and use the average of them as the basis for comparison. This system works better than obtaining four to six separate data points. However, the averages may not be accurate, as mentioned already. The general rule is get data which is as valid as possible. Insist on this.

- Finally, acknowledge that biological data rarely follow linear trends. Long-term trends are difficult or impossible to predict accurately. Everytime an important decision is made, such as setting the target pressure, re-evaluate the data.
to determine what the new direction and trend really are. For example, recognize that target pressures are tentative guesses; they need to be validated. New target pressures must be established when new decisions are being made.

d) Years Estimated Remaining (YER). For many chronic diseases, including the common glaucomas, the duration of a disease process stems from when the disease starts until the person having the disease dies. Having a reasonable idea of how long the person will live, then, is essential for care to be rational and appropriately personalized.

Two practical points follow: 1) It is possible with a high level of accuracy to predict the likelihood of a person living five more years, and with a reasonable degree of accuracy whether a person will live 20 more years, and 2) It is not possible to predict accurately how long a person will live on the basis of the age of the person. The first and most important factor relates to whether the person has a condition which will affect YER: e.g. an individual with an aggressive metastatic malignant melanoma is not likely to live more than a year. A second important consideration relates to general health, which is a Gestalt impression that can be usually given accurately by the patient; asking about the person’s level of energy is a good clue in this regard. A third criterion relates to the person’s weight, a fourth to whether they smoke cigarettes, a fifth to whether they drink more than one beer or one cocktail a day, a sixth to the age at which family members died, and a seventh to the person’s age. The number of YER can be estimated, using the information in Table 1. Recall, current age is not a good indication of years estimated remaining (YER).

c) Ability to care for one’s self. It is not difficult to get a good idea of how well people can care for themselves. Providing appropriate personalized care requires having a good understanding of how well or poorly the patient can care for himself or herself. It is unrealistic to expect patients who are biologically, psychologically or emotionally unable to comprehend, to articulate concerns, to adhere or to persevere to do those very things.

Table 1. The individual is assigned 20 years, estimated, remaining (YER).

<table>
<thead>
<tr>
<th>Age &gt; 75 years</th>
<th>Subtract 1 YER for each year above age 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health: fair</td>
<td>Subtract 5 YER</td>
</tr>
<tr>
<td>General health: poor</td>
<td>Subtract 10 YER</td>
</tr>
<tr>
<td>Overweight</td>
<td>Subtract 1 YER for each 50 excess pounds</td>
</tr>
<tr>
<td>Smokes cigarettes</td>
<td>Subtract 2 YER</td>
</tr>
<tr>
<td>History relatives die prematurely</td>
<td>Subtract 2 YER for each ten years below age 70</td>
</tr>
</tbody>
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Result is the minimum YER (years, estimated, remaining)

For example,

Case One: A 50-year-old man in poor health (−10) who is 100 pounds overweight (−2), smokes (−2) and whose brothers died before age 55 (−2).

\[-10 + \left( -2 \right) + \left( -2 \right) = -16\text{ YER}\]

\[20 - 16 = 4\text{ YER for this person.}\]

Case Two: A 90-year-old woman in excellent health whose siblings all lived into their 90’s.

\[90 – 75 = 15\text{ YER}\]

\[20 – 15 = 5\text{ YER}\]

This woman has an excellent chance of living to be 95.

In summary:

1. Always direct attention towards restoring, maintaining or improving the overall health of each individual person.
2. Personalize diagnosis and care.

References:
