

Primary Care Provider Views of the Current Referral-to-Eye-Care Process: Focus Group Results

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PURPOSE. To understand the barriers facing primary care providers (PCPs), including nurse practitioners (NPs) and physician assistants (PAs), in the current referral-to-eye-care process and to solicit suggestions from PCPs on how to improve the current referral system.

METHODS. Four focus groups were conducted with a total of 17 PCPs: two groups with physicians (MDs): one in a rural setting and one in an academic medical center setting and one group of NPs and one of PAs, both in an academic setting. All discussions were audiotaped and transcribed, and both authors performed content analysis of the transcripts with the assistance of qualitative software.

RESULTS. The most frequently cited referral barriers included: (1) poor communication from eye care providers (ECPs), (2) patients' lack of finances/insurance coverage, and (3) difficulty in scheduling an eye care appointment. Suggestions made in all groups on ways to improve the current referral system included (1) implementing electronic medical records (EMRs), (2) receiving better communication/feedback from ECPs, (3) having ophthalmologists hold clinic days in primary care facilities, and (4) performing retinal scans in primary care clinics. We found few differences between the opinions of MDs and those of NPs and PAs.

CONCLUSIONS. PCPs desire change(s) in the current referral-to-eye-care system. Better communication between PCPs and ECPs, further implementation of EMRs, and increasing eye screening in primary care clinics were common themes. Implementing specific suggestions, such as modernizing medical record systems, may help to increase eye care utilization among patients at high risk for advancing eye disease and vision loss. (*Invest Ophthalmol Vis Sci.* 2010;51:1866-1872) DOI:10.1167/iov.09-4512

The population of persons 65 years of age and older (≥ 65) in the United States is projected to increase from 40 million to 71 million in the next 20 years.¹ Approximately half of those who survive at least 7 years will develop glaucoma, age-related macular degeneration, and/or diabetic retinopathy as they age, increasing the need for eye care services.² Regular eye care is associated with better disease outcomes and quality of life for

those ≥ 65 ,³ but almost half of patients with one or more diagnosed eye diseases do not receive eye care according to recommended guidelines.^{4,5} In many patients, particularly those with diabetes, the disease is diagnosed and followed up regularly by primary care providers (PCPs), but often the patients do not receive regular eye care.⁴ In the context of this article, we define a PCP as a physician (MD, i.e., a general internist, family practitioner, general practitioner, or pediatrician), nurse practitioner (NP), or physician assistant (PA), providers who serve as a primary contact point between the patient and the health care system, and an eye care provider (ECP) as an ophthalmologist or optometrist.

Based on our review of the literature, the overall referral-to-eye-care practices of PCPs has seldom been examined, and the practices of NPs and PAs has not been examined at all. The work that has been done has focused mainly on referral of diabetic patients for eye examinations,⁶⁻¹² which is an important but only a single aspect of referral to eye care. One of these studies noted that a breakdown in the PCP-to-ECP referral chain may explain the discrepancy between PCP reported referral-to-eye-care rates and actual rates of ophthalmic examination by an ECP.⁷ A study in South Africa also cited referral system deficiencies as the probable cause that many patients do not receive eye care in that country.¹³ Furthermore, referral to eye care is a key aspect of health care hand-offs that are a potential quality-of-care concern identified by the Institute of Medicine.¹⁴ As a result, we targeted this PCP-to-ECP referral step as a point of interest and sought to obtain initial qualitative data directly from PCPs regarding their referral-to-eye-care patterns, the barriers they encounter in the process, and what can be done to improve the referral system.

METHODS

Before it began, the study was granted approval by the institutional review boards of both Duke University Health System and the University of North Carolina at Chapel Hill (UNC). We first conducted a MEDLINE search surveying literature published in English from 1966 to February 2009, using combinations of key words relevant to PCP referral-to-eye-care patterns and barriers.

After reviewing relevant articles, we realized that very few publications discuss these issues, and most of the ones that do are centered on referral of a patient by an MD (not an NP or a PA) for diabetic eye examinations. We used the information gathered from the literature search to develop a semistructured script for the individual interviews and focus groups. To ensure that the posed questions were clear and relevant, we pilot tested the script on three individuals who did not participate in the focus groups: one MD, one NP, and one PA. We used the revised script to facilitate each focus group discussion, to ensure comparability between the results for each group.

We recruited study participants for the academic-setting MD, NP, and PA groups from Duke Primary Care (DPC) and UNC Health Care in Durham and Chapel Hill, North Carolina, respectively. The rural MD group was recruited through a personal PCP contact of one of the authors (CDH) in rural southwest Arkansas. We were unable to recruit

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TABLE 1. Number of Participants in Each Year Range of Primary Care Experience

PCP Type	Years of Experience in Primary Care			
	<5	5–10	11–20	>20
Academic MDs	1	2	1	1
Rural MDs	1	2	0	1
NPs	1	2	1	0
PAs	2	1	1	0

a sufficient number of NPs and PAs in rural areas of North Carolina and Arkansas to conduct focus groups with those provider types in the rural setting.

When a PCP expressed interest in joining the study, we confirmed that the PCP had primary care experience and practiced primary care either within the academic setting (for the academic groups) or the rural setting (for the rural MD group). We conducted four focus groups: an academic-setting MD group, a rural-setting MD group, an academic-setting NP group, and an academic-setting PA group. We conducted all the focus groups over dinner in an area that was easily accessible and familiar to all participants. All participants received a free multicourse dinner (approximate value, \$75) during the discussion as compensation for their time. Before the start of each group, we obtained informed consent from each participant, in accordance with the Declaration of Helsinki. All the focus groups were moderated by one of the authors (CDH).

We began each group by expressing appreciation for the individuals' participation, stating the objectives and ground rules for the focus group, and asking for introductions by the participants. Throughout the discussion, the participants were able to speak freely about their perceptions of barriers in the referral-to-eye-care system and ideas regarding the changes needed in the current referral system. We recorded all the focus groups with two microcassette tape recorders for accuracy and clarity and later transcribed each recording with word-processing software. We used qualitative software (NUD*IST Vivo; QSR International, Cambridge, MA) for content analysis of the transcripts. In addition, we both reviewed and analyzed each of the scripts from individual interviews and focus groups for content and key concepts. The purpose of the present study was to identify a range of issues regarding eye care and ideas on how to improve care delivery that can later be explored quantitatively. Therefore, the results of the focus groups represent all the information obtained from the discussions, whether it was supported by the majority of the participants or by only one.

TABLE 2. PCP-Cited Barriers in the Referral-to-Eye-Care Process

Barriers to Eye Care Referral	Number of Comments by PCP Type				
	Academic MDs	Rural MDs	NPs	PAs	Total
No/little feedback from ECP	5	1	3	5	14
Patient's lack of finances/insurance coverage	3	2	4	4	13
Difficulty in scheduling ophthalmology appointment	4	0	2	2	8
Dependence on patient to schedule own appointment	2	0	0	1	3
Too many referrals to process in paper-based system	3	0	0	0	3
Wait time for patient at ophthalmology office	2	0	0	0	2
Limited access to ECPs (no full-time ophthalmologist in area)	0	2	0	0	2
Patient access to transportation	0	2	0	0	2
Can't understand ECP feedback; too much ophthalmology jargon in notes	0	1	1	0	2
PCP time constraints	1	0	0	0	1
Patient unwilling to attend ECP appointment	0	0	1	0	1

RESULTS

Participant Characteristics

As mentioned, there were four focus groups: academic-setting MDs, rural-setting MDs, academic-setting NPs, and academic-setting PAs. The size of the groups ranged from four to five people. In all, 17 individuals participated, representing a wide range of years of primary care experience (Table 1).

Focus Group Analysis

A total of 51 comments were made by the focus group participants in regard to barriers to eye care referrals. We classified these comments into 11 areas of concern (Table 2). The most frequently cited barriers included (1) poor communication from the ECP, (2) patients' lack of finances and/or insurance coverage, (3) difficulty in scheduling ophthalmology appointments, (4) dependence on the patient to schedule own appointment, and (5) too many referrals to process in a paper-based system. These five barriers accounted for 80% of all comments made about barriers in the referral-to-eye-care process. Examples of the comments on the most frequent barriers are noted in Table 3. In addition to the five most common barriers cited, six other areas were identified as barriers to referral. Table 4 illustrates some of the comments made in each of those areas.

With respect to changes that could be made in the current referral-to-eye-care system, focus group participants made a total of 49 comments in nine distinct content categories (Table 5). Suggestions on implementing electronic medical records (EMRs) and getting better communication from ECPs were most frequently offered, combining to comprise almost 50% (24/49) of the total comments. Examples of suggestions from each category are shown in Table 6.

Other data from our study show that all the PCP types were comfortable treating uncomplicated eye infections or conjunctivitis and a foreign body amenable to flushing, on their own instead of referring patients with those conditions to an ECP. Outside of these two eye/vision problems, most PCPs were not comfortable handling eye and vision problems on their own. All PCPs except three said that they refer at least one patient to an ECP daily. Two NPs and one PA said that they refer at least one patient weekly.

Diabetic eye screening was the most commonly cited reason for referral among all PCP types, with cataracts, glaucoma, age-related macular degeneration, hypertensive retinopathy, and foreign body also mentioned as common reasons for referral. All PCP types thought that more than 90% of their referred patients are seen by an ECP when referred for an acute

TABLE 3. Examples of Most Frequently Cited Barriers to Referral

Barrier	Example(s)
No or little feedback from ECP	<p>“Our whole practice has mentioned that we pretty much uniformly don’t get communication on the vast majority of cases from the academic eye center, which is pretty huge. I mean, why is that? It’s just a block away! And why aren’t the ophthalmologists’ notes in our EMR? That’s another thing I just don’t understand.” (Academic MD2)</p> <p>“One of the most challenging things for me is not knowing if the patients ever see the ophthalmologist . . . You kind of rely on your patients. You’re saying, ‘When was your last eye exam?’, and the patient says, ‘Well, I think it was in the spring, but I’m not sure.’ You really don’t know the outcome of the ophthalmology visit.” (PA3)</p>
Patient lack of finances/insurance coverage	<p>“Some of it is financial—if the family can’t afford it or their insurance plan doesn’t have any kind of vision coverage.” (NP1)</p>
Difficulty in scheduling eye appointment	<p>“I have to get through the ‘phone tree’ before there’s somebody I can talk to in the ophthalmology office.” (NP1)</p> <p>“There is a big wait if patients just call for themselves for an ophthalmology appointment.” (Academic MD2)</p>
Dependence on patient to schedule own appointment	<p>“A lot of times the referral person at our front desk just hands the patient a phone number. So, it’s on the patient to call and schedule the ophthalmology appointment.” (Academic MD5)</p>
Too many referrals to process in a paper-based system	<p>“One barrier that’s specific to our clinic is the overwhelming number of referrals that we go through in a day, and the staff that has to process them. And it’s all paper right now, and things fall through the cracks. And there is no trail. So, it’s the workload.” (Academic MD3)</p>

condition (e.g., a red, painful eye), but all PCPs except three thought that only 50% to 70% of their referred patients are seen for chronic eye or vision problems (e.g., diabetic eye examinations). Two NPs thought that 90% or more of their referred patients are seen for chronic eye conditions, whereas one NP thought that only 40% were seen. Tables 7 and 8 show responses of the PCPs when asked whether they would be willing to take on more eye care in their practice than they are performing currently (Table 7) and whether they would be willing to take on more eye care responsibilities if appropriate reimbursement were available (Table 8).

DISCUSSION

There have been few studies assessing the referral-to-eye-care practices of PCPs and what barriers PCPs face in the referral process for eye care in general (i.e., not just diabetes eye care). Therefore, through this pilot study, we sought to identify general referral-to-eye-care barriers from the perspective of PCPs (including NPs and PAs) and to solicit suggestions from PCPs on how problems in the current referral system can be remedied. We explicitly sought to include NPs and PAs, given

their growing roles in the health care delivery system, to assess whether they had different or unique concerns.

We used the focus group method for several reasons. Focus groups facilitate an atmosphere of self-disclosure in which participants can freely express ideas, opinions, and feelings about a particular topic among a group of people who share similar characteristics.¹⁵ In our study, all participants shared the experience of providing primary care and navigating the referral system to get their patients seen by ECPs. One of the reasons we separated our focus groups into different provider types (MD, PA, and NP) was to maintain a comfortable, permissive environment for all participants (e.g., PAs might be more likely to express themselves freely if they are discussing with other PAs and not with MDs who may be their supervisors). Another reason for this separation was to reveal differences of opinion between provider types. Focus groups allow a collection of data that present a range of opinions about a particular topic in a rapid and in-depth fashion.¹⁶ Analysis of the data from three or more focus groups commonly helps identify trends and patterns regarding the issue of interest.¹⁵

Patients access eye care through various potential referral pathways, including self-referral (i.e., a patient contacting an

TABLE 4. Examples of Additional Barriers Identified

Barrier	Example(s)
Wait time at ophthalmology office	<p>“It’s important that the patients don’t have to wait two hours in the lobby when they get to the ophthalmologist’s office because people kind of get teed off when that happens.” (Academic MD1)</p>
Limited access to ECPs	<p>“Well, our local ophthalmologist actually isn’t truly local. He comes here once a week or every two weeks, I can’t remember. . . . If you have an acute problem, then we find ourselves getting on the phone and calling to figure out if he is in town. . . .” (Rural MD1)</p> <p>“If it’s going to be 4 or 5 days before an ophthalmologist can get my patient in, it affects how I refer patients.” (Rural MD2)</p>
Patient access to transportation	<p>“With my geriatric patients . . . a fair number of them can’t go or tell me they can’t go or ‘I don’t have a ride’ or ‘I can’t drive down there.’” (Rural MD1)</p>
Can’t understand ECP feedback	<p>“[From the ophthalmologist] I just need: ‘I saw your patient, diagnosed them with this, and this is what we’re doing [for treatment].’ Because if I get a copy of their progress note, and they’ve got all their [ophthalmology] abbreviations, it’s tough to read. The ophthalmology note is the toughest note to read that I can think of.” (Rural MD4)</p>
PCP time constraints	<p>“I don’t have time to do [eye screening]. I mean, I could be trained to do it, but I don’t have the time to do that.” (Academic MD1)</p>
Patient unwilling to attend	<p>“Well, one barrier is that the patient has to agree to go to the eye care visit.” (NP2)</p>

TABLE 5. PCP Suggestions for Improving Current Referral-to-Eye-Care System

Suggestions	Academic MDs	Rural MDs	NPs	PAs	Total
Implement EMRs	5	3	3	2	13
Better communication/feedback from ECPs	4	2	2	3	11
Have ophthalmologists in primary care clinic on certain days	4	1	2	2	9
Do retinal scans in primary care clinic	2	2	1	2	7
Hire ancillary staff in primary care clinic to do eye screening	2	0	0	0	2
Have ophthalmologist in area/town	0	2	0	0	2
Have ophthalmology appointment schedule viewable online	2	0	0	0	2
Devise a more streamlined way to make ophthalmology appointments	0	0	0	2	2
Be able to speak to ophthalmologist directly	0	0	1	0	1

ECP directly), referral from another ECP, referral from another specialist (e.g., an endocrinologist referring a patient for a diabetic eye examination), referral from an emergency or urgent care provider, and referral from a PCP. Few of these pathways have been studied in detail, especially when considering referrals within the health care system of the United States. Regarding self-referral, one study of 214 patients in a California tertiary care eye center found that almost 30% of patients received their primary contact with the health care system through their ophthalmologist,¹⁷ suggesting that self-referral plays a large role in that patient population. Otherwise, data from the U.S. health care system on self-referrals and referrals from ECPs or other specialists are limited. We also could not find specific data on the percentage of eye care patients in the United States who are referred by their PCPs, but we noted that in the United States in 2004, more than 40% of the 1.12 billion ambulatory patient visits were made to PCPs, including NPs and PAs.¹⁸ Because PCPs play such a large and important role in the U.S. health care system, referral to eye care by them is an important pathway to understand.

Previous work has focused mainly on MD (not NP or PA) referral-to-eye-care patterns of patients with diabetes,⁶⁻¹² and our results extend these prior findings in several ways. As found in other studies,^{7,9,11} our results show that most PCPs say they refer patients for annual diabetic eye examinations but also acknowledge that many of their patients (30%-50%, according to the PCPs in this study) do not actually receive an annual examination. In addition, we discovered potential causes of the discrepancy between stated rates of referral and actual eye examination visit rates (e.g., reliance on patients to self-schedule eye care appointments). Our findings regarding (1) the need for better communication between PCPs and ECPs and (2) further implementation of EMRs to facilitate easier appointment scheduling and communication agree with results from two other studies of diabetic eye referral.^{10,12} The PCPs in our study gave some clear examples of how ECPs and PCPs can improve communication. For example, the PCPs wanted more professional interaction with ECPs in the form of periodic teaching or lecture sessions. The PCPs stated that such sessions (e.g., during a noon conference at the primary

TABLE 6. Examples of Comments for Improving Current Referral-to-Eye-Care System

Suggestion	Example(s)
Implement EMRs	<p>"I guess in an ideal world if there was just a button I could hit and make it happen. If the EMR is available and it had a button, so I could just push it and the referral would happen. That would be ideal world, I guess. For me, that would be easy." (Rural MD4)</p> <p>"I would have a patient-centered medical home where we have electronic health records so that everybody in the system can access everything in the system about that patient. That would be 'ideal world'." (NP4)</p>
Better communication/feedback from ECPs	<p>"I think that number one for me would be getting feedback from the referral." (PA4)</p> <p>"[From the ophthalmologist] I just need: 'I saw your patient, diagnosed them with this, and this is what we're doing [for treatment].' Because if I get a copy of their progress note, and they've got all their [ophthalmology] abbreviations, it's tough to read. The ophthalmology note is the toughest note to read that I can think of." (Rural MD4)</p>
Have ophthalmologists in primary care clinic	<p>"Given that a lot of my patients cancel their specialty appointments because they can't afford the \$35 co-pay, I would say: bring the patients in once a month and we have eye clinic at the primary care facility. You, the PCP, do your diabetic visit at the same time [as the eye care visit]; it's a \$10 co-pay or whatever lower co-pay. Bring eye care to the patients. . . . In family practice, I've always viewed us as more of a 'medical home'. I mean, we don't meet all the stipulations through Medicare, but that's how we view ourselves. So, in my mind, that's something [specialty services] that we should provide, and I've worked in practices that have done that. We've brought in specialists to our facility to provide better services for our patients, and it works really well. Our patients are more familiar with us, and so it's much more likely that they're going to come and get their care there [at the primary care clinic]." (Academic MD2)</p> <p>"If you were in practice right down the hall from a really good ophthalmologist that you didn't mind referring patients to, then that would be ideal." (NP4)</p> <p>"Maybe just have one day that ophthalmologists will come in to the primary care setting, and they could do screenings right there. We could screen a lot of people right there." (PA4)</p>
Do retinal scans in primary care clinic	<p>"It would be ideal, because of all our diabetics, to have either the [ophthalmologist] in the practice with us or at least do the retina scan here so that we can be sure that a higher percentage of patients do get things checked." (Academic MD5)</p> <p>"They now have these things that you can use to screen for diabetic retinopathy in the primary care office. That might be handy to have; that would be convenient, I think." (PA3)</p>

TABLE 7. PCP Interest in Performing More Eye Care Than Currently Performing

Response*	PCP Type				Total
	Academic MDs	Rural MDs	NPs	PAAs	
No, it takes too much time and/or costs too much	2	2	0	2	6
No, don't feel capable	0	0	1	2	3
Yes, if ancillary staff did it and we were reimbursed	3	1	0	0	4
Yes, if appropriately trained	0	0	2	0	2

* Question: Would you be interested in performing more eye care in your office/clinic than you perform currently?

care facility) would help them stay current on advances in eye care and allow them to get to know the ECPs in their area, which could result in better referral practices and communication between the two provider types.

Communication limitations underlie many PCP concerns about the current referral-to-eye-care system. In all four focus groups, multiple PCPs cited lack of feedback from ECPs as a barrier in the referral process. Most PCPs said they had trouble getting any kind of feedback about their patients from ECPs (i.e., no phone call, fax, e-mail, note in the EMR, or hard copy via mail). Two other PCPs said they receive feedback from ECPs, but the feedback is often difficult to understand because of the ECPs use of "ophthalmology abbreviations and jargon" (Rural MD4) or "ophthalmology mumbo jumbo" (NP1). Our findings are not the first to note poor communication on the part of ECPs^{13,19} and specialists in general.²⁰

The PCPs in our study suggested that feedback from ECPs be concise and understandable. A suggestion from one PCP was to receive a referral follow-up note from the ECP saying, "I saw your patient, diagnosed him/her with X, and Y is what we're doing [for treatment and follow-up]" (Rural MD4). This suggestion closely parallels both our own and published²¹ recommendations to ECPs of (1) returning a report to the PCP in a format understandable to non-ECPs, (2) including in the report results of the eye examination and treatment plan, and (3) adding any recommendations for follow-up. A few PCPs in our study also mentioned that they would like to receive a no-show notice from ECPs when their patients do not show up for eye care appointments, which is another published recommendation.²¹

Review articles and studies^{12,19,21,22} identify effective collaboration and communication between PCPs and ECPs as essential for improving delivery of eye care, enhancing patients' vision and quality of life, and providing continuity of care. Persistent failure of ECPs to give useful feedback to PCPs could reduce PCP referral-to-eye-care rates or at least alter referral patterns, as one PCP suggested: "Coming here [to an academic medical setting], I was shocked at the lack of com-

munication from the academic ophthalmologists. I've been here for a little over a year, and I have yet to receive any communication... . And so, I'm constantly a little tainted. It's not that I tell patients not to go to the academic eye center, but I certainly do not look down on referring elsewhere because I have a higher chance of actually getting communication from an outside provider than one at the academic eye center" (Academic MD2). Patients may be less likely to attend their eye care appointments if their PCPs are forced to refer them to eye care clinics that are farther away from their places of residence and/or employment.

The implementation and/or better utilization of EMRs was the most frequently cited suggestion for referral system improvement among the PCPs in our study. Academic PCPs in our study noted that the system in which they work has EMRs, but the ECPs do not use it properly (e.g., academic ECPs do not place their progress notes in the EMRs for all other providers to access). The use of EMRs could facilitate easier and more consistent communication between PCPs and ECPs and also reduce the difficulty of scheduling eye care appointments, the reliance on patients to schedule their own eye care appointments, and the overwhelming number of referrals to process in a paper-based system—respectively, the third, fourth, and fifth most frequently cited barriers in this study. Academic PCPs suggested that if their EMR system had a function that allowed primary care clinics to view the academic eye center's appointment schedule online, scheduling could be completed by the clinic's office staff before the patients leave the primary care clinic. This type of scheduling could reduce both paperwork by primary care clinics and reliance on patients to self-schedule appointments after they leave the primary care appointment. In addition, properly implemented EMRs can provide automated referral reminders to PCPs, which can be important considering the time constraints and the complex patient medical conditions that PCPs must manage.^{10,11,23}

EMR systems can be expensive and time-consuming to implement and maintain, but almost all PCPs in our study expressed strong support for moving the health care system

TABLE 8. PCP Interest in Performing More Eye Care Than Currently Performing if Reimbursement Were Appropriate

Response*	PCP Type				Total†
	Academic MDs	Rural MDs	NPs	PAAs	
No, don't have time	0	0	1	1	2
Yes, if staff did it	4	0	0	0	4
Yes, if given more time with each patient	2	0	0	4	6
Yes, with appropriate training	0	0	1	3	4
Yes	0	3	0	0	3
Unsure	0	1	0	0	1

* Question: Would you be interested in performing more eye care if you were appropriately reimbursed?

† Overall number of comments ($n = 20$) sums to more than number of participants ($n = 17$), because some participants' comments applied to more than one category (e.g., PA3 wanted both more time with patients and additional training).

toward the implementation of EMRs. Even PCPs in the rural area of our study, where practices are not supported by an academic medical system and thus there is no outside financial and technical support to pay for installing an EMR system, were supportive of EMRs. In fact, at least two of the four PCPs in the rural MD group had already purchased and implemented EMRs in their own practices, despite the cost and time required to do so. With the recent \$19 billion allocation to the health information technology program of the American Recovery and Reinvestment Act of 2009, EMR implementation could become a more realistic goal in the near future, even for those PCPs practicing in rural and underserved areas.²⁴

Patients' lack of finances and/or insurance coverage was the second most frequently identified barrier to referral. This finding is in line with those in other qualitative studies about overall barriers to eye care (i.e., not solely barriers to referral) for PCPs,¹² ECPs,^{12,25} and patients.^{12,25} Although PCPs from all focus groups noted financial concerns as a barrier to referral, few offered suggestions on how to remedy the situation. One PCP, however, suggested the following: "Given that a lot of my patients cancel their specialty appointments because they can't afford the \$35 co-pay, I would say: Bring the patients in once a month and we have eye clinic at the primary care facility. You, the PCP, do your diabetic visit at the same time; it's a \$10 co-pay or whatever lower co-pay. Bring eye care to the patients. In family practice, I've always viewed us a more of a 'medical home'... So, in my mind, [specialty services] are something that we should provide, and I've worked in practices that have done that. We've brought in specialists to our facility to provide better services for our patients, and it works really well. Our patients are more familiar with us, and so it's much more likely that they're going to come and get their care there [at the primary care clinic]" (Academic MD2). Other PCPs in that focus group thought that this was a good idea, although some wondered whether their clinic space was sufficient to support an ECP practicing even part time in the same facility.

Having ECPs hold clinic hours in the same facility as the PCPs was suggested by at least one provider in all four focus groups. The PCPs said that it would be much easier to refer to someone who could see patients the same day in the same facility, as was suggested by Academic MD2. Alternatively, many but not all PCPs were open to the idea of performing more eye care in their own clinics, with a few stipulations. Most PCPs stated that proper financial and/or temporal reimbursement would have to be in place before they would consider taking on more eye care duties. Academic MDs tended to want technicians or other clinic staff to perform the extra eye care duties. Rural MDs were more willing to take on the duties themselves, whereas NPs and PAs tended to want more training in eye care before performing extra eye care duties. In fact, to sharpen their eye care skills, NPs, PAs, and some MDs were interested in attending continuing medical education (CME) conferences taught by ophthalmologists. For example, PA1 said, "If there would be a hands-on CME [with an ophthalmologist], I would absolutely attend—like a half a day Saturday kind of thing," to which PA4 added, "I think a lot of midlevels would attend that."

The NPs and PAs cited most of the same eye referral barriers and recommendations as did MDs. One notable exception was in the amount of additional eye care and/or screening they would be willing to perform. Most of the NPs and PAs tended to favor receiving additional eye care training and taking on more eye screening and care in their clinics than did the MDs. Most of the MDs did not want to take on additional eye care duties, even if they received additional training and appropriate reimbursement, unless they were somehow given more time in the clinic day to take on such duties. Aside from this

issue, we did not note significant differences in the comments and suggestions of the NPs and PAs compared with those of the MDs. We note, however, that we were only able to analyze data from one focus group of NPs and one focus group of PAs because these provider types were difficult to recruit in sufficient numbers in rural areas. We could discover unique issues and opinions among NPs and PAs if more of them were surveyed, and we will attempt to further assess potential differences between provider types in the ongoing quantitative portion of this study.

Participants in the rural MD focus group cited two barriers that were unique to them: limited access to ECPs and patients' lack of access to transportation. They noted that the "local" ophthalmologist was only in town 1 to 2 days per week, which caused them to rely more on referral to a nearby optometrist. That rural PCPs rely more on optometrists than do their non-rural counterparts is a finding that is not unique to our study.⁸ The rural MDs noted that on referrals requiring the immediate attention of an ophthalmologist (e.g., a patient with glaucoma risk factors who presents with a painful, red eye), they must call to several clinics within a 50-mile radius to determine where the local ophthalmologist is practicing that day. They also mentioned that several of their patients, particularly elderly patients, tell them not to refer them to ECPs because "I don't have a ride to get there," a concern that was found in another study involving focus groups of patients and ECPs.²⁵ Patients often must have family members drive them to medical appointments, and family members do not have the time to take them to multiple appointments on different days. Thus, the PCP appointment usually takes priority and specialty appointments are not attended (Rural MD1).

We note several limitations in our study. Focus group analysis carries with it the risk of investigator subjectivity during data analysis.¹⁵ To avoid this bias, we used systematic and reproducible methods of coding and categorizing with the use of qualitative software and two-investigator content analysis. Validity and generalizability also are common concerns in focus group studies.¹⁵ To ensure validity, we pilot tested questions to confirm that they were understood. During focus group discussions, the moderator sought to clarify any areas of ambiguity. In addition, before the end of each focus group, the moderator gave a brief summary of what had been discussed and asked participants to verify the summary comments. As for generalizability, results of focus group studies are not intended to be generalized because such studies are, by nature, in-depth examinations of particular topics by few participants. The focus group methodology is in contrast with quantitative study methods, which usually seek to offer breadth instead of depth and therefore rely on a large sample to allow for generalizations. Instead of generalizability, authors of other focus group studies have suggested the concept of transferability, which means it is up to the receiver (i.e., you, the reader) to decide whether the results can be applied to a different situation.¹⁵

We acknowledge that you, the reader, may not view these results as transferable to your geographical practice area. Providers in other regions of the United States may have different practice patterns that present a whole new set of challenges regarding referral to eye care. For example, PCPs in some areas may not be aware of recommended eye care guidelines and thus may not refer patients for eye care at regular intervals, whereas PCPs practicing in other rural areas may cite provider time constraints as more important than patients' access to transportation. Because the U.S. health care system differs from the health care systems of other countries in many ways, providers in other countries are likely to face different referral barriers. For example, in South Africa, patients' access to ECPs may be a larger barrier than lack of communication between PCPs and ECPs.¹³ Clearly, many factors outside of this study's

findings could play a role in eye care referrals. For results to be generalizable, we need a study with more breadth; therefore, we are currently developing a quantitative survey-based study to further evaluate PCP referral to eye care.

This pilot study was designed to learn more about the barriers that PCPs face in the referral-to-eye-care process and what suggestions PCPs have to remedy current referral problems. The key findings suggest that PCPs recognize major problems within the current referral system and desire better communication and collaboration with ECPs and better implementation and utilization of EMRs. ECPs can do a better job of providing prompt and understandable feedback to PCPs regarding their referred patients. The recent allocation of funds via the health information technology program of the American Recovery and Reinvestment Act of 2009 has the potential to expand EMR systems across the United States, even in rural and underserved areas. PCPs and ECPs should seek out these and other ways to improve continuity of care for the millions of patients at high risk for advancing eye disease and vision loss.

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