

# Understanding Patient Referral Wait Times for Specialty Care in Ontario: A Retrospective Chart Audit

Comprendre le temps d'attente pour les patients  
recommandés auprès des soins spécialisés en Ontario :  
audit rétrospectif des dossiers



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## Abstract

*Context:* When examining wait times for specialist care, the duration between a patient's referral and specialist visit (wait time one) is poorly understood.

*Objectives:* To calculate wait time one in primary care clinics across Ontario using chart audit.

*Methods:* We conducted a retrospective chart audit at five Ontario-based primary care clinics in 2014–2015.

*Results:* We analyzed 461 referrals. Median wait time one for non-urgent and urgent referrals was 79 and 49 days, respectively. Gastroenterology, obstetrics/gynecology, and ear, nose and throat received the most referrals. Wait times were longest for dermatology (112 days) and shortest for general surgery (32 days).

*Conclusion:* Wait times vary substantially by referral urgency and specialty type in Ontario. Calculating wait time from primary care clinics directly offers new perspectives on wait time one and enables clinics to target improvement efforts to best meet patient needs. Our findings will be relevant to providers and policy makers interested in implementing strategies to reduce wait times.

## Résumé

*Contexte :* Dans l'examen du temps d'attente pour l'accès au spécialiste, la durée entre la recommandation du patient et la consultation auprès du spécialiste (temps d'attente « un ») est bien peu connue.

*Objectifs :* Calculer le temps d'attente « un » dans des cliniques de soins primaires en Ontario au moyen d'un audit des dossiers.

*Méthode :* Nous avons mené un audit rétrospectif des dossiers dans cinq cliniques de soins primaires établies en Ontario, en 2014–2015.

*Résultats :* Nous avons analysé 461 recommandations. Le temps d'attente « un » médian pour les recommandations non urgentes et urgentes était de 79 et 49 jours, respectivement. Les spécialités qui ont reçu le plus de recommandations étaient la gastroentérologie, l'obstétrique/gynécologie et l'oto-rhino-laryngologie. Les temps d'attente étaient plus longs pour la dermatologie (112 jours) et plus courts pour la chirurgie générale (32 jours).

*Conclusion :* Les temps d'attente varient considérablement en fonction de l'urgence de la recommandation et du type de spécialité, en Ontario. Le calcul du temps d'attente à partir des cliniques de soins primaires offre de nouveaux points de vue sur le temps d'attente « un » et permet aux cliniques de cibler leurs efforts d'amélioration afin de mieux répondre aux besoins des patients. Nos résultats sont pertinents pour les prestataires de soins et les responsables de politiques qui s'intéressent à la mise en place de stratégies pour réduire les temps d'attente.

**L**ONG WAIT TIMES AND POOR ACCESS TO SPECIALIST CARE ARE A MAJOR PROBLEM facing the Canadian healthcare system. According to a recent international Commonwealth Fund Survey, Canada continues to perform below the international average for timely access to patient care, with Canadians in all provinces reporting the longest wait times for specialists among the 11 countries included. The study found that more than half of Canadians (56%) waited longer than four weeks to see a specialist, compared with the international average of 36% (CIHI 2017). In studies of patient experience, 18–21% of Canadians reported that their lives have been affected by the wait to see a specialist (Harrington et al. 2014; Sanmartin et al. 2006), with many patients reportedly experiencing stress, pain, a greater reliance on over-the-counter medications and challenges with work and maintaining the same level of income (Harrington et al. 2014). These factors can be further exacerbated by barriers to communication between providers, which reduce coordination of care and can cause delays in treatment or assessment. A 2011 report by the Royal College of Physicians and Surgeons of Canada identified a lack of effective communication between general practitioners and specialists as a major factor hindering intraprofessional relationships (Little 2011).

Evaluation of wait times in Ontario has mostly focused on the time between when a patient visits a specialist and when they receive the treatment/testing prescribed by the specialist, a metric referred to as wait time two (MOHLTC 2008). However, patient engagement in the healthcare system begins well before the specialist visit. The total time that a patient has to wait to receive treatment for a condition can be seen as the cumulative delay between several chronological steps: (1) the patient's decision to consult a primary care provider (PCP), (2) the appointment with the PCP, (3) the PCP sending a referral letter to a specialist, (4) the appointment with the specialist and (5) any further tests and/or treatment. The time between steps three and four (i.e., from the PCP's referral request to the specialist appointment) is called wait time one, and has received considerably less study than wait time two. In fact, despite significant progress in measuring and reporting wait times for treatments, there are currently no mechanisms in place to measure or report on the length of wait times to see specialists at the provincial level in Ontario. This is due, in part, to the challenges associated with measuring wait time one, which is affected by factors such as the financial costs of monitoring wait times given the high volume of patients waiting to see specialists; the incomparability of reporting standards given differences in workflows, processing times and record-keeping among clinics; and triage based on the urgency of patients' conditions (Petch and Dhalla 2013).

Most studies of wait time have been conducted from a specialist perspective in which referrals to a particular specialty were analyzed for patients with a specific clinical diagnosis (Armstrong et al. 2008; Barua and Fathers 2014), or else relied on physician or patient surveys (Petch and Dhalla 2013; Steven 2011). While these studies provide some perspective on wait times in Canada, they suffer from a number of methodological limitations, including low participation rates, a focus on a limited range of specialty groups, use of monetary incentives and a reliance on surveys answered

after the fact and hence subject to possible recall bias. Studies adopting a primary care perspective have relied principally on health administrative data, which offer large samples but face such limitations as low data quality, interpretation errors and inaccuracies. Chart audits, while more labor-intensive, offer a more accurate method for measuring elements of care quality (Green et al. 2012; Hogg et al. 2010), as they draw on data points not available in health administrative data, including physicians' notes and correspondence between providers.

In this study, we sought to (1) test the feasibility of calculating wait time one from the primary care perspective through a retrospective chart audit and (2) calculate wait time one from a sample of primary care practices in Ontario. The results of this study are highly relevant for provincial policy makers in their efforts to address the problem of excessive wait times for specialist care, and for other researchers studying wait times.

## Methods

### *Study design and setting*

We conducted a retrospective chart audit using a convenience sample of five primary care clinics in Ontario. Four were large academic family health teams located in a large urban area, and one was a rural clinic in the northern part of the province.

### *Sources of data and variable specification*

Data were collected from two sources: referral letters that PCPs sent to specialists and the clinic's electronic medical records (EMRs).

#### REFERRAL LETTER DATA

Data elements extracted from the referral letter included: the date the referral was made, the specialty type, the reason for the referral, if the referral was urgent and if the referral was for a procedure. It was not always possible to capture the date the referral was made versus the date the referral was faxed to the specialist. Where possible, both dates were captured and the date the referral was made was used for the wait time one calculation. The urgency of the referral was ascertained based on the presence of select key words (e.g., priority, urgent, ASAP). Cases where urgency was suspected but not overtly indicated were classified as "unsure." Referrals for medical procedures, such as a colonoscopy or a colposcopy, were captured as procedural referrals.

#### EMR DATA

Data collected from the EMR included the date the patient saw the specialist, patient gender, patient year of birth and patient postal code (first three digits). We also identified instances of communication between specialists and PCPs at two time points: after the referral was sent and after their patient saw the specialist.

Data were abstracted and uploaded to the secure web-based collaboration space hosted by the Winchester District Memorial Hospital for the Champlain region and facilitated by

the Champlain Local Health Integration Network. All data were stored on secure servers at the Winchester District Memorial Hospital.

### *Sampling description*

We took a systematic sample of 100 referrals from each clinic. Each clinic was asked to extract one month's worth of referrals from a period between September 2014 and November 2014. This total number of referrals in a particular month was then divided by 100 to obtain the sampling interval integer. If a clinic did not have a total of 100 referrals in one month, the time period was extended in order to obtain the desired 100 referrals from each clinic. It should be noted that the ease of pulling referrals varied among the clinics depending on their referral tracking processes and EMR capabilities. For this reason, the final sample of referrals generated by all clinics spanned a period from January 2014 to February 2015. The sampling for each clinic started by randomly selecting the first referral from the list, and then every  $k^{\text{th}}$  referral in the frame, where  $k$  was the sampling interval calculated as follows:  $k = N/100$ , where  $N$  was the total number of referrals per study frame for each clinic.

All referrals made to any specialty during the study time period were eligible for inclusion. Any non-urgent referrals for electronic consultation through the Champlain BASE™ eConsult service were excluded, as they have been received within seven days (Liddy et al. 2013).

### *Quality control*

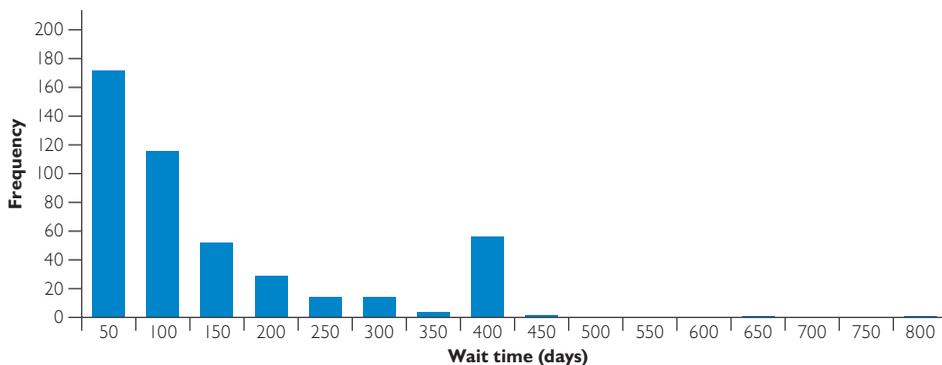
Medical students performed the chart abstraction. Standardized training was provided by the principal investigator and a medical resident who had experience in reviewing charts. Training was delivered in a single session roughly one hour in length, during which the sampling method, data collection form and capturing dates for wait time one calculation were explained. The students were encouraged to contact the research team with any specific questions while performing chart abstractions. On average, completing the chart abstraction process for 100 charts took three to five days depending on the complexity of the data collection (e.g., ability to extract referrals in a given month using paper, EMR or mixed methods) and student/clinic availability. To ensure consistency and quality of the data collected, members of the research team routinely monitored the data collection process and responded quickly to any questions that arose during the chart abstraction phase. Chart abstractors were also provided with a detailed written support material, which was based on those used in another major study of primary care practices in Ontario (Liddy et al. 2011).

### *Analysis*

Wait time one was defined as the time (in days) between when the referral was requested by the PCP and when the patient saw the specialist. Because wait times do not typically follow

a normal distribution (Figure 1), medians and interquartile ranges (IQRs) were calculated. We tabulated counts and proportions as appropriate as part of the descriptive analysis of patient and referral information. In cases where there was no record of the patient having been seen by the specialist during the one-year follow-up period, we assumed a wait time of 365 days. This cut-off was selected to ensure a full year of chart abstraction was completed from the date the referral was initiated. EMRs at some participating clinics included data on specialist visits occurring outside of our 365-day window. These data were also collected where available and used in place of our 365-day assumption. All data analysis was completed in Microsoft Excel.

**FIGURE 1.** Distribution of wait times ( $n = 461$  cases)



## Results

A total of 501 charts were abstracted across five clinics. Forty referrals were excluded for the following reasons: (1) the patient declined the specialist appointment, (2) the patients' symptoms resolved before the specialist appointment and the appointment was no longer needed, (3) the specialist rejected/redirected the referral or (4) the referral was to the Ontario Telemedicine Network (OTN) telederm program or OTN consultation through the OTN (OTN 2017).

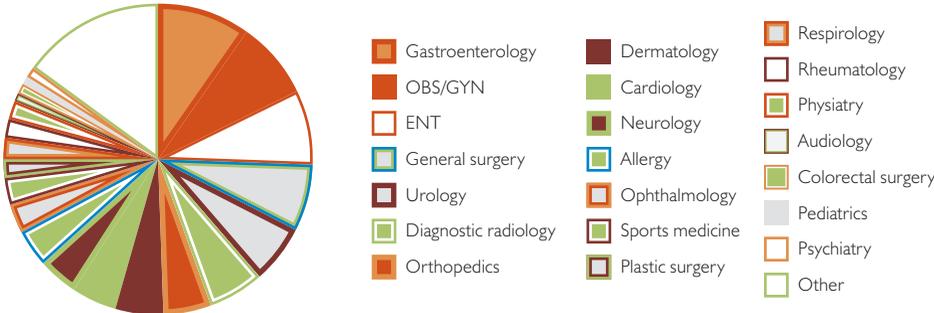
A total of 461 cases (92%) were therefore included in the final analysis. Of these, slightly more were completed on behalf of female patients (57%) and for adult patients (58%), and nearly one-third (31%) were for a procedure (Table 1). The proportion of referrals that were for a procedure varied across the five sites, with clinics five and three reporting higher rates of referrals for a procedure (41% and 38% of referrals were for a procedure, respectively) compared to clinic two, which had the lowest rate of 19% referrals for a procedure. The urgency of referral varied across sites, with clinic two reporting the highest proportion of urgent referrals (17%) compared to other clinics, all of which were under 10%.

Figure 2 illustrates the specialty distribution for all referrals submitted by the participating clinics. The most common specialty groups were gastroenterology (10%), obstetrics/gynecology (OBS/GYN) (8%), ear, nose and throat (ENT) (8%), general surgery (7%) and urology (6%).

TABLE 1. Characteristics of referrals

Characteristic	Clinic 1 (n = 97)	Clinic 2 (n = 89)	Clinic 3 (n = 86)	Clinic 4 (n = 98)	Clinic 5 (n = 91)	Total (N = 461)
Urgent, n (%)						
No	82 (85)	69 (78)	85 (99)	47 (48)	85 (93)	368 (80)
Unsure	8 (8)	5 (6)	0 (0)	44 (45)	0 (0)	57 (12)
Yes	7 (7)	15 (17)	1 (1)	7 (7)	6 (7)	36 (8)
Patient gender, n (%)						
Female	50 (52)	45 (51)	53 (62)	66 (67)	51 (56)	265 (57)
Male	47 (48)	44 (49)	33 (38)	32 (33)	40 (42)	196 (43)
Patient age, n (%)						
Child (0–18)	6 (6)	7 (8)	6 (7)	6 (6)	0 (0)	25 (5)
Adult (19–64)	52 (54)	48 (54)	39 (45)	59 (60)	71 (78)	269 (58)
Senior (65+)	39 (40)	34 (38)	41 (48)	33 (34)	20 (22)	167 (36)
Procedure, n (%)						
No	60 (62)	62 (70)	46 (53)	49 (50)	54 (59)	271 (59)
Unsure	11 (11)	10 (11)	8 (9)	20 (20)	0 (0)	49 (11)
Yes	26 (27)	17 (19)	32 (37)	29 (30)	37 (41)	141 (31)

FIGURE 2. Distribution of all referrals (n = 461) by specialty



ENT = ear, nose and throat; OBS/GYN = obstetrics/gynecology.

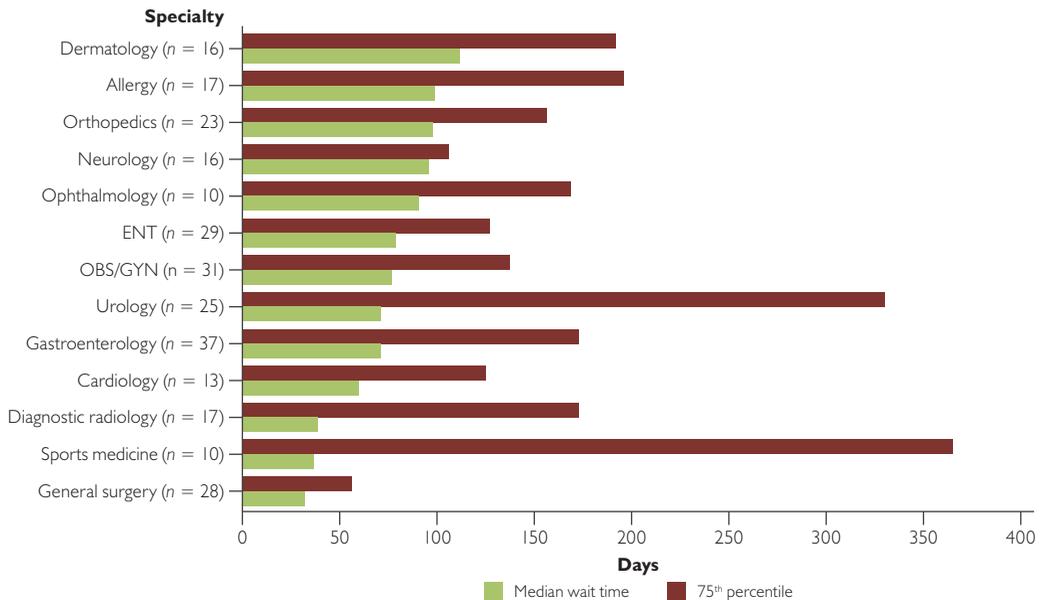
Wait time 1

In 11% of referrals (49/461), there was no indication the patient had seen the specialist after one year. For these cases, we assumed a wait time of 365 days. In an additional 2% of referrals (10/461), wait times of greater than 365 days were identified through EMR data (Figure 1). The median wait time across all five clinics for all non-urgent referrals was 79 days (IQR: 35–173). Urgent referrals had a median wait time of 49 days (IQR: 18.75–77.75), while for cases where urgency was unclear, the median wait time was 57 days (IQR: 24–111).

Clinic four had the shortest median wait time overall at 50 days (IQR: 24–172.5) and for non-urgent cases at 49 days (IQR: 24.5–261.5), while clinic two had the longest median wait time overall at 91 days (IQR: 48–222) and non-urgent at 105 days (IQR: 62–245).

In general, median wait times varied substantially among the different specialty groups. Figure 3 shows that among those specialty groups that received at least 10 non-urgent referrals, dermatology had the longest median wait times for all non-urgent referrals (112 days), followed by allergy (99 days), orthopedics (98 days) and neurology (96 days). General surgery had the shortest median wait times for non-urgent referrals (32 days), followed by sports medicine and diagnostic radiology (37 and 39 days, respectively).

**FIGURE 3.** Median wait time one in days from date referral is made until the date patient sees specialist for non-urgent referrals ( $n = 368$ ), for the most popular specialty types with more than 10 referrals



ENT = ear, nose and throat; OBS/GYN = obstetrics/gynecology.

### PCP-specialist communication

Communication between PCPs and specialists were examined at two time points: immediately after referral was made and after the referral visit took place. The specialist’s office corresponded with the PCP clinic after the patient was initially referred in 22% of referrals (98/461), and followed up with the PCP clinic after the patient’s visit in 79% of cases (366/461), often via a consult letter.

### Discussion

We demonstrated that a retrospective chart audit is a feasible, reproducible method for assessing wait time one from the primary care perspective. The median wait time was 79 days for non-urgent referrals and 49 days for urgent referrals. Wait times varied substantially between

clinics, specialty groups and levels of urgency. Some specialties exhibited higher demand than others (e.g., gastroenterology, OBS/GYN), as evidenced by a greater number of referrals from all participating clinics. The majority of communication between PCPs and specialists took place after the patient visited the specialist, where the specialist often sent a consult letter back to the PCP informing them of the details of the appointment, as opposed to before the patient visit, such as a letter informing the PCP of the appointment date. Only a quarter of specialists communicated with PCPs after the initial referral appointment was made.

Few studies have been conducted in Canada exploring wait time one from the PCP perspective. An Ontario-based study linking family physicians' EMR data to healthcare administrative databases found that the length of wait time varied between specialty groups (Jaakkimainen et al. 2014), with gastroenterology demonstrating the longest wait time among non-surgical specialties (76 days) and cardiology the shortest (39 days). Another Ontario study using similar methods reported a median wait time of 53 days (Thind et al. 2012), while a study in Alberta found a median wait time of 61 days (Thanh et al. 2013). While these studies report shorter wait times than found in our analysis, they rely on administrative data to assess wait times, which are limited in the detail of a clinical encounter and do not capture information such as urgency and reason for referral.

The success of our methodology supports previous research, which found chart audits to be effective at assessing elements of performance and identifying areas for improvement (Gregory et al. 2008). Audit and feedback programs are frequently employed as quality improvement and educational interventions to professional practice, and often lead to moderate but potentially important improvements in care quality. The effectiveness of such programs is determined by the practice's baseline performance and the manner in which feedback is provided (Ivers et al. 2012). Our own experience supports this finding: we conducted knowledge exchange activities with participating practices following the study's completion, leading in some cases to changes in workflow. For example, median wait times in one clinic were virtually identical for urgent (78 days) and non-urgent cases (75 days), an issue that the clinic was unaware of and has now taken steps to remedy.

Finally, our findings suggest that the majority of PCPs received feedback from the specialist after the patient's visit, but few received an acknowledgement after initially sending the referral. This would likely cause the PCP to be unsure if the specialist received the referral and how long the patient can expect to wait for treatment. However, it is important to note that this estimate was based on correspondence explicitly recorded in the EMR, and does not rule out the possibility of unrecorded exchanges. In either case, this points to the importance of better communication from the specialist's office immediately after the referral was made and the need for PCPs to follow up with the specialist's office to verify if a consultation has occurred.

Our study has several limitations. The small sample size means that the number of referrals per specialty group is quite small. This makes our results more volatile and sensitive to extreme values, as evidenced by the considerable gap between the median and 75<sup>th</sup> percentile wait times seen in some specialties (e.g., sports medicine, urology). Future studies employing larger

sample sizes are warranted. Improvements in EMR technology could allow measurement data to be collected automatically, reducing the workload inherent in a chart audit and allowing for larger data sets to be collected in a more efficient way. For instance, all provinces across Canada are collecting wait time data for patients with priority conditions (e.g., cancer), and recently an indicator for specialist care wait time has been added (CIHI 2016). The referral data came from only a few clinics in Ontario, which limits the study's generalizability. We did not capture whether practitioners at any one clinic specialized in specific services (e.g., biopsies), which could have influenced the number of referrals submitted to a particular specialty group. Our calculation of wait time one varied based on data availability, with the date the referral was faxed to the specialist occasionally standing in for the date the referral was requested when the latter was not available. Furthermore, we were unable to account for patient-level factors that may have extended wait times (e.g., rescheduling of appointments, lack of availability). Wait times may have also been subject to over- and underestimation in some cases. Overestimation of wait times may have stemmed from instances where specialists' consultation letters were not sent or were misfiled. Conversely, instances where the patient had no recorded visit with a specialist were noted as having wait times of one year, though the actual wait time may have been longer. Future chart audits should examine the EMR for more than one year to see when exactly the patient was seen by the specialist. Another limitation of the chart audit is the reliance solely on the recorded information. Any information that was not explicitly recorded was assumed to not have occurred. For instance, referral urgency was determined based on the presence of various key words denoting urgency (e.g., ASAP, priority, urgent), which may not have been used in every case. Lastly, anecdotal evidence suggests that for certain specialties where it is practically impossible for a patient to get in via referral, family doctors stop referring.

## Conclusion

Our study successfully demonstrated the feasibility of calculating wait time one from a primary care perspective using a chart audit. Using this method, we found median wait time one in participating clinics was 79 days for non-urgent referrals and 49 days for urgent referrals. We also demonstrated substantial variance in wait times for referrals to different specialty groups. Our findings suggest a need for new strategies to improve wait times for specialist care, such as the eConsult service. Furthermore, clinics can use chart audits to assess their own wait times, allowing them to target the specialties where the need for improvement is greatest.

Further research should examine whether wait times vary based on other factors (e.g., socio-economic status), as well as the economic impact of longer wait time one from the patient and payer perspectives.

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