

Use of Electronic Consultation System to Improve Access to Care in Pediatric Hematology/Oncology

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Background: Electronic consultations (eConsult) allow for communication between primary care providers and specialists in an asynchronous manner. This study examined provider satisfaction, topics of interest, and efficiency of eConsult in pediatric hematology/oncology in Ottawa, Canada.

Methods: We conducted a cross-sectional assessment of all eConsult cases directed to pediatric hematology/oncology specialists using the Champlain BASE (Building Access to Specialists through eConsultation) eConsult service from June 1, 2014 to May 31, 2016.

Results: There were 1064 eConsults to pediatrics during the study timeperiod and pediatric hematology/oncology consults accounted for 8% (85). During the same study timeperiod, 524 consults were seen in the pediatric hematology/oncology clinic. The majority of the eConsults were for hematology (90.5%) in contrast to oncology topics (9.5%). The most common topics were anemia, hemoglobinopathy, bleeding disorder, and thrombotic state. Primary care providers rated the eConsult service very highly, and their comments were very positive. The eConsult service resulted in deferral of 40% of consults originally contemplated to require a face-to-face specialist visit.

Conclusions: This study showed successful implementation and use of the eConsult service for pediatric hematology/oncology and resulted in avoidance of a large number of face-to-face consultation. The common topics identified areas for continuing medical education.

Key Words: electronic, consultation, hematology/oncology

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Electronic consultations (eConsult) are asynchronous, consultative communications between providers on an electronic platform.¹ These have been shown to decrease wait times to see a specialist which in turn has been shown to decrease anxiety in patients.^{2,3} In Canada, access to specialty care is a challenge and there has been a significant

increase in the wait time for patients to see a specialist.⁴ The eConsult service has been shown to improve access of primary care providers (PCPs) to speciality expertise without the need for face-to-face consultation,⁵ which in turn should decrease wait times for patients.

In Eastern Ontario, an eConsult system was formed in 2010, based on a secure web-based tool, as an alternative to face-to-face consultations.⁵ A pilot study was run to evaluate its effectiveness and acceptability to practitioners. This study showed good uptake, high levels of satisfaction, and avoidance of unnecessary specialist visits. The benefits noted were improved access to specialist care and reduced wait times. PCPs found the service valuable, specifically the ability to assist with patient assessment and management by having access to a rapid response to clinical questions, clarifying the need for diagnostic tests or treatments, and confirming the need for a formal consultation. As well, specialists liked the improved interaction with PCPs and the ability to determine with the PCP which patients should be referred. This pilot study involved 11 specialists all from adult-based subspecialties.

Following this initial proof of concept pilot, the program was expanded to include 16 adult subspecialties as well as pediatric hematology/oncology to determine utilization, benefits, and impact of the service.⁶ Of the 406 completed cases, 2% were pediatric hematology/oncology cases. Overall, this service was found to be highly valued and referral was avoided in half of the cases. Following this utilization study, the eConsult service was again expanded to include the majority of pediatric subspecialty services provided in our institution in addition to hematology/oncology. The use and type of consults received specific to pediatric hematology/oncology are described in this report.

METHODS

We conducted a cross-sectional assessment of all the eConsult cases directed to pediatric hematology/oncology specialists using the Champlain BASE (Building Access to Specialists through eConsultation) eConsult service from June 1, 2014 to May 31, 2016. A full description of the set up and function of the eConsult service is provided elsewhere.⁶ Briefly, a pediatric hematology/oncology consultation is generated by the PCP logging on the secure web portal and submitting the patient information, consultation question, and any attachments needed such as laboratory printouts. The consult is then directed to the appropriate service, and in the case of pediatric hematology/oncology, 1 consultant reviewed all consults directed to this service. The consultant then responded to the consultation with either a request for more information, clinical advice, or recommendation for a face-to-face consultation. There is ability for back and forth dialog between the PCP and the

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consultant until the PCP decides to close the case. Once the case is closed, the PCP completes a mandatory post-consultation survey.

In terms of payment for the eConsult service, the PCP does not pay to use this system. The specialist consultant self-reports how much time is spent answering the question and then is paid a prorated amount based on a rate of 200\$ per hour. This money is paid directly to the physician on a quarterly basis. The funds for this payment are from a grant to undertake the establishment of this eConsult service.

The legal implications of providing medical advice via a secure internet connection was reviewed with Canadian Medical Protective Association (CMPA—Canadian malpractice insurance body). The eConsult is felt to be similar to any telephone conversation or hallway discussion, and the CMPA is highly supportive of this type of communication as it documents the transaction.

The eConsults were all reviewed by 1 pediatric hematologist/oncologist (D.J.) and categorized into pediatric hematology/oncology topic by the same clinician. Data on use of the eConsult service were collected. The number of consults seen in the pediatric hematology/oncology clinic at the Children's Hospital of Eastern Ontario during the same timeperiod was also collected. This research was approved by the Research Ethics Board at the Children's Hospital of Eastern Ontario and the Ottawa Health Science Network Research Ethics Board.

RESULTS

Use of the eConsult Service

Of the 1064 eConsult for pediatric patients during the study timeperiod, 85 (8%) were pediatric hematology/oncology consultations. Only general pediatrics (37%), orthopedics (15%), and psychiatry (12%) had more eConsult for pediatric patients. During the study timeperiod there were 524 consults seen in the pediatric hematology/oncology clinic. The time spent on the electronic consult was <10 minutes in 84 of 85 cases, and 10 to 15 minutes in only 1 case. The 85 consults came from a total of 66 PCPs, 53 of whom were physicians and 13 were nurse practitioners. In total, 53 PCPs sent only 1 electronic consult to pediatric hematology/oncology, and 13 sent ≥ 2 consults to this service. The average time to for the PCP to receive the response to the eConsult was 3.5 hours.

Questions Asked of the eConsult Service

The majority of eConsults were pediatric hematology (77/85 or 90.5%) as opposed to pediatric oncology (8/85 or 9.5%). The most common consult was for anemia (23.5%) followed by hemoglobinopathy (12.9%) and bleeding disorder (11.8%) (Table 1).

Satisfaction With the eConsult Service

Following the eConsult, the PCP completed a close out survey. The results of the survey are shown in Table 2. The majority of PCPs rated the value of the eConsult service as "very good" to "excellent" for both, themselves and their patients. In total, 55% reported to have received good advice for a new course of action and 41% confirmed their original care plan. In total, 40% of referrals were avoided as a result of the eConsult, and in 8% was a referral not originally contemplated but now initiated.

TABLE 1. Questions Asked in the eConsult

Hematology/Oncology Topic	No. Consults	Percentage of All Consults
Anemia	20	23.5
Hemoglobinopathy	11	12.9
Bleeding disorder	10	11.8
Thrombotic state	7	8.2
Neutropenia	6	7.1
Thrombocytosis	6	7.1
Lymphadenopathy	5	5.9
High hemoglobin	4	4.7
ABO incompatibility	3	3.5
Cancer follow-up	2	2.4
Other topics (1 each)	11	12.9

Thus, of the 85 eConsults, only 20 resulted in a face-to-face visit.

Impact of the eConsult

Following the consultation, the PCP was able to comment on the eConsult experience and describe its impact. Sample comments for the eConsult for pediatric hematology/oncology eConsults were:

- "Allowed me to feel confident in managing a clinical situation a little outside my scope ... over a long weekend at that!"
- "Good, concise answer, saved the patient having to travel to see a specialist which is really helpful given that she has 2 young kids and doesn't drive. Got the answer within 2 hours of submitting the question. Thank you!!"
- "Was able to ask a follow-up question and get great advice."
- "Thank you for this excellent service."
- "Really helpful to get information so quickly. It's easier than a phone consult as you don't have to play phone tag and they can review when they are free and same for referring MD."
- "Thank you for your help and the confirmation of lab interpretation. Thank you!"
- "Thanks for the education and reassurance!!"

DISCUSSION

This is the first study examining the use of an eConsult service in pediatric hematology/oncology. We found eConsult to be well received by both PCPs and hematology/oncology specialists. Pediatric hematology/oncology was the fourth most common pediatric subspecialty consulted using the eConsult service. Access to specialist services occurred within hours of a request. The eConsult service resulted in 40% of consults being avoided and initiated a referral where one was not originally contemplated in 8% of the cases. The comments provided by the PCPs show the high appreciation of the service. Two comments in particular summarize how eConsult allows for more efficient care for all individuals involved "... saved the patient having to travel to see a specialist which is really helpful given that she has 2 young kids and doesn't drive" and "... It's easier than a phone consult as you don't have to play phone tag and they can review when they are free and same for referring MD."

The workload to the subspecialist providing the eConsult service was not onerous. All but one eConsult were completed within 10 minutes, and only 1 took 10 to

TABLE 2. Close Out Survey Responses

Question	Response	Percentage
Q1: Which of the following best describes the outcome of this eConsult for your patient	1: I was able to confirm a course of action that I originally had in mind	41
	2: I got good advice for a new/additional course of action	55
	3: I did not find the response very useful	2
	4: Other	1
Q2: As a result of the eConsult ...	1: Referral was originally contemplated but now avoided	40
	2: Referral was originally contemplated and is still needed—eConsult likely leads to a more effective visit	15
	3: Referral was not originally contemplated and is still not needed— eConsult provided useful feedback/information	34
	4: Referral was not originally contemplated, but eConsult process resulted in a referral being initiated	8
	5: There was no particular benefit to using eConsult	1
	6: Other	1
Q3: Please rate the overall value of the eConsult service in this case for your patient	1: 1—minimal	1
	2: 2	0
	3: 3	15
	4: 4	15
	5: 5—excellent	79
Q4: Please rate the overall value of the eConsult service in this case for you as a PCP?	1: 1—minimal	1
	2: 2	0
	3: 3	4
	4: 4	15
	5: 5—excellent	80

15 minutes to complete. A face-to-face consult typically takes 20 to 30 minutes,⁷ so the shortened time for the eConsult makes this process more efficient for the specialist also.

The majority of topics asked of the eConsult were hematology topics as opposed to oncology topics. This likely represents the need for acute consultation for oncology cases, not amenable to waiting for consultant response via an e-mail. This is certainly the case in our clinic where the majority are hematology, and the oncology patients are most often referred via urgent phone calls or direct from the emergency department (data not shown) as opposed to faxed/mailed paper consults. As well, the majority of hematology consults had accompanying blood work, which is more amenable to giving advice without the benefit of a physical examination, as opposed to the majority of oncology consults.

The different eConsult topics are helpful to identify areas of continuing medical education for PCPs. As well, the most prevalent topics such of anemia, hemoglobinopathy, bleeding disorder, and thrombotic state, are topics that lend themselves to information sheets outlining common questions. These information sheets could be downloaded from the eConsult site in future to answer common questions and avoid the need for any sort of consult.

There are some limitations of this study that should be discussed. First, the outcome of the eConsult on clinical outcomes was not assessed. In addition, the eConsult did not assess patient satisfaction with this service. Finally, data are rarely collected on satisfaction with face-to-face consultation other than hospital wide surveys which are rarely completed, thus the comments from the providers using the eConsult service are in isolation and not able to be compared with satisfaction with face-to-face consultation.

Overall, this study showed successful implementation and use of the eConsult service for pediatric hematology/oncology. It resulted in avoidance of a large number of face-to-face consultations, and was well as being appreciated by PCPs. It also identified areas for continuing medical education which will aid PCPs in care of patients without requiring the assistance of a specialist. Finally, it was more efficient than face-to-face consultation. This service would likely be of benefit in all pediatric hematology/oncology programs.

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