
The Role of Photography in Increasing Efficiency of Dermatologic Inpatient Consulting Service

Ritu Swali

University of Nebraska Medical Center

Tyler D. Evans

University of Nebraska Medical Center

Dillon Clarey

University of Nebraska Medical Center

Corey Georgesen

University of Nebraska Medical Center

Ashley Wysong

University of Nebraska Medical Center

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Introduction:

Inpatient dermatology consultations can bring a mixed bag of pathologies. Due to the highly specialized nature of dermatology and the lack of dermatologic training in medical school, the dermatologic team is consulted for matters that range from non-urgent to pressing. Pictures are a critical component of dermatology and greatly aid in the diagnosis of cutaneous diseases. In the inpatient setting, pictures can help streamline diagnosis and prevent unnecessary tests or procedures. The purpose of this study was to evaluate for the presence of pictures in patients' chart after a dermatology consult had been placed through EPIC at the University of Nebraska Medical Center (UNMC).

Methods:

Baseline data was gathered for two months in regards to the presence or absence of pictures in patients' charts upon consultation of the UNMC academic dermatology service. At the two month mark, a prompt was added to the EPIC order for dermatology consultation stating, "Are there pictures in the chart?" This prompt required the consulting team to check 'yes' or 'no' before proceeding with signing the electronic order. Data was then gathered after two months following initiation of the prompt.

Results:

In the baseline two months, 15/33 (45.4%) consults contained photographs. In the two months following the prompt, "Are there pictures in the chart?", 57/71 (80.3%) of consult orders placed contained a photograph. A Chi-squared analysis was performed and revealed a significant difference (Chi-squared statistic 12.823, p-value < 0.001) between the number of pictures placed in the chart with consult order before and after prompt.

Conclusion:

By adding a prompt in the EPIC order questioning picture availability, a significant increase was seen in pictures taken by consulting teams. This can help improve patient care by decreasing time to diagnosis, preventing unnecessary testing or procedures, and practicing cost-efficient medicine.

Keywords

Health Communication, Inpatient Dermatology, Photography, Medical Efficiency

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Cover Page Footnote

Thank you to all of the primary services who consult dermatology on a daily basis. We encourage continued photography use to help care for our patients. Thanks for all you do!

The Role of Photography in Increasing Efficiency of Dermatologic Inpatient Consulting Service

Ritu Swali¹, Tyler D. Evans¹, Dillon Clarey¹, Corey Georges¹, Ashley Wysong¹

¹University of Nebraska Medical Center, College of Medicine, Department of Dermatology

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Introduction

Inpatient dermatology consultations can bring a mixed bag of pathologies. Due to the highly specialized nature of dermatology and the lack of dermatologic training in medical school, the dermatologic team is consulted for matters that range from non-urgent to pressing. With a busy outpatient clinic running contiguously, the need to triage the inpatient service and consolidate daily rounds to the afternoon is essential. The use of photography with inpatient consults enables the dermatologist the opportunity to view the patient's

skin alongside the principle reason for consultation. However, photographs are not always attached to the chart, at times making it challenging for the consulted dermatologist to determine whether the consult is truly urgent or if it may be seen after clinic or at a later time (Fig. 1).

To address this problem in greater detail, all inpatient consultations received by dermatology in July and August 2020 were reviewed with the following SMART Aim:

SMART (Specific, Measurable, Achievable, Realistic, Timely) AIM: The goal of photography requirement is to increase the percentage of dermatologic consults with photographs attached by 20% in the academic year 2020 – 2021. We aim to improve the consulting process in order to bring the appropriateness of inpatient management with the goal of decreased hospital length of stay and enhancement of the overall patient/family and care provider experience.

Background

UNMC's dermatology department is located in the center of Omaha, Nebraska, and the university-based hospital serves a diverse population, representative of the national demographics.¹ As the only one of two academic tertiary care centers within a 200-mile radius, the hospital is acclaimed for outstanding complex medical care in

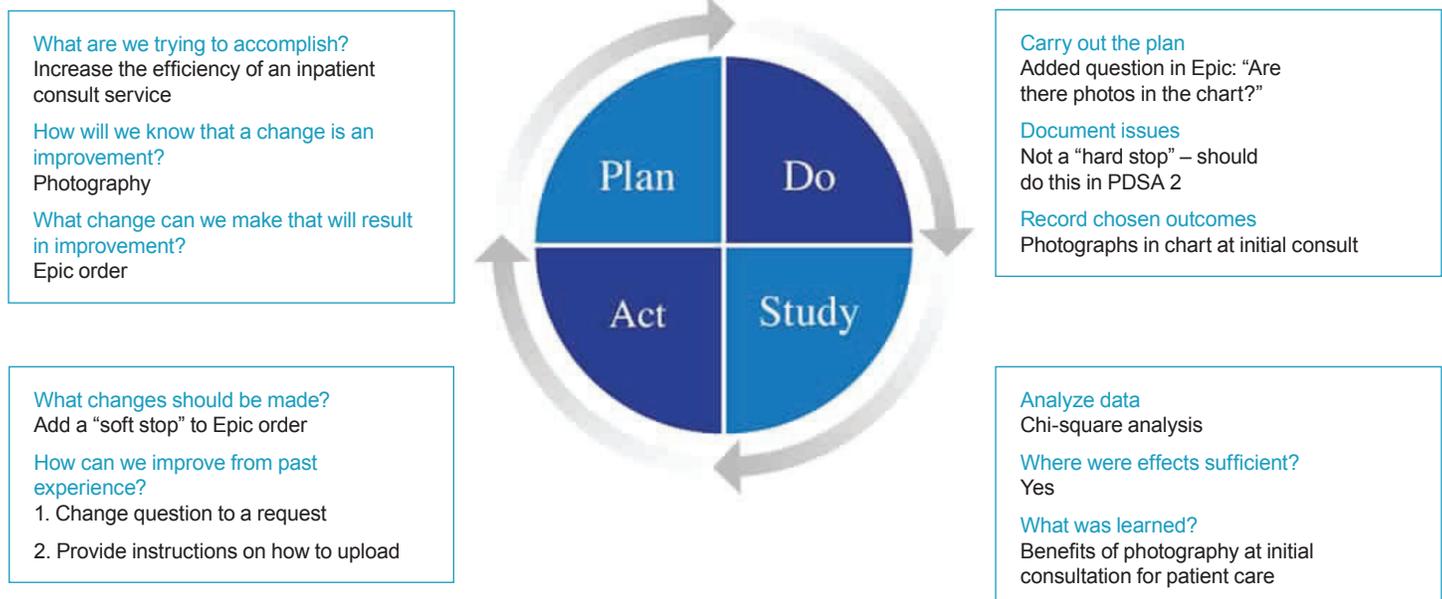


Figure 1. Model/framework for improvement using Plan-Do-Study-Act cycle.

transplantation, cancer, and infectious disease. The outpatient dermatology clinic and three satellite campuses attend to more than 100 patients per day, necessitating a fast-paced and highly efficient working environment. While the project team understood that the relatively new onset of the dermatology consulting service as well as the onset of a new intern class managing the inpatient primary services likely contributed to the problem, it was believed that the systems and processes could be improved for the benefit of both inpatient and outpatient dermatologic patient care.

Lack of dermatologic training in medical school is a well-established healthcare issue.² Misdiagnosis amongst primary admitting inpatient teams is commonly between 50-70%.³ A large majority of dermatologic inpatient consultations are diagnosed as common skin conditions that are better managed in an outpatient setting.⁴ Moreover, typical dermatologic outpatient clinics are busy and filled to maximum capacity, with provider schedules generally booked out for 3-6 months. Not only do referrals take time, they may be cost-prohibitive.⁵ At teaching hospitals, average handling time and time to response for the attending, after initial evaluation of the patient by trainees, are 44 minutes and 406 minutes, respectively.⁶ Inappropriate referrals reduce the ability of providers to assess emergent inpatients cases swiftly, as well as urgent outpatient referrals.⁵

Photography has shown to be an effective modality for teledermatology for high-complex care hospital patients when compared to standard face-to-face visualization.⁵⁻¹⁰ Studies at teaching hospitals assessing accuracy of dermatology residents' diagnoses based on photography have further elucidated its usefulness.⁷

Methods

Measurement

For baseline, data collections were based off two months of inpatient consults to gain an overview. For every consult that was placed, data were recorded in regard to: whether there were pictures in the chart at time consult order was placed, were photos adequate enough to render a diagnosis, was patient able to be discharged to clinic, and if so, were they discharged that same day to clinic. This same data was then collected for two months following addition of the prompt, "Are there pictures in the chart?"

Design

The project team consisted of the three resident physicians from the dermatology department. Knowing that current providers from primary care teams are not accustomed to working with dermatology colleagues as the department is relatively new, we wanted to standardize a process to encourage referring providers to take photographs.

Our concept focused on creating a mandate for photography prior to consulting the service. After consideration of different mediums (i.e., PerfectServe, verbal), we chose the Epic electronic medical record (EMR), mainly due to the ability of the software to integrate this step and HIPAA compliance. Additionally, the process of placing a "consult order" is already a well-established norm by the primary inpatient teams.

We used process mapping to demonstrate how this question could streamline the existing service, as shown by the above diagram.

By providing photographs for the resident physicians to evaluate, the ability to triage level of urgency of in-person evaluation can be made more efficient. It similarly eliminates the time resident physicians are taking away from their outpatient clinic patients.

Strategy

Plan, do, study, act (PDSA) cycles were used to trial the improvement interventions and assess the impact on availability of photography for inpatient consults. The project team reviewed all inpatient consults daily, allowing for continuous evaluation of the impact of interventions and for the project to be reactive to any compliance issues that were identified.

PDSA: We started implementing changes to remind primary teams to upload photos prior to placing consult orders. This was done by collaboration with the UNMC information technology (IT) team to modify Epic software so that a simple "yes/no" question was added to the "Consult Inpatient Dermatology Academic" order asking: "Are there pictures in the chart?" (Fig. 2)

This achieved an increase in the rate of photography to 80.3 % (57/71). Feedback received indicated that since this intervention allowed for placement of the consult order regardless of the answer choice, primary team providers felt it was inconvenient to take an extra optional step due to their workload and time constraints. Additionally, numerous providers were not familiar with the ease of photography through Haiku.

Results

In the baseline two months, 15/33 (45%) consults contained photographs. Of those that did contain photographs, 9/15 (60%) contained sufficient photographs to enable for an adequate rendering of a diagnosis. When considering both the patient's current hospital status and reason for dermatologic consult, it was felt that 25% of patients could have been discharged to clinic for management of their dermatologic condition. No patients were discharged to clinic over this time period.

In the two months following the prompt, 'Are there pictures in the chart', 57/71 (80%) of consult orders placed contained a photograph. Of these 57 photos, 34 (60%) were felt to be adequate enough to render a diagnosis. It was felt that of these 71 consults, 8 (11.26%) could have been discharged to clinic for

The screenshot shows the Epic 'Inpatient consult Dermatology Academic' form. At the top right are 'Accept' and 'Cancel' buttons. The form contains the following fields and options:

- Provider: Dermatolog
- Specialty: (empty)
- Priority: Routine (selected), STAT
- Reason for Consult? (text input)
- Are there pictures on the chart? (Yes/No buttons)
- Consulting physician notified? (Yes/No buttons)
- Consult directed to (will be added to Treatment Team): (text input)
- Comments: + Add Comments (F6)
- Reference Links: 1. PerfectServe Link
- Process Inst.: For all STAT or EMERGENT consults, the ordering provider is required to check "yes" and call the consulting provider. If a nurse is placing a STAT or URGENT consult order through a telephone order, the nurse is responsible for communicating the consult order to the consulting physician.

At the bottom left are 'Next Required' and 'Link Order' buttons. At the bottom right are 'Accept' and 'Cancel' buttons.

Figure 2. Photograph of Epic Order set when consulting Dermatology.

Table 1.

Comparison of photos available to be evaluated by Dermatology on consultation before and after prompt was added.

	Photos Present in Chart	No Photos in Chart	Adequate Photos for Dx	Discharged to Clinic on same day of consult (# of patients)
Pre- Question	15 (45%)	18 (55%)	9 (60%)	0
Post- Question	57 (80%)	14 (20%)	34 (60%)	3

management, with three patients eventually being discharged on the same day of consult to clinic (Table 1).

A Chi-squared analysis was performed and revealed a significant difference (Chi-squared statistic 12.823, p-value < 0.001) between the number of pictures placed in the chart with consult order before and after prompt.

Discussion

Several lessons were learned from this QI project. Visual examination is vital for rendering of a dermatologic diagnosis. Despite this, 55% of consults in our baseline two months did not contain photographs. Sometimes, the reason for dermatologic consult was not entirely related to the patient's primary reason for admission and could be seen less urgently. The dermatologic consult may not have been of the utmost importance for the care of the patient, possibly explaining why there were not photographs in the chart. On the other end of the spectrum, several of these patients were admitted for serious dermatologic conditions needing urgent care. Photograph taking can be a time intensive process (loading Epic, taking photos, labeling photos, uploading photos), however, this has become less time intensive with app-based EMRs and smart device usage in hospitals. Further, many consulting providers and staff were not aware of the ability to send photographs thru the Epic EMR. This presented more of a technological challenge rather than a time constraint.

The necessity of a "hard stop" if there were not photographs was debated by our team. From our end, it is easy to say that we would very strongly prefer that photographs be in the chart at the time of consult. However, we did not want to decrease the number of consults we received if providers were not able or did not know how to upload a photograph as part of the consult process.

Conclusion

High-resolution, quality photographs are critical for dermatologists when evaluating a patient electronically. The addition of photographs with dermatologic consults streamlines the ability to render a diagnosis and improve patient care.⁵⁻¹⁰ Despite this, before a prompt was added to the consult order, the majority of consulting physicians did not provide a picture with the consult. Our study revealed how a simple prompt of "Are there pictures in the chart?" can significantly increase consulting physician compliance with pictures. This ultimately led to several patients being discharged to clinic, rather than admitted to the hospital, where they were able to be cared for outside of a hospital setting. We recognize that dermatology is a unique specialty and no other specialty on our campus requires pictures with consults. This may have played a role in the low number of providers placing a picture with the consult order before the prompt was added. As this was the first year of the dermatology residency here at UNMC, a learning curve was to be expected. Many other factors could have led to low number of photos initially, such as time constraint, familiarity with adding pictures to the chart, and knowledge of dermatology. This study could be beneficial to other specialties looking to streamline their consult order set. Further research is warranted to evaluate if different prompts lead to more compliance with consult orders, and if a 'hard stop' would be beneficial to implement when placing a consult. ■

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