

# Endocrine EConsults Improve Access to Care for the Underserved

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## Abstract

The endocrinology eConsult service at Mount Sinai Hospital, in New York City, was conceived to simplify and accelerate access to the expertise of endocrinologists. Here we detail how we designed our workflow according to input from primary care providers (PCPs). Additionally, we describe the impact of the pilot phase of our endocrinology eConsult service. In this pilot phase, providers in a Medicaid clinic and those making visits to homebound patients placed eConsult orders within the hospital's EMR using one of 18 original, disease-specific templates and one generic template. The eConsultant sent evidence-based recommendations in a response template, which included a rationale with references. As part of an ongoing quality improvement project, PCPs were asked to complete a two question closeout survey. Seventy percent of PCPs indicated that they got good advice for a new or additional course of action, and 25% answered that they were able to confirm a course of action that they already had in mind. Referral was originally contemplated, but avoided as a result of the eConsult according to 62% of respondents, exceeding rates reported at other academic institutions. Our unique emphasis on providing a detailed rationale for recommendations may have contributed to these outcomes. With a majority of respondents indicating that a formal consultation was averted, an expanded endocrine eConsult service could reduce a significant volume of unnecessary endocrine referrals, expedite more urgent visits, and reduce costs. This outcome is especially significant in light of a nationwide shortage of endocrinologists.

## Keywords

PervasiveHealth Proceedings, eConsultation; eConsult; e-Consult; endocrinology; asynchronous consultation

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## 1 Introduction

With above average wait times and a growing workforce shortage [1] providing access to timely endocrinology consultation is becoming more challenging. EConsultation is an attractive solution to the disparity between supply and

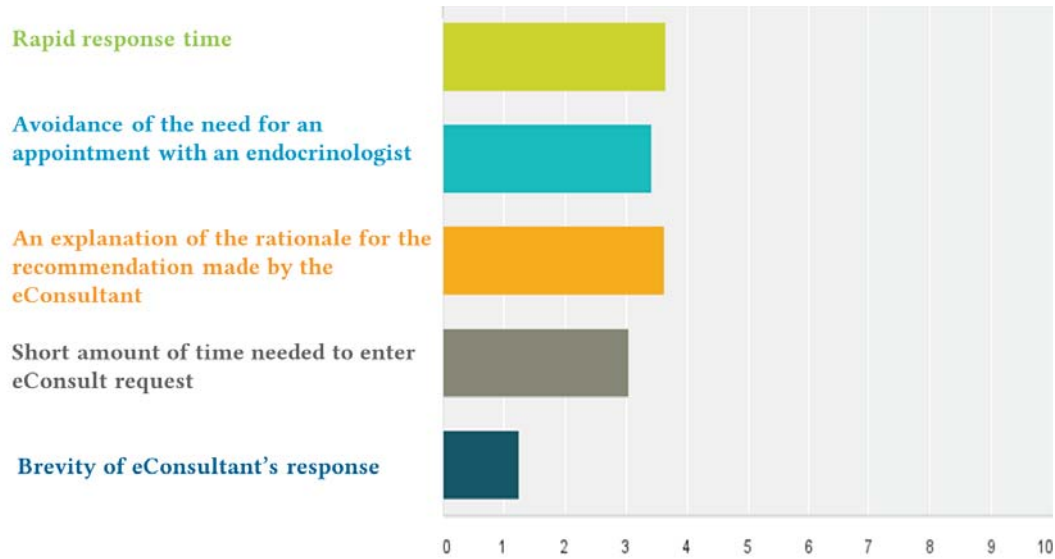
demand for endocrinologists, in particular because clinical decision making for endocrine conditions is often driven by review of medication use and laboratory and imaging data. EConsults are consultations sought by one physician from another through an electronic portal, in this case, Epic. This store-and-forward workflow allows for asynchronous consultation, which suits the busy schedules of PCPs and specialists alike, and has been demonstrated to reduce time to obtain endocrinologist advice [2]. The Mount Sinai endocrinology eConsult service is designed to simplify and accelerate access to the expertise of endocrinologists in order to improve delivery of care to underserved patients. We set out to characterize completed eConsults, to determine whether formal office consultations can be averted, and to discern how the referring provider's course of action is affected by the eConsult.

## 2 Methods

### 2.1 eConsult Program Development

Prior to launching the Mount Sinai endocrinology eConsult service, referring providers in the pilot were surveyed in order to assess how best to address their needs. These 165 providers included interns, residents, attendings, and nurse practitioners seeing patients in a Medicaid clinic and making visits to homebound patients. A survey link was distributed by email, and responses were collected on an anonymous, voluntary basis. Forty-three responses were received, representing a 26% completion rate. The most informative survey responses were to a question asking providers to rank the features they would want from our eConsult service in order of importance (figure 1). The highest score (3.65) was given to "rapid response time", followed by "an explanation of the rationale for the recommendation made by the eConsultant" (score 3.63). The third ranking feature was "avoidance of the need for an appointment with an endocrinologist" (score 3.42).

In addition to sending out this survey to PCPs, we also identified a clinical champion among our referring providers. This individual tested the eConsult process with us prior to our pilot launch, and provided important feedback about our referral templates. This PCP also advocated for the need for and value of the endocrinology eConsult service.



**Figure 1: Responses to prelaunch survey question asking providers to rank the features they would want from the endocrinology eConsult service in order of importance.**

The workflow designed for endocrine eConsults through Epic is demonstrated in [figure 2](#). This workflow was modeled after that of the University of Ottawa [3], with the key difference being our use of referral and response templates. Both referral and response templates are designed to facilitate error-free communication, promote education, and meet compliance requirements. In our workflow the PCP accesses the endocrinology eConsult service through the hospital’s EHR, Epic. After logging into the system, and locating their patient, the PCP places an order for an eConsult. Typing “eConsult” in the “orders” section generates the appearance of a drop-down menu of 18 original, copyrighted disease-specific templates and one generic template. These templates include autopopulated information regarding each patient, such as their demographics, past medical history, problem list,

medication list, allergies, vital signs, and laboratory test results. The PCP is prompted to formulate a focused clinical question, and to answer a number of pointed questions to guide clinical decision making. The PCP indicates the urgency of the request.

The eConsult enters the Epic “In Basket” of the specialist, who then replies with a request for more information, suggestion for a face to face visit, or, more commonly, with their clinical recommendations. These recommendations are sent in the form of a response template, complete with a detailed rationale and links to clinical practice guidelines and relevant literature. The specialist’s response is automatically sent to the referring provider’s Epic “In Basket” and is also available for viewing in the patient chart under a “Chart Review” tab. The PCP is permitted to request follow up advice in the course of the eConsult encounter.

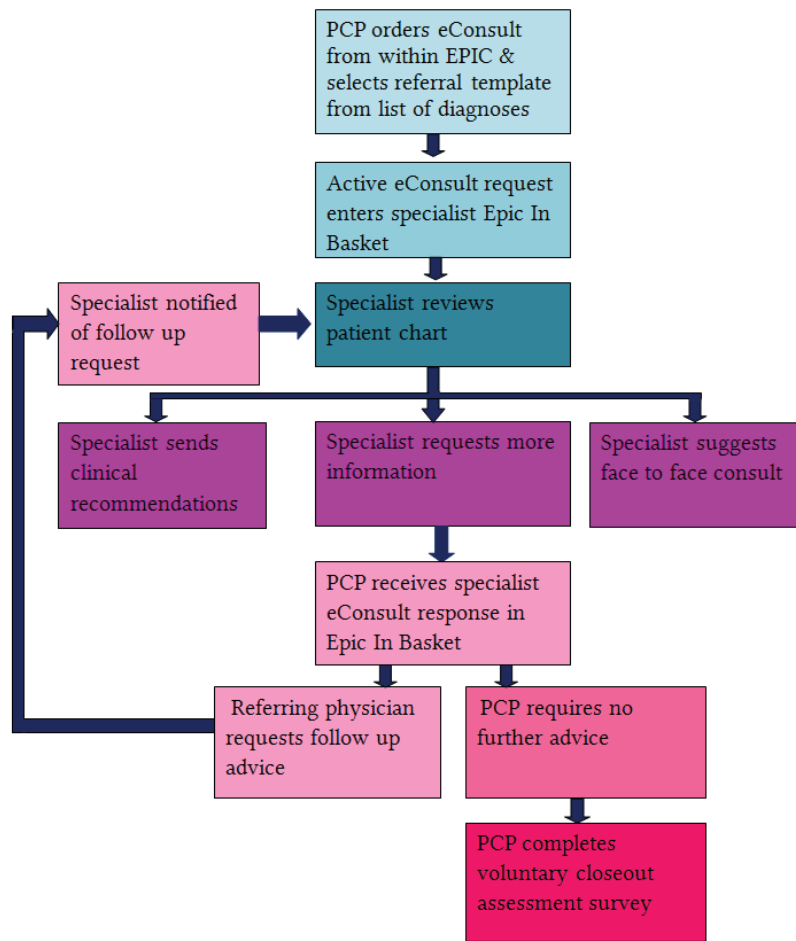


Figure 2: Workflow for endocrinology eConsult service within Epic.

## 2.2 EConsult Evaluation

Completed eConsult characteristics were extracted using the Epic reporting workbench. As part of an ongoing quality improvement project, referring providers were asked to complete a closeout survey containing two multiple choice questions about each eConsult, and these were answered on a voluntary, anonymous basis. A link to the closeout survey appears in the specialist's eConsult response.

## 3 Results

### 3.1 Characterization of eConsult Requests

Between February 8th and May 3rd of 2017, 165 referring providers submitted 52 endocrine eConsult requests during the pilot phase of our service launch. Of these eConsults 46% were related to thyroid conditions, 29% to diabetes, 15% to calcium and bone metabolism, 6% to adrenal conditions, and 4% to reproductive hormone derangements (Table 1).

Table 1: Endocrine eConsult totals by referral category.

| Referral Category           | Number of EConsults | Percent of Total |
|-----------------------------|---------------------|------------------|
| Thyroid related             | 24                  | 46%              |
| Diabetes                    | 15                  | 29%              |
| Calcium and bone metabolism | 8                   | 15%              |
| Adrenal                     | 3                   | 6%               |
| Reproductive Hormones       | 2                   | 4%               |



### 3.2 eConsult Response Time

Median response time to eConsult requests was one day. During the same timeframe patients waited an average of up to 25 days for their first consultation in a hospital endocrinology Medicaid clinic.

### 3.3 PCP Closeout Survey Responses

Twenty-four responses to the referring provider closeout survey were submitted, representing a 46% completion rate. Responses to a survey question asking PCPs to indicate the result of eConsult appear in [figure 3](#). Referral was originally

contemplated but avoided as a result of the eConsult according to 62% of respondents. Twenty-one percent of respondents answered that while referral was originally contemplated and was still needed, the eConsult provided useful information. Seventeen percent of providers endorsed that referral was not originally contemplated, and was still not needed, but the eConsult led to a more effective visit. No providers indicated that there was a lack of benefit to the eConsult. In no cases did the referring provider indicate that there was no benefit to the eConsult, or that the eConsult resulted in a referral though one was not originally contemplated.

Referral was originally contemplated but is now avoided

Referral was originally contemplated and still needed, but this eConsult provided useful information

Referral was not originally contemplated, and is still not needed, but this eConsult resulted in a referral

Referral was not originally contemplated, and is still not needed, but this eConsult leads to a more effective visit

There was no benefit to this eConsult

Other

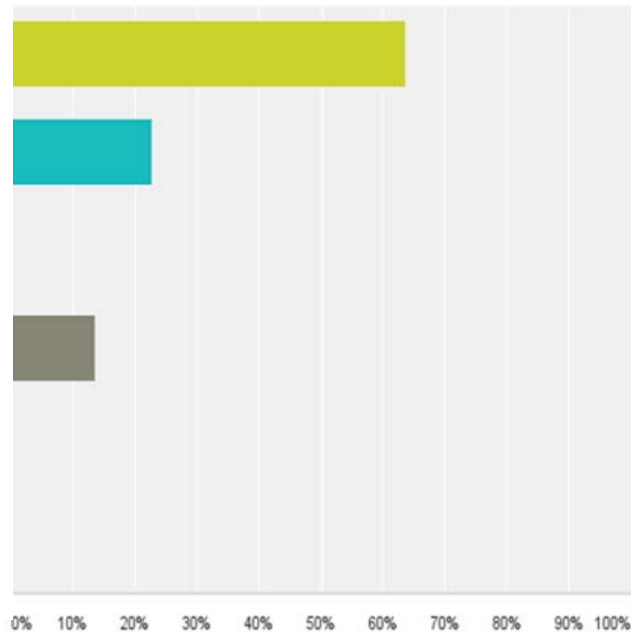
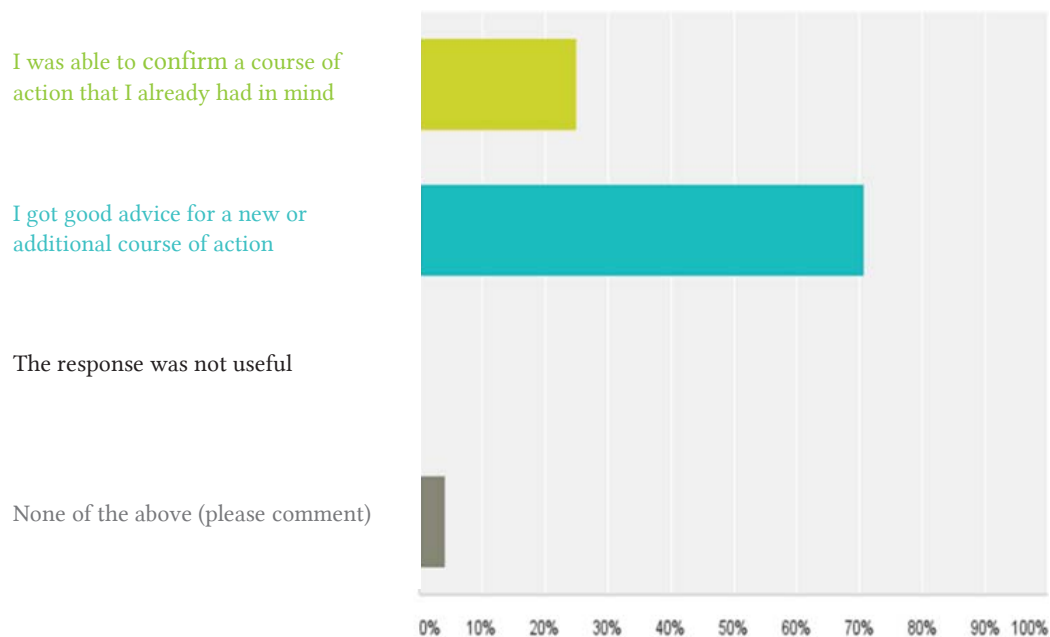


Figure 3: Responses to a survey question asking referring providers to indicate result of eConsult.

In response to the second survey question, seventy percent of respondents indicated that they got good advice for a new or additional course of action, and 25% answered that they were able to confirm a course of action that they already had in mind ([figure 4](#)). No providers indicated that the response was not useful. One respondent selected the option “none of the

above” and commented, “This was a helpful tool for resident (and attending) education regarding a common endocrinology topic; it is a great way to learn from specialist colleagues.”



**Figure 4: Responses to a survey question asking referring providers to further elaborate on the outcome of the eConsult.**

#### 4 Discussion

Based on current trends, with 62% of respondents indicating that formal consultation was averted, our endocrine eConsult service could reduce a significant volume of unnecessary, low complexity endocrine referrals, and facilitate expediting more urgent visits. Furthermore, costs of care delivery are expected to fall, as well as costs to patients represented by reduced co-pays, travel expenses, and missed work hours. These positive effects have the potential to be substantial as an expanded eConsult service becomes available across the Mount Sinai Health System, which employs more than 6,500 physicians and spans 7 hospital centers and 300 community locations in the New York metropolitan area. This experience provides a path towards scalability to other specialties and sites throughout our hospital system.

In the pilot phase of our endocrinology eConsult service, improved access to endocrinologist advice was demonstrated with a median response time of one day. During the same timeframe, patients waited up to an average of 25 days to obtain an initial face to face appointment with endocrinologists in training in a Medicaid hospital clinic. Rapid response time was prioritized given that it was endorsed as most the important feature of an eConsult service by referring PCPs.

The percent of eConsults leading to face to face visits being averted exceeded those described by endocrinologists in the University of Ottawa. The group, who completed 464 eConsults between 2011 and 2015, reported that 44% of originally contemplated formal consultations were avoided [2]. This divergence may be attributed to differences in patient populations and provider practices, as well as our lower eConsult volume to date, which will increase as our service

becomes more widely available to vulnerable populations. Our unique emphasis on providing a detailed rationale for recommendations may also give the referring provider more confidence to manage certain endocrine conditions with eConsult support alone. An explanation of the rationale for recommendations was ranked as the second most important feature that PCPs desired from our service according to our prelaunch survey, and therefore our explanations were comprehensive, with references to guidelines and relevant literature.

Compared to published data from other institutions, our endocrine eConsult service experienced unique referral rates for specific conditions, with more questions related to diabetes. At the University of Ottawa 36% of eConsults were for thyroid related questions, 18% for bone metabolism, 12% for diabetes, 9% for reproductive hormones, and 25% were for other conditions or were unspecified [2]. At the University of California at San Francisco, where 158 eConsults were completed in the first year of the program, 5.7% of eConsults were completed using their diabetes referral template [4]. By contrast, twenty-nine percent of our endocrine eConsults to date have been for diabetes, the referral category which is most likely to drive measurable and attributable improvements in outcomes. We encourage more endocrine eConsults overall, and specifically for diabetes, with the goal of reducing hemoglobin A1c levels, diabetes related complications, and associated hospital admissions, while controlling costs. The number of people with diabetes has almost quadrupled since 1980 to 422 million adults in 2016, or 8.5% of the population worldwide [5]. This epidemic has major health and socioeconomic impacts and eConsultation can be part of the solution.

## A. Appendix

### A.1 Introduction

### A.2 Methods

A.2.1 *eConsult Program Development*

A.2.2 *EConsult Evaluation*

### A.3 Results

A.3.1 *Characterization of eConsult Requests*

A3.2 *eConsult Response Time*

A3.3 *PCP Closeout Survey Responses*

## 4. Discussion

## 5. References

### References

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