

Case Report

Ten Steps to Establishing an e-Consultation Service to Improve Access to Specialist Care

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Abstract

There is dissatisfaction among primary care physicians, specialists, and patients with respect to the consultation process. Excessive wait times for receiving specialist services and inefficient communication between practitioners result in decreased access to care and jeopardize patient safety. We created and implemented an electronic consultation (e-consultation) system in Eastern Ontario to address these problems and improve the consultation process. The e-consultation system has passed through the proof-of-concept and pilot study stages and has effectively reduced unnecessary referrals while receiving resoundingly positive feedback from physician-users. Using our experience, we have outlined the 10 steps to developing an e-consultation service. We detail the technical, administrative, and strategic considerations with respect to (1) identifying your partners, (2) choosing your platform, (3) starting as a pilot project, (4) designing your product, (5) ensuring patient privacy, (6) thinking through the process, (7) fostering relationships with your participants, (8) being prepared to provide physician payment, (9) providing feedback, and (10) planning the transition from pilot to permanency. In following these 10 steps, we believe that the e-consultation system and its associated improvements on the consultation process can be effectively implemented in other healthcare settings.

Key words: e-health, information management, telemedicine, telehealth, e-consultation

Introduction

Patients and providers are dissatisfied with the current consultation and referral process. Patients report excessive wait times to access specialist care^{1,2} as well as instances of uncoordinated care, such as tests being duplicated and results not being available at the time of their referral appointments.³ Both primary care providers and specialists also report dissatisfaction with the referral process. Not knowing if the referral had been received, not being informed of the appointment, and a lack of information regarding follow-up treatments were prominent issues with primary care providers.⁴ Specialists cite problems with poor-quality referral questions, insufficient patient information, and lack of relevant laboratory results.⁴ These communication barriers can result in significant breakdowns in continuity of care, inappropriate treatment, and potential harm to the patient.⁵

Various methods have been developed in an attempt to improve the consultation process, but none without limitations. Telephone consultations have been explored, but finding a common time available for multiple physicians is difficult.⁶ Telemedicine similarly has issues with physician synchronicity and has the added complication of requiring specialized equipment.⁷ E-mail consultation is an obvious solution due to its simplicity and asynchronicity; however, serious privacy issues exist with sharing patient information over e-mail.⁸

Electronic consultation (e-consultation) has been implemented in other jurisdictions with existing shared electronic health records such as in the United States and New Zealand.^{9,10} In New Zealand, extensive patient information including reasons for referral, relevant information, and appended tests/reports are included during electronic referral of patients to the hospital by a general practitioner. An electronic referral system has also been implemented as an extension of shared electronic health records within the San Francisco General Hospital network.⁹ In addition to communicating the relevant information, the system established in San Francisco includes dialogue between provider and specialist to reduce the number of unnecessary referrals. Many regions, however, do not have shared records, and thus different ways are needed to connect the primary care community to enable better access to specialist service.

We developed a Web-based e-consultation service to simplify and accelerate access to the expertise of medical specialists by primary care providers (PCPs) in order to improve delivery of care to patients. The system was developed and implemented in several stages,

including proof-of-concept, pilot phase, and more recently broad-scale implementation, in our health region.¹¹

There were several practical aspects we needed to consider in the development and implementation of such a tool, including establishing partnerships, privacy issues, physician engagement, and payment. The aim of this article is to describe the steps required to implement the practical and technical aspects of the e-consultation system, while highlighting the reasoning behind each step and the lessons learned along the way. The intent is to provide a step-by-step guide that can be used in other health regions to implement a similar process to improve the overall access to care.

The Champlain BASE e-Consultation Service

The Champlain BASE Project: Building Access to Specialists through e-Consultation is a Web-based service developed to allow primary care practitioners to submit a patient-specific clinical question to a specialist, using a standardized electronic form. Each provider has his or her own user name and password for log-on and may access the Web forms from any computer with high-speed Internet access. Supplementary patient information such as laboratory results, digital images, and health history can be included to assist the specialist in making an informed recommendation. The consultation request is assigned to an appropriate specialist (based on availability and specialty) who then has 1 week to respond. Depending on the individual request, the specialist may be able to:

- Provide the PCP with answers to questions and avoid the need for the patient to see the specialist
- Request additional information before being able to provide advice or
- Recommend a formal referral, in which case any additional diagnostic tests or courses for treatment may be requested and completed before the appointment.

Setting

The healthcare system in Canada is funded through public funds and is freely available to all Canadians. Various payment models exist for PCPs and specialists, ranging from traditional fee-for-service practices, capitation-based, and blended models. The majority of our specialists operate in fee for service, and the primary care providers are mainly in capitation-based or blended models. Only the specialist is remunerated for a referral, and it must be initiated by a primary care provider.

We implemented e-consultation in the Champlain Local Health Integration Network (LHIN), which is one of 14 regional health districts in Ontario, Canada, and encompasses Ottawa and its surrounding communities. The Champlain LHIN is a culturally diverse region with a population of 1.2 million people who have chronic disease burdens and patient health outcomes that are comparable to those for Ontario and the rest of Canada.¹² The area has one main urban center with a large tertiary-care hospital housing many of the speciality services that provide care to both the urban

population and people living in outlying rural communities. The majority of primary care providers work exclusively in the community, with few opportunities for regular interactions with the specialist community.

Although there has been increasing adoption of electronic medical records (EMRs) within primary care, there is limited use of technology within the specialist community with linkages to laboratories and imaging results. There are no shared EMRs in our region. The traditional consultation and referral process still relies on faxing requests and telephone scheduling.

Timeline

The project began in 2009 with the launching of the live site in early 2010. Subsequent pilot testing with evaluation was completed in March 2011 (Fig. 1).

We suggest there are 10 steps to consider when implementing an e-consultation service (Fig. 2), including identifying key partners, choosing a platform, starting small with a pilot, and designing the product and processes. Ensuring the privacy and security aspects must be completed before going live with the system. Considerations of who the participants are, payment issues, and building in ongoing feedback are important. Finally, preparing for sustainability if the implementation is successful in your region should be an early planned activity rather than an afterthought.

1. PARTNERS—ESTABLISH THE KEY WORKING PARTNERSHIPS (CLINICAL CHAMPIONS, REGIONAL SUPPORT, TECHNOLOGY PARTNER)

A project of this nature requires (1) clinical champions, consisting of family physicians and specialists to advocate the need for and efficacy of the system, (2) health region buy-in to provide

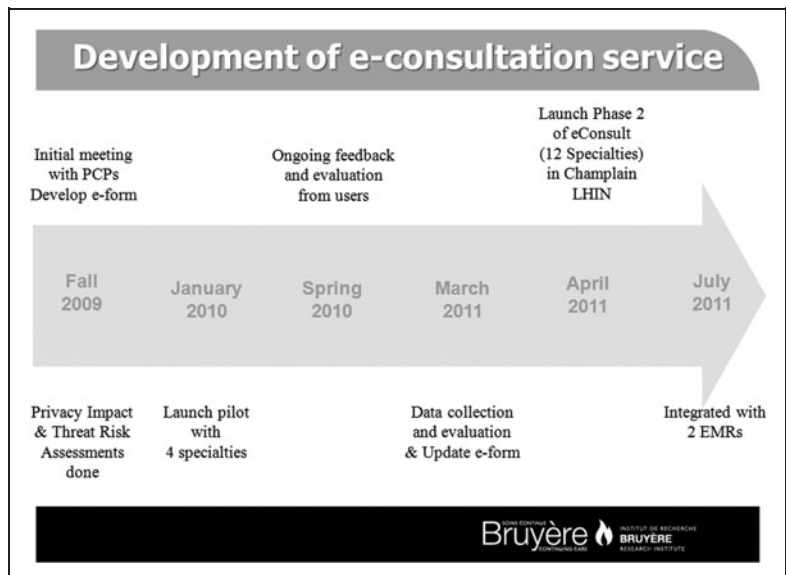


Fig. 1. Timeline outlining the development, launch, and progression of the electronic consultation service. EMR, electronic medical record; LHIN, Local Health Integration Network; PCP, primary care physician.

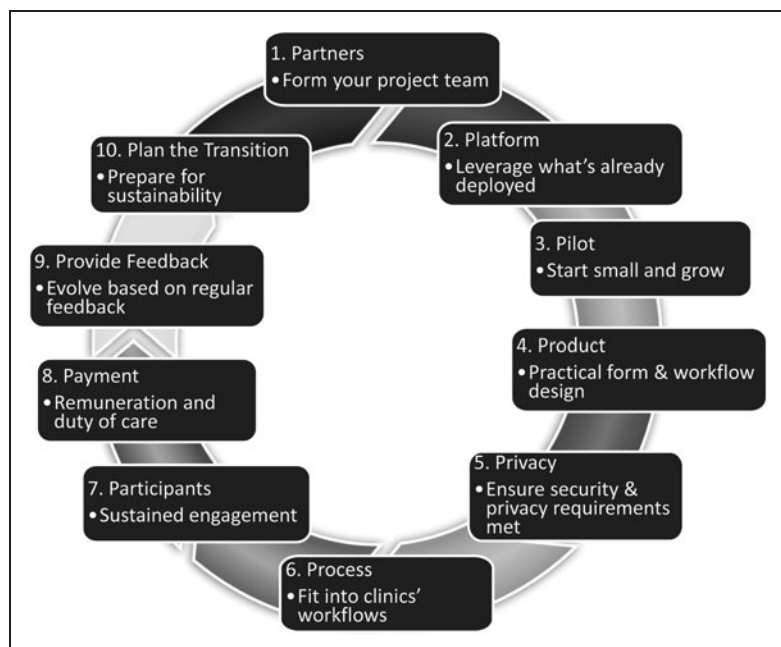


Fig. 2. The 10 steps to consider when designing an electronic consultation system.

infrastructure and human resource support, and (3) technical/e-health support to facilitate system development, maintenance, and technical support. Much of the infrastructure and assistance required may already be established through a hospital or a local/regional health network. Look to partner with other organizations in order to minimize the financial and technical burdens of planning and deploying the infrastructure/platform to host the e-consultation application. Our team originally comprised two physicians who had identified a need and developed the original proposal upon which the e-consultation system was based. The core team now consists of a specialist physician (at Ottawa Hospital), a research coordinator and an academic PCP (at Bruyère Research Institute), the Chief Information Officer at one of the regional hospitals (Winchester District Memorial Hospital) where the infrastructure is hosted, and a project manager from the Champlain LHIN based in Ottawa, ON.

2. PLATFORM—CHOOSE A PLATFORM FOR THE ECONSULTATION SYSTEM

Technology designed to facilitate communication and collaboration between physicians is advancing. The choice of system should be based on local existing infrastructure in order to enable sustainability and scalability, and this is facilitated by ensuring key partners are part of the initial project team. Many different types of computer systems are used in healthcare practices. In Canada, most hospitals and community organizations are separate enterprises, with each typically using internal systems and tools that do not easily lend themselves to collaboration with external partner organizations or individuals. To find an application able to

integrate seamlessly with diverse systems is often challenging. More integrated business solutions across multiple healthcare agencies are not expected to come for some time.

It is also important to acknowledge the existing challenges when attempting to implement technology to facilitate communication within the healthcare setting. As physicians have limited time and may not use e-consultation on a daily basis, the system should be user friendly, simple, and to the point, making it easy to learn and re-learn.

We based our e-consultation service, including associated forms, automated workflows, and interface engines, on SharePoint¹³ extranet. This system was widely available and had been established by the Champlain LHIN as a secure regional collaboration space, which provided a unique solution in the region that addresses the issues of usability and deployment of electronic/automated processes and interactions across organizations. The registration of users is controlled through the LHIN but is not limited to specific organizations, thereby facilitating collaboration with individuals or organizations outside the health network. The platforms deployed for the extranet provide a secure, robust, and scalable environment that supports a wide range of capabilities, including:

- An easy-to-use yet advanced array of collaboration tools, including document repositories, discussion boards, etc.
- Customizable individual workspaces for teams
- Differing permission levels to enable partitioning of the system for multiple user types
- The ability to create a broad set of tools, including electronic forms and workflows, to automate a wide range of processes
- Delivery of automated outbound e-mails and notifications
- Database creation and generation of reports
- Comprehensive and secure e-mail (integrated with existing e-mail systems used in Ontario for healthcare providers)

3. PILOT—START SMALL AND BUILD

We started with a small core group representing the key partners, including both primary care providers and specialists. Starting with a small group will allow you to identify many of the obstacles before the system is sufficiently large that they prove extremely difficult to manage. We used a participatory-type approach to develop the system in an iterative, localized manner. We met monthly with our initial primary care providers as part of their regular monthly meetings. Starting small and engaging users early on in the development process were critical to our success. We conducted an in-depth qualitative evaluation (focus groups and interviews) with our initial users.¹¹ This approach enabled us to develop the system based on the user's needs and test several versions of the form, assess workflows, and identify and address the user's concerns related to privacy, liability, and remuneration.

We started with 14 PCPs and 11 specialists who represented four specialty areas: endocrinology, nephrology, neurology, and rheumatology. Other specialties were gradually added to the system to a total of 28 specialists representing 12 specialties in April 2011. The specialties were generally added based on recommendations from PCPs and included dermatology, cardiology, internal medicine, thrombosis, ear/nose/throat, general pediatrics, and obstetrics/gynecology; one specialty, pediatric hematology/oncology, was added based on the core team being approached by the specialty to get added.

4. PRODUCT—DESIGN THE E-CONSULTATION FORM

An online form is the simplest solution as it can be used by participants anywhere with Internet access (Appendix, *Figs. A1 and A2*). The use of specialized forms that enable data to be sent securely over the Internet is an asynchronous technique, which suits the busy schedules of both the PCPs and the specialists using the service. Three different form formats were explored with our initial user group: free text, directed form (mandatory fields) including prompts for additional information, and existing EMR forms. There are many varieties of consultation forms from which the e-consultation system can be based.¹⁴ Examples of consultations forms currently used by PCPs were drawn upon when designing e-consultation forms. System users (both primary care and specialists) were consulted to determine a format preference. Most users preferred forms that most closely aligned with the way providers were completing current consultations and thus would allow for a free text question, the ability to attach files, and the option of free text for additional patient information. For users who already do consults within a computer system, this also allows for them to either attach usual consult form or do a “cut and paste” from an existing Word document.

We also included three tips for both primary care providers (reason for consultation, specific treatments already prescribed, suggestions for possible treatments) and specialists (reasons for recommendation, suggestions for possible treatments, suggestions for tests and recommendations according to the results of the test) to “remind” them of the key components of quality consult-referral discussion.

5. PRIVACY—ENSURE PRIVACY AND SECURITY REQUIREMENTS ARE MET

Security is of utmost concern when using Internet-based information-sharing programs in the healthcare system. Electronic transfer of patient information can jeopardize a patient’s right to privacy if the proper precautions are not taken.^{15–17} The e-consultation platform described in this article utilized a secure region-wide information-sharing network. Privacy impact and threat risk assessments were performed in compliance with the Personal Health Information Protection Act.¹⁸ The process took about 3 months to obtain the necessary approvals and roughly 6 months for all documentation to be finalized. This work was facilitated by working collaboratively with the health region and partnered hospitals. Most health regions and healthcare organizations will have a privacy office/officer who can assist with the process of conducting a

privacy impact assessment, whereas threat risk assessment of the technology platform is usually performed by independent third-party experts.

6. PROCESS—DETERMINE WORKFLOW

The workflow of the e-consultation system must fit as seamlessly as possible into the physician’s usual workflow to ensure participation. It is important to minimize system usage time. The physician should be able to enter, or complete, a consult request in under 10 min. Again, early consultation with potential system users was a key enabler to understanding workflow issues. Below (and shown in Appendix, *Fig. A3*) is a description of the workflow used in our e-consultation system.

The PCP accesses the e-consultation service through a computer that is connected to the Internet, using his or her unique username and password. After logging into the system, the PCP will open and complete the e-consultation request form (Appendix, *Fig. A1*), which includes the date of request, specialty needed for consultation, patient’s demographic information, and the body of question. On the same page, PCPs have the option to attach additional files such as pictures, test results, etc. Following submission, two automatic notification e-mails are generated: (1) to the requestor to confirm successful submission and (2) to the “Assigner” for the specialty to let him or her know of a new request pending assignment to the appropriate specialist—for the pilot, this role was primarily filled by the LHIN Project Manager. It is important to note that the e-mails do not contain any information related to the case itself, other than identifying the requesting PCP and the target specialty. The project manager logs into the system and assigns the request to a specialist based on the specialty required and specialist availability. The availability of the specialists varied and the scheduling depended on size of the group and personal preference. In some instances, there is only one specialist, and generally this specialist can receive notifications and access the cases anytime/anywhere, so availability is not an issue—in the rare situation where they may be unreachable, PCPs are notified of a potential delay in receiving a response. Where there are only two or three specialists, assignment rotates between the specialists, and specialists contact the manager if they plan to be away for any extended period of time. Where a larger group is involved, the manager is provided with updated e-consultation coverage schedules of availability from the relevant departments. This assignment prompts an automatic e-mail to the assigned specialist to let him or her know of the consultation request pending his or her review and response within 1 week—once more, the e-mail does not contain any other information about the case. The specialist logs into the e-consultation system using his or her own username and password and answers the consultation request (Appendix, *Fig. A2*). At this point, the PCP receives an automatic e-mail message notifying of the consultation response now being available. The PCP would then log back into the e-consultation system to view the response from the specialist, following which the PCP could ask a follow-up question or close the case. Closing the case includes completion of a short survey that is presented at the bottom of the e-consultation

form to the PCP about the specific consultation. Once the survey response is complete, a .pdf transcript of the case is generated by the system and made accessible to both the PCP and the specialist, with both receiving an automated notification e-mail regarding the existence of the file.

Early in the process, two main issues were identified with regard to fitting the e-consultation forms in the physician's workflow. First, PCPs wanted the option of delegating preparation, closure, and filing of the e-consultation request to an assistant or office administrator. This was addressed by adding the possibility for "delegates" to take any necessary action in the e-consultation system on behalf of the PCP. Second, PCPs using EMRs wanted to be able to generate the e-consultation request directly from the EMR. We invited any interested clinics to participate in a proof-of-concept phase by engaging their EMR vendors and working with the project team to develop the necessary interfaces for this purpose. Two clinics and their vendors were subsequently involved in the implementation of the proof-of-concept, and the ability to initiate e-consultations directly from the EMR was successfully completed and tested. However, it became apparent that many physicians found the initiation of the requests directly from the e-consultation Web site more convenient, and therefore the integrated EMR solution was not further pursued or enhanced at that point. Most clinicians have been generating an electronic file from their EMR and attaching it to the Web-based form when needed/appropriate.

7. PARTICIPANTS—KEEP PHYSICIAN ENGAGEMENT SIMPLE

Physician participation will ultimately determine the success of e-consultation. Keeping the physician engagement aspects—joining, training, and ongoing support—simple is important.

Recruitment of physicians into projects of this kind is often challenging. Solidifying clinical champions within the project team is the first important step in recruiting physicians, as it is their connections and willingness to campaign for the system that will have the most significant influence on physician participation.

In addition to the recruitment efforts of our PCP and specialist champions, multiple forms of advertisement, including the distribution of leaflets, booths at continuing medical education events, and word of mouth, were used to maximize reach to PCPs. We also had the opportunity to present at several local public forums (a regional health board meeting, health technology forums) and had articles published in local papers following the presentations that generated much local interest leading to participation.^{19,20} PCPs are the initiators in the process of e-consultation, and their full engagement dramatically boosts the number of e-consultations.

Specialists were recruited into the project primarily by the specialist on our project team as well as through participation in continuing medical education events and in-hospital rounds. The selection of the type of specialists who were needed on the service was based on the referral needs of the primary care community; thus this may differ in each region depending on access issues. We also experienced organic growth with both specialists and PCPs who joined following recommendation from their peers.

Initially, our e-consultation project manager met with both the PCPs and specialists to give individualized training on navigating the Web site and use of the e-consultation forms. The training sessions took approximately 20 min. Physicians were also provided with a training manual for future reference and a "cheat sheet" card summarizing the steps to completing a referral shown in *Figure 3*. We also offered to return to the physicians' offices for additional training if they were having difficulties with any aspects of the process.

eConsultation in 4 Steps for PCPs v.2.0

Step 1 – Access the eConsult site

- Open your web browser and go to: <https://www.lhinworks.on.ca/eforms/econsult2>
[It is recommended that you save this address to the "Favorites" list in your browser]
- Login using your existing User Name (typically "firstname.lastname") and Password for the Champlain Collaboration Space

Step 2 – Initiating an eConsult

- Click on **New eConsult Request** on the top left hand side of the main eConsult page
- Complete the form, ensuring all required fields (*Req'd) are filled & supporting electronic files are attached
- Click **Save** followed by **Continue to next step** (you can also click twice on **Continue to next step**)

If you have not filled out all the required fields, the system will display a message indicating the missing information. You can "Close Form Without Sending" or "Go Back to Form" to complete the missing field(s).

If all required fields have been completed, you can click on one of the following three choices :

- **Close form without sending** => if you intend to return to the form at a later time to add/modify information prior to submitting to specialist
- **Go back to form** => if you wish to make changes to the information now
- **Send the eConsult to Specialist** => if you are satisfied with the information and are ready to submit to specialist
[You will receive an email notification confirming successful submission of your request.]

Step 3 – Retrieving response

- Once the specialist has responded, a notification email will be sent to you. Simply access the site per Step 1, and you will find the response under one of the following headings as indicated in the email, and you can open the form by clicking on the icon in the "Type" column:
 - eConsults requiring more information => Specialist has requested additional information. You can provide the additional information or choose not to proceed further with this request.
 - eConsults with a recommendation => Once you have reviewed the response/recommendation, you can proceed with a follow-up query or close the request.
 - eConsults recommending a referral => Once you have reviewed the response/recommendation, you can a) indicate you intend to proceed with the referral and close the request, or b) indicate you do not intend to proceed with the referral at this point but have a follow-up query, or c) indicate you do not intend to proceed with the referral at this point and close the request.

Step 4 – Closing an eConsult

- Once you are ready to close the eConsult, you will be presented with a short survey as the final step. The 4 multiple choice questions are mandatory and the text box is optional.
- You can then click on "**Continue to Next Step**" followed by "**Close eConsult**".

[Note: Your recently closed eConsults appear at the bottom of the main page under the heading "Completed eConsults", and you can also access all your closed cases using the "Completed eConsults" link in the left navigation column.]

For technical assistance, please contact either amir.afkham@lhins.on.ca, 613-747-3235 or christine.boisvert@lhins.on.ca, 613-747-3250.

Thank you for using eConsult!

Fig. 3. A guide provided to primary care physicians (PCPs) to assist them in navigating the electronic consultation (eConsultation) system.

At present, most of the training sessions are conducted remotely by phone if the provider user already has a basic comfort level with computer use. System support is required at the onset of the project and in training system users and continues in the form of troubleshooting and technical assistance for the duration of time that the system is online.

As with any online service, there must be a central hub to receive and respond to questions and concerns from the users. The position requires someone who is able to respond to requests quickly and thus has availability during business hours. The types of questions posed are usually of a nontechnical nature (forgotten password, cannot remember how to upload a document, submitted request to wrong specialty, etc.) and thus requires someone with balanced proficiency in customer service practices and technical know-how.

8. PAYMENT—DETERMINE PAYMENT AND LIABILITY ASPECTS (DUTY OF CARE)

In consultation with our initial specialist users, we established a billing rate of \$200/h for their service. This rate was based on the average current remuneration of specialists in Ontario for a face-to-face consultation, which is approximately \$150 for all specialties listed. The specialist e-consultation form ended by asking them to indicate how much time they spent on their response to the question (Appendix, *Fig. A2*). They were given time slot selections of 1–10, 10–15, 15–10, and >20 min. If >20 min was selected, the specialist was asked to provide an explanation. Time submitted by specialists across all specialties averaged at 11.7 min per case.

Funding for remunerations for specialists was originally obtained from a TOHAMO research grant and is subsequently being subsidized through the Department of Medicine at The Ottawa Hospital. Long-term compensation for this type of virtual medicine service will need to be supported through physician payment services contracts at the provincial level.

We also consulted with the Canadian Medical Protective Association to ensure that the e-consultation system did not create any novel litigation risks, as the potential for these issues was a concern among specialists during the recruitment phase of the project. The advice received from the Canadian Medical Protective Association was that the duty of care in this project is no different than any other “curbside” or telephone consultation request and that no novel litigation risks existed provided the physician had “enough information to make [his/her] recommendation.” The e-consultation forms were tailored to provide the option to specialists to ask for more information or decline to provide a recommendation.

9. PROVIDE FEEDBACK—BUILD IN CONTINUOUS QUALITY FEEDBACK

Obtaining feedback was critical to providing a service that participants would find useful and actively engage in. We built into the e-consultation form five questions to assess impact of the service (Appendix, *Fig. A4*).

In addition to seeking physician feedback, system efficacy was determined by continuously evaluating usage and outcomes. Mea-

asures used to track usage included the number of participating physicians, the number completed e-consultation requests per registered PCP, and the proportion of requests per specialty. The response time for consultation requests and the self-reported amount of time spent by specialists on the response were also tracked. Outcome measures included the specialist recommendation (e.g., further investigations, treatment initiated, consultation avoided) and physician satisfaction with the process.

We are also providing regular updates to the specialists and include the number of referrals and summary feedback including comments from the PCPs. As the feedback has been very positive, being able to highlight the value of the service provided by the specialists is a way of encouraging ongoing participation.

10. PLAN THE TRANSITION FROM PILOT TO SUSTAINABLE PROGRAM—PLAN EARLY FOR SUSTAINABILITY RATHER THAN AFTERTHOUGHT

Three key elements are needed to ensure sustainability: (1) maintaining the benefit of the service (perceived high clinical value), (2) funded infrastructure, and (3) human resource support.^{21,22}

The pilot phase of our e-consultation project was funded through a small research grant. These funds helped cover the start-up costs, including development of forms, system workflow, and user training, as well as everyday operational costs. The success of the pilot project enabled the project team to obtain additional bridge funding from the LHIN and hospital. The transition of e-consultation into a sustainable program comes with the realization that secured funding of the associated costs is required.

Once the system has been established, sustainability of e-consultation primarily requires human resources support. Ongoing staffing is required for project coordination and management, information technology-related tasks such as system updates, and end-user technical support, which includes assistance with system troubleshooting and recovery of login information. Funds are also required for ongoing physician engagement-related functions, such as recruiting and training.

Current Status of e-Consultation Service

We continue to expand the e-consultation service and are collecting ongoing utilization data. As of June 30, 2013, over 1,257 consults have been processed through the system.²³ User satisfaction is high, with satisfaction ratings of 4.63 out of 5. We have 26 different specialists services available for consultation, including the recent addition of a clinical pharmacist. We have over 300 registered primary care providers, representing 30% of all primary care providers in our community.

Conclusions

Accessing specialist care will continue to be a major challenge for Canadians. In addition to important patient safety issues, personal stress and ineffective information transfer require us to seek innovative solutions to improve care.

We have successfully developed and implemented an e-consultation service, which has now processed over 800 consultations with an

overwhelmingly positive response from both PCPs and specialists. In over 40% of cases, a face-to-face consultation would have been necessary had our e-consultation system not been available. This system has improved access to care and increased PCP–specialist communication among participating specialists in our region.

We have described how this system can be replicated in other health regions by considering 10 essential steps, including partners, platform, piloting, product, privacy, process, participants, payment, providing feedback, and planning for sustainability.

Disclosure Statement

No competing financial interests exist.

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Received: February 27, 2013

Revised: April 3, 2013

Accepted: April 4, 2013

(Appendix follows →)

Appendix

Create an eConsult

NOTE: The system will log you out after 20 minutes of inactivity - you can save your information at any point by clicking on the save button

Step 1 - Primary Care Practitioner Information

PCP Test
Primary Care Practitioner Name

123 pcp road pcpville pcpcode
Street Address City/Municipality Province Postal Code

6135551111 6135551110
Telephone Facsimile E-Mail

Step 2 - Specialty

Please Select Consultant Specialty: *Req'd

Step 3 - Patient Information

Does the patient consent to this eConsult? Yes No *Req'd

1 / Jan / 2001 Male Michael Headache
Date of birth *Req'd Gender *Req'd Given Name Surname
(dd/mm/yyyy)

Pertinent information concerning the patient will assist the consultant to assess the case properly and ultimately generate an informed recommendation.

Please provide information concerning the patient in the space provided below (i.e. allergies, nutrition, social history). Note that you can also attach electronic files to this request, in which case the text below will be complementary to the attachments (field will automatically adjust to amount of text).

Previously healthy

Would you also like to attach relevant electronic files to this request? No Yes

Step 4 - Consultation Request

Consultation request should include the following elements (if applicable):

- Reason for consultation
- Specific treatments already prescribed
- Suggestions for possible treatments (i.e. I would like to optimize current treatment; I am inquiring about an alternative approach to the problem)

Please type request in the space provided below *Req'd

Please see Mr Headache for assessment on worsening pain in head. We have tried massage and also caffeine based treatments with no improvement. He now mentions that he drinks 3 slushies a day and I wonder if this could be contributing to the pain.

N.B. A clearly formulated question will assist the consultant in providing a clear recommendation.

Continue to Next Step

Please note that it may be necessary to click on this button twice

Office use only: Author ID: pcp.test User Type: PCP PCP: pcp.test

Fig. A1. Online form completed by the primary care provider in requesting an electronic consultation (eConsult).

Specialist

ID: fc6c342-d84c-4ede-ad2b-72029d6e1...

NOTE: The system will log you out after 20 minutes of inactivity - you can save your information at any point by clicking on the save button

Step 1 - Primary Care Practitioner Information

PCP Test
Primary Care Practitioner Name

123 pcp road pcpville ON pcpcode
Street Address City/Municipality Province Postal Code

6135551111 6135551110
Telephone Facsimile E-mail

Step 2 - Patient Information

1 / 1 / 2001 Male Michael Headache
Date of birth Gender Given Name Surname
(dd/mm/yyyy)

The requester also has provided the following information concerning the patient.
Previously healthy

The requester has also attached the following documents concerning the additional information that was requested.

Step 3 - Specific Question from Primary Care Practitioner

The requester has posed the following question:

Please see Mr Headache for assessment on worsening pain in head. We have tried massage and also caffeine based treatments with no improvement. He now mentions that he drinks 3 slushies a day and I wonder if this could be contributing to the pain.

e-Consultation Summary:
07-Nov-2012 09:22 (PCP Entry): PCP asked question: Please see Mr Headache for assessment on worsening pain in head. We have tried massage and also caffeine based treatments with no improvement. He now mentions that he drinks 3 slushies a day and I wonder if this could be contributing to the pain.
07-Nov-2012 09:22 (PCP Entry): eConsult created
07-Nov-2012 12:32 (Assigner Entry): eConsult assigned

Step 4 - Specialist Response

Do you require additional information before generating an informed recommendation? No Yes

Recommendation should include the following elements (if applicable):

- Reason for recommendation
- Suggestions for possible treatments (i.e. How to optimize current treatment; Recommending an alternative approach to the problem)
- Suggestions for tests and recommendations according to the results of the test (i.e. Prescribe test X. If results are positive/negative, proceed with treatment Y/Z or request patient referral)

Please type recommendation in the space provided below:

*Req'd A clearly constructed recommendation will assist the Primary Care Provider to improve patient care.

Is a referral advised for the patient? No Yes

Would you like to include attachment(s) that you feel would be beneficial to the Primary Care Practitioner? (optional) No Yes

Step 5 - Consultant Information

Please ensure that your contact information is correct.

specialist.test Specialist Test
User ID Consultant Name

123 specialist road specialistville Ontario specialistcode
Street Address City/Municipality Province Postal Code

6135552222 6135552220 amir.afkham@hins.on.ca
Telephone Facsimile E-Mail

Step 6 - Feedback

How much time did you spend working on this particular e-consult?

This information will be helpful in determining the usefulness and efficiency of the e-consult process and will enable us to calculate the spend for your services.

Continue to Next Step

Please note that it may be necessary to click on this button twice

Fig. A2. Online form received by the specialist when an electronic consultation is requested.

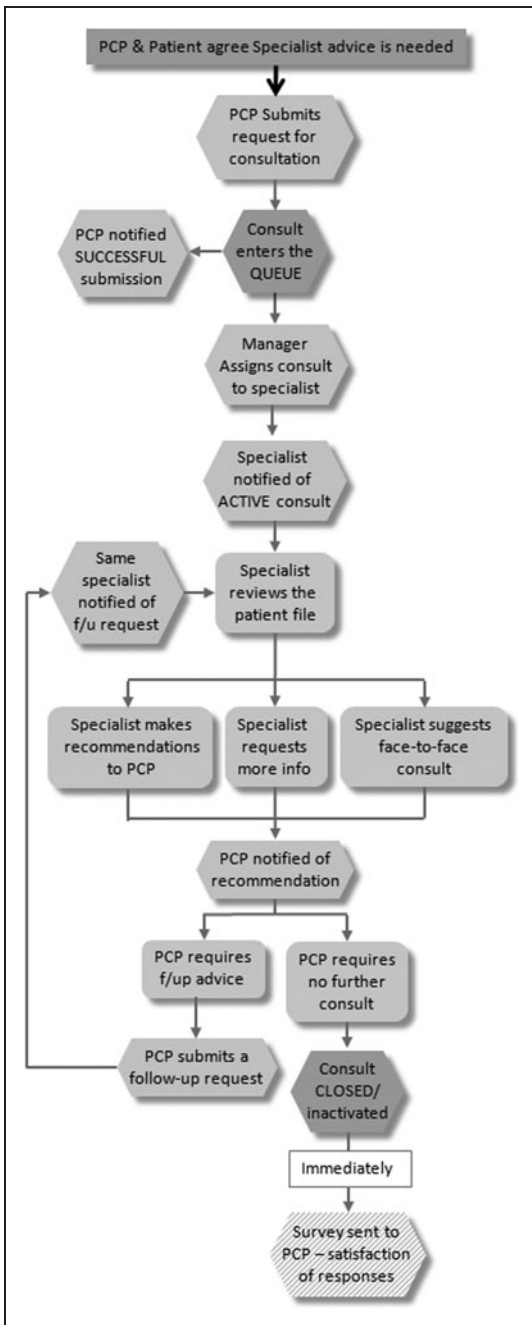


Fig. A3. Description of the workflow used in our e-consultation system. f/u or f/up, follow-up; PCP, primary care physician.

1. Which of the following best describes the outcome of this eConsult for your patient:

- I was able to confirm a course of action that I originally had in mind
- I got good advice for a new or additional course of action
- I did not find the response very useful
- None of the above (please comment)

2. As a result of this eConsult, would you say that:

- Referral was originally contemplated but now avoided at this stage
- Referral was originally contemplated and is still needed - this eConsult likely leads to a more effective visit
- Referral was not originally contemplated and is still not needed - this eConsult provided useful feedback/information
- Referral was not originally contemplated, but eConsult process resulted in a referral being initiated
- There was no particular benefit to using eConsult in this case
- Other (please comment)

3. Please rate the overall value of the eConsult service in this case for your patient:
Minimal 1 2 3 4 5 Excellent

4. Please rate the overall value of the eConsult service in this case for you as a primary care provider:
Minimal 1 2 3 4 5 Excellent

5. We would value any additional feedback you provide:

Fig. A4. Five questions added to the e-consultation (eConsult) form to assess impact of the service.