

Doctor–Patient Communication in Glaucoma Care

Analysis of Videotaped Encounters in Community-Based Office Practice

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Purpose: To assess doctor–patient communication in patients with glaucoma.

Design: Observational cohort study.

Participants: Twenty-three ophthalmologists and 50 patients with glaucoma.

Methods: Doctor–patient encounters were audio- and videotaped and analyzed using validated sociolinguistic approaches. After the visit, the doctor and the patient completed questionnaires, and patients were interviewed using a semistructured, patient-centered protocol.

Main Outcome Measures: Summary statistics about doctor–patient encounters, assessment of alignment of attitudes between patients and doctors, and patient admission to missing doses.

Results: Physicians spent an average of 8.0 (standard deviation [SD], 3.1; median, 7.8) minutes in the room with the patient and an average of 5.8 (SD, 2.4; median, 7.5) minutes talking with the patient, delivering 70% of all spoken words and asking two thirds of all questions. Glaucoma-related discussion occupied 50% of talk time and was focused primarily on examinations and treatment (25%). One third of discussions addressed ocular issues other than glaucoma. Virtually all physician questions (94%) were closed ended. Most patient questions were about intraocular pressure (20% of visits), details of the medication regimen (20%), disease status (14%), and testing (12%). Although physicians and patients were aligned in believing that the physician should control the visit agenda, physicians tended to support greater physician control of decision making than did patients. Physicians failed to identify most patients who admitted to missing doses, a surrogate for nonadherence, stating that 10 of 13 in this category were taking drops “all” or “most” of the time. Physician interviews detected 3 of the 11 patients whose postvisit questionnaire indicated missing a dose in the last week compared with 11 of the 11 detected by the postvisit research interview. Patients who stated they had missed doses recently reported being less satisfied with the doctor–patient encounter than those who did not.

Conclusions: Doctor–patient dialogue was universally physician centered; physicians spoke 70% of the words and asked closed-ended questions that restricted the patient’s contribution to “yes/no” or brief responses. A minority of physicians ever asked patients if they had questions. In contrast with the patient-centered research interview, doctors’ physician-centered communication failed to identify most patients who had missed doses.

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Patients frequently fail to take medications as prescribed. A large meta-analysis of medication adherence found that nearly 25% of doses are missed on average across medical specialties.¹ Similar findings were reported for adherence with glaucoma medications using several different pharmacy claims database analyses.^{2–5} Studies of patient adherence with topical therapy using electronic monitoring also reported similar findings.^{6–8} Although it is clear that nonadherence is common, few studies have identified risk factors for poor adherence.

The Glaucoma Adherence and Persistency Study⁹ reported that adherence was significantly lower among “doctor-dependent” patients who learned “everything they know” from the physician, lacked confidence in their knowledge of glaucoma, and reported that their physicians did not elicit their participation in discussion by asking if they had questions or understood. The Glaucoma Adherence and Persistency Study also demonstrated poorer adherence by “unconcerned” patients (i.e., those who did not think that missing their eyedrops would increase their risk of losing vision).

Both “doctor-dependent” and “unconcerned” patients reported that their doctors had not explained to them what glaucoma might do in the future, an experience that was independently and significantly associated with nonadherence. Both of these nonadherent groups reported that doctors gave fewer responses to their questions than was reported by the most adherent patients; better communication by physicians was associated with better adherence. Most ophthalmologists reported using the same limited repertoire of communication strategies to address nonadherence. A minority of ophthalmologists, who had patients with higher adherence rates, asked patients about their understanding of glaucoma and acknowledged to their patients that perfect adherence is difficult to achieve⁹ (Hahn SR, Friedman DS, Tan J, et al. Raising motivating concern: doctor–patient communication in glaucoma treatment. Paper presented at: World Ophthalmology Congress, 2008; July 1, 2008; Hong Kong, China).

These findings raise the possibility that improved doctor–patient interactions may result in better adherence. In fact, the American Migraine Communication Study¹⁰ examined communication in care of patients with migraine and documented that patients and health care providers are often misaligned in their understanding of the patient’s experience. This study demonstrated that an intervention to improve communication by physicians in community practice increased the use of targeted communication skills and improved doctor–patient “alignment,” which is when the physicians’ understanding of the patients’ beliefs, attitudes, and experiences are in agreement with the patient’s self-report.¹¹

We conducted a 2-phase, interventional study to investigate whether an educational intervention designed to improve communication about adherence to topical glaucoma therapy would alter how ophthalmologists communicate with their patients. In the first phase, we specifically evaluated current doctor–patient communication in relation to the detection and management of nonadherence to glaucoma medication. Ophthalmologists’ encounters with glaucoma patients were audio- and videotaped. After the visit, these patients and their physicians were queried about their experiences. In the second phase, physicians from phase 1 were trained in potentially useful new communication strategies and then were again observed by audio- and videotape to assess change. This article provides findings from phase 1 of the interventional study.

Methods

Patient and Physician Selection

The investigators consisted of 2 glaucoma specialists (DF, HQ), 2 specialists in patient–doctor communications (SH, MO), a research methodologist (SK), and a statistician (JM). The study received Independent Investigational Review Board Inc. (Plantation, FL), and Johns Hopkins Investigational Review Board approval. Written, informed consent was obtained from both physicians and patients. A total of 743 invitation letters was mailed to community-based ophthalmologists who see ≥ 5 glaucoma patients per day, and who were known to prescribe glaucoma medications frequently from data provided by Pfizer (Table 1; avail-

able online at <http://aaojournal.org>). This list was used to identify physicians prescribing glaucoma medications and was not used for any other purpose. For logistical reasons, we limited the sample to doctors in New Jersey, New York, and Maryland. We excluded persons who had subspecialty training in glaucoma. Of the 143 practices who responded, 23 met these criteria and agreed to participate. Patients and physicians were compensated for their participation in the study. Physicians were aware that an educational program was planned. Physicians consented to the following: “This study will be conducted in 3 phases: Phase I—in-office recording of dialogue with glaucoma patients; Phase II—off-site training sessions to learn techniques to have a more efficient, effective dialogue; Phase III—in-office recording to determine the effectiveness of the training in phase II.”

Ophthalmologists or their office staff identified glaucoma patients with scheduled appointments who might be eligible for the study. To be eligible for the study, patients had to be ≥ 40 years of age with a diagnosis of open-angle glaucoma or ocular hypertension and have been undergoing treatment with ocular hypotensive eyedrops for the preceding 12 months or longer.

Data Collection

The study design included observation of 1 visit to the doctor by each patient, including audio- and videotaping of all encounters with the ophthalmologist and virtually all of the encounters with the technician. Field researchers spent up to 2 days in each office collecting data. Each of the 23 ophthalmologists yielded ≥ 1 patient for the final sample of 50 patients; none contributed > 4 , and the average was 2 patients per physician. Ninety-nine patients were approached; 16 refused participation. Of the 83 recorded visits, 50 were included in the analysis. Eighteen recorded patients were excluded for the reasons shown in Table 2 (available online at <http://aaojournal.org>). Of the remainder ($n = 65$), a random selection was enrolled until the desired sample size of 50 interactions was obtained.

Research staff recruited and obtained consent from patients upon their arrival in the clinic. Patients and physicians were aware that the visit would be audio- and videotaped. To minimize the impact of videotaping on patient and physician behavior, patients and physicians were told that the study was about communication with glaucoma patients, but were not informed of the specific research question. Recordings of the interactions between the ophthalmologist and the patient were transcribed and analyzed using validated sociolinguistic approaches.^{12–16} Transcripts were used to assess the nature of the doctor–patient interaction, including a quantitative assessment of the topics discussed and time spent on them, as well as the number and type of questions asked and answered. We categorized questions asked by physicians as either open ended or closed ended. Open-ended questions provide a broad set of response possibilities for the patient in contrast with closed-ended questions, which limit the patient response to answers such as “yes” or “no,” a number, or a selection from a brief list of choices.

Postvisit Written Questionnaires

After the visit, questionnaires were administered to the doctor and the patient assessing their general beliefs and attitudes about doctor–patient communication and their experience during this particular visit. Each physician completed a single questionnaire assessing his or her own beliefs regarding who should be in control of the visit agenda and the relative roles of the doctor and patient in medical decision making and in learning about glaucoma and its treatment. Physicians also completed a patient-specific questionnaire about the attitudes that they believed each participating

Table 3. Baseline Demographics and Characteristics of Physicians (n = 23)

Characteristic	Value
Age (yrs); mean (SD)	53.2 (8.89)
Range	39–67
Male gender, n (%)	21 (91.3)
Years in practice, mean (SD)	24.1 (8.44)
Range	9–41
Ethnicity, n (%)	
Caucasian	20 (87%)
African American	1 (4%)
Asian	1 (4%)
Indian	1 (4%)
Location, n (%)	
Maryland	7 (30%)
New Jersey	8 (35%)
New York	8 (35%)
Subspecialty, n (%)	
No	20 (87%)
Yes	3 (13%)
Group or solo practice, n (%)	
Group	14 (61%)
Solo	9 (39%)

SD = standard deviation.

patient held regarding the same issues (i.e., who should be in control of the visit agenda and relative roles in decision making and learning about glaucoma). The patient-specific questionnaire also assessed the physician's perceptions of the patient's beliefs and concerns about glaucoma; the patient's adherence and barriers to adherence; and the physician's own as well as the patient's satisfaction with the interaction. The patient questionnaire contained similarly phrased questions about the patient's beliefs and attitudes on the same patients as well as self-reported adherence. The physician and patient questionnaires used the same anchored, Likert-type response choices for similar questions. This design was employed so that patient and physician responses to questions assessing similar content could be directly compared. For example, physicians were asked, "Overall, how concerned do you think this patient is about what glaucoma might do in the future?" and patients were asked, "Overall, how concerned are you about what glaucoma might do to you in the future?" The paired questions were used to assess the degree of agreement between patient and physician pairs, and to assess whether physicians were aligned with their patients, that is, whether they were aware of the patient's beliefs whether or not the physician's own beliefs agreed with those of the patient. The direction of the Likert scale responses was set so that the response given a numerical value of "1" indicated the most desirable response (e.g., motivated to adhere, concerned about disease, actively engaged in self-management) and the higher numbered responses indicated less desirable responses.

Postvisit Patient Interview

Research staff also interviewed patients immediately after the doctor visit. The interview assessed patient's adherence to treatment using a semistructured, patient-centered protocol, described below, that was designed to decrease patient's reluctance to acknowledge nonadherence by assuring the patient that the interviewer understood that nonadherence is both common and understandable, and that accurate information about actual adherence is important, because it can have a significant impact on treatment decisions.

Missed Doses

A meta-analysis of studies using the question "Have you missed any doses of medicine in the last week?" found that 87% of patients who respond "yes" have clinically significant nonadherence (but the question detects only 55% of all nonadherent patients).¹⁷ We therefore used a "yes" response to this question as a surrogate for patients who were likely not fully adherent to topical therapy. When patients satisfied 1 of 3 criteria: (1) admitted missing a dose in the last week on the postvisit questionnaire; (2) admitted missing doses during the videotaped doctor–patient encounter; or (3) acknowledged nonadherence during the postvisit interview they were considered to be at high risk of nonadherence. We defined physician detection of missed doses as a response by the physician on the postvisit questionnaire indicating that the patient takes medication less than "all" or "most" of the time.

Statistical Methods

Spearman correlations were used to assess agreement and alignment between paired items of the physician and patient postvisit questionnaires. Wilcoxon signed rank tests were used to assess the statistical significance of the differences between patient and physician responses to the paired items. The distribution of physician and patient responses was compared between adherent and non-adherent patients using Fisher exact tests ($P \leq 0.05$ was used to determine statistical significance).

Results

A total of 23 ophthalmologists and 50 patients were enrolled in the study from November through December 2007 (Tables 3 and 4).

Table 4. Baseline Demographics and Characteristics of Patients (n = 50)

Characteristic	Value
Age (y)	
Mean \pm SD	72.0 \pm 11.81
Range	45–92
Age at glaucoma diagnosis (y)	
Age (y)	61.5 \pm 14.1
Mean \pm SD	30–87
Male gender, n (%)	21 (42)
Location, n (%)	
Maryland	15 (30)
New Jersey	17 (34)
New York	18 (36)
Length of doctor–patient relationship, n (%)	
<1 y	3 (6)
1–3 y	3 (6)
3–5 y	12 (24)
>5 y	31 (62)
Insurance coverage, n (%)	
None	0
Medicare/Medicaid	13 (26)
Private	12 (24)
Private/Medicare/Medicaid	25 (50)
Prescription coverage, n (%)	47 (94)
Visit frequency, n (%)	
Every 2–3 mos	22 (44)
Every 6 mos	16 (32)
Other	12 (24)

SD = standard deviation.

Table 5. Percent of Time Spent in Doctor–Patient Discussion*

Topic	Medical Treatment	Surgical/Other Treatment	Disease Education	Symptoms	Examination	Diagnosis/History	Ocular Comorbidities	Nonocular Comorbidities	Small Talk
Mean	20.99	0.38	2.23	0.23	25.33	0.40	33.18	7.52	9.73
Standard deviation	13.10	1.46	5.32	1.14	13.44	1.11	19.59	10.22	8.29

*Percent of talking time devoted to topic. Physicians spent an average of 5.8 ± 2.4 minutes (median, 7.5) talking with the patient and an average of 8.0 ± 3.1 minutes (median, 7.8) in the room with the patient, including silent time during examination and recording the patients' charts.

Ophthalmologists had an average of 22.7 years in practice, had a mean age of 53.2 years (range, 39–67), and were largely male (21/23, 91.3%; Table 3). Patients were 58% female, with an average age of 72 years; all patients had seen the study ophthalmologist previously and 62% had been seeing the study ophthalmologist for ≥ 5 years (Table 4). The average visit lasted 12.2 minutes (standard deviation [SD], 5.4; median, 11.3 minutes), including time spent with the physician and with the technician during both silent examination and conversation. The physician spent an average of 8.0 minutes (SD, 3.1; median, 7.8 minutes) in the room with the patient and spent an average of 5.8 minutes (SD, 2.4; median, 7.5 minutes; Table 5) talking with the patient. Patients spent an additional average of 6.2 minutes alone with the technician in the 36 out of 50 encounters, during which the technician worked separately with the patient.

Content and Process in Physician–Patient Dialogue

Glaucoma-related discussion occupied 50% of speaking time and was focused primarily on examinations and medical treatment (25%; Table 5), including some education about medications (Table 6). One third of the visit was spent discussing ocular issues other than glaucoma, most often visual acuity. Disease education occupied only 2% of encounters on average.

During physician–patient encounters, physicians spoke 70% of the words. Physicians asked questions about glaucoma in 94% of encounters, averaging 5.6 questions per visit. Virtually all physician questions (94%) were closed ended. Open-ended questions about adherence were observed in 18% of encounters (e.g., questions that began with: “Tell me about . . .” or “How are things . . .”). Most visits (41/50) contained closed-ended questions about adherence, and 14% of visits contained questions that presumptively asked patients to confirm that they had been adherent (i.e., “My assumption is that you’re taking your eyedrops pretty faithfully?”). There were no questions assessing patient understanding of the purpose of their medication. Physicians perfunctorily asked patients if they had any questions in 9 visits (18%), essentially signaling the end of the visit in most instances, and

Table 6. Example of Doctor–Patient Discussion of Glaucoma: A 61-Year-Old Male Patient with the Ophthalmologist

Doctor	Right now your vision is improved to about 20/40 in that eye. Now the pressure was, at that point last week, 38, which have (sic) been reduced actually from 54, so your medication now you're taking the Lumigan and the Timoptic, right?
Patient	Yeah.
Doctor	And your pressures today are still a little high, 23. We really want you a little lower than that, and we need, when we look at your optic nerve and what have you, we need pressures closer to 15. Okay? In that vicinity. But we're getting there.

received meaningful responses on 2 occasions. Patients asked an average of 3.2 questions about glaucoma and its treatment in 62% of encounters and almost always received a direct response (98%). The most common questions were about intraocular pressure (20% of visits), details of the medication regimen (20%), disease status (14%), and testing (12%).

Assessing Patient Understanding, Motivation, and Barriers to Adherence

Physicians and patients discussed specific barriers to adherence with glaucoma medication in 38% of visits, focusing on side effects in 24%, and the mechanics of administration in 20% (Table 7). Physicians made inquiries about the need for refills in 36% of encounters. Only 2 of the 19 (16%) patients asked admitted having the barriers they were asked about. Patients offered unsolicited information about barriers such as side effects (6 visits), drop administration (3 visits), getting the medicine (2 visits), and cost (2 visits) in 32% of visits. Physicians acted on barriers in 20% of visits, giving instructions in 5 visits, switching medication in 4, and giving samples in 2. Medication refills were discussed and provided in 9 visits.

Ophthalmologists assessed patients' understanding of their regimen in 8 visits (16%), using an open-ended question or asking the question in a context that made the focus on understanding clear in 6 instances. In the other 2 discussions of understanding, the physician asked an apparently perfunctory, “Any questions?” inquiry and received meaningful answers. Physicians rarely assessed patient's concerns about glaucoma (2/50, or 4% of visits). Physicians

Table 7. Doctor–Patient Communication in Assessing Barriers to Adherence

A 76-year-old female patient with the ophthalmologist	
Doctor	Terrific. Okay. Any side effects? Any problems from it?
Patient	No, none at all that I noticed. Nothing.
A 58-year-old male patient with the ophthalmologist	
Doctor	Yeah. So, umm, okay. No side effects? No problems with it?
Patient	No, no.
Doctor	Doesn't bother your eyes?
Patient	A little burning for a couple of minutes, but—
Doctor	But it's tolerable?
Patient	Sure. Not a—not any big deal.
Doctor	Okay. It's—it's tolerable.
Patient	Sure [laughs].
Doctor	It's better—better to use drops that have a little stinging burn than to go blind.
Patient	Yeah, yeah.

asked questions about patients' attitudes or experiences with treatment in 11 visits (22%). However, they phrased their questions in a way that presumed the absence of problems in 5 of those discussions, and, not surprisingly, patients confirmed the presumption (Table 7). Overall, understanding, concerns, or attitudes toward treatment were addressed in 17 (34%) of visits.

Alignment in the Doctor–Patient Relationship

Most patients (72%) agreed at least “somewhat” with the statement that physicians should set the agenda, and in 62% of encounters physicians believed that their patients would agree at least somewhat with this expectation. Physician's and patients' responses correlated significantly, indicating that the physician's perception of their patient's attitude was aligned with the patient's actual beliefs (Spearman's $r = 0.42$; $P = 0.002$; Table 8, question pair 1; available online at <http://aojournal.org>); and mean responses to the 6-point Likert scale for these items was virtually identical (2.92 and 2.96 for physician and patient, respectively; $P = 0.70$). When asked about their own beliefs about who should set the agenda, most physicians (66%) thought that they should set the visit agenda. The one third of physicians who disagreed, believing that patients should play a more active role, nevertheless understood that most of their patients wanted them to set the agenda.

In contrast with doctor–patient alignment on control of the visit agenda, there was poorer alignment on the role of doctor and patient in making decisions about treatment. No correlation was observed between patients' belief about their role and the physicians' perceptions of their patients' beliefs (Table 8, question pair 2), and patients believed that they played a more active role than their physicians thought they did (mean 2.60 ± 0.904 vs. 2.94 ± 0.512 , respectively; $P = 0.02$). One out of 10 patients said that they were the most actively involved person in decision making, and 38% said they shared that role equally with their doctor. By contrast, no physician thought that their patients would say that the patient was the most active partner in decision making, and physicians thought that only 16% of patients would say that their role was an equal one. Physicians' assessment of their patients' beliefs closely mirrored their own attitudes about the role that patients should play in decision making. No physician believed that patients should play the most active role in decision making, 20% endorsed an equal role for patients, and 80% felt that patients should participate but that the doctor should play a dominant role. There was also poor alignment on where patients should learn about glaucoma, with patients tending to depend more heavily on physician education and physicians expecting that at least some education would occur outside the office (Table 8, question pair 3).

Physicians were also misaligned with their patients on other issues, tending to give more pessimistic or less positive assessments than their patients did (Table 8). Patients expressed a desire for more information about glaucoma (question pair 4) and were more confident in their knowledge of glaucoma (question pair 5) than physicians thought they were. Physicians' perceptions of patients' concerns about what glaucoma might do in the future did not correlate with patients' self-reported concern. Most patients stated that they were “very concerned” (70%) whereas physicians only ranked 28% as being “very concerned” and were more likely to rank patients as being only “concerned” (32%) or “somewhat concerned” (26%), although the differences in distribution and the mean item response score were not significantly different (question pair 6). Physician and patient perceptions that the physician had explained what to expect in the future from glaucoma were aligned in the direction of response (question pair 7), but patients gave a significantly more positive rating than physicians did.

Satisfaction with Communication and the Visit

Overall, both physicians and patients were satisfied with communication during the visit; however, patients were significantly more satisfied than physicians (Table 8, question pair 9, mean score: 1.20 for patients, 1.82 for physicians; $P < 0.001$), and patient and physician ratings were not significantly correlated. Patients rated communication as “very satisfying” in 84% of encounters and “satisfying” in 12% compared with 35% and 51%, respectively, for physicians. Compared with previous visits (which had not been recorded), both patients and physicians rated the recorded visit as equally or more satisfying and patients were more laudatory than physicians (question pair 10).

Physicians were well aligned with their patients in the extent to which the visit had met the patient's needs (Table 8, question pair 11; $r = 0.364$; $P = 0.01$). Physicians also accurately estimated what the patients would say about having their needs met (question pair 12; $r = 0.339$; $P = 0.02$). In both of these measures, patients were more positive than physicians (1.31 for patient and 1.63 for physician assessments of whether the visit met the patient's needs, where 1 = meeting needs completely and 4 = not meeting them at all, and 1.73 for the physician's assessment of what the patient would say compared to the patient's actual rating of 1.31; $P < 0.0001$ for both comparisons).

Prevalence of Missed Doses

A total of 13/50 (26%) patients were classified as having missed doses based on our criteria. The post-visit research interview detected 12; physicians detected 4 in their encounters; and 11 patients acknowledged missing a dose on the post-visit questionnaire (Fig 1). Doctor–patient encounters were much less sensitive than the semistructured, postvisit research interview; physicians detected 3 of the 11 patients who admitted missing doses on the postvisit questionnaire compared with the postvisit interview, which detected all 11.

In addition to a frank admission of having missed a dose of medication, 48% of patients revealed recent problems with adherence during the postvisit interview that they had not revealed to their physicians, including 6 patients who acknowledged multiple and 11 who acknowledged single missed doses, 13 patients who had problems with administration of drops, and 3 patients with cost and insurance issues. Another 20% of patients acknowledged more remote adherence issues that also had not been discussed with the physician during the current visit. One third of patients (32%) mentioned problems that they had also revealed to their ophthalmologist.

Adherence: Physician Assessment, Patient Self-Report, and Research Interview

Physician assessments of their patients' adherence did not correlate with patient self-reports. Patients claimed better adherence than that estimated by the physician (Table 8, question pair 13; mean self-reported adherence, 1.34 vs 2.02, respectively; $P < 0.001$). Physicians thought that 22% of patients took their medications “all of the time,” 60% “most of the time,” 14% “a good bit of the time,” and only 4% of patients were thought to be taking their medication “some” or “a little bit” of the time. By comparison, 76% of patients said they took their medications “all of the time” and another 18% said they took them “most of the time.” Only 1 patient (2%) confessed to taking it “a good bit of the time,” and 2 (4%) acknowledged taking it “some of the time.”

On the postvisit questionnaire, physicians thought that 10 of the 13 (76.9%) patients who acknowledged missing doses in the previous week took their medication “all” or “most” of the time

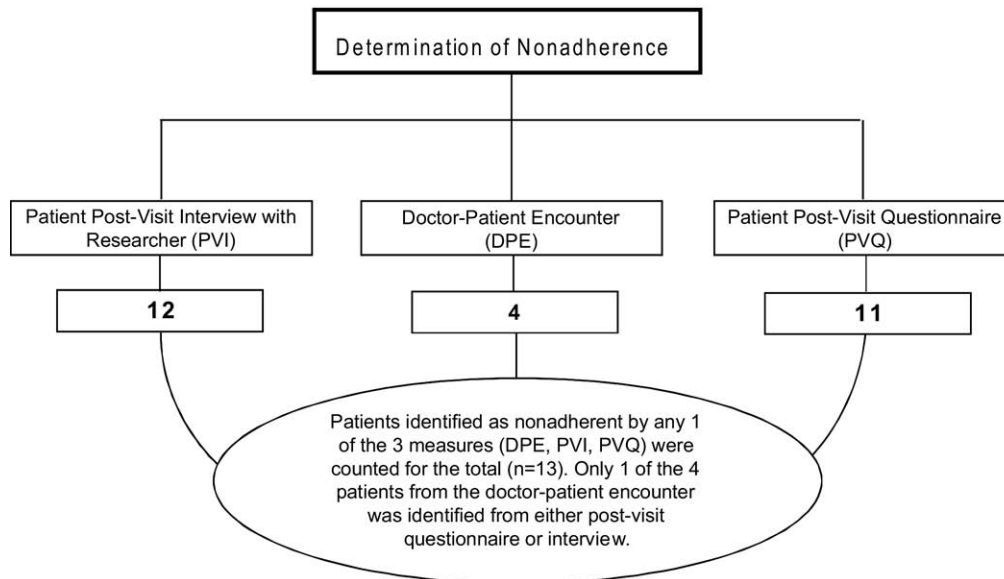


Figure 1. Determination of nonadherence.

(and “falsely” classified 6 patients who did not admit to missed doses as taking medication less than most of the time). Physicians were 3 times more likely to classify a patient as having difficulty getting drops into the eye if they were in the group who had admitted to missing doses (31% for missed doses versus 8% for those who did not; $P = 0.07$).

Compared with those who did not miss doses in the preceding week, those who did miss doses reported a lower level of self-reported adherence ($P = 0.01$), believed they need to do a better job adhering ($P = 0.03$), believed that their physicians think they should do a better job adhering ($P = 0.01$), and were less comfortable admitting nonadherence ($P = 0.02$). Patients missing doses in the preceding week were less likely to feel that communication in the recorded visit was very satisfying (54% vs 94%, respectively; $P = 0.001$) and more likely to be moderately or somewhat satisfied. They also reported having more difficulty taking medication while traveling or away from home (23% vs 3%, respectively; $P = 0.052$), getting the medication into the eye (42% vs 8%, respectively; $P = 0.02$), and experiencing side effects as somewhat of a problem (15% vs 0%, respectively; $P = 0.07$). All other comparisons of the 2 groups of patients resulted in Fisher exact test P values > 0.10 .

Discussion

This is the first ophthalmic study of videotaped doctor–patient interactions. By and large, the interactions were physician centered rather than patient centered and were ineffective in detecting patients who admitted to missing doses in the previous week, a surrogate for nonadherence. Physicians dominated the average 5.8 minutes of dialogue, speaking 70% of the words spoken and asking twice the number of questions compared with patients. Physicians almost exclusively employed closed-ended questions, restricting the patient’s contribution to “yes/no” or brief responses. Only a minority of physicians ever asked patients if they had questions.

Although physicians and patients were aligned in their belief that the physician should set the visit agenda, they were misaligned in other important areas. For example, patients felt that they should be more involved in medical decision making than did physicians, and physicians believed that patients should learn more about glaucoma outside the doctor’s office, whereas patients did not. Doctors believed that a minority of patients was very concerned about losing vision from glaucoma, whereas a much higher proportion of patients reported high concern.

Importantly, physicians in this study failed to identify most patients who admitted to missing ≥ 1 dose in the preceding week. A meta-analysis of methodologically strong studies examining self-report of missing ≥ 1 doses of medication in which nonadherence was defined as taking $< 80\%$ of doses as determined by pill count, demonstrated that admitting to missing ≥ 1 dose has 87% specificity and 55% sensitivity in detecting nonadherence.¹⁷ Adherence to chronic medical treatment is poor in most diseases,^{1,18} and several recent studies indicate that glaucoma patients take about 65% of prescribed doses and half of patients stop medication for significant periods of time.^{4,8,19} In the Glaucoma Adherence and Persistency Study, patients had poorer measured adherence by pharmacy refill data if they: (1) took a passive “doctor-dependent” role in learning about glaucoma, (2) were “unconcerned” that nonadherence increased the risk of vision loss, or (3) were patients of physicians who did not actively assess their beliefs and concerns or acknowledge the difficulty of adhering.⁹ It was clear from the videotaped transcripts in the present study that physicians failed to accurately gauge patient concern and, more important, did not take steps such as acknowledging the difficulty of good adherence or actively assessing patient beliefs about glaucoma and its treatment. These techniques were used in the research associate–administered postvisit interviews, which were significantly more likely to identify

patients who admitted to missing doses in the preceding week.

The postvisit interview may have been more sensitive in detecting missed doses in part due to a greater willingness to confess undesirable behavior to a research associate rather than to the physician. Patients often want to please their doctors and can go to great lengths to hide nonadherence to therapy.^{20–22} However, the postvisit interview purposefully created a nonjudgmental dialogue and allowed patients to report their experiences and concerns in their own words. This patient-centered approach has been demonstrated to be central to effective communication.^{23–29} It is characterized by open-ended questions that direct the patient’s attention to specific topics but leaves the format of the response “open” rather than forcing a short answer. This approach is more likely to reveal the patient’s true understanding and attitudes. The physician then can provide the information that is missing as revealed by listening to the patient’s response. Additional open-ended questions can be used to determine how well the patient has incorporated the new information, a sequence referred to as “ask–tell–ask.”^{11,30–34} Many medical school curricula now require training in patient–doctor communications, but physicians often are exposed to a more data-driven approach, where physicians ask patients yes/no questions. Although recent studies demonstrate that open-ended questions may not take significantly more time, physicians’ belief that they do¹¹ in conjunction with the increasing time pressure that physicians feel may be important factors causing physicians to use closed-ended questions almost all of the time.

In the recorded visits, physicians displayed a physician-centered rather than a patient-centered communication style that addressed adherence ineffectively. Physicians dominated the dialogue, asking an average of 5.6 questions, 94% of which were closed ended. They only asked patients if they had any questions in 18% of visits (and this was often perfunctory), and patients asked no questions in 38% of visits. Although adherence was often addressed, it was discussed with closed-ended questions that presumed adherence or that required an explicit contradiction of the physician’s statement to acknowledge nonadherence (e.g., “You’re taking your drops, aren’t you?”). Open-ended questions about disease concerns, specific barriers, concerns, or problems with medication were virtually absent. During their conversation with patients, physicians failed to elicit information that was detected on the postvisit questionnaire, including barriers to adherence (e.g., remembering drops while traveling, difficulty getting drops into their eyes, and side effects).

This physician-centered communication style is consistent with the attitude shared by patients and physicians that the doctor should be in charge of the visit agenda. However, this belief stands in contrast to patients’ expressed wishes to be involved in medical decision making and physicians’ preference that patients be more independent in learning about glaucoma. Physicians and patients seem to perceive the merits of greater participation on the part of the patient, but seem to be trapped in a physician-centered, closed-ended pattern of communication. This style of communication seems to be the rule throughout medicine in general. In

the American Migraine Communication Study,¹⁰ which used the same methodology, 91% of questions by physicians were closed ended, and nonalignment of patient and physician on degree of impairment and symptoms led to a failure to provide proper preventive treatment in half of the patients who could have benefited. In the present study, physicians and patients were nonaligned on a host of important parameters, as described. We hypothesize that educating physicians to use more patient-centered communication can improve the outcome of medical therapy in glaucoma. Interventional education for physicians was undertaken among those participating in this research, and the results will be reported shortly.

This study has a number of limitations. The sample size was limited by the expense and practicality of extensive recording and transcribing of visit information. This may have led to a failure to detect some significant associations between the characteristics of physicians, patients, communication, and adherence. Our surrogate for poor adherence, although more robust than single-source self-report, nevertheless does rely on self-report data that do not fully reflect adherence. Previous studies suggest that up to 20% of patients who admit to missing a dose in the preceding week used their medications as prescribed, whereas close to half of others who did not confess to any missed doses may have been poorly adherent.¹⁷ Included patients generally knew the doctors well and had been visiting the clinic for many years. Results of these interactions may differ from those of newer patients. Some visits were likely brief eye pressure check visits, whereas others were longer and involved testing of visual field. The nature of the visit may have altered the intensity with which physicians interacted with the patients. Furthermore, some patients had multiple problems (cataract, macular degeneration, etc.) and the encounters may have focused more on those issues in some cases. Videotaping of encounters might have influenced physician performance or patient behavior in significant ways. However, it is generally considered that physicians and patients accommodate rapidly to videotaping.^{35–37} Both physicians and patients were willing participants in a study where researchers were video- and audiotaping their interactions. Persons willing to do this may differ from those who refuse to take part in this kind of research and therefore the results may not be generalizable. To limit the impact of being studied on physician and patient behaviors, both groups were provided only a general explanation of the purpose of the research.

Another potential limitation is the fact that study patients had known their physicians for many years. It is possible that a more thorough discussion of issues related to adherence had taken place before and was not deemed necessary in the taped encounter. Finally, it is possible that, in some offices, technicians provide a fair amount of education to patients about adherence and may play a role in the detection of nonadherence. However, we did not identify a single encounter where the technician notified the physician of this concern or where the physician acted in response to a technician note to this effect.

In summary, this study demonstrated that, in current practice, ophthalmologists and patients use physician-

centered communication patterns that both parties found satisfactory; however, these communication patterns fail to detect patients who are missing doses and therefore likely to be poorly adherent. A patient-centered, postvisit interview or self-administered patient questionnaire is far more likely to detect these patients. Physicians fail to query patients on important areas and in a way that permits the disclosure of information known to be related to barriers to adherence. Interventions that improve doctor-patient communication should be tested as methods to improve the outcomes of glaucoma care.

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Table 1. Physician Eligibility Criteria

Ophthalmologist with >5 and <40 years in practice postresidency.
No specialty fellowship in glaucoma.
Patient volume of ≥ 50 patients/week and ≥ 5 glaucoma patients/week.
More than 70% of time spent in direct patient care (vs research or administrative work).
No prior participation in Pfizer i2i training program.
No affiliation with any pharmaceutical company or other health care manufacturer, serving as a clinical investigator, consultant, researcher or in any other capacity.

Table 2. Patients Excluded from Final Sample

Reason	Number
Glaucoma in only 1 eye	7
Chronic dry eye	3
Taking other (nonglaucoma) eyedrops	3
No videorecording available	1
Macular degeneration	1
Time on glaucoma therapy <12 months	1
Audio not understandable	1
Visit consists of laser procedure only	1
Total	18

Table 8. Doctor–Patient Alignment (Questions with Likert Scale Responses)

Pair	Question	Response Scale	Mean ± SD	Spearman Correlation	Spearman Correlation P Value	Spearman Correlation P Value
1	Physician: To what extent do you feel that <i>this patient</i> would agree with the following statement: <i>The doctor is the one who should decide what gets talked about during a visit.</i> Patient: The doctor is the one who should decide what gets talked about during a visit.	1 = Strongly agree 2 = Agree 3 = Somewhat agree 4 = Somewhat disagree 5 = Disagree 6 = Strongly disagree	2.92±1.243 2.96±1.726	0.422	0.002	0.703
2	Physician: Which of these best describes your role versus <i>this patient's</i> role in glaucoma treatment decision-making? Patient: Which of these best describes your role versus the physician's role in glaucoma treatment decision-making?	1 = The patient is the person most actively involved in treatment decisions 2 = Equal (participation) 3 = Although [patient] involved [physician] more responsible 4 = The patient is not involved/I (physician) am completely responsible	2.094±0.512 2.60±0.094	0.087	0.550	0.019
3	Physician: To what extent do you feel that <i>this patient</i> would agree with the following statement: <i>Patients should rely on their doctors' knowledge and not try to find out about their conditions on their own.</i> Patient: Patients should rely on their doctors' knowledge and not try to find out about their conditions on their own.	1 = Strongly agree 2 = Agree 3 = Somewhat agree 4 = Somewhat disagree 5 = Disagree 6 = Strongly disagree	3.28±1.230 2.90±1.909	0.075	0.603	0.201
4	Physician: Which best describes this patient's level of desire for information about glaucoma? Patient: Which best describes your level of desire for information about glaucoma?	1 = He/she wants as much information as possible 2 = A lot 3 = Only some 4 = Does not want any	2.68±0.819 1.30±0.735	0.092	0.527	<0.001
5	Physician: How confident do you think this patient is in his/her knowledge of glaucoma? Patient: How confident are you in your knowledge of glaucoma?	1 = Very confident 2 = Moderately confident 3 = Somewhat confident 4 = Somewhat unconfident 5 = Moderately unconfident 6 = Very unconfident	2.90±1.046 1.88±0.881	0.056	0.701	<0.001
6	Physician: Overall, how concerned do you think this patient is about what glaucoma might do in the future? Patient: Overall, how concerned are you about what glaucoma might do to you in the future?	1 = Very concerned 2 = Moderately concerned 3 = Somewhat concerned 4 = Somewhat unconcerned 5 = Moderately unconcerned 6 = Not at all concerned	1.96±0.903 1.74±1.367	-0.058	0.691	0.202
7	Physician: During your visits with this patient since he/she was diagnosed with glaucoma, to what extent have you explained what to expect in the future from glaucoma? Patient: During your visits with your doctor since you were diagnosed with glaucoma, to what extent has he/she explained to you what to expect in the future from your glaucoma?	1 = Very much so 2 = Somewhat 3 = Not at all	1.70±0.614 1.38±0.635	0.309	0.029	0.003
8	Physician: What did you want this patient to understand about their intraocular pressure today? Patient: What is your understanding of how your intraocular pressure or IOP was today?	1 = Perfect 2 = Good but not perfect 3 = Too high 4 = Much too high	1.75±0.820 1.96±0.658	0.356	0.014	0.088
9	Physician: How satisfying did you find your communication about glaucoma <i>today</i> with this patient? Patient: How satisfying did you find your communication about glaucoma <i>today</i> with this physician?	1 = Very satisfying 2 = Moderately satisfying 3 = Somewhat satisfying 4 = Somewhat unsatisfying 5 = Moderately unsatisfying 6 = Very unsatisfying	1.82±0.727 1.20±0.499	0.149	0.307	<0.001

(Continued)

Table 8. (Continued.)

Pair	Question	Response Scale	Mean \pm SD	Spearman Correlation	Spearman Correlation P Value	Spearman Correlation P Value
10	Physician: How would you rate the quality of your communication about glaucoma <i>today</i> compared with past visits with this patient? Patient: How would you rate the quality of your communication about glaucoma <i>today</i> compared with past visits with <i>this</i> physician?	1 = Better than prior visits 2 = Same as prior visits 3 = Worse than prior visits	1.80 \pm 0.456 1.78 \pm 0.422	0.190	0.192	1.00
11	Patient: Did your communication about glaucoma <i>today</i> meet your needs? Patient: Did your communication about glaucoma <i>today</i> meet your needs?	1 = Met his/her needs completely 2 = Met most 3 = Met to some extent 4 = Did not meet his/her needs at all	1.63 \pm 0.487 1.31 \pm 0.552	0.364	0.01	<0.0001
12	Physician: To what degree would <i>this patient</i> say the communication about glaucoma <i>today</i> met his/her needs? Patient: Did your communication about glaucoma <i>today</i> meet your needs?	1 = Met his/her needs completely 2 = Met most 3 = Met to some extent 4 = Did not meet his/her needs at all	1.73 \pm 0.536 1.31 \pm 0.522	0.339	0.018	<0.001
13	Physician: Please rate this patient's level of adherence to glaucoma therapy overall. Patient: Often people have trouble using their medication as directed. Please rate how often you use your glaucoma medication.	1 = He/she uses the medication as directed all of the time 2 = Most of the time 3 = A good bit of the time 4 = Some of the time 5 = A little of the time 6 = None of the time	2.02 \pm 0.795 1.34 \pm 0.717	0.122	0.399	<0.0001
14	Physician: How comfortable do you think your patient would be talking with you about missing doses of his/her medication, if he/she had not been adherent? Patient: How comfortable would you be talking about missing doses of your medication, if that happened, with this physician?	1 = Very comfortable 2 = Moderately comfortable 3 = Somewhat comfortable 4 = Somewhat uncomfortable 5 = Moderately uncomfortable 6 = Not at all comfortable	2.30 \pm 0.886 1.60 \pm 1.212	0.071	0.622	0.001
15	Physician: To what extent do side effects interfere with taking his/her medication? Patient: To what extent do side effects interfere with taking your medication?	1 = Not at all 2 = Somewhat 3 = A great deal	1.20 \pm 0.539 1.04 \pm 0.200	-0.084	0.566	0.086
16	Physician: How much of a problem do you think paying for his/her glaucoma medication is for this patient? Patient: How much of a problem is paying for your glaucoma medication?	1 = Not a problem 2 = Somewhat of a problem 3 = A significant problem	1.42 \pm 0.476 1.24 \pm 0.476	0.336	0.017	0.0078
17	Physician: How much of what this patient knows about glaucoma did he/she learn from you and other doctors? Patient: How much of what you know about glaucoma did you learn from your doctors?	1 = Everything he/she knows 2 = Most 3 = Not much 4 = None of what he/she knows	1.94 \pm 0.475 1.71 \pm 0.540	0.110	0.453	0.042

SD = standard deviation.