Assessment of the Quality of Glaucoma Referral Letters Based on a Survey of Glaucoma Specialists and a Glaucoma Guideline

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Objective: To assess the quality of glaucoma referral letters and to report on the results of a survey of glaucoma specialists about referral letter content.

Design: Cross-sectional study.

Participants: A survey of 135 glaucoma specialists and audit of 200 consecutive referral letters to a tertiary glaucoma unit.

Methods: An online questionnaire was sent to members of the Canadian and American Glaucoma Societies asking what they considered the most important data to be included in a glaucoma referral. Consecutive referral letters to a tertiary glaucoma unit were assessed for legibility and content on the basis of the survey results and information items in current guidelines.

Main Outcome Measures: Survey outcome and proportion of included content items in referral letters.

Results: The survey revealed that the top 5 most important data that glaucoma specialists would like to be included in a referral letter for progressive glaucoma were serial visual fields (VFs), current glaucoma therapy, current intraocular pressure (IOP), maximum IOP, and serial disc imaging. These items often were omitted in the referral letters audited. A total of 200 referral letters were assessed, 46% from ophthalmologists, 42% from optometrists, 10% from family practitioners, and 2% from other sources. Reasons for referral were diagnosis of glaucoma (37%), unstable glaucoma (25%), angle assessment (17%), and others (21%). Some 26% of the referral letters were deemed illegible (18% from ophthalmologists vs. 6% from optometrists; $P < 0.01$). Degree of urgency was mentioned in 27% of referrals. Optometrists were more likely than ophthalmologists to provide visual acuity (VA), IOP, refraction, and VFs ($P < 0.01$ for each). Some 24% of referrals for progression included more than 10 of the 14 information points suggested by the Canadian glaucoma guidelines, and 34% included fewer than 8 of the 14 points.

Conclusions: Referral letters frequently did not include important information, with 34% of referral letters deemed substandard. Optometrist referrals were better than ophthalmologist referrals in terms of content and legibility. A checklist of clinical details for referring physicians is suggested, which includes maximum and current IOP, disc evaluation, serial VFs, and serial disc imaging. *Ophthalmology 2014;121:126-133 © 2014 by the American Academy of Ophthalmology.*

The referral process is an important aspect of quality patient care that is typically initiated with a referral letter. In addition to providing valuable clinical information, the referral letter should indicate the degree of urgency to minimize disruptions between primary and specialty care that can undermine quality of care[1] and threaten patient safety.[2] In a Canadian Medical Association survey of more than 3000 respondents,[3] only 43% of family physicians (FPs) and 60% of specialists thought that the referral process was effective. The main problems identified by specialists included insufficient supporting information, for example, laboratory tests (55%), and insufficient patient information, for example, reason for referral (51%).

Despite the recognized importance of referral letters, the literature evaluating referral letters and interventions to improve referral letters is limited. In a Cochrane review of 17 studies, local educational interventions and structured referral forms were the only effective interventions.[4] The Canadian Ophthalmology Society evidence-based clinical practice guidelines for the management of glaucoma in the adult eye (CGG)[5] included a glaucoma referral template highlighting 14 items to be included in a glaucoma referral letter (Fig 1).

The objectives of this study were to survey glaucoma specialists regarding the top information desired in a referral letter and to assess referral letters received by a tertiary glaucoma unit in terms of legibility and content compared with the CGG referral letter template and a survey of glaucoma specialists.[5]

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	Items under review
Patient's details	***1. Patient's name*** 2. Patients' address ***3. Patients' date of birth*** 4. Patient Contact Number
Referring agent details	5. Referrer's name 6. Referrer's address 7. Referrer's contact number 8. Physicians billing number (for Canadian payment claims) ***9. Date of referral*** 10. Degree of urgency
Ophthalmic /Glaucoma Information	11. Visual acuity 12. Refraction ***13. Length of glaucoma diagnosis*** 14. Family history ***15. Maximum/pre-treatment intraocular pressure (IOP)*** 16. Recent IOP 17. Disc evaluation ***18. Visual fields*** ***19. Past/Serial visual fields*** ***20. Disc imaging*** 21. Past/Serial disc imaging ***22. Ocular surgery*** ***23. Other ocular pathology***
Medication	***24. Name of drop(s)*** ***25. Frequency of drops and which eye(s)*** ***26. Previous eye drops*** 27. Allergies 28. Other systemic medication

Figure 1. List of items that were assessed for referral letter content. The 13 items in bold plus reason for referral are based on the Canadian guidelines.[5] IOP = intraocular pressure.

Methods

An e-mail was sent to members of the Canadian Glaucoma Society and American Glaucoma Society inviting them to participate in an electronic questionnaire regarding glaucoma referral letters. The following 2 questions were asked:

1. When receiving a glaucoma referral letter from an ophthalmologist OR an optometrist for consideration of GLAUCOMA PROGRESSION or SURGERY, what are the top 5 most important pieces of information you would like to know?

2. When receiving a glaucoma (suspect) referral letter from an ophthalmologist OR an optometrist for consideration of a DIAGNOSIS OF GLAUCOMA, what are the top 5 most important pieces of information you would like to know?

Answer options for each were visual acuity (VA), refraction, degree of urgency, recent visual fields (VFs), serial VFs, current/recent intraocular pressure (IOP), maximum IOP, disc evaluation, recent disc imaging, serial disc imaging, previous ocular surgery, previous ocular pathology, and nonophthalmic medications. For question 1, additional options included current glaucoma therapy/frequency, previous glaucoma therapy, any known allergy or side effect of glaucoma therapy, and length of glaucoma diagnosis. The survey only accepted 5 equally ranked answer options with no free text option. The web link was available to participants for 2 months.

During a 2-month period, all new referral letters sent to the glaucoma service at the Toronto Western Hospital were reviewed. The referral letters were assessed according to the information provided, such as patient's personal details, referring physician/optometrist details, medical and ocular history, medication details, allergies, and 14 information points as recommended in the CGG referral letter template[5] (Fig 1). In addition, the following items were assessed: the referral source (ophthalmologist, optometrist, FP, other) and reason for referral (diagnosis of glaucoma, assessment of glaucoma progression, transfer of care, narrow-angle assessment, others), legibility, whether a template was used, and if the referral was typed or handwritten. All letters were included, and there were no exclusion criteria. Referrals were by mail or fax. The referring practitioners were not aware that their letters were being assessed. This study was approved by the University Health Network Research Ethics Board (part of the University of Toronto).

Statistical analysis was performed using SPSS version 20 (SPSS Inc., Chicago, IL). Chi-square test was used to compare legibility and content provided between optometrist and ophthalmologist referrals.

Results

A total of 200 referral letters were evaluated during the study period. Table 1 summarizes the sources and reasons for referral. The majority of referrals were from ophthalmologists (46%) and optometrists (42%) followed by FPs (10%) and others (2%; 1 each from an emergency physician, general physician, dermatologist, and neurologist). The most common reason for referral was for the diagnosis of glaucoma (37%), of which the majority were from optometrists (47%). The second most common reason was for progression or surgical assessment (25%), with 82% of these referrals originating from ophthalmologists. The third most common reason for referral was for narrow-angle assessment (17%), with the majority originating from an optometrist (91%).

Overall, 74% of the referral letters were deemed legible. Some 18% of referrals from ophthalmologists were of poor legibility compared with 6% from optometrists ($P < 0.01$). This is partially explained by optometrists preferring to type letters compared with ophthalmologists (65% vs. 30%, respectively; $P < 0.01$). However, optometrists still have better legibility than ophthalmologists (82% vs. 71%; $P < 0.01$) even when assessing only the handwritten letters.

Table 2 displays the frequency for including basic demographic and nonclinical information. Some 96% of the referral letters included these items with the exception of physician billing number (33%) and degree of urgency (27%). In addition, 6% of the letters did not have a date.

Not all clinical information assessed is essential in every type of referral. For example, a referral requesting a narrow-angle assessment does not necessarily require VF or disc imaging. In contrast, a referral requesting a diagnosis of glaucoma should include more information, including VA, IOP, disc assessment, and VF. Therefore, criteria for each assessment were based on the reason for referral (Table 3).

Referral letters requesting a diagnosis of glaucoma were poor in reporting historical information, such as maximum IOP (16%), family history (51%), previous surgery (44%), and other ocular pathology (57%). Information based on the current examination findings was more readily provided. This included VA (72%), current IOP (84%), and disc evaluation (82%).

Optometrists were more likely than ophthalmologists to provide information in all categories except for reporting previous ocular surgery and ocular pathology. The differences between information provided in optometry and ophthalmology referral letters were statistically significant ($P < 0.05$) in 5 items (VA, IOP, family history, refraction, and VF) displayed in Figure 2. The differences in all other items were not statistically significant.

Referral letters for progression are assessed with greater scrutiny because the referrer should include data to demonstrate the parameter of concern for progression. Structural parameters,

Table 1. Source and Reason for Referral

Referral Source	Diagnosis of Glaucoma	Assessment for Progression or Surgery	Narrow Angle Assessment	Transfer of Care	Other			Total
					Second Opinion	*Acute, Uncontrolled IOP after Surgery*	*Cataract Assessment*	
Ophthalmologist	28 (14)	41 (20.5)	3 (1.5)	5 (2.5)	7 (3.5)	8 (4)	0 (0)	92 (46)
Optometrist	34 (17)	8 (4)	31 (15.5)	8 (4)	2 (1)	0 (0)	1 (0.5)	84 (42)
Family physician	8 (4)	1 (0.5)	0 (0)	6 (3)	4 (2)	0 (0)	1 (0.5)	20 (10)
Other	3 (1.5)	0 (0)	0 (0)	1 (0.5)	0 (0)	0 (0)	0 (0)	4 (2)
Total	73 (36.5)	50 (25)	34 (17)	20 (10)	13 (7.5)	8 (4)	2 (1)	200 (100)

IOP = intraocular pressure. Data are n (%).

including disc description, disc imaging, and serial disc imaging, were provided 68%, 28%, and 12% of the time, respectively. Functional parameters, including VA, VF, and serial VF, were provided 60%, 32%, and 16% of the time, respectively.

Most (82%) of these referrals came from ophthalmologists, making a comparison between referral sources not possible. The 14 items recommended by the CGG template to be included in referrals are shown in bold in Figure 1. Demographic information (patient name, date of birth, reason for referral, and date of referral) were included 96% or more of the time. Current clinical information (name of eye drops [84%], drop frequency [56%], ocular pathology [70%], and ocular surgery [64%]) were moderately well reported, although historical clinical information was poorly reported (glaucoma duration [38%], maximum IOP [30%], names of previous eye drops [46%], VF [32%], disc imaging [28%], and serial VF [16%]).

Only 12 of the referrals (24%) included more than 10 of the 14 suggested items in the glaucoma guidelines, and 34% included fewer than 8 of the 14 points. The average number of items included was 8.6 of 14, with a range of 3 to 14. Ophthalmologists included an average of 8.5 of 14, and optometrists included an average of 9.1 of 14. None of the referrals used the Canadian guideline referral template. Fifteen referrals used their own pro forma, and 35 referrals did not. Those that used their own pro forma scored an average of 9.9 of 14, and those that did not use any pro forma scored 8.0 of 14 ($P = 0.04$).

A link to the online survey was sent to members of the American Glaucoma Society and Canadian Glaucoma Society. In the 2-month period after the invitation, a total of 138 members responded. Three returned incomplete surveys and were therefore excluded from analysis, giving a final sample size of 135.

Figures 3 and 4 summarize the survey results for referral letters regarding a diagnosis of glaucoma and unstable glaucoma (progression or surgery), respectively. The top 5 clinical data a glaucoma specialist would like to be included in a referral letter for a diagnosis of glaucoma were maximum IOP (75%), current or recent IOP (64%), disc evaluation (64%), serial VFs (58%), and recent VFs (46%). For a referral letter regarding unstable glaucoma (progression or surgery), the top 5 clinical data were serial VFs (81%) current glaucoma therapy (63%), current/recent IOP (63%), maximum IOP (51%), and serial disc imaging (43%).

Figure 5 compares the survey results with the referral letter audit for referral letters requesting diagnosis of glaucoma and unstable glaucoma. Recent and serial VF, maximum IOP, and serial disc imaging were items in the top 5 of our survey that featured poorly in our letter audit.

In total, there were 110 different referring practitioners, each sending a mean of 1.8 letters (standard deviation, 1.48; range, 1−10). Nine practitioners sent more than 3 letters, but often for different reasons. Ten of the referral letters were from 1 ophthalmologist, but for 6 different reasons. Eight referral letters were from 1 optometrist: 4 letters for angle assessment, 2 for transfer of care, and 2 for diagnosis of glaucoma. The other high-frequency referring parties were 3 practitioners; each referred 6 letters for up to 4 different reasons. Table 4 displays the number of referral letters from the same practitioner.

Discussion

The Canadian Medical Association has stated that improving the referral and consultation process is one of its current priorities. In a survey of 5500 secondary and tertiary physicians,[6] less than half (47%) reported that referral letters contained enough information to triage a patient. Inadequate referral information may result in irreversible vision loss and a potential liability for physicians from delayed treatment.[7]

Table 2. Number of Letters that Contain the Information Point from Different Referral Sources

Source	Total	Patient's Details				Referring Agent's Details					
		Name	*Address*	*DOB*	*Contact Number*	*Name*	*Address*	*Contact Number*	*Billing Number*	*Date of Referral*	*Degree of Urgency*
Ophthalmologist	92	92	91	91	90	92	91	91	37	86	3
Optometrist	84	84	78	84	83	84	83	84	13	80	35
Family physician	20	20	19	20	20	20	20	20	15	18	16
Other	4	4	4	4	4	4	4	3	1	4	0
Grand total	200	200	192	199	197	200	198	198	66	188	54

DOB = date of birth.

Failure to communicate is a common cause of complaints and medicolegal claims.[8] In contrast, a good letter can reduce repeated investigations[9] and avoid trials of previously ineffective or nontolerated therapies. Overall, good referral letters improve patient care, facilitate efficiency of the consultation process, and result in improved letter replies.[10]

The names and contact details for patients and referrers are essential for a referral not to be rejected. This is universal to all referral letters, and this information was almost always present in this study. Eighteen percent of our referrals were for narrow-angle or cataract assessment. Referrals for these reasons can reasonably exclude some clinical information. This is because historical information is less important, and most essential information needed to manage these cases can be obtained from clinical assessment performed during the consultation.

In contrast, referrals for diagnosis of glaucoma, assessment for progression or surgical intervention, second opinions, and transfer of care require more information. Glaucoma is a slowly progressive disease and at times can be difficult to diagnose. Without historical data, it is difficult to set target pressures or decide on surgery. For example, the American Academy of Ophthalmology preferred practice pattern guidelines for primary open-angle glaucoma[11] recommend setting target pressures on the basis of pretreatment pressure levels and optic nerve status (by disc evaluation, VF, and disc imaging) compared with previous examinations. The UK joint guidance on the referral of glaucoma suspects by community optometrists recommends providing "as much factual information derived from the eye examination as possible." They also recommend "a copy of the visual field assessment should also be provided."[12] This recommendation is further supported by the results of our survey of glaucoma specialists, where serial VFs, maximum and recent IOP, and serial disc imaging featured highly in the top 5 items to include in a glaucoma referral letter (Figs 3 and 4). If this historical information is available but omitted from the referral letter, this may do the patient a disservice.

The quality of referral letters reported in this study for diagnosis of glaucoma and unstable glaucoma (progression or surgery) was generally poor. Less than 30% of letters provided maximum IOP, recent or past VF, or disc imaging. Optometrists were generally better than ophthalmologists at providing information. In our study, VA, IOP, refraction, and VF were provided significantly more frequently by optometrists compared with ophthalmologists ($P < 0.01$ for all). In a study from the United Kingdom looking at optometrist-initiated glaucoma referral letters, 44% of letters (53/121) were classified as "fail" standard. The most common reason for "fail" was lack of date of referral (45%), patient date of birth (32%), and disc evaluation (26%). Some 98% of their referrals included IOP that was higher than our results (28%).[13] In another British study, 97% of optometry referrals provided IOP and 82% recorded VF findings.[14] Both of these studies did not report maximal IOP or compare optometry letters with ophthalmology referral letters.

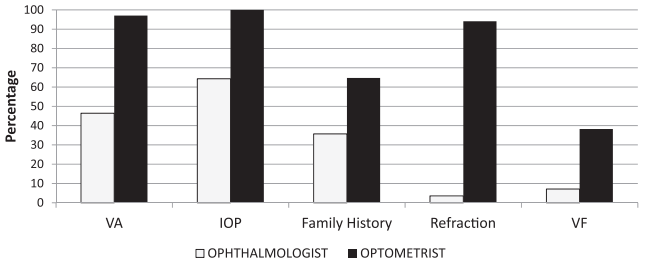

Figure 2. Percentage of referrals from ophthalmologists and optometrists that included visual acuity (VA), intraocular pressure (IOP), family history, refraction, and visual fields (VFs) in referral letters requesting the diagnosis of glaucoma. All 5 information items have statistically significant differences between ophthalmologists and optometrists.

Our survey of the top 5 most important data to include in a glaucoma referral letter revealed that glaucoma specialists find maximum IOP, recent IOP, serial VFs, disc evaluation, and serial disc imaging as the most helpful information for both diagnosis and progression detection. This is in keeping with the Advanced Glaucoma Intervention Study, which stated that the "evaluation of visual field series remains the clinical method most frequently used to assess the course of glaucoma."[15] However, there was a disconnect between glaucoma specialists' needs and the data provided in referral letters. For example, 80% of glaucoma specialists thought that serial VFs were important to help detect progression or decide on surgery, but only 16% of referrals for progression or surgery included this information (Fig 5). Likewise, 76% of survey responders thought maximum IOP was important when diagnosing glaucoma, but only 16% of referral letters included this information. Our referring sources generally were good at providing recent IOP (90%) and current drug therapy (84%), which also featured in the top 5 most important specialist-designated criteria.

It is not uncommon to have a discrepancy between what specialists want and what the referrer provides. Perception may be part of the problem. In a Canadian survey, 91% of FPs thought that their letters contained sufficient information for the specialist to triage the patient, in contrast with 47% of specialists who thought the FP did not include sufficient information.[3] Another study reported that 85% of FPs thought that the findings on physical examination should be included in referral letters, whereas only 27% to 58% actually did this.[16]

Another possible explanation for the lack of information provided is that the referring practitioner may not be aware of the importance of historical data or is concerned with the quality of the data. In addition, physicians and optometrists are under time pressure and may consider a detailed referral letter a low priority.

Despite advances in information technology, more than half of referral letters were handwritten. Typed letters were received from only 32% of ophthalmologists compared with 67% of optometrists ($P < 0.01$). Some 29% of handwritten letters from ophthalmologists were illegible compared with 18% from optometrists ($P < 0.01$). Studies looking at a doctor's handwriting found that doctors were no worse than executives[17] but worse than nurses, other medical professionals, and administrative staff.[18] Poorly legible handwriting can delay treatment, lead to unnecessary tests, and result in patient

Table 3. Number of Letters that Contain the Information

Source	Total	Ophthalmic Information							
		VA	*Refraction*	*Length of Diagnosis*	*Family History*	*Maximum IOP*	*Recent IOP*	*Disc Evaluation*	*VF*
Diagnosis (n = 73)									
Ophthalmologist	28	13	1	NA	10	3	18	21	2
Optometrist	34	33	32	NA	22	7	34	30	13
Family physician	8	1	0	NA	2	0	0	0	0
Other	3	0	0	NA	0	0	0	1	0
Progression (n = 50)									
Ophthalmologist	41	21	6	15	19	12	37	26	11
Optometrist	8	8	7	4	4	3	8	8	5
Family physician	1	1	0	0	0	0	0	0	0
Angle Assessment (n = 34)									
Ophthalmologist	3	2	2	NA	1	0	2	0	0
Optometrist	31	23	22	NA	19	11	23	18	12
Transfer of Care (n = 20)									
Ophthalmologist	5	4	2	3	4	2	4	4	2
Optometrist	8	6	6	6	3	0	6	5	4
Family physician	6	0	0	0	1	0	0	0	0
Other	1	0	0	0	0	0	0	0	0
Other (n = 23)									
Ophthalmologist	15	5	1	3	7	4	9	8	2
Optometrist	3	3	2	0	0	1	3	3	1
Family physician	5	0	0	0	0	0	0	0	0
Grand Total	200	120	81	31	92	43	144	124	52

IOP = intraocular pressure; NA = not applicable; VA = visual acuity; VF = visual field.

discomfort and even death.[19] In addition, it can have adverse medicolegal implications because "sloppy handwriting can be interpreted by the jury as sloppy care."[20]

Referral letters could be improved by a number of methods. Referral practitioner inertia, time management, understanding, and prioritization are the key barriers to adequate referral letters. Inertia and time management can be tackled by simplifying the process. This can be done using a template form with the key data highlighted in a uniform manner so that information can be supplied and processed quickly. It also reduces the amount of writing required.[21,22] Another way to simplify the process for the referring doctor would be to attach copies of all test results and all clinical documentation with the referral note. The receiving specialist can then extract the key information as necessary. However, this could be a laborious task.

Electronic referral systems can be developed to speed up the process using drop box or tick box style letter generation. These systems would have the advantage of legibility, traceable delivery, lower carbon footprint, and automated blocking of incomplete referrals. Ideally, the process would automatically attach serial IOP, VF, and disc imaging information that could then be integrated into the receiving system. It can also open up the possibility of automated processing and triage. Disadvantages include expensive setup, inertia, and learning curve.

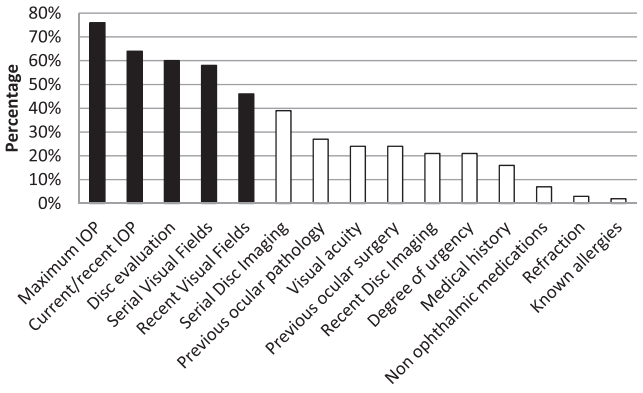

Figure 3. Survey results for the top 5 clinical information items to be included in a referral letter for the diagnosis of glaucoma. The top 5 answers are in *black*, and the remaining are in *white*. IOP = intraocular pressure.

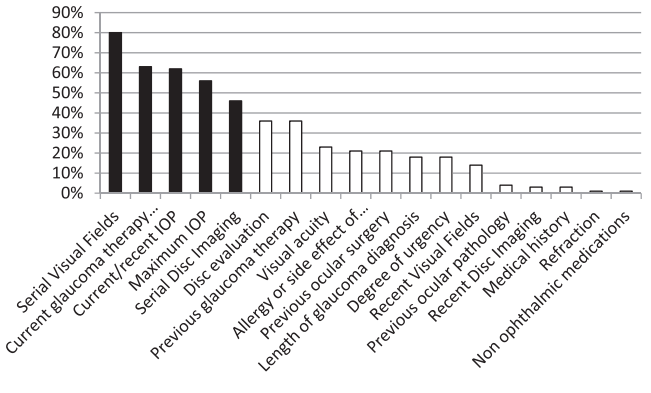

Figure 4. Survey results for the top 5 information items to be included in a referral letter for unstable glaucoma (progression or surgery). The top 5 answers are in *black*, and the remaining are in *white*. IOP = intraocular pressure.

Point from Different Referral Sources

Ophthalmic Information					Medication				
Serial/Past VF	*Disc Imaging*	*Serial/Past Imaging*	*Ocular Surgery*	*Other Ocular Pathology*	*Name of Drops*	*Frequency of Drops*	*Previous Eye Drops*	*Allergy*	*Other Medication*
NA	2	NA	13	18	NA	NA	NA	2	3
NA	0	NA	14	17	NA	NA	NA	8	10
NA	0	NA	0	0	NA	NA	NA	2	5
NA	0	NA	0	1	NA	NA	NA	0	1
4	11	4	29	29	35	22	20	10	12
4	3	2	3	6	6	5	2	3	5
0	0	0	0	0	1	1	1	1	0
NA	NA	NA	2	3	NA	NA	NA	0	2
NA	NA	NA	7	8	NA	NA	NA	1	4
2	2	2	4	4	5	4	2	2	1
1	1	1	3	3	4	3	1	1	3
0	0	0	2	3	1	0	0	2	3
0	0	0	0	0	0	0	0	0	0
2	1	1	9	10	6	4	5	2	4
1	0	0	2	2	1	0	0	0	0
0	0	0	2	3	1	1	0	3	3
14	18	10	90	107	60	40	31	37	56

Although a referral letter template encourages inclusion of important information, we found that none of the referral letters adopted the published template from the Canadian guidelines. This is perhaps not surprising because most individuals already have an established mechanism for producing a referral letter. However, developing a referral letter template is problematic because "one size fits all" is not possible given the unique needs of each patient. One alternative is to develop a checklist of items to include in a referral letter. Figure 6 displays a suggested checklist of items to include when referring a patient with glaucoma.

This study's strengths are the prospective nature and large sample size specific to glaucoma referrals. To our knowledge, this is the first study to categorize and analyze glaucoma

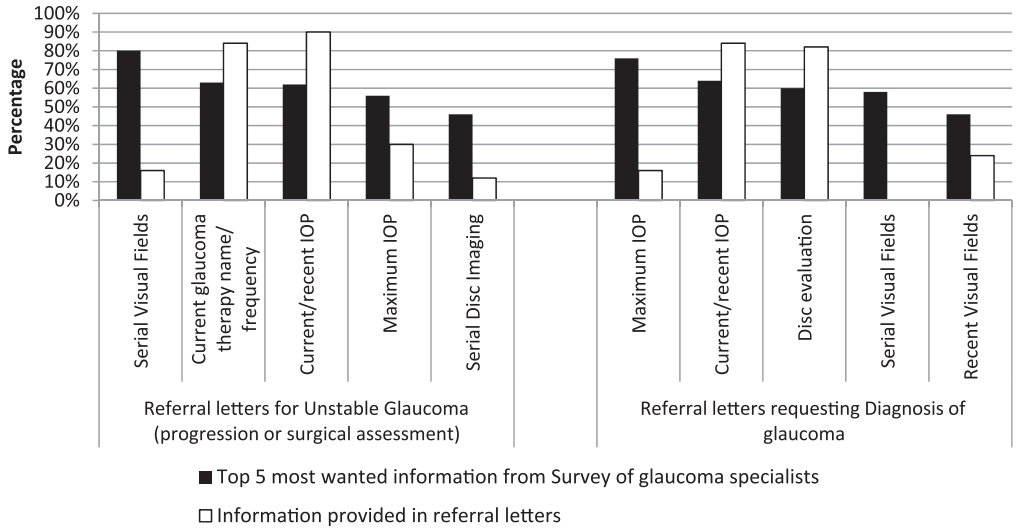

Figure 5. A comparison of the referral letter survey results with the referral letter audit results. The percentages of the top 5 survey responses for referral letters for unstable glaucoma and diagnosis of glaucoma are shown in *black*. The percentage of referral letters reviewed that included these top 5 items is shown in *white*. IOP = intraocular pressure.

Table 4. Number of Referral Letters from Same Referring Practitioner, Separated by Reason for Referral

No. of Referrals from Same Practitioner	Diagnosis of Glaucoma	Assessment for Progression or Surgery	Narrow Angle Assessment	Transfer of Care	Other			Total
					Second Opinion	*Acute, Uncontrolled IOP after Surgery*	*Cataract Assessment*	
1	39	27	13	17	10	6	2	114
2	8	8	2	2	1	1	0	22
3	2	1	3	0	0	0	0	6
4	3	1	2	0	0	0	0	6
Total No. of Different Referral Sources	52	37	20	19	11	7	2	NA

IOP = intraocular pressure; NA = not available.

referrals according to the reason for referral and source of referral. It is also the first to compare optometric referral letters with ophthalmology referral letters and to survey glaucoma specialists on desired referral letter content.

Study Limitations

The limitations of our study include evaluating only 1 component of the referral process, namely, referral letter quality and content. Other equally important aspects not evaluated in this study include appropriateness of referrals, appropriateness of glaucoma management, timeliness of consultation, and communication back to the referring physician/optometrist. In addition, the referral letters evaluated were from 2 physicians (Y.M.B. and G.E.T.) working in a single center. Although these physicians work independently and receive referrals from different sources, our findings will likely vary depending on individual referring sources and may be influenced by the consultant because some consultants require specific information or test results before accepting a referral. Although we included a large number of referral sources (200 letters from 110 sources), 45 sources provided more than 1 letter, which may have biased the results (Table 4). Because clinical content requirements vary by reason for referral, the same source including letters for different reasons may have introduced some bias. Finally, the interpretation of legibility is subjective.

In conclusion, our study highlights the need for improvement in glaucoma referral letters. The issue of legibility could be improved by typing letters. The use of information technology may help streamline the referral process. In terms of referral letter content, the use of a referral letter template or checklist (Fig 6) should be encouraged, with emphasis on those items of high priority on the survey of glaucoma specialists, such as maximum IOP, recent IOP, disc evaluation, glaucoma therapy, serial VFs, and serial disc imaging. Overall improvements in referral letter quality will require knowledge translation efforts, the willingness of the various stakeholders to recognize deficiencies in the referral process, and individual efforts to introduce change in their referral process.

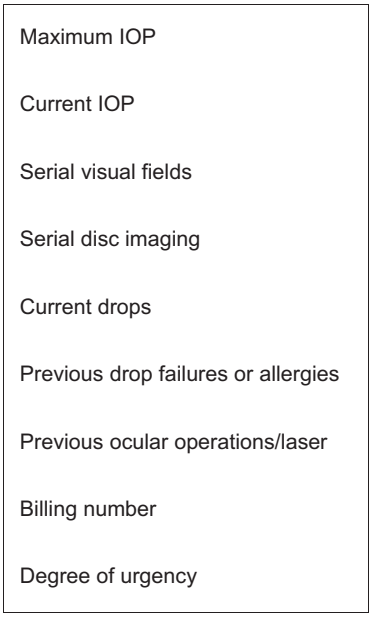

Figure 6. Checklist of items to include in a referral letter for progression of glaucoma. IOP = intraocular pressure.

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