

## 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 speciality 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 **41,728** cases have been completed by **1,417** registered PCPs (**1,202** family physicians and **215** nurse practitioners) from **520** clinics in **118** towns/cities, who can access **114** 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:

<b>Population health</b>	<b>28,792</b>	The number of eConsults ( <b>69% of cases</b> ) completed without the patient requiring a face-to-face specialist visit.
	<b>16,893</b>	The number of eConsults ( <b>40% of cases</b> ) where a referral was originally contemplated but avoided based on the specialist’s advice.
	<b>2</b>	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 <b>2 minutes!</b>
<b>Patient experience</b>	<b>87%</b>	Percentage of patients who considered eConsult useful in their case.
	<b>97%</b>	Percentage of patients who considered eConsult an acceptable alternative to traditional face-to-face referrals.
<b>Provider experience</b>	<b>92%</b>	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.
	<b>94%</b>	Percentage of specialists who stated eConsult improves inter-provider communication.
<b>Cost savings</b>	<b>\$47.35</b>	Weighted average cost of an eConsult case across specialty groups (compared to \$133.60/case for traditional referrals).
	<b>\$11.00</b>	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).

\*as of 31 Jul 18

### 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 <http://www.openmedicine.ca/article/view/551>
- 2) Utilization, Benefits and Impact of an e-Consultation Service across Diverse Specialties and Primary Care Providers. *Telemed J eHealth* 2013 <http://www.ncbi.nlm.nih.gov/pubmed/23980939>
- 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>
- 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>
- 5) eConsults to Endocrinologists improve access and change primary care provider behavior. *Endocr Pract* 2016 <http://www.ncbi.nlm.nih.gov/pubmed/27295019>
- 6) Evaluation of an electronic consultation service in Obstetrics and Gynecology in Ontario. *Obstet Gynecol* 2016 <http://www.ncbi.nlm.nih.gov/pubmed/27159757>
- 7) Ask the eConsultant: Improving access to hematology expertise using an asynchronous eConsult system. *J Telemed Telecare* 2016 <http://www.ncbi.nlm.nih.gov/pubmed/27106936>
- 8) Improving Access to Specialist Care for an Aging Population. *Gerontol Geriatr Med* 2016 <http://ggm.sagepub.com/content/2/2333721416677195>
- 9) Use of Electronic Consultation System to Improve Access to Care in Pediatric Hematology/Oncology. *J Pediatr Hematol Oncol* 2017 <https://insights.ovid.com/crossref?an=00043426-900000000-98224>
- 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 <http://www.tandfonline.com/doi/full/10.1080/22423982.2017.1323493>
- 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>
- 12) Improving Access to Otolaryngology - Head and Neck Surgery Expert Advice Through eConsultations. *Laryngoscope* 2018. <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>
- 14) Improving access to Urologists through an electronic consultation service. *Can Urolog Assoc J* 2017 <http://www.cuaj.ca/index.php/journal/article/view/4314>
- 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>
- 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>
- 17) Improving Access to Rheumatologists: Use and Benefits of an Electronic Consultation Service. *J Rheumatol* 2017 <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>
- 19) Supporting better access to chronic pain specialties: a qualitative study of the Champlain BASE™ eConsult service. *J Am Board Fam Med* 2017 <http://doi.org/10.3122/jabfm.2017.06.170170>
- 20) Evaluating the implementation of The Champlain BASE™ eConsult service in a new region of Ontario, Canada: a cross-sectional study. *Healthcare Policy* 2017 <http://doi.org/10.12927/hcpol.2017.25320>
- 21) The impact of electronic consultation on a Canadian tertiary care pediatric specialty referral system: A prospective single-center observational study. *PLoS ONE* 2018 Jan;13(1):e0190247 <https://doi.org/10.1371/journal.pone.0190247>
- 22) Nephrology eConsults for Primary Care Providers: Original Investigation. *Can J Kidney Health Dis* 2018 <http://dx.doi.org/10.1177/2054358117753619>
- 23) The doctor is (virtually) in: Using electronic consultation to provide access to prompt psychiatric services. *Psychiatric Services* 2018 <https://doi.org/10.1176/appi.ps.69302>
- 24) Understanding patient referral wait times for specialty care in Ontario: A retrospective chart audit. *Healthcare Policy* 2018 <https://www.longwoods.com/content/25397>
- 25) Sustainability of a primary care driven eConsult service. *Ann Fam Med* 2018 <http://dx.doi.org/10.1370/afm.2177>
- 26) The use of electronic consultations is associated with lower specialist referral rates: a cross-sectional study using population-based health administrative data. *Fam Pract* 2018 <https://doi.org/10.1093/fampra/cmz020>
- 27) Using the Quadruple Aim Framework to Measure Impact of Health Technology Implementation: A Case Study of eConsult. *J Am Board Fam Med* 2018 <http://www.jabfm.org/content/31/3/445.full>
- 28) Ask a Neurologist: What Primary Care Providers ask, and reducing referrals through eConsults. *Neurol Clin Pract* 2018 <https://doi.org/10.1212/CPJ.0000000000000458>
- 29) Improving access to Gastroenterologist using eConsultation: A way to potentially shorten wait times. *J Can Assoc Gastroenterol* 2018 <https://doi.org/10.1093/jcag/gwy017>
- 30) Evaluation of an electronic consultation service in psychiatry for primary care providers. *BMC Psychiat* 2018 <https://doi.org/10.1186/s12888-018-1701-3>

### Enhancing the Patient Experience of Care

- 1) 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 <http://www.ncbi.nlm.nih.gov/pubmed/25797111/>
- 2) Patient perspectives on wait times and the impact on their life: A waiting room survey in a chronic pain clinic. *Scandinavian J Pain* 2017 <https://doi.org/10.1016/j.sjpain.2017.07.015>
- 3) Use of Social Media for Patient Engagement in an Innovative Implementation Project. *Can Fam Physician* 2017 <http://www.cfp.ca/content/63/3/251.full>
- 4) Just a click away: exploring patients' perspectives on receiving care through the Champlain BASE™ eConsult service. *Fam Pract* 2018 <https://doi.org/10.1093/fampra/cmz073>

### Reducing the Per Capita Cost of Health Care

- 1) Applied Health Research Question Report: Understanding needs and impact of eConsult in the Champlain LHIN. *MOHLTC Report* 2014 [http://www.phcresearchnetwork.com/documents/King\\_LiddyAHRQ%20Abstract\\_INSPIRE.pdf](http://www.phcresearchnetwork.com/documents/King_LiddyAHRQ%20Abstract_INSPIRE.pdf)
- 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

- 1) Impact of and satisfaction with a new eConsult service: a mixed methods study of primary care providers. *J Am Board Fam Med* 2015 <http://www.jabfm.org/content/28/3/394.full>
- 2) A comparison of referral patterns to a multispecialty eConsultation service between nurse practitioners and family physicians: the case for eConsult. *J Am Assoc Nurse Pract* 2015 <http://onlinelibrary.wiley.com/doi/10.1002/2327-6924.12266/abstract>
- 3) Perspectives of Champlain BASE Specialist Physicians: their experiences and recommendations for expanding eConsult services across Ontario. *Stud Health Technol Inform* 2015 <http://ebooks.iospress.nl/publication/39209>
- 4) Impact of Question Content on e-Consultation Outcomes. *Telemed J eHealth* 2015 <http://online.liebertpub.com/doi/10.1089/tmj.2015.0081>
- 5) Unique educational opportunities for PCPs and Specialists arising from electronic consultation services. *Acad Med* 2016 <https://www.ncbi.nlm.nih.gov/pubmed/28030423>
- 6) Archibald D, Liddy C, Lochnan HA, Hendry PJ, Keely E. Using Clinical Questions through eConsults to Inform Continuing Professional Development. *J Contin Educ Health Prof* 2018 <http://doi.org/10.1097/CEH.0000000000000187>
- 7) Who uses eConsult? Investigating physician characteristics associated with usage (and non-usage). *Telemed J E Health* 2018 <http://dx.doi.org/10.1089/tmj.2017.0225>
- 8) Specialist perspectives on Ontario eConsult services. *Telemed J E Health* 2018 <http://dx.doi.org/10.1089/tmj.2018.0012>

### Exploring Policy and Implementation Issues Pertaining to eConsult

- 1) Ten Steps to Establishing an e-Consultation Service to Improve Access to Specialist Care. *Telemed J eHealth* 2013 <http://www.ncbi.nlm.nih.gov/pubmed/24073898>
- 2) Critical requirements and considerations for establishing and participating in an eConsultation service: Lessons learned from the Champlain BASE team. *E Healthc Law Rev* 2015. [http://www.dimock.com/files/articles/GDM\\_NP\\_ElectronicHealthcareLawReview\\_5%231.pdf](http://www.dimock.com/files/articles/GDM_NP_ElectronicHealthcareLawReview_5%231.pdf)
- 3) Policy Innovation is Needed to Match Health Care Delivery Reform: The Story of the Champlain BASE eConsult Service. *Health Reform Observer* 2015 <https://escarpmentpress.org/hro-ors/article/view/2747>
- 4) The Current State of Electronic Consultation & Electronic Referral Systems in Canada: an Environmental Scan. *Stud Health Technol Inform* 2015 <http://ebooks.iospress.nl/volumearticle/39214>
- 5) Electronic consultation systems: worldwide prevalence and their impact on patient care-- a systematic review. *Family Pract* 2016. <http://fampra.oxfordjournals.org/cgi/content/full/cmww024>
- 6) Social franchising: Scale and spread of innovation in Canada. *Health Pol Technol* 2018 <https://doi.org/10.1016/j.hlpt.2018.03.005>
- 7) A Systematic Review of Asynchronous, Provider-to-Provider, Electronic Consultation Services to Improve Access to Specialty Care Available Worldwide. *Telemed J e-Health* 2018 <http://dx.doi.org/10.1089/tmj.2018.0005>
- 8) Using an integrated knowledge translation (IKT) approach to enable policy change for electronic consultations in Canada. *Healthc Pol* 2018 <http://dx.doi.org/10.12927/hcpol.2018.25551>

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>

For more information, contact:

**Primary Care Lead**  
[cliddy@bruyere.org](mailto:cliddy@bruyere.org)  
613-562-6262, Ext. 2928

**Specialist Lead**  
[ekeely@toh.on.ca](mailto:ekeely@toh.on.ca)  
613-738-8400, Ext. 81941

**Engagement &  
Implementation Lead**  
[Amir.Afkham@lhins.on.ca](mailto:Amir.Afkham@lhins.on.ca)  
613-747-3235