Electronic Consultation Services Worldwide: An Environmental Scan

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Abstract

**Background:** Excessive wait times for specialist care pose a serious concern for many patients, leading to duplication of tests, patient anxiety, and poorer health outcomes. In response to this issue, many healthcare systems have begun implementing technological innovations designed to improve the referral-consultation process. Among these services is electronic consultation (eConsult), which connects primary care providers and specialists via a secure platform to facilitate discussion of patients’ care.

**Objective:** In this article, we examine the different eConsult services available worldwide and compare the strategies, barriers, and successes of their implementation in different healthcare contexts worldwide.

**Methods:** We conducted an environmental scan comprised of three stages: a literature review, a grey literature search, and targeted, semi-structured key informant interviews. We searched Medline and EMBASE (literature review) and Google (grey literature search). Upon completing the searches, we generated a list of potential interview candidates from among the stakeholders identified. Potential participants included researchers, physicians, and decision-makers. Maximum variation sampling was employed to ensure sufficient breadth of participant experience. We conducted semi-structured interviews by telephone using an interview guide based on the RE-AIM framework. Analyses of transcripts were conducted using a thematic synthesis approach.

**Results:** A total of 53 services emerged from the published and grey literature. Respondents from 10 services participated in telephone interviews. Four major themes emerged from the analysis: service structure, benefits of eConsult, implementation challenges, and implementation enablers.

**Conclusion:** eConsult services have emerged in a variety of countries and health system contexts worldwide. Despite differences in structure, platform, and delivery of their services, respondents described similar barriers and enablers to implementation and growth, and reported improved access and high levels of satisfaction.

**Keywords:** eConsult; primary care; implementation; service adoption
Introduction
Excessive wait times for specialist care pose a serious concern for many patients, leading to duplication of tests, patient anxiety, and poorer health outcomes.[1-3] In response to this issue, many healthcare systems have begun implementing technological innovations designed to improve the referral-consultation process.[4-8] Among these are electronic consultation (eConsult) services: secure online applications that facilitate asynchronous communication between primary care providers (PCP) and specialists, allowing PCPs to ask questions to specialists directly about a patient’s care and in some cases avoid the need for a face-to-face consultation.

In 2009, our team launched the Champlain BASE™ (Building Access to Specialists through eConsultation) eConsult service in the Champlain health region of Ontario. As our service grew, we wanted to gain a better understanding of whether other such services were operating in Canada. To this end, we conducted an environmental scan of services across Canada in order to ascertain the status of eConsult in each province. Our study found no other eConsult services in the country; only two other services emerged besides our own, both of which were exclusively eReferral systems.[9] Unlike eConsult, which can supplement or replace the in-person referral in some cases, eReferral is simply a platform that lets PCPs submit or schedule patient referrals electronically.

Since then, interest in eConsult has expanded in many countries.[7,8] Champlain BASE™ has likewise grown, reaching its 30,000th case. Building on its regional success, the service is in the process of expanding process-wide, with money for its implementation earmarked in Ontario’s 2017 budget. The service is also expanding beyond provincial borders. Partnerships with provincial and national groups have resulted in services informed by the BASE™ model emerging in Alberta, Manitoba, and Newfoundland and Labrador.

Given our service’s forthcoming growth, we have endeavored to update our previous scan, making two key changes to its scope. First, we have expanded our search to services available outside of Canada in order to capture a broader range of experiences. Second, we focused our current scan exclusively on eConsult services, as eReferral services address different issues and are not directly comparable to eConsult. These changes allowed us to examine the successes and barriers faced by eConsult services in a wide array of different contexts, providing invaluable insight into which elements are most vital and which may—or indeed, should—be adapted to fit the individual circumstances of the region in which they are implemented.

Methods

Design
Our study follows the methodology used in our previous environmental scan modified to expand from a Canadian to an international focus.[9] Our process was implemented in three stages: a literature review, a grey literature search, and key informant interviews.

Population
Our environmental scan targeted any documentation pertaining to the development, implementation, or expansion of eConsult services. We defined eConsult services as asynchronous, directed communication between providers over a secure electronic medium that
involved sharing of patient-specific information and sought clarification or guidance regarding clinical care. While services based in any country were eligible for inclusion, only literature published in English and French were reviewed.

Literature Review
We conducted literature searches of Medline and EMBASE databases to identify existing eConsult services. Our search strategy built on the keyword combinations and variants used in our previous scan, with modifications to 1) expand the scope beyond Canadian services to include services implemented internationally, and 2) focus exclusively on eConsult services (Appendix A).

Grey Literature Search
Following the literature review, we performed a grey literature search using the Google search engine (Appendix B). If the search yielded more than 100 hits, the reviewer read through all results until a) ten pages (1000 hits) had passed without yielding any information about a new service, or b) the end of the search was reached.

Key Informant Interviews
Upon completing the literature review and grey literature search, we generated a list of potential interview candidates from among the stakeholders identified in the acquired documents. Potential participants included researchers, healthcare providers (e.g. physicians), and decision-makers involved in the development or implementation of an eConsult service. To ensure sufficient breadth of participant experience, we employed maximum variation sampling,[10] with relevant factors including the service’s country of origin, technology platform, and host organization. We did not attempt to contact Canadian services for interviews, as our team had already developed partnerships with all services identified by the scan.

Potential participants were contacted by email. Emails were written in English. For services based in countries with majority languages other than English, we generated brief descriptions of the project in their language using Google Translate. A member of our research team (JJ) conducted semi-structured interviews by telephone using an interview guide structured around the RE-AIM framework, which assesses a project’s ability to translate research into action using five categories: reach, effectiveness, adoption, implementation, and maintenance (Appendix C).[11] The interviewer was a Research Coordinator with a Master’s degree and experience conducting previous qualitative studies. He had no prior relationship with any interview subjects. Interviews began with a brief discussion of the research project’s objectives. All interviews were conducted in English and lasted 20-45 minutes. Interviews were audio recorded and transcribed verbatim. Participants received a copy of the interview transcript to review and correct if necessary.[12]

Data Analysis
Transcripts were uploaded into NVivo version 11. Team members followed the thematic synthesis approach outlined by Thomas et al.[13] One member of the research team (JJ) reviewed the transcripts and developed an initial framework of descriptive and analytical themes. The remaining six team members independently reviewed the transcripts using the framework, meeting to discuss progress, identify any disconfirming data, and confirm whether data saturation had been reached. Emerging themes were agreed upon by consensus and amended as needed based on new data.
Ethics Approval
The Ottawa health Science Network Research Ethics Board (20120894-01H) and the Bruyère Continuing Care Research Ethics Board (M16-12-052) provided ethics approval for this study.

Role of the Funding Source
Funding was provided by the Ontario Ministry of Health and Long-Term Care, Champlain Local Health Integration Network, and the Canadian Institute of Health Research. The funders played no part in the study design, collection, analysis, or interpretation of the data, in the writing of the report, or in the decision to submit the article for publication.

Results
Searches of the Medline database returned 262 cases, of which 115 were deemed sufficiently relevant to be reviewed by abstract. Search of the EMBASE database returned 441 cases, of which 172 were sufficiently relevant for abstract review. The results of both searches were combined, resulting in 206 citations after duplicates were removed. A review of these citations revealed 28 distinct eConsult services that met our definition of eConsult (i.e. asynchronous platforms that allow PCPs and specialists to discuss a patient’s care). An additional 25 services emerged from the grey literature search, resulting in 53 eConsult services from 17 regions (16 countries plus one international service). The United States had the highest number of identified services (n=28), followed by Canada (n=4), Brazil (n=3), and Spain (n=3). A map of all services is presented in Figure 1.

Figure 1. Map of services that were identified by the environmental scan (n=53) and participated in interviews (n=10)

We sent emails to representatives from 49 services (Canadian services, including our own, were excluded from interview recruitment to avoid bias). Representatives from 11 services responded to our email and completed telephone interviews. In two cases, we held joint interviews with two representatives from the service. In another case, two separate interviews were conducted about the same service because the initial respondent recommended we interview another representative. One of the services we interviewed was excluded from our analysis because it
was still in its preliminary stages and had not yet developed an eConsult platform. Our final dataset thus consisted of 11 interviews with 13 representatives from 10 eConsult services in 4 countries. Respondents held a number of roles, including researchers (n=3), physicians (n=4), managers/directors (n=2), and Chief Executive/Medical/Information Officers (n=4), and represented a range of service types, varying in size, technology leveraged, and funding model. Service characteristics are described in Table 1.

Table 1. Characteristics of services discussed in telephone interviews

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Active Since</th>
<th>Host Organization</th>
<th>Tech Platform</th>
<th>Payment Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonian Health Information System</td>
<td>Estonia</td>
<td>2011</td>
<td>Government</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>ZorgDomein</td>
<td>Netherlands</td>
<td>2001</td>
<td>Business</td>
<td>EMR</td>
<td>Profit</td>
</tr>
<tr>
<td>Bradford Teaching Hospitals</td>
<td>UK</td>
<td>2005</td>
<td>Hospital/Clinic</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>AristaMD</td>
<td>USA</td>
<td>2005</td>
<td>Business</td>
<td>EMR</td>
<td>Profit</td>
</tr>
<tr>
<td>Los Angeles Dept. Health Services</td>
<td>USA</td>
<td>2012</td>
<td>Government</td>
<td>Web</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>NYC Health + Hospitals</td>
<td>USA</td>
<td>2012</td>
<td>Hospital/Clinic</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>CHC Association of Connecticut</td>
<td>USA</td>
<td>2017</td>
<td>Non-profit</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>Veteran’s Health Administration</td>
<td>USA</td>
<td>2011</td>
<td>Government</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>Duke Institute for Health Innovation</td>
<td>USA</td>
<td>2013</td>
<td>Research Institute</td>
<td>EMR</td>
<td>Nonprofit</td>
</tr>
<tr>
<td>RubiconMD</td>
<td>USA</td>
<td>2013</td>
<td>Business</td>
<td>Web</td>
<td>Profit</td>
</tr>
</tbody>
</table>

EMR = electronic medical record; Web = browser-based web application

Thematic analysis of interviews revealed four themes: service structure, benefits, implementation challenges, and implementation enablers (Figure 2).
Service Structure
Respondents discussed a number of issues pertaining to the structure of their eConsult service, including its usage, platform, implementation, and payment.

Usage
Usage patterns varied considerably between services, which operated in a range of environments and at vastly different scales. For instance, the Bradford Teaching Hospitals eConsult service offers different single-specialty services, among the largest of which—renal medicine—handles roughly 30 cases a month answered by a single nephrologist, whereas the Veteran’s Health Administration’s New England region processed 90,600 cases in 2015 alone.

Platform
All respondents’ services utilized one of two main platforms: those integrated into electronic medical records (EMR) used by participating clinics, and those hosted online and accessed via a web browser. However, platforms varied considerably within these categories. In some cases, eConsult functioned as part of the referral process, with all referrals automatically made eligible for eConsult. For instance, in the Los Angeles Department of Health Services, “E-consult is the mandated way to request non-urgent, non-emergent outpatient specialty care services from us. There is no other pathway” (Respondent 11). Others, such as RubiconMD, offer “a web-based and also mobile app-based e-consult platform” (Respondent 9) through which PCPs can submit eConsults if they so choose.

Implementation
Respondents’ services were at various stages of implementation, with some well-established services having operated for years, while others were only recently launched and still in their pilot phases. Many respondents described implementation as a gradual process that leveraged grassroots connections, beginning in one instance as “a bottom-up initiative between one family doctor and one hospital” (Respondent 1). Another respondent described the initial service he worked on as operating largely independently alongside a handful of sympathetic providers:
We deliberately went under the radar to start with because we thought there’d be a lot of red tape trying to get this approved. We just thought it was such an obvious thing to bring advantage to patients that we should generate some under-the-radar momentum and enthusiasm and run with that (Respondent 2).

**Payment**

Participating services included for-profit businesses as well as non-profit organizations affiliated with universities, hospitals, and regional or national governments. As such, payment mechanisms varied widely based on the objectives of the organization and the health system of the country in which it operated. In US-based systems, the payee was typically the patient’s insurer or, for some populations (e.g. safety-net services for low-income individuals, the Veteran’s Health Administration) the state-funded Medicare/Medicaid. In countries with universal healthcare (e.g. the United Kingdom, Estonia), payment came directly from the government. Some services remunerated PCPs and/or specialists for participating, while others—particularly those that had integrated eConsult into the referral process—considered it an extension of the provider’s regular duties and provided no additional or alternate means of payment. For instance, in the Los Angeles Department of Health Services’ system:

[PCPs] don’t see any change in their revenue as a result of using the system or not. The incentive for them to use the system is that this is how they get referrals to their patients. [...] The same goes for the specialists, because in the safety-net systems every doctor just has a flat salary and the whole system is just a flat capitated system (Respondent 6).

**Benefits**

Participants described a number of benefits that eConsult provided: managing wait times, avoiding unnecessary visits, improving quality of care, streamlining the referral process, building provider relationships, and cost savings.

**Managing wait times**

Many respondents cited rapid turnaround times as a major benefit of eConsult, noting that their service has helped manage wait times for patients seeking specialist advice: “by doing an eConsult you’re getting all the patients immediate specialist impact by getting someone to weigh in on their care plan” (Respondent 4). Several respondents noted that eConsult provided much-needed relief in areas where wait times were substantial: “There was a pretty significant backlog of referrals that hadn’t been managed at one of the health centres. And so they’re using this pilot as an opportunity to clear out that backlog” (Respondent 7). Respondents stressed how patients benefit from better management of wait times: “It’s also good for the patients as well to get that feedback quickly” (Respondent 2). One respondent noted that this can even have tangible benefits for patients’ health: “by giving them earlier face-to-face care by the specialist, you’re not seeing patients sitting for months and months on a waitlist, getting worse, and then having some acute event and ending up in the E.R” (Respondent 4).

**Avoiding unnecessary visits**

Several respondents stated that their eConsult service “in many cases helps to avoid a referral” (Respondent 9). Respondents noted the benefit this has for patients, as many of them are able to receive care without the long waits and inconvenience associated with a specialist referral.
Improving quality of care
Respondents also discussed how eConsult services improve the quality of care patients receive. This improvement was multifaceted and extended beyond the speed of replies and capacity to avoid unnecessary specialist visits: “you can improve the quality of care, you can improve the speed of care, you can reduce the cost of care. There are so many aspects associated to teleconsultation” (Respondent 3). While promptness and efficiency emerged as key benefits, respondents argued that eConsult still had value in cases where a face-to-face consultation was required, as it allowed PCPs to better support patients prior to the specialist consultation. As one respondent described:

A third [of cases are] new work, a third avoid a live visit and a third don’t avoid a live visit, but it may actually prepare patients and providers for the live visit better by having trialed a change in medicine before they see the specialist. Or allow the [PCP] to order certain tests that then would be available to the sub-specialist at the time of the visit (Respondent 8).

Streamlining the referral process
Another benefit of eConsult was its ability to “streamline the referral process” (Respondent 6). One respondent described her service as providing a kind of triage, allowing patients who can be treated at the primary care level to avoid unnecessary visits while freeing up space for those who require face-to-face specialist referrals:

For patients who have higher acuity issues that do need a face-to-face visit, you’re able to identify those patients and expedite them. And because you’re clearing out these lower acuity patients from the waitlist to see the specialist, you’re seeing a huge opening of access to getting face-to-face [appointments] (Respondent 4).

Another respondent noted that eConsult’s inherent tracking of consultation requests improved accountability by “making sure that every referral gets a specialist’s eyes on it and gets some follow-up” (Respondent 5).

Building provider relationships and empowering PCPs
Several respondents mentioned that the inter-provider connections fostered by eConsult can help build relationships between PCPs and specialists. Additionally, eConsult can help empower PCPs by providing them with the necessary guidance to perform a broader scope of patient care. As one respondent noted, PCPs who use eConsult “feel that they can provide more [healthcare services] than expected of them initially” (Respondent 1).

Cost savings
Lastly, several respondents discussed eConsult’s ability to save money for patients and the healthcare system. Respondents noted that a case answered via eConsult costs substantially less than a face-to-face specialist visit:

Keeping the patient at the primary care, that’s the least expensive setting to treat a patient in. [Payers] recognize immediate return on their investment just from avoiding the more expensive specialist visits. And the things that come along with the specialists visits that are often these extremely extensive workups that may or may not be necessary, right. […] So you’re seeing a reduction in things like E.R. visits and hospital admissions,
Implementation Challenges
Respondents mentioned several challenges associated with implementing eConsult: articulating service value, ensuring care is effectively delivered, financial barriers, technological challenges, minimizing provider burden, and scale-up.

Articulating service value
When discussing implementation challenges, nearly all respondents mentioned that they found it difficult to convince stakeholders of eConsult’s value. Often this challenge occurred at the management level, with respondents struggling to secure investment in implementation from leaders who were skeptical of the service’s efficacy: “the initial challenge was actually convincing people that providers would use this, if it was made available” (Respondent 9). Convincing providers to engage was also sometimes a challenge, though in their case it was more a question of fighting inertia and getting practitioners to adjust to new methods of delivering care:

The greatest challenge was getting people to think about their work differently. Specialists with the viewpoint that “how can I possibly care for somebody that I haven’t seen face-to-face personally and laid my own hands on them?” Getting them to think about delivering specialty care through this interaction with a primary care physician. Getting PCPs to think about this not as extra work, [but] as an actual patient-centric intervention, because you are setting up a communication with the specialist (Respondent 11).

Ensuring care is effectively delivered
According to a few respondents, one of the main challenges with eConsult is ensuring that the service consistently delivers appropriate care. These services tended to be non-profit organizations that dealt with vulnerable patients and faced limitations in staffing, which at times made it difficult to reach patients and follow up with the advice received through eConsult:

Since we’re a safety-net system there are often concerns with having accurate contact information for patients. Some may change phone numbers, some may not have been comfortable giving us a phone number. [...] Capacity is really an issue for us. (Respondent 5).

A respondent from another service noted the particular challenges associated with using eConsult for urgent cases: “if you need urgent specialty care you’re still kind of stuck sitting sometimes in emergency room or begging the specialist, the office, to squeeze somebody in. And it’s hard to get that kind of urgent access” (Respondent 6).

Financial barriers
A few respondents cited financial issues as a challenge to eConsult implementation. These included the logistics of paying providers as well as securing sufficient funds to implement and run the service. Respondents spoke of the need for buy-in from decision-makers capable of financing the service “through a pilot or for some seed money to get it off the ground” (Respondent 9), some of whom were reluctant to support new or unproven programs:
I think the biggest challenge for us has been the politics of some of this with the CEOs who look at this and say ‘yeah, that’s great. But how am I going to get paid? And how am I going to make money from this? Or how am I going to cover my costs?’” (Respondent 7).

**Technological challenges**

Several respondents described technical challenges in eConsult implementation. However, these issues were characterized not as serious issues, but as inconveniences or growing pains associated with implementing any new system: “you’re going to run into some things where the information isn’t processing right or there’s something screwy in the EHR or whatever. […] It’s just a matter of working through those issues” (Respondent 7). This ran counter to some expectations in implementing a technical innovation. One respondent noted that his team “anticipated incorrectly that the main challenge would be technical” (Respondent 10).

**Minimizing provider burden**

When discussing their eConsult services, several respondents emphasized the need to minimize the burden of usage it placed on PCPs and specialists. While respondents viewed eConsult as time-saving for the system overall, they noted that adopting the service meant fitting new tasks into extremely busy workflows, an action which some providers resisted:

> Whenever you change something there’s always new challenges. […] PCPs have to make a larger investment in the conversation with the specialists to get their patient in for specialty care, [while specialists] need to have a more robust conversation with the PCPs in order to manage the patient. And so probably our biggest area of complaint or pushback has been the PCP is feeling like it’s more work (Respondent 11).

**Scale-up**

A few respondents articulated ongoing challenges with scale-up, as their initial services attempt to serve a broader scope of patients over a wider area. Respondents noted that at a larger scale, issues such as payment and service delivery must be more formalized, as structures that worked for a few hundred providers may no longer work with a user base in the thousands.

**Implementation Enablers**

Respondents described a number of factors that contributed to the success of their services: responding to an existing need, addressing providers’ concerns and frustrations, building on existing infrastructure, engaging clinical champions, and embedding into provider workflows.

**Responding to an existing need**

The most commonly-cited enabler for successful implementation was answering a need that had been articulated by the target population. This need might stem from a policy initiative enacted by regional or national decision-makers, or from providers frustrated with the current state of affairs. As one respondent described: “we had very long wait times. Many of our specialties had specialty care wait times over six months. Some more than a year. There was […] the black hole phenomenon where a request would come into us and it would disappear” (Respondent 11). A successful service will “build in the right cultural and financial system to make sure that incentives are aligned. So that PCPs have a reason to use it, specialists have a reason to be courteous and timely” (Respondent 6).
Building on existing infrastructure
When designing an eConsult service, many respondents found it advantageous to leverage existing platforms. In many cases this consisted of an EMR, which had the benefit of already offering a secure digital link between providers and clinics. By harnessing established infrastructure, respondents were able to build their services at a fraction of the time and cost it would have taken to develop a wholly independent system. One respondent, describing the creation of an eConsult service inside an established network, stated: “I was almost stunned at how straightforward it was” (Respondent 10).

Engaging clinical champions
Several respondents spoke to the importance of engaging clinical champions early in the implementation process. These individuals were PCPs or specialists who believed strongly in the service, used it often, and advocated on its behalf to their colleagues. As the primary end users of eConsult, healthcare providers are uniquely positioned to offer feedback on how the service works, and respondents stated that their advocacy lent momentum and legitimacy to the project. In the words of one respondent: “having those clinical champions as true believers upfront has made all the difference in the world” (Respondent 7).

Embedding into provider workflows
Several respondents underscored the importance of developing a service that fits “[as] seamlessly as possible into the clinician’s workflow. Because these guys are really strapped for time.” Ease of use was critical to successful adoption, and respondents described taking pains to cut out any extraneous or cumbersome elements from the application:

Understanding the limitations that your teams have on a day-to-day basis and the bottlenecks that they experience has been really critical for us. […] We had the time to really implement, see how things were going, find out that “x” component here was a few more clicks than it really needed to be, and that was a barrier for staff. And we could resolve that and improve that workflow (Respondent 5).

Addressing providers’ concerns and frustrations
To support buy-in from providers, several respondents made a point to seek user feedback regularly throughout the implementation process and address their concerns. Respondents stressed that in order to get physicians to consider using eConsult, it has to be at least as effective and easy to use as the traditional referral-consultation process: “the main selling point for the service has been the commonsense nature of it and the fact that it works well for [PCPs] and it works well for [specialists]” (Respondent 2).

Discussion

Principal Results
Our study found that eConsult services are being implemented in countries around the world. Services can take a number of different forms, with variations in scope, technology platform, financial structure, and engagement strategy. They did not come predominantly from any one sector, emerging as private companies, research pilots, government initiatives, and extensions of existing hospitals or healthcare clinics. Despite these differences, respondents frequently described facing similar barriers in their implementation, and cited common factors that enabled
the successful implementation and growth of their services. Gaining interest from stakeholders, ensuring the service effectively meets its stated aims, and securing financial support were among the most frequently cited barriers, while engaging clinical champions, building on existing infrastructure, and addressing an existing need emerged as the main enablers of success.

Limitations
Our study has several limitations. Of the 53 services identified by the environmental scan, only 11 participated in interviews (10 of which were included). Services from the United States are disproportionately represented, making generalization to other countries more difficult. This limitation is exacerbated by our ability to conduct interviews in only two languages (English and French). While effort was made to contact all services regardless of their location, our lack of fluency in other languages likely hindered our ability to recruit participants. Additionally, all of the healthcare providers who participated in this study were physicians. As such, the views of other eConsult users (e.g. nurse practitioners) may not have been reflected.

Comparison with Prior Work
Among enablers, addressing an existing need was often described as a particularly important step. The services in our study all emerged to address a common problem of poor access to specialist care, with individual approaches tailored to address each service’s target population. This approach reflects our own experience with the Champlain BASE™ eConsult service. Our team created eConsult as a direct response to excessive wait times for specialist care, which remain significant and ongoing problem in Canada. A 2016 survey by the Commonwealth Fund assessed 11 countries on measures of healthcare quality, including access to care. Canada ranked last on wait times for specialist care, with 56% of patients waiting four or more weeks for an appointment versus an average of 36%.[14] The severity of this issue drove eConsult’s implementation in our region. Likewise, a number of respondents in our study built their own services around the needs of their communities. For instance, in the above-cited Commonwealth Fund survey, the United States fared relatively well on the metric of specialist wait times—ranking third out of eleven participants—but faced a number of substantial barriers related to equity and cost of care.[14] As such, several of the United States-based services in our study developed their programs with a lens towards improving equity. Notably, several were “safety net services” specifically designed to help vulnerable individuals who lacked private insurance.

Encouragingly, eConsult is a flexible and multifaceted solution, and has shown itself to be well-positioned to address the wide range of access issues presented by communities in different countries. Respondents witnessed a wide range of benefits of their eConsult services, including their ability to avoid unnecessary specialist visits, improve the overall quality of care, reduce costs, and improve communication between providers. These assertions are supported by the literature, which has reported many of the same benefits for eConsult services.[7,8] A systematic review conducted in 2015 identified 27 peer-reviewed papers discussing eConsult services and found high levels of provider satisfaction (70%-95%), quick response times (less than three days in most cases), and avoidance of unnecessary referrals.[7] A systematic review by our team found similar results, as well as some evidence of reduced costs.[8]

Conclusion
eConsult services have emerged in a variety of countries and health system contexts worldwide. Structure, platform, and delivery model varied, but the services consistently demonstrated
improved access and high levels of satisfaction. Respondents encountered several barriers to implementation, but were able to overcome them by addressing an existing need and working with engaged clinician leaders. Lessons learned from this group will be helpful for those looking to implement an eConsult service in their own jurisdictions.

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Conflicts of Interest
The authors have no conflicts of interest to declare, real or perceived.

Abbreviations
PCP: primary care provider
BASE: Building Access to Specialists through eConsultation

Multimedia Appendix
Appendix A. Search Strategy matrix for literature review
Appendix B. Strategy used for grey literature search
Appendix C. Semi-structured interview guide
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