

The logo for OntarioMD features the word "Ontario" in a blue sans-serif font and "MD" in a purple sans-serif font. To the right of the text is a decorative graphic consisting of a grid of dots in various colors (blue, purple, green, yellow, red) that tapers off to the right, creating a sense of depth and movement.

OntarioMD

Empowered Practices. Enhanced Care.

## **eConsult EMR Integration**

Outcome Evaluation Final Report

Published December 2019

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## 1.0 Executive Summary

eConsult provides Ontario physicians and nurse practitioners with timely access to specialist advice and often eliminates the need to send patients for an in-person specialist visit. Through a private and secure web portal, requesting providers can send a specialist a clinical question about their patient and receive advice quickly and securely, generally within two business days.

Web-based eConsult access has proved to be convenient and successful for clinicians who do not use electronic medical records (EMRs) or who need eConsult access when they are away from their EMRs. However, OntarioMD understands that the 18,000+ clinicians in Ontario who use EMRs prefer to access patient information and digital health tools through their EMRs. For this reason, OntarioMD led a pilot initiative between April 2016 and March 2019 to make eConsult available through some OntarioMD-certified EMRs. More than 200 clinicians across Ontario were given the opportunity to use eConsult through QHR Technologies' Accuro® EMR and WELL EMR Group (formerly KAI Innovations' OSCAR).

OntarioMD completed an outcome evaluation of the eConsult EMR integration pilot in early 2019 to understand the impact of an EMR-integrated eConsult solution on frequency of use, efficiency, and clinician satisfaction. OntarioMD's outcome evaluation incorporated a clinician participant survey, workflow mapping based on the test environment, simulations and a review of automated activity log data.

### Benefits Identified

The evidence considered for this outcome evaluation clearly demonstrates that an EMR-integrated eConsult solution helps improve EMR-connected clinicians' workflows by integrating eConsults directly into their patients' electronic records. The outcome evaluation revealed improvements in EMR-connected clinicians' efficiency of use, improved workflow and motivation to use eConsult more often. Feedback received from the clinician survey of 145 pilot participants included:

- Respondents reported saving an average of almost five minutes per consult when accessing eConsult via an EMR vs. web-based access.
- 90% of respondents agreed that eConsult improves workflow.
- 90% of respondents agreed that using eConsult through their EMR motivates them to use it more.
- 85% of respondents would recommend eConsult through their EMR to their colleagues.
- 80% of respondents agreed that EMR-integrated eConsult was easy to use.
- Respondents indicated a strong preference for eConsult over traditional methods of seeking specialist advice, and a preference for the EMR-integrated method over the web method of access:
  - 90% of respondents reported that they would be likely/very likely to use the EMR method over the web method.
  - 80% of respondents reported that they would be likely/very likely to prefer eConsult over traditional methods.

Survey respondents indicated their favorite features of eConsult integrated into their EMR:

- Auto-population of patient demographics;

- Ability to upload attachments (i.e. images, diagnostic reports etc.) directly from the EMR; and
- Automatic documentation within the EMR (patient chart).

OntarioMD also used a workflow simulation to better understand the time clinicians spend using web-based eConsult in comparison to the EMR-integrated solution. The simulated workflow required a user to submit a cardiology eConsult, receive a reply and take the appropriate actions for closing the case. It is important to note that the simulated workflow was completed in a controlled EMR Lab environment. Results will vary depending on the EMR used, the clinician's typical workflow and the specialty consulted.

The simulated workflow revealed considerable differences in the number of workflow steps for clinicians using eConsult through their EMRs versus the web-based solution:

- For a clinician submitting an eConsult through their EMR:
  - Creating the eConsult: eight (8) steps;
  - Receiving the response: five (5) steps.
- For a clinician submitting an eConsult through the web-based method, without the assistance of a delegate<sup>1</sup>:
  - To create the eConsult: 18 steps;
  - To receive the response: 14 steps.
- For a clinician with the assistance of a delegate, through the web-based method:
  - To create the eConsult: 9 steps clinician, 11 steps delegate;
  - To receive the eConsult: 3 steps clinician, 15 steps delegate.

## Next Steps

This evaluation process provided the eConsult EMR Integration project team with valuable evidence and recommendations (see Section 7), which may be considered for the expansion of eConsult availability through EMRs, as well as for further improvements to continued evaluation of the solution. OntarioMD is focused on expanding availability of eConsult through additional OntarioMD-certified EMR product offerings. The provincial specification was made available to all OntarioMD-certified EMR vendors in April 2019. Since then, OntarioMD has moved forward on the integration of eConsult into Avaros, YES and YMS EMRs, with availability in these product offerings scheduled for early 2020. Clinicians' ability to access eConsult through their EMRs will vary depending on their EMR vendors' specific timelines for incorporating the eConsult service into their certified EMR products. In the interim, as the EMR integration process continues, OntarioMD encourages clinicians to continue using eConsult through the web based OTNhub.

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<sup>1</sup> A delegate model is available in eConsult to help clinicians with the administrative components of eConsult. If interested, a clinician can assign a delegate who can respond to and receive eConsults on the clinician's behalf.

## 2.0 Background

eConsult is a secure web-based tool, which provides physicians and nurse practitioners with timely access to specialist advice for all patients and often eliminates the need for an in-person specialist visit. Primary care clinicians have realized several benefits using eConsult, including:

- Timely access to non-urgent questions (average response time is 2 days);
- Access to over 90 specialties and sub-specialties;
- Improved care coordination and collaboration between clinicians; and
- Opportunities to enhance learning and manage patient cases at the family practice level, where patient trust is often highest.

The Ontario eConsult Program was created to enable timely and equitable access to specialist advice for all patients in Ontario. The program, with the support of the Ministry of Health, integrates two successful initiatives: BASE™ Managed Specialty model and the Ontario Telemedicine Network's (OTN) Direct to Specialist model. The program includes four services: Ontario eConsult Service, Champlain BASE™ regional service, Teledermatology and Teleophthalmology. Accessed primarily through the secure OTNhub, the program is led by the Ontario eConsult Centre of Excellence (eConsult COE), housed at the Ottawa Hospital in partnership with the Bruyère Research Institute. Delivery partners include Ontario Telemedicine Network, OntarioMD and eHealth Ontario. Several regional partners are supporting the initiative locally.

Since the program's inception in 2014, OntarioMD, along with its partners, has leveraged its clinician engagement and change management expertise to onboard over 8,000 referring clinicians and 900 specialists to eConsult<sup>2</sup>. In addition to deploying eConsult to clinicians across the province, OntarioMD has led the pilot initiative to integrate eConsult into OntarioMD-certified EMR product offerings. The integration of eConsult into EMRs aims to add value to the service by streamlining workflow and improving efficiency for clinicians. eConsult is currently available through QHR Technologies' Accuro® EMR and WELL EMR Group (formerly KAI Innovations' OSCAR).

This report presents the findings of an outcome evaluation OntarioMD conducted to demonstrate the benefits experienced by more than 200 participating clinicians who accessed eConsult through QHR Technologies' Accuro EMR and WELL EMR Group (formerly KAI Innovations' OSCAR) between April 2016 and March 2019.

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<sup>2</sup> Data reflected is as of August 2019.

## 3.0 Objectives

### Outcome Evaluation Objectives

The eConsult EMR integration outcome evaluation was designed around the following objectives:

1. Assess how well the eConsult EMR integration pilot demonstrated project benefits and outcomes, and suggest related process improvements for the next phase of eConsult EMR integration; and
2. Assess changes in participating clinicians' knowledge, attitudes, behaviours, efficiency and user satisfaction as a result of using eConsult through their EMRs.

### Key Evaluation Questions

The evaluation team developed a logic model, theory of change and evaluation matrix to articulate evaluation questions, indicators, resources and appropriate data sources. The outcome evaluation questions can address changes in knowledge, skills, perceptions, and behaviours. The following evaluation questions were developed for this pilot:

1. Did the eConsult EMR integration pilot contribute to increased user satisfaction?
2. Is there an increase in the use of eConsult that is attributable to EMR integration?
3. To what extent did the pilot lead to efficiency in the completion of an eConsult?
4. Did the eConsult EMR integration pilot produce or contribute to the intended outcomes?
5. Did the implementation of the EMR integration pilot result in a change in knowledge, attitude, behaviours and perception among the members of the target population?

With these evaluation questions in mind, OntarioMD's focus for the eConsult EMR integration outcome evaluation was to better understand if the EMR-integrated solution increased clinicians' use of the eConsult service, proved more efficient than the web-based solution, and improved overall user satisfaction with eConsult.

## 4.0 Methodology

### Evaluation Design

A utilization-focused evaluation (UFE) design was selected to increase the value the results will hold for the intended user, and thereby increase the likelihood of uptake. The UFE approach involves the intended users in planning the outcome evaluation. Internal stakeholders at OntarioMD involved in supporting eConsult EMR integration collaborated with the evaluation team in building the evaluation plan, including method design (survey and simulations).

The eConsult EMR integration outcome evaluation consists of a non-experimental post-test only design. An element of a quasi-experimental design has been employed with quantitative data sources to acquire various lines of insight and evidence, as a result of the evaluation design having some limitations. The following methods were selected to address the evaluation questions:

- **Reduced time:** Assessed via self-reporting of time to create an eConsult comparing pre- and post-EMR integration (survey) and inferred through workflow (simulation);
- **Increased use:** Assessed via self-reporting of frequency of eConsult use comparing pre- and post-EMR integration (survey) and number of eConsults sent (activity log);
- **Efficiency:** Assessed via self-reporting of perceived efficiency (survey), timing (activity log) and workflow steps (simulation); and
- **User satisfaction:** Assessed via self-reporting of satisfaction (survey).

## Data Collection

OntarioMD leveraged a clinician participation survey, activity usage data and an EMR Lab simulation to support the outcome evaluation. This section provides information about each of these tools:

### Clinician Participation Survey

- The clinician participation survey for this evaluation was developed by the OntarioMD evaluation team. It was deployed via Survey Monkey to 145 clinicians who had registered to use eConsult through their EMRs. Respondents were incentivized to participate with a \$10 gift card for survey completion. The respondents were informed that their participation in data collection was voluntary. There were no risks anticipated for participants, and results were kept confidential and reported only in an aggregated and de-identified state.
- The survey was open for completion by respondents from January 16 to February 4, 2019. OntarioMD Practice Advisors sent a reminder email to participants on January 25, 2019. A total of 49 clinicians completed the survey, for a response rate of 33.8%.

### Activity Usage Data

- The Ontario Telemedicine Network (OTN) provides OntarioMD with automated usage reports for eConsult on a weekly basis. These reports contain cumulative data about each eConsult submitted and each response received through both the web and EMR methods.
- The weekly usage reports were reviewed as a secondary data source, beginning with pilot initiation (April 2016) to conclusion of the evaluation (January 2019).

### EMR Lab Simulation

- The EMR Lab is a virtual test environment with artificial patient data allowing OntarioMD staff to experiment with solutions and train clinicians without risk of exposing real patient data.
- The scenarios used for the eConsult EMR integration workflow simulations were constructed to explore workflow, number of steps and time required to create, respond to and close an eConsult.

## 5.0 Evaluation Findings

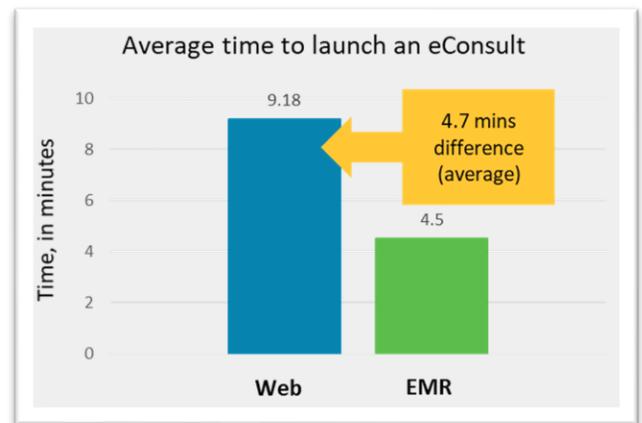
### Reduced time

#### Survey

- Respondents reported saving an average of almost five minutes per consult when creating an eConsult via their EMRs compared to the web-based solution.

#### Simulation

- Although timing was not captured in lab simulations, the number of steps required to complete an eConsult varied dramatically in a sample workflow. This suggests that timing would be likewise affected. See **Efficiency** for further detail.



### Increased use

#### Survey

- 90% of respondents agreed that using eConsult through their EMR motivates them to use it more often than the web-based solution.
- Perceptions seemed to reinforce this motivation, with respondents reporting using the EMR method more often during the pilot than they used the web method prior to the pilot: on average, respondents indicated using eConsult through their EMR 1.075 times/month, compared to 0.85 times/month for the web-based solution.
- Respondents indicated a strong preference for the EMR method over other methods of seeking specialist advice. However, there were differences in the strength of this preference in relation to web-based eConsult compared to “traditional” methods (e.g., phone, fax):
  - 90% of respondents reported that they would be likely/very likely to use the EMR method over the web method;
  - 80% reported that they would be likely/very likely to use the EMR method over traditional methods.

### Efficiency

#### Survey

- 90% of respondents agreed that accessing eConsult through their EMR improves workflow.
- 80% of respondents agreed that eConsults through their EMR were easy to submit.

#### Simulation

The following workflows were mapped via OntarioMD’s EMR Lab, using Accuro EMR:

- A simple eConsult requiring a brief description and one or two attachments via the EMR method. This EMR-integrated workflow required eight steps at creation and five steps after receipt/response.

- For the same eConsult scenario, the evaluation team mapped two variations of a workflow via the web method: one involving a delegate and one completely created by the clinician. The workflows were broken down into create and receipt/response. The steps required for creation and receipt via web method, by clinician alone, and clinician with delegate, were:
  - Create, no delegate: 18 steps
  - Receive/Respond, no delegate: 14 steps
  - Create, with delegate: 9 steps clinician, 11 steps delegate
  - Receive/Respond, with delegate: 3 steps clinician, 15 steps delegate
- Applying this workflow<sup>3</sup> to EMR integrated eConsult, 10 to 13 steps were avoided at creation, and 9 to 13 at receipt/response. However, this will vary depending on the EMR used and on the type of specialty consulted.
- For the clinician with a delegate, the receipt of an eConsult will require fewer steps via web method (3) than EMR method (5), but only at the cost of additional steps to the delegate (14 steps with no delegate, 15 steps with a delegate – in addition to the 3 by the clinician).

## User satisfaction

### Key findings

- 85% of respondents indicated they would recommend eConsult through their EMR to their colleagues.
- Respondents singled out the following beneficial features of EMR integration (“what do you like best?”):
  - Auto-population of patient demographics,
  - Ability to load attachments directly in the EMR, and
  - Automatic documentation within the EMR (patient chart).

## 6.0 Limitations

The limitations identified in this section should be considered when analyzing the findings in this outcome evaluation:

### 1. Challenges of collecting accurate timing data

Although the evaluation team can report that there is a significant reduction in self-reported time to create an eConsult through the EMR, the team does not have access to automated data to validate this self-reporting. This limitation can be addressed in subsequent stages of rollout by the introduction of either an accurate automated timing mechanism or a sub-sample designated to collect timings.

### 2. Challenges of assessing changes in frequency

In a typical practice, clinicians are unlikely to require specialist advice on a day-to-day basis. Participant data acquired through self-reporting and the activity log both show an average

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<sup>3</sup> The workflow applied may not be typical but was identified by OntarioMD’s EMR Lab subject matter expert as representing a ‘preferred practice’ workflow due to its economy of steps or efficiency.

eConsult frequency of less than three per month. In combination with the small size of the pilot sample, it suggests that the evaluation team should consider the evaluation question “Does EMR integration affect frequency of eConsult use?” for a larger sample tracked over a longer period.

### **3. Variability in time to create an eConsult**

The variation in time required to create an eConsult will be considerable, depending on the specialty chosen. For example, a dermatology eConsult may include a brief description and an attachment of a visual, whereas a psychiatry eConsult may include no attachments, but a very elaborate description.

### **4. Variability in the EMR interface**

Product differences are not fully addressed in this evaluation as OntarioMD’s EMR Lab only focused on Accuro EMR. The evaluation team estimates differences in the workflow (the number of steps) based on a single eConsult instance in the simulation environment (Accuro EMR). This will differ depending on the EMR product offering used. As new EMR offerings are added to the eConsult EMR integration rollout, the evaluation team recommends that each one is added to the EMR Lab to serve multiple purposes including demonstration, preparation of field staff, and evaluation.

### **5. Self-reporting is important, but is best validated via an objective or automated method**

Surveys are an essential evaluation tool if they are used as part of a suite of approaches to collect objective and subjective information about the intervention (typically triangulation, but not necessarily “three”). The evaluation team recommends an exploration of options for automated data collection for future evaluations.

## **7.0 Conclusions and Recommendations**

In review of the evaluation findings, several recommendations emerge to improve our ability to measure outcomes in the next phase. The outcome evaluation quantified that eConsult EMR integration adds value to the Ontario eConsult Service in terms of time spent and improved efficiency of clinical workflows. On average, survey respondents reported saving almost five minutes per eConsult sent through their EMRs compared to the web-based method. In addition, 10 to 13 steps were found to be saved when creating an eConsult in the EMR, and 9 to 13 steps saved in receiving/closing, based on a typical workflow. These findings prove that EMR integration improves clinician workflows for eConsult use.

Free-text responses suggest there are product and/or vendor-specific issues which need to be addressed. As the number of EMRs involved in eConsult EMR integration increases, the number of issues may increase as well. These differences are difficult to quantify, and the evaluation team suggests the incorporation of a qualitative sub-study to build a comprehensive understanding of how best to support clinicians in the optimal use of eConsult through their EMR.