Background
The Champlain BASE™ (Building Access to Specialists through eConsultation) eConsult service began as a conversation between a family physician (Dr. Liddy) and endocrinologist (Dr. Keely), who felt something could be done to address the excessive wait times many patients endured in accessing specialist care. Delays in receiving specialist care cause patient anxiety, result in duplication of testing and provider frustration, and can lead to poorer patient outcomes.

In 2009, a small proof-of-concept project was launched. Starting with five specialists and 15 primary care physicians, in partnership with the Champlain LHIN and Winchester District Hospital, a secure online electronic communication tool that allows primary care providers’ quick access to specialty care for their patients was developed. Through the Champlain BASE™ service a primary care provider can submit a non-urgent, patient-specific question to a participating specialty. The request is processed and assigned to an appropriate specialist, who is asked to respond within seven days and a) provide guidance on how the PCP can treat the patient, b) recommend a face-to-face referral, or c) request more information.

The service’s growth has been consistently guided by evidence and our evaluation framework encompasses several dimensions (patient perspective, costs, utilization, provider experience, educational aspects). We use system-level utilization data augmented by additional studies incorporating a number of methods, including a randomized controlled trial, surveys, and interviews.

Funding and National Collaborations
Dr.’s Liddy and Keely have been successful in obtaining almost $2 million dollars in funding for operational support and research for the Champlain BASE™ eConsult service. Funding has been received from CIHR, the Royal College of Physicians and Surgeons of Canada, MOHLTC, Bruyere Research Institute, University of Ottawa Department of Medicine, and CHAMO (CHEO AFP Innovation fund).

Through this funding, they have established a national collaborative which includes Canada Health Infoway, Canadian Foundation for Healthcare Improvement, Canadian Medical Protective Association, Canadian Patient Safety Institute, Government of the Northwest Territories, Manitoba Health Research Council, and national partnerships. Royal College of Physicians and Surgeons of Canada, The College of Family Physicians of Canada, University of Alberta, and Memorial University.
eConsult by the Numbers*

The Champlain BASE™ service has been hugely successful. A total of 33,327 cases have been completed by 1,355 registered PCPs (1,160 family physicians and 195 nurse practitioners) from 449 clinics in 105 towns/cities, who can access 105 specialty services. It has provided thousands of patients with quick access to specialist advice. Below, we present some key numbers that indicate eConsult’s impact on specialist access, based on the Quadruple Aim framework:

<table>
<thead>
<tr>
<th>Population health</th>
<th>23,329</th>
<th>The number of eConsults (70% of cases) completed without the patient requiring a face-to-face specialist visit.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13,332</td>
<td>The number of eConsults (40% of cases) where a referral was originally contemplated but avoided based on the specialist’s advice.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>The average response time, in days, from the moment the eConsult is sent to the time the first specialist response is given. The fastest response time was 2 minutes!</td>
</tr>
<tr>
<td>Patient experience</td>
<td>87%</td>
<td>Percentage of patients who considered eConsult useful in their case.</td>
</tr>
<tr>
<td></td>
<td>97%</td>
<td>Percentage of patients who considered eConsult an acceptable alternative to traditional face-to-face referrals.</td>
</tr>
<tr>
<td>Provider experience</td>
<td>92%</td>
<td>Percentage of cases that primary care providers rated as high/very high value. Common benefits cited include prompt replies, quality of advice, and educational benefits.</td>
</tr>
<tr>
<td></td>
<td>94%</td>
<td>Percentage of specialists who stated eConsult improves inter-provider communication.</td>
</tr>
<tr>
<td>Cost savings</td>
<td>$47.35</td>
<td>Weighted average cost of an eConsult case across specialty groups (compared to $133.60/case for traditional referrals).</td>
</tr>
<tr>
<td></td>
<td>$11.00</td>
<td>Additional savings per case when accounting for the potential cost of avoided referrals and out-of-pocket expenses for patients (e.g. transportation costs, lost wages).</td>
</tr>
</tbody>
</table>

*as of 31 Dec 17

Research Program

Our program of research is grounded in The Quadruple Aim framework. We have successfully published in all quadrants demonstrating high impact of this innovative service.

Improving the Health of Populations
- eConsult cuts response times from months to two days
- Two-thirds of cases did not require a face-to-face specialist referral
- Exploration of specific populations (e.g. chronic pain patients, pharmacists) reveals high value of the service

Enhancing the Patient Experience of Care
- eConsult responds to patients’ previously articulated dissatisfaction with wait times
- Interviews with patients reveal high satisfaction with eConsult’s impact on access, care quality, and continuity of care†

Reducing the Per Capita Cost of Health Care
- We demonstrate a cost effective payment model for specialists
- Across specialty groups, the service costs a weighted average of $47.35/case versus $133.60/case for traditional referrals
- Costs drop dramatically after the start-up period, reaching ~$6.45/case by year 3
- Further savings that account for societal costs are being explored
Improving the Work Life of Health Care Providers and Staff

- PCPs rank eConsult as high/very high value in over 90% of cases
- 94% of specialists report that eConsult improves communication with PCPs
- eConsult provides a powerful teaching tool for PCPs

Publications

The Quadruple Aim framework provides a useful lens through which to view the scope of our research:

Improving the Health of Populations

1) Building Access to Specialist Care through E-Consultation. *Open Med* 2013  

2) Utilization, Benefits and Impact of an e-Consultation Service across Diverse Specialties and Primary Care Providers. *Telemed J eHealth* 2013  

3) Improving access to chronic pain services through eConsultation: A cross-sectional study of the Champlain BASE eConsult service. *Pain Medicine* 2016  
[http://painmedicine.oxfordjournals.org/content/early/2016/04/02/pm.pnw038](http://painmedicine.oxfordjournals.org/content/early/2016/04/02/pm.pnw038)

4) Rationale and model for integrating the pharmacist into the outpatient referral-consultation process. *Can Fam Physician* 2016  
[http://www.cfp.ca/content/62/2/111?etoc](http://www.cfp.ca/content/62/2/111?etoc)

5) eConsults to Endocrinologists improve access and change primary care provider behavior. *Endocr Pract* 2016  


7) Ask the eConsultant: Improving access to hematology expertise using an asynchronous eConsult system. *J Telemed Telecare* 2016  

[http://jpm.sagepub.com/content/2/2333721416677195](http://jpm.sagepub.com/content/2/2333721416677195)


10) Improving access to specialists in remote communities: A cross-sectional study and cost analysis of the use of eConsult in Nunavut. *J Circumpolar Health* 2017  

11) The Association between Question Type and the Outcomes of a Dermatology eConsult Service. *Int J Derm* 2017  
[http://dx.doi.org/10.1111/ijd.13628](http://dx.doi.org/10.1111/ijd.13628)

[http://dx.doi.org/10.1002/lary.26677](http://dx.doi.org/10.1002/lary.26677)

13) Prevention of delayed referrals through the Champlain BASE eConsult Service. *Can Fam Physician* 2017  
[http://www.cfp.ca/content/63/8/e381](http://www.cfp.ca/content/63/8/e381)

14) Improving access to Urologists through an electronic consultation service. Can Urolog Assoc J 2017  

15) Primary care physician referral patterns in Ontario, Canada: a descriptive analysis of self-reported referral data. *BMC Fam Pract* 2017  
[https://doi.org/10.1186/s12875-017-0654-9](https://doi.org/10.1186/s12875-017-0654-9)

16) Improving access to allied health professionals through the Champlain BASE eConsult Service: a cross-sectional study in Canada. *Br J Gen Pract* 2017  
[https://doi.org/10.3399/bjgp17X693125](https://doi.org/10.3399/bjgp17X693125)

[https://doi.org/10.3899/jrheum.161529](https://doi.org/10.3899/jrheum.161529)
18) The use of eConsults to improve access to specialty care in thrombosis medicine. *Thrombos Res* 2017
https://doi.org/10.1016/j.thromres.2017.11.002

http://doi.org/10.3122/jabfm.2017.06.170170

http://doi.org/10.12927/hcpol.2017.25320

**Enhancing the Patient Experience of Care**


2) Patients’ perspectives on wait times and the referral-consultation process while attending a tertiary diabetes and endocrinology centre: Is eConsultation an acceptable option? *J Diabetes* 2015


4) Just a click away: exploring patients’ perspectives on receiving care through the Champlain BASE™ eConsult service. *Fam Pract* 2017 https://doi.org/10.1093/fampra/cmx073

**Reducing the Per Capita Cost of Health Care**


2) What are the costs of improving access to specialists through eConsultation? The Champlain BASE experience. *Stud Health Technol Inform* 2015 http://ebooks.iospress.nl/volumearticle/39213

3) Choosing a model for eConsult specialist remuneration: factors to consider. *Informatics* 2016
http://www.mdpi.com/2227-9709/3/2/8

4) What are the cost savings associated with providing access to care through the Champlain BASE eConsult service? *BMJ Open* 2016 http://bmjopen.bmj.com/content/6/6/e010920.abstract

**Improving the Work Life of Health Care Physicians and Staff**


5) Impact of Question Content on e-Consultation Outcomes. *Telemed J eHealth* 2015
http://online.liebertpub.com/doi/10.1089/tmj.2015.0081

**Exploring Policy and Implementation Issues Pertaining to eConsult**


We are actively disseminating our work through social media and electronic resources

Website: [www.champlainBASEeConsult.ca](http://www.champlainBASEeConsult.ca); Twitter: @BASE_eConsult; eBook: [http://itunes.apple.com/us/book/id1108131512](http://itunes.apple.com/us/book/id1108131512)

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