

# Referral characteristics and wait times for uveitis consultation at academic tertiary care centres in Toronto

Tina Felfeli, BSc,\* Panos G. Christakis, MD, FRCSC,\* Nupura K. Bakshi, MD, FRCSC,\*<sup>†,‡,§</sup>  
Efrem D. Mandelcorn, MD, FRCSC,\*<sup>†,||</sup> Radha P. Kohly, MD, PhD, FRCSC,\*<sup>†,¶</sup>  
Larissa A. Derzko-Dzulynsky, MD, FRCSC\*<sup>†,‡</sup>

## ABSTRACT • RÉSUMÉ

**Objective:** To assess the characteristics of referrals to academic uveitis tertiary care centres in Toronto and identify determinants of wait time for consultation.

**Design:** Retrospective case series.

**Methods:** Consecutive new uveitis referrals received at 5 University of Toronto-affiliated uveitis tertiary care centres, between February 2016 and November 2016, were included.

**Results:** A total of 159 new uveitis referrals were received from academic (69%) and community (31%) providers. A large proportion of referrals were sent by comprehensive ophthalmologists (33%) and retina specialists (38%). Disease was bilateral in 46% of cases, had an acute onset in 43% of cases, and was classified as posterior uveitis in 38% of cases. Disease etiology at the time of referral was unknown in 55% of cases. Only 43% of all referrals included a basic uveitis workup, and patients who had undergone diagnostic testing had a shorter wait time for consultation ( $41 \pm 43$  vs.  $59 \pm 54$  days,  $p = 0.033$ ). Acute uveitis had a shorter wait time compared with recurrent and chronic uveitis ( $33 \pm 42$  vs.  $66 \pm 44$  and  $59 \pm 58$  days,  $p < 0.001$ ). Referrals triaged as urgent had significantly shorter wait times compared with referrals triaged as semiurgent or elective ( $7 \pm 10$  vs.  $54 \pm 43$  and  $88 \pm 59$ ,  $p < 0.001$ ).

**Conclusions:** Referrals to academic uveitis tertiary care centres in Toronto are often acute, bilateral cases affecting the posterior segment without a known etiology. Approximately half of referrals include no diagnostic workup, which may delay diagnosis for patients and lengthen wait times for consultation. We provide a set of recommendations for investigations that should be included in uveitis referrals.

**Objectif :** Évaluer les caractéristiques des patients qui sont adressés à des centres de soins tertiaires universitaires spécialisés dans le traitement de l'uvéite à Toronto et définir les facteurs qui influent sur le délai de consultation.

**Nature :** Série de cas rétrospective.

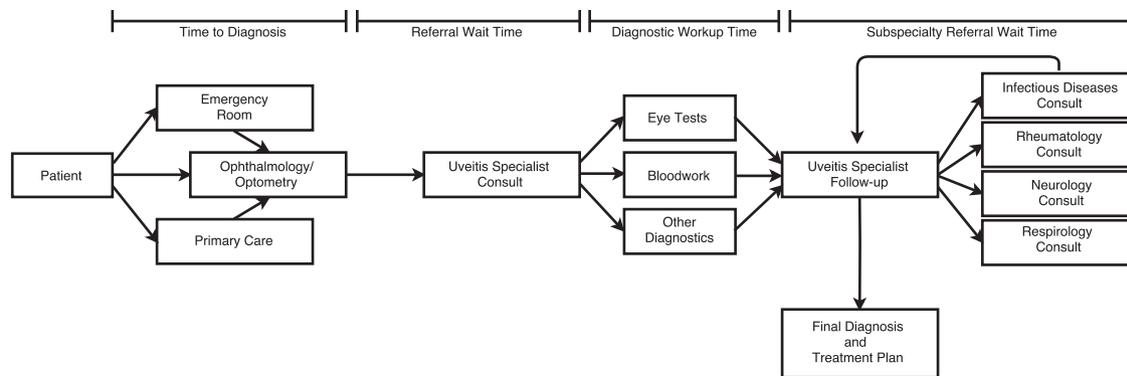
**Méthodes :** On a inclus des patients consécutifs souffrant d'uvéite nouvellement adressés à 5 centres de soins tertiaires spécialisés dans le traitement de l'uvéite affiliés à l'Université de Toronto entre février et novembre 2016.

**Résultats :** Un total de 159 nouveaux cas d'uvéite ont été adressés par des professionnels de la santé du milieu universitaire (69 %) et de la collectivité (31 %). Une importante proportion de ces patients avaient été adressés par des spécialistes en ophtalmologie complète (33 %) et des rétiniologues (38 %). L'atteinte était bilatérale dans 46 % des cas; 43 % des sujets avaient subi une atteinte aiguë, tandis que dans 38 % des cas, il s'agissait d'une uvéite postérieure. Pour 55 % des patients, l'étiologie de l'atteinte n'était pas connue au moment où le médecin a adressé son patient à un centre de soins tertiaires. Seulement 43 % de tous les patients ainsi adressés avaient déjà fait l'objet d'un examen sommaire de l'uvéite, et les patients chez lesquels on avait procédé à des examens diagnostiques ont dû attendre moins longtemps avant de rencontrer un spécialiste ( $41 \pm 43$  vs  $59 \pm 54$  jours;  $p = 0,033$ ). Le délai de consultation était plus court dans les cas d'uvéite aiguë que dans les cas d'uvéite récurrente ou chronique ( $33 \pm 42$  vs  $66 \pm 44$  et  $59 \pm 58$  jours;  $p < 0,001$ ). Les cas jugés urgents ont été vus significativement plus rapidement que les cas jugés semi-urgents ou sans caractère d'urgence ( $7 \pm 10$  vs  $54 \pm 43$  et  $88 \pm 59$  jours;  $p < 0,001$ ).

**Conclusions :** Les patients adressés à des centres de soins tertiaires universitaires spécialisés dans le traitement de l'uvéite à Toronto ont souvent une atteinte aiguë bilatérale intéressant le segment postérieur sans étiologie connue. Environ la moitié de ces patients n'avaient fait l'objet d'aucune évaluation diagnostique préalable, ce qui peut retarder le diagnostic et prolonger le délai avant la consultation. Nous présentons un ensemble de recommandations quant aux examens qui devraient être réalisés chez les patients qui nous sont adressés en raison d'une uvéite.

Uveitis is a collection of intraocular inflammatory diseases that account for 10%–15% of blindness in developed countries.<sup>1</sup> The incidence of uveitis based on one of the largest studies in the United States is estimated to be 115.3 per 100 000 person-years.<sup>2</sup> The major visual morbidity, and loss of productive work years associated with uveitis are a substantial psychosocial burden to patients and come at a high economic cost to society.<sup>3–6</sup> Early recognition and treatment is one of

the major prognostic factors in uveitis and may reduce the disability it causes.<sup>7</sup> Given the heterogeneous presentation and multitude of infectious and noninfectious causes, uveitis presents a diagnostic challenge for health care providers.<sup>8–10</sup> According to the 2015 Statistics Canada population census, the Toronto Metropolitan Area population is estimated to be 6.2 million, with 49% of persons born outside of Canada.<sup>11,12</sup> The large and diverse Toronto metropolitan



**Fig. 1**—Uveitis referral pathway from time of presentation to diagnosis and establishment of a treatment plan.

area population augments the complexity of the etiologies underlying uveitis and creates challenges in prompt diagnosis.

The referral patterns for uveitis consultation will vary depending on the health care setting where patients present, the need for multidisciplinary ancillary testing, and subspecialty expertise for management (Fig. 1). The referral letter is an essential document for communicating information that will enable correct triaging, diagnostic accuracy, and efficient use of medical resources.<sup>13</sup> Subsequent detailed history, review of systems, list of medications, accurate examination, and basic laboratory results are essential in guiding the appropriate diagnostic tests in the evaluation of uveitis.<sup>14</sup> Several studies have highlighted the deficiencies in the referral process, including incomplete and erroneous referral letters, which delay patient care.<sup>15–18</sup> The Institute of Medicine framework for health care improvement notes that reduction of wait times and a timely management is one of the main criteria for quality patient care.<sup>19</sup> As a large city with several academic uveitis tertiary care centres, Toronto provides an excellent opportunity for investigating quality of care for uveitis consultations. A better understanding of the factors in the health care pathway that influence the time needed to diagnose and treat uveitis may improve patient care and help preserve vision. The purpose of this study is to report the characteristics of referrals to University of Toronto-affiliated uveitis tertiary care centres, and to identify determinants of wait time for consultation.

## METHODS

Consecutive new uveitis consult referral letters received between February 2016 and November 2016 at University of Toronto-affiliated academic centres providing uveitis care within the city of Toronto were identified. The 5 academic centres included were the Kensington Vision and Research Centre, Mount Sinai Hospital, St. Michael's Hospital, Sunnybrook Health Sciences Centre, and Toronto Western Hospital. A list of all patient visits during the 10-month study period was obtained from the institutional databases at the respective centres. Patients referred for uveitis consultation were identified using Ontario Health Insurance Plan (OHIP) consultation service codes

and OHIP diagnostic codes relevant to uveitis and were searched on physician-specific electronic medical record databases. Identified patient charts were then reviewed manually to identify all new uveitis referrals. Efforts were made to include referrals received through email and in-person/telephone communications, when this information was accessible in the patient chart. Cases previously under the care of the recipient uveitis specialist were not considered to be new referrals and were excluded from analysis. Eligible referral letters were reviewed by an ophthalmologist not directly involved in the care of the patients (P.G.C.) to determine appropriateness for inclusion in the study and assessment of the referrals using a priori criteria for uveitis classification and triaging urgency. The corresponding author (L.A.D.) independently reviewed and graded a random selection of 25% of referrals to ensure consistency of documented characteristics. Data were abstracted by a third author (T.F.), and discrepancies were resolved by consensus. Retrospective review of patients' records was permitted by the Institutional Review Board for Human Subjects Research at the St. Michael's Hospital Ethics Board, and the study procedures adhered to the tenets of the Declaration of Helsinki.

Standardized Uveitis Nomenclature criteria was used to describe the uveitis as unilateral or bilateral, and classify cases based on anatomic involvement as follows: (i) anterior, (ii) intermediate, (iii) posterior, and (iv) panuveitis.<sup>1</sup> A broad categorization for etiology was used to define each case as (i) infectious; (ii) noninfectious uveitis associated with systemic inflammatory disease; (iii) white dot syndromes; and (iv) idiopathic/not yet diagnosed. A distinction was made between infectious and noninfectious uveitis due to differences in urgency for treatment and the need for antimicrobial therapy versus immunosuppression. Noninfectious uveitis cases were further subdivided into those with systemic involvement and white dot syndromes due to differences in associated symptoms, prognosis, and the approach to treatment.<sup>20</sup> Disease course was defined as one of the following: (i) acute, of sudden onset and limited duration; (ii) recurrent, repeated episodes of inflammation separated

by periods of inactivity > 3 months without therapy; (*iii*) chronic, persistent uveitis characterized by prompt relapse within 3 months after discontinuation of therapy.<sup>21</sup> Urgency of the referral was determined according to the following definitions: (*i*) urgent, vision-threatening disease requiring immediate assessment; (*ii*) semiurgent, active or uncontrolled disease requiring assessment in a timely manner; and (*iii*) elective, quiescent or stable disease that may be assessed on an elective basis. Additional items including the mode of referral (fax, email, in-person/telephone), referral source (academic setting or community setting), referring provider (comprehensive ophthalmologist, uveitis or retina specialist, optometrist, rheumatologist, emergency physician, primary care provider, or other) were collected. The reason for referral was labeled as one or more of the following: (*i*) workup and diagnosis; and/or (*ii*) management; and/or (*iii*) second opinion. All diagnostic workup and/or testing results included in the referral (complete blood count [CBC], human leukocyte antigen B27 [HLA-B27], venereal disease research laboratory [VDRL] test, antinuclear antibody [ANA] test, purified protein derivative skin test [PPD], chest radiography, optical coherence tomography [OCT], intravenous fluorescein angiography [IVFA], computed tomography [CT], magnetic resonance imaging [MRI], and anterior chamber [AC] paracentesis) were recorded. As a part of standard of care in the centres included in the study, all referring physicians were contacted once at the time that the referral was received to request for any additional diagnostic tests not previously communicated in the referral letter. The aim of this practice is to reduce duplication of tests and promote stewardship of health care resources. Current medications used to treat uveitis were also documented (steroid or nonsteroidal anti-inflammatory drugs topical agents, subtenons/intravitreal or systemic steroids, systemic immunosuppression). Patient demographics (age and sex) and postal code were collected. Postal code for each patient was used to estimate distance travelled (km) to the designated institutions for uveitis consultation (using maps.google.ca). The wait time for each consult was calculated as the time between the date of referral received to the date of the first appointment booked for the patient. All classifications were made based

on the information provided in the referral letter. In cases where there was inadequate information to accurately grade the referral item, the “unknown” classification was used.

All statistical analyses were performed using SPSS software version 16.0 (SPSS Inc, Chicago, Ill.). Descriptive statistics were used to report patient demographics and referral characteristics, and categorical variables were analyzed using a  $\chi^2$  test. Two-tailed independent sample *t* tests and paired sample *t* tests were used to compare continuous variables. A *p* value < 0.05 was considered to be statistically significant.

## RESULTS

A total of 159 new uveitis consult referrals were identified at the 5 University of Toronto-affiliated academic centres during the 10-month study period. The patient population was on average  $48 \pm 19$  years old at presentation and consisted of 57% females. Academic-affiliated providers referred 69% of patients while community providers referred 31% of patients. Fax was the most common mode of referral and comprised 95% of cases. The largest number of referrals was sent by comprehensive ophthalmologists (33%) and retina specialists (38%; Table 1). The most common reason for referral was ongoing management (76%), followed by diagnosis and workup (43%), and second opinion (22%). Disease was bilateral in 46% of referrals and unilateral in 48%, while laterality was not reported in 6% of referrals. The most common anatomical localization of uveitis was posterior (38%), followed by anterior (35%), intermediate (12%), panuveitis (11%), and unknown (4%). Disease presentation was classified as acute (43%), recurrent (28%), chronic (26%), or unknown (3%; Table 2). The most common uveitis etiologies were the following: non-infectious uveitis associated with systemic disease (29%), infectious (10%), and secondary to a white dot syndrome (7%). Referrals were triaged as urgent (vision-threatening) in 21% of cases, semiurgent (active or uncontrolled) in 60% of cases, and elective (quiescent or stable) in 19% of cases. In 55% of referrals, disease etiology was unknown at the time of referral. Only 43% of all referrals reported

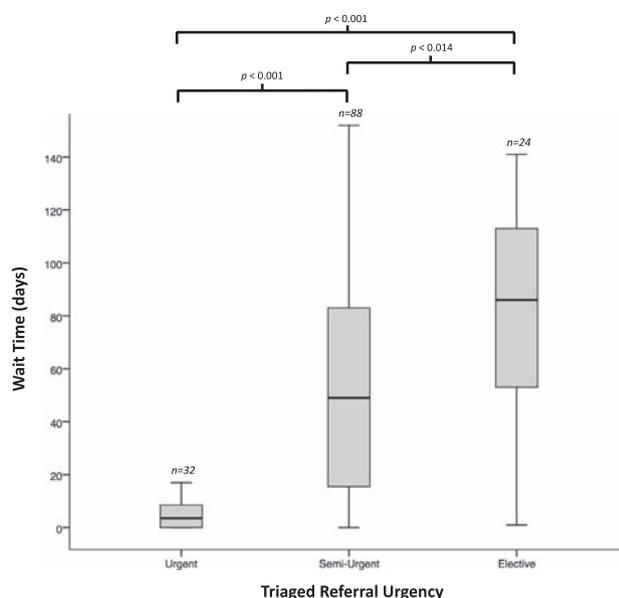
**Table 1—Characteristics of referral letters according to the referring provider**

Referring Provider	Number of Referrals (%)	Setting		Reason for Referral (one or more of the following)		
		Academic	Community	Diagnosis and Workup	Second Opinion	Management
Comprehensive ophthalmology	52 (33%)	25 (48%)	27 (52%)	30 (58%)	5 (10%)	43 (83%)
Retina specialist	60 (38%)	53 (88%)	7 (12%)	21 (35%)	21 (35%)	39 (65%)
Uveitis specialist	12 (8%)	12 (100%)	0 (0%)	1 (8%)	6 (50%)	7 (58%)
Optometry	9 (6%)	0 (0%)	9 (100%)	7 (78%)	0 (0%)	9 (100%)
Rheumatology	9 (6%)	9 (100%)	0 (0%)	1 (11%)	2 (22%)	7 (78%)
Emergency medicine	5 (3%)	4 (80%)	1 (20%)	5 (100%)	0 (0%)	5 (100%)
Primary care	6 (4%)	0 (0%)	6 (100%)	2 (33%)	0 (0%)	6 (100%)
Other	6 (4%)	6 (100%)	0 (0%)	1 (17%)	1 (17%)	5 (83%)
Total	159	109 (69%)	50 (31%)	68 (43%)	35 (22%)	121 (76%)

\*Other = Neuro-ophthalmology, glaucoma specialist, respirology, neurosurgery.

Variable	Anterior Uveitis	Intermediate Uveitis	Posterior Uveitis	Panuveitis	Total
Number of referrals	55 (34%)	19 (12%)	61 (38%)	18 (11%)	159 (100%)
Age at presentation, years Mean ± SD (range)	47 ± 16 (15-79)	40 ± 18 (18-75)	51 ± 19 (12-87)	54 ± 23 (19-96)	48 ± 19 (12-96)
Female sex	34 (62%)	12 (63%)	35 (57%)	7 (39%)	91 (57%)
Laterality					
Unilateral	30 (55%)	6 (32%)	32 (53%)	7 (39%)	77 (48%)
Bilateral	23 (42%)	12 (63%)	26 (43%)	11 (61%)	73 (46%)
Unknown	2 (4%)	1 (5%)	3 (5%)	0 (0%)	9 (6%)
Urgency					
Urgent	8 (15%)	1 (5%)	14 (23%)	9 (50%)	33 (21%)
Semiurgent	31 (56%)	13 (68%)	39 (64%)	9 (50%)	96 (60%)
Elective	16 (29%)	5 (26%)	8 (13%)	0 (0%)	30 (19%)
Course					
Acute	13 (24%)	4 (21%)	39 (64%)	11 (61%)	68 (43%)
Recurrent	29 (53%)	4 (21%)	12 (20%)	2 (11%)	41 (26%)
Chronic	13 (24%)	9 (47%)	9 (15%)	5 (28%)	45 (28%)
Unknown	0 (0%)	2 (11%)	1 (2%)	0 (0)	5 (3%)
Etiology					
Infectious	23 (42%)	0 (0%)	12 (20%)	4 (22%)	16 (10%)
Noninfectious systemic	32 (58%)	6 (32%)	9 (15%)	2 (11%)	45 (28%)
Inflammation					
White dot syndromes	—	—	11 (18%)	—	11 (7%)
Idiopathic/Not yet diagnosed	0 (0%)	13 (68%)	29 (48%)	12 (67%)	87 (55%)
Distance travelled, km mean ± SD (range)	66 ± 205 (1–1356)	48 ± 42 (1–141)	102 ± 395 (1–3000)	38 ± 34 (2–146)	72 ± 271 (1–3000)
Wait time, days mean ± SD (range)	53 ± 45 (0–152)	76 ± 64 (5–295)	40 ± 44 (0–151)	47 ± 51 (0–152)	49 ± 49 (0–295)

appropriate basic diagnostic testing results and included a combination of CBC (28%), HLA-B27 (12%), VDRL (26%), ANA (18%), OCT (6%), IVFA (8%), PPD test (20%), chest radiography (25%), and MRI and/or CT scan (3%). Secondary workup such as AC paracentesis was included in 2% of referrals. At the time of referral, 48% of patients were being treated with topical steroids, and 10% of patients were treated with systemic immunosuppression.



**Fig. 2—**Boxplots comparing wait times for patients awaiting uveitis consultation according to triaged referral urgency. Note: Box intersection lines represent median, box edges represent the 25th and 75th percentiles, and whiskers represent the 5th and 95th percentile.

The mean wait time for consultation was 49 ± 49 days. Urgent cases had significantly shorter wait times (7 ± 10 days) compared with semiurgent cases (54 ± 43 days) and elective cases (88 ± 59 days, *p* < 0.001; Fig. 2). Acute uveitis had a shorter wait time (33 ± 42 days) compared with recurrent (66 ± 44 days) and chronic uveitis (59 ± 58 days, *p* < 0.001). Posterior uveitis trended towards a shorter wait time (40 ± 44 days) compared with other uveitis classifications (55 ± 51 days; *p* = 0.06). Referrals that included a basic workup had shorter wait times (41 ± 43 days) than those that did not include any diagnostic testing results (59 ± 54, *p* = 0.033). For referrals requesting workup and diagnosis, the wait time was shorter (37 ± 42 days) compared with referrals requesting ongoing management or a second opinion (58 ± 52 days, *p* = 0.008). Referring provider and practice setting did not significantly influence uveitis wait times. The mean travel distance for patients was 72 ± 271 km for a uveitis consult at University of Toronto-affiliated uveitis tertiary care centres.

## DISCUSSION

As the second major treatable cause of blindness in the Western world, uveitis is responsible for up to 10% of cases of visual loss.<sup>3</sup> Herein, we present the first report of new uveitis referrals to academic tertiary care centres in Toronto to assess the burden of disease. Our results demonstrate that referrals sent to uveitis specialists in Toronto are often challenging and undifferentiated cases being referred by comprehensive ophthalmologists and retina specialists. Disease is often bilateral, acute, and involving the posterior segment. Referrals for vision-threatening disease are usually seen within 1 week, but

semiurgent and elective consultations may take several months. The majority of referrals were sent with a request for management or transfer of care of the patient to a uveitis specialist. Most importantly, over half of the referrals had no diagnostic workup performed before consultation.

Prompt diagnosis and treatment of uveitis is important to reduce morbidity. However, most referrals to Toronto tertiary care centres do not include a diagnostic workup, which may increase wait times for uveitis specialists, and lengthen the time until treatment can be initiated. The American Academy of Ophthalmology has published guidelines on the basic uveitis workup for practicing ophthalmologists.<sup>22,23</sup> Nonetheless, it is important to recognize that evaluation and management of uveitis is often challenging due to extensive differential diagnoses and lack of a standardized protocol.<sup>24,25</sup> Indeed, etiology of uveitis remains uncertain or unknown in 30%–70% of cases even after workup.<sup>26–32</sup> In our cohort, the etiology of disease at the time of referral was unknown in 55% of cases. This may also be partly attributed to the complexity of the cases referred to large tertiary care centres in Toronto. Interestingly, anterior uveitis, the most common form of uveitis in the United States, Australia, and Europe,<sup>33</sup> was outnumbered by posterior uveitis referrals in our case series. Other rare diseases such as white dot syndromes, with a reported incidence of 0.45 per 100 000 per year,<sup>34</sup> were identified in 7% of the posterior uveitis referrals received in this study. Furthermore, in contrast to other reports from tertiary care centres,<sup>35–39</sup> the majority of referrals received at our institutions had an acute onset, and thus required an extensive workup. It is important to note that the referral bias of the cases received at tertiary care centres compared with community practices, as previously described by McCannel and colleagues,<sup>29</sup> strongly affects the characteristics of uveitis referrals received at our institution, and thus these referrals are not representative of all uveitis cases in community practices in the Greater Toronto area. Furthermore, the

results presented here are based on a single institution's experience, which serves as a major limitation of this study, but may reflect important aspects of uveitis care in other academic centres.

Laboratory testing is essential in determining etiology of uveitic disease, ruling out infection, initiating appropriate treatment, identifying comorbid systemic diseases, and understanding the disease prognosis. For example, serologic screening for syphilis and chest radiography are recommended investigations for all forms of uveitis and additional tests such as liver function tests are important considerations before initiation of immunosuppressive treatment.<sup>21</sup> Routine tests such as CBC, blood chemistries, erythrocyte sedimentation rate, and C-reactive protein have been suggested to be too nonspecific for preliminary diagnosis<sup>8,10</sup> and may be ordered on a case-by-case basis in consideration of the patient's medical history, review of systems, ocular findings, and differential diagnosis. Other tests such as HLA-B27 are part of the standard workup for acute anterior uveitis and tuberculosis skin test or QuantiFERON-TB gold is part of the standard workup in Eales disease, choroidal granuloma, and serpiginous-like choroiditis.<sup>21</sup> A brief summary of basic workups for uveitis are listed in Table 3, which can serve as a guide for diagnostics that may be included in the initial referral.<sup>9,10,21–24,40,41</sup> In more challenging cases, a multistep process for the initial workup may be warranted in consideration of the complexity of the case, relevance of findings, accessibility to various testing and the cost-effectiveness<sup>8</sup> of the diagnostics. In a multistep process, the referring provider may initially send a detailed referral letter that will guide uveitis specialists' triaging, who will then send recommendations to the referring provider for additional tests to be performed before the initial uveitis consultation. Despite these indications, only 43% of all referrals received at our institutions included diagnostic testing required to appropriately triage patients. Similar findings have been reported for glaucoma referrals received at Canadian tertiary care centres, where 34% of referral

**Table 3—Recommended routine investigations for initial uveitis workup**

Test	Specific Diagnostics
Bloodwork	<ul style="list-style-type: none"> <li>• Angiotensin converting enzyme (ACE)</li> <li>• Venereal disease research laboratory test (VDRL) or syphilis screen chemiluminescent microparticle immunoassay (CMIA)</li> </ul>
Radiology	<ul style="list-style-type: none"> <li>• Chest radiography</li> </ul>
Energy testing	<ul style="list-style-type: none"> <li>• Purified protein derivative (PPD) skin test for tuberculosis (TB)               <ul style="list-style-type: none"> <li>◦ Only recommended for patients from endemic regions</li> </ul> </li> </ul>
Specialized testing	<ul style="list-style-type: none"> <li>• Human leukocyte antigen B27 (HLA-B27)               <ul style="list-style-type: none"> <li>◦ For anterior uveitis</li> </ul> </li> <li>• Antinuclear antibody (ANA)/Antineutrophil cytoplasmic (ANCA)               <ul style="list-style-type: none"> <li>◦ Recommended if there is evidence of systemic involvement or vasculitis</li> </ul> </li> <li>• Treponemal tests to screen for syphilis               <ul style="list-style-type: none"> <li>◦ Recommended for syphilis due to high sensitivity and specificity<sup>40</sup></li> </ul> </li> </ul>

Note: Recommendations have been adapted from previously published guidelines on uveitis workup,<sup>9,10,21–24,41</sup> and should be customized on a case-by-case basis in consideration of their relevance, accessibility, and cost-effectiveness.<sup>8</sup> Routine investigations including complete blood count (CBC), electrolytes/creatinine, and erythrocyte sedimentation rate (ESR)/C-reactive protein (CRP), may be ordered in consideration of patient's medical history, review of systems, ocular findings, and differential diagnosis.

letters did not contain the necessary information for triaging patients.<sup>15</sup> Other specialties in medicine have faced the same difficulties with regard to the lack of the key medical information in referral letters.<sup>18,42,43</sup> Deficits in communication of important information in the referral letter adversely affect patient care, increase wait times, and result in inefficient use of health care resources when duplication of diagnostic tests is required.<sup>13</sup>

Reducing wait time for patient care is considered one of the key aims of the Institute of Medicine's health quality improvement guideline.<sup>19</sup> Wait times for uveitis referrals, particularly those with vision-threatening disease, can influence the prognosis and quality of life for patients. At our institutions, despite the challenges in triaging referrals with inadequate information, urgent cases were usually seen within the same week. On the other hand, semiurgent cases had a greater variability in their wait time, averaging 1–3 months. The literature suggests that bilateral posterior uveitis, which represented 43% of all our cases, is associated with a reduction in quality of life in patients with uveitis due to bilateral reduced visual function.<sup>44,45</sup> Given that approximately 64% of posterior uveitis referrals were categorized as semiurgent, it is suspected that many of these cases had longer wait times than desired. Reducing the number of elective referrals to tertiary care centres may reduce wait times for patients with vision-threatening disease and allow for timelier triaging of urgent and semiurgent cases.

The number of visits and distance travelled for follow-ups is another major factor contributing to quality of life for uveitis patients and their ability to work. The frequent need to adjust immunosuppressive therapy in uveitis necessitates frequent monitoring and can introduce challenges for patients travelling long distances for uveitis consults. In our series, patients travelled an average of 72 km, and given that most referrals (76%) requested ongoing management, receiving uveitis subspecialty care comes at a high personal cost to patients, both due to travel expenses and absence from work. Furthermore, given that most patients were referred without having received a diagnostic workup, multiple additional visits may be required early in the course of disease. Although certain diagnostic tests may only be available at academic institutions (such as polymerase chain reaction testing), the majority of the basic uveitis workup is available in community settings and can be performed by the referring provider or a primary care provider.

Overall, the findings of this study suggest that quality of care for patients with uveitis may be improved with published guidelines on the basic workup required from referring providers and use of standardized referral forms for referrals sent to tertiary care centres. Inclusion of basic workup in referral letters will enable more accurate and timely triaging of patients and may improve wait times for urgent and semiurgent cases. Furthermore, a collaborative approach between academic-affiliated and community

providers toward a joint management of uveitis cases will minimize the burden on patients by reducing the distance travelled and the number of visits required.

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From the \*Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ont.; †Kensington Vision and Research Centre, Toronto, Ont.; ‡St. Michael's Hospital, Toronto, Ont.; §Mount Sinai Hospital, Toronto, Ont.; ||Toronto Western Hospital, University Health Network, Toronto, Ont.; ¶Sunnybrook Health Sciences Centre, Toronto, Ont.

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Correspondence to Larissa A Derzko-Dzulynsky, MD, FRCSC, University of Toronto, Department of Ophthalmology and Vision Sciences, 340 College Street Suite 501, Toronto, Ont. M5T 3A9; DerzkodzulyL@smh.ca