Dermatology discharge continuity clinic enhances resident autonomy and insight into transitions-of-care competencies: a cross-sectional survey study

Jasmine Rana MD, Arash Mostaghimi MD MPA MPH

Affiliations: Department of Dermatology, Brigham and Women's Hospital and Harvard Medical School, Boston, Massachusetts

Corresponding Author: Arash Mostaghimi, MD, Department of Dermatology, Brigham & Women's Hospital, Harvard Medical School, 75 Francis Street, PBB-B 421, Boston, MA 02115, Tel. 617-525-8335 Fax. 617-525-3177, E-mail: amostaghimi@bwh.harvard.edu

Abstract

Dermatology residents perform consults on hospitalized patients, but are often limited in their ability to follow-up with these patients after discharge, leading to inadequate follow-up and understanding of post-discharge transitions of care. In 2013, a discharge continuity clinic (DCC) staffed by the inpatient consult dermatology resident and attending dermatologist was established at one of the four adult hospital sites residents rotate through in the Harvard Combined Dermatology Residency Program. Resident perceptions about the DCC and their educational experience on inpatient consult rotations with a DCC and without a DCC were obtained using a cross-sectional survey instrument in June 2016. Self-reported data from a multi-year cohort of dermatology residents (n = 14 of 20, 70% response rate) reveals that the DCC enabled resident autonomy and resident satisfaction in care of their patients, insight into the disease-related challenges and the broader social context during transitions of care from inpatient to outpatient settings, and more enriching learning experiences than inpatient consult rotations without a DCC. Dermatology residents self-report participation in an inpatient consult rotation with a DCC supports their autonomy and achievement of post-discharge transitions-of-care competencies.

Keywords: discharge clinic; dermatology resident education; ACGME; competencies; continuity; longitudinal; autonomy; transitions of care

Introduction

Inpatient consults provide a unique and valuable learning experience for dermatology residents [1]. Unfortunately, a common scenario for a dermatology resident rotating through an inpatient consultation services is to provide an in-hospital evaluation for a patient they are unlikely to see again post-hospitalization. A lack of continuity in patient care may adversely affect health outcomes for the patient and negatively impact resident learning [1, 2].

In 2012, dermatology residents at our institution noted there were limited opportunities for post-discharge follow-up of patients seen on inpatient consults. To address this educational gap, we instituted a weekly discharge continuity clinic (DCC) for dermatology residents during inpatient consult rotations at one of the four main adult academic hospital sites at our program. We hypothesized that, compared to residents' experience on inpatient consult rotations without a DCC, residents would self-report (1) higher degrees of autonomy and satisfaction in the care of their patients, (2) more awareness of disease-related and social challenges during transitions of care, and (3) more enriching learning experiences overall during inpatient rotations with a DCC. Below we describe the DCC design, implementation, and initial evaluation of the DCC with cross-sectional resident survey data.

Methods

Setting and Participants

Dermatology residents in the Harvard Combined Dermatology Residency Program (HCDRP) in Boston,

MA, USA obtain their clinical training at five main Harvard affiliated hospitals: Beth Israel Deaconess Medical Center, Boston's Children Hospital, Brigham and Women's Hospital (BWH), Massachusetts General Hospital, and West Roxbury Veterans Association Hospital.

Residents rotate through inpatient consult services at all five clinical sites during post-graduate year (PGY) 2 and 3, with most inpatient rotations completed by the end of PGY2. In June 2016, there were a total of 27 residents in the HCDRP, 20 of which were eligible for this study (having completed the inpatient consult rotation with the DCC since its establishment at BWH in 2013 and at least one other inpatient consult rotation without a DCC for comparison).

Eight-week inpatient consultation rotations in the HCDRP provide dermatology residents with experience in evaluation and management of complex medical dermatology diagnoses, such as erythroderma, vasculitis, blistering disorders, adverse cutaneous drug reactions, bacterial and fungal infections, and cutaneous manifestations of systemic disease. All residents are required to attend a longitudinal ambulatory continuity clinic (one half-day weekly) during consult rotations, although this may be at a different clinical site. Depending on the volume of inpatient consults at each clinical site, residents also have one to three additional half days of ambulatory clinic per week scheduled at the same clinical site as the consult rotation.

Intervention

The DCC began in September 2013 and consists of a weekly half-day clinic at BWH staffed by the PGY2 or PGY3 dermatology resident rotating through the BWH inpatient consult rotation and an attending dermatology preceptor. Inpatient consult residents arranged ambulatory follow-up appointments in the DCC for hospitalized patients who required post-discharge evaluation. Patients unable to attend clinic on the day of the DCC or who needed to be seen earlier were scheduled in clinics on other days of the week; all attempts were made to allow the consult resident to see the patient on those days as well. In the DCC, after doing their initial clinical evaluation of a patient, residents staff the patient with an attending preceptor to make further management decisions.

Residents see an average of 15 consults a week and 3 to 6 inpatients in the DCC weekly. The remainder of the clinic is scheduled with a mix of routine and urgent appointments generally scheduled 24-48 hours prior to clinic. In contrast, post-discharge patients seen by inpatient consult residents at the clinical sites without a DCC are scheduled as available often without consideration of the resident's availability to see the patient.

Instrument development

A copy of the 10-question survey instrument administered is included in the appendix. The questions in the survey were adapted (with permission from author Edward Krupat, PhD, Harvard Medical School, Boston, MA, USA) from a non-validated questionnaire previously administered to medical students to evaluate a Harvard Medical School longitudinal integrated clerkship [3]. Modified survey questions were reviewed by the authors for face and content validity. Questions were organized into four constructs a priori: preparedness for practice (block 1), professional fulfillment (block 2), satisfaction with inpatient rotations with a DCC (block 3), and satisfaction with inpatient rotations without a DCC (block 4). Cronbach's alpha was calculated to assess survey reliability (i.e. internal consistency) using Stata version 14.0 (StataCorp, College Station, TX) for each block (i.e. construct). Because the instrument was not unidimensional, it did not make sense to report Cronbach's alpha for the instrument as a whole [4]. Reliability coefficients were acceptable (0.70 to 0.95), [4]: 0.93 for block 1, 0.78 for block 2, 0.86 for block 3, and 0.78 for block 4.

Analysis

This study was approved by the BWH Institutional Review Board. In June 2016 (the end of the HCDRP academic year), eligible PGY2, PGY3, and PGY4 dermatology residents (n = 20) were anonymously surveyed online using Qualtrics survey software (Qualtrics, Provo, UT) about their perceptions of adult inpatient consult rotations with and without a DCC using 5-point Likert scales. Participation was optional. In the administered survey, statements in Blocks 1 and 2 were presented in random order to minimize bias due to ordering effects. Blocks 3 and 4, which asked about resident perceptions of inpatient consult rotations with and without the DCC, were

also presented in a random order.

Descriptive statistics were used to summarize resident perceptions recorded in the cross-sectional survey data using Excel 2016 (Microsoft, Redmond, WA). A Wilcoxon signed-rank test for matched samples was performed to compare resident perceptions of inpatient consult rotations with a DCC and without a DCC (blocks 3 and 4) using Stata version 14.0 (StataCorp, College Station, TX). Responses to 5-point Likert scales (strongly agree to strongly disagree; never to almost always) in blocks 3 and 4 were analyzed as a continuous variable from 1 to 5 (where 5 = strongly agree or almost always). Because the visual inspection of histogram plots revealed data to be non-normal, median rating values for each question were reported (**Table 2**), [5].

Results

The overall response rate for the survey was 70% (n = 14 of 20). A multi-year cohort of PGY2, PGY3, and PGY4 residents responded (**Table 1**). Of these, 86% of respondents "somewhat agreed" or "strongly agreed" that inpatient rotations with a post-discharge clinic prepared them better for future clinical practice. The majority of respondents described their experience in the DCC as "rewarding" (100%), "empowering" (93%), "satisfying" (93%), "confidence-building" (86%), "autonomous" (71%), and "humanizing" (64%) as shown in **Figure 1**; less than half of the respondents characterized their DCC experience as "hectic", "stressful", "frustrating", or "marginalizing". The majority of residents (71%) "somewhat agreed" or "strongly agreed" that their patient load in the DCC was appropriate.

The median ratings of matched survey questions about inpatient rotations with a DCC clinic were statistically greater than median ratings about inpatient rotations without a DCC clinic as shown in **Table 2** ($p < 0.05$). The majority of respondents felt that inpatient rotations with a DCC "prepared me somewhat more" or "prepared me much more" than inpatient rotations without a DCC in nine out of ten post-discharge transitions-of-care competencies surveyed in **Table 3** with the exception of

Table 1. *Respondent characteristics.*

Variable	n = 14
Post-graduate year: number of residents (%)	
PGY2	7 (50)
PGY3	3 (21)
PGY4	4 (29)
Intent to practice in an academic hospital setting: number of residents (%)	
Definitely yes	8 (57)
Probably yes	4 (29)
Might or might not	2 (14)
Predicted (%) post-residency career breakdown: average ± SD	
In practice	54 ± 24
In teaching	13 ± 7
Doing research	27 ± 28
In administration	6 ± 7
Predicted (%) post-residency clinical breakdown: average ± SD	
Outpatient clinics	73 ± 18
Inpatient consult services	29 ± 17

Table 2. *Median ratings (with interquartile range, IQR) for matched survey items about inpatient rotations with a DCC versus without a DCC. Responses to a 5-point Likert scale were analyzed as a continuous variable (1-5) where 5 = strongly agree or almost always.*

Question	With DCC Median rating (IQR)	Without DCC Median rating (IQR)	p-value α = 0.05
How often were you involved in seeing hospital patients you treated after their discharge?	4 (3-4)	2 (1-3)	0.004
How often were you involved in establishing relationships with patients that you would term meaningful?	4 (3-4)	3 (2-3)	0.016
How often did you feel you made a real difference in the health or well-being of your patients?	4 (4-4)	3 (3-4)	0.009
Making an outpatient follow-up appointment for patients after discharge [with OR without a DCC] was uncomplicated.	5 (4-5)	2 (1-4)	0.009
Overall, inpatient rotations [with OR without a DCC] were a valuable experience.	5 (5-5)	4 (3-5)	0.009

Table 3. *Self-reported achievement of transitions-of-care competencies. Aggregate responses to the question, "Compared to inpatient rotations WITHOUT a dedicated post-discharge clinic, to what extent do you believe your experience in inpatient rotations WITH a dedicated post-discharge clinic have prepared you…".*

Statement	ACGME core competency domaina	Prepared me equally (%)	Prepared me somewhat or much more (%)
To understand the importance of follow-up with patients after discharge	Systems-based practice	7	93
To work as a team with other inpatient healthcare providers	Interpersonal and communication skills	50	50
To work as a team with other outpatient healthcare providers	Interpersonal and communication skills	21	79
To anticipate disease-related complications facing patients after they leave the hospital	Systems-based practice	7	93
To anticipate challenges related to the social determinants of health facing patients after they leave the hospital	Systems-based practice	14	86
To respond to patient questions and concerns	Interpersonal and communication skills	21	79
To see how post-discharge transitions of care (e.g. discharge to rehab, outpatient follow-up) affects patients and their families	Systems-based practice	21	79
To practice and make patient care decisions autonomously	Patient care	14	86
To feel confident providing patient care without attending supervision	Patient care	21	79
To practice in an inpatient dermatology consult service after residency	Patient care	21	79

aDesignation of ACGME core competency domains was done by the authors using the ACGME definition of the six core competencies [12]; in cases where a statement fell under multiple ACGME core competency domains, the primary domain felt to have the most alignment by the authors was listed.

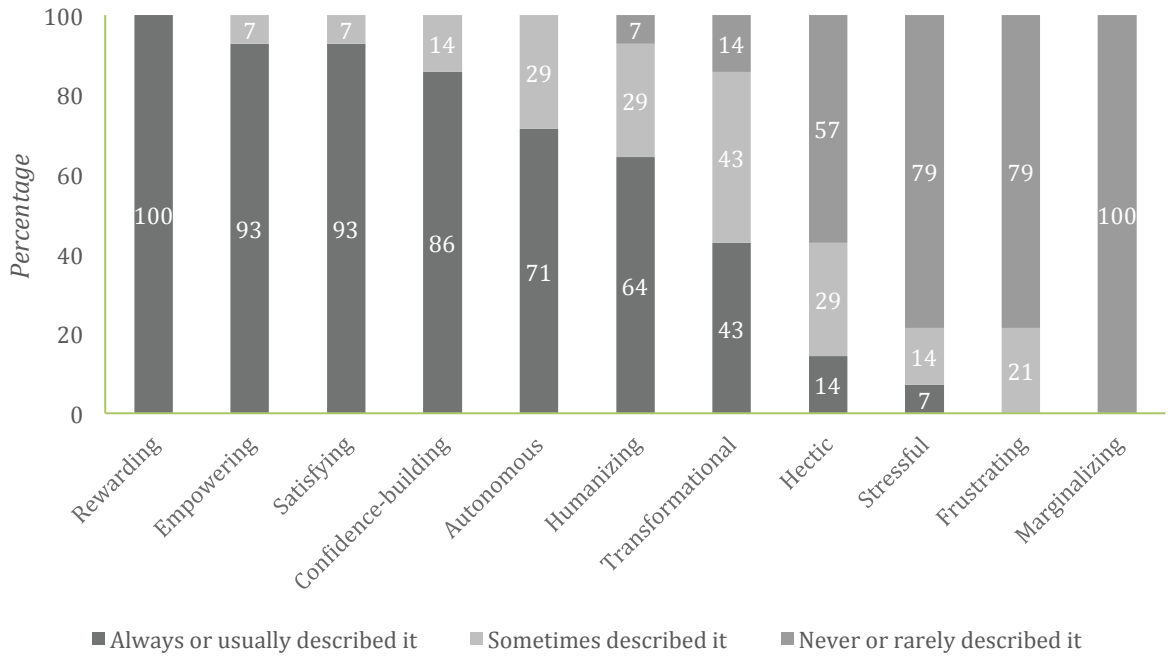

Figure 1. *Residents' description of their experience in the DCC. Ratings for each adjective were given on a 5-point Likert scale from "never described it" to "always described it" by each respondent (n=14) to the question: "how well would you say the following adjectives describe your experience as a provider in the dedicated post-discharge follow-up clinics during your inpatient rotations?".*

preparedness "to work as a team with other inpatient healthcare providers."

Discussion

Post-discharge continuity clinics (DCCs) in internal medicine residency programs have previously been shown to have educational value for residents [6, 7, 8], but to our knowledge, this is the first published report of a post-discharge continuity clinic (DCC) for residents in a medical subspecialty. Cross-sectional self-report data from dermatology residents reveal high degrees of resident satisfaction and feelings of autonomy and empowerment in care of their patients during an inpatient consult rotation with a DCC (**Figure 1** and **Table 2**). This data also suggests residents were feasibly able to have more longitudinal patient follow-up opportunities and valuable learning experiences during their consult rotation with a DCC compared to consult rotations without a DCC (**Table 2**). Importantly, residents also reported feeling more prepared to, with the exception of working on teams with inpatient providers (50% reported feeling "equally" prepared to do this on rotations without a DCC), anticipate and understand transitions-of-care challenges after rotating through an inpatient consult rotation with a DCC relative to inpatient consult rotations without a DCC (**Table 3**).

As one dermatology resident explained in the free-response part of the survey: "the ability to see patients in follow up is critical in our autonomy as residents. In post-discharge clinic, we learn how quickly a disease responds to therapy, the natural progression of disease, side effects of medications, and how to think critically about manipulating therapy. Plus, it is incredibly humanizing and rewarding to see patients in clinic after they have been discharged and identify you as the provider who cared for, and healed them."

Importantly, high levels of resident autonomy and personal fulfillment can, according to self-determination theory (SDT), help foster intrinsic motivation toward the practice of medicine, which is often undervalued in medical curricula [9]. Residents' descriptions of the DCC in **Figure 1** are also notable for the fact that less than half of the respondents perceived the DCC as "hectic", "stressful", or "frustrating", suggesting that gains in autonomy, for example, are not at expense of having a safe and supportive learning environment. Although patient-related and skill-based outcomes are idealized in medical education assessment, attitudinal data as

in our study can be valuable in designing optimal educational experiences for residents and medical students [10]. Given the rising burnout rate among clinicians [11], an over-reliance on "hard" outcomes should not be at the expense of overlooking trainees' overall well-being.

Personal and professional fulfillment aside, the competencies listed in **Table 3** are well-aligned with selected ACGME core competencies for residents [12], particularly "systems-based practice", "patient care", and "interpersonal and communication skills". Although more research on educational continuity interventions in graduate medical education needs to be performed, research about longitudinal educational clinical clerkships in medical school (in which students form longitudinal learning relationships with patients across inpatient and outpatient settings) suggests continuous patient learning experiences may enrich students' communication skills, confidence, and knowledge of the broader psychosocial determinants of health [3, 13]. Likewise, in this single-institution study, dermatology residents self-reported similar themes (**Table 3**) that they associated with the DCC during their inpatient consult rotations. All the available evidence suggests that "continuity" in education reform in undergraduate and graduate medical education generally has positive affective and cognitive learning benefits for trainees.

These results must be interpreted in the context of our study design. Although the survey instrument was adapted from a pre-existing instrument which evaluated a similar intervention to enhance its validity, it lacks criterion and construct validity. With regard to reliability, each pre-determined survey domain (blocks 1, 2, 3, and 4) had an acceptable level of internal consistency. Importantly, the outcomes reported in this study are attitudinal and process outcomes. We were unable to capture any resident psychomotor outcomes (e.g. demonstrated skill, competence) or system and patient-related outcomes (e.g. DCC patient volume and characteristics, readmission rates, etc.) related to our intervention. Although this was a small-scale preliminary analysis of the overall educational value of the DCC, this study reflects a near comprehensive cross-section of a multi-year cohort of dermatology residents at our program. Generalizability of the study may be limited by unique characteristics of clinical sites and residents at our institution. Notably, this study design also does not allow us to understand what, if any, confounding elements may have enhanced the DCC at BWH.

Conclusion

Dermatology residents self-reported enhanced autonomy and achievement of post-discharge transitions-of-care competencies after completing an inpatient consult rotation with a DCC. We demonstrate a DCC during an inpatient consult rotation in a medical subspecialty residency program can support affective (satisfaction, autonomy, confidence, empowerment) and cognitive (understanding of transitions-of-care challenges) learning objectives aligned with 3 out of 6 ACGME core competency domains ("interpersonal and communication skills," "patient care" and "systems-based practice").

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Abbreviations

DCC - Discharge continuity clinic
HCDRP - Harvard Combined Dermatology Residency Program
BWH - Brigham and Women's Hospital
PGY - Post-graduate year
ACGME - Accreditation Council for Graduate Medical Education

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BLOCK 1

Compared to inpatient rotations WITHOUT a dedicated post-discharge clinic, to what extent do you believe your experience in inpatient rotations WITH a dedicated post-discharge clinic have prepared you:

	Prepared me much less	Prepared me somewhat less	Prepared me equally	Prepared me somewhat more	Prepared me much more
To understand the importance of follow-up with patients after discharge	o	o	o	o	o
To work as a team with other inpatient healthcare providers	o	o	o	o	o
To work as a team with other outpatient healthcare providers	o	o	o	o	o
To anticipate disease-related complications facing patients after they leave the hospital	o	o	o	o	o
To anticipate challenges related to the social determinants of health facing patients after they leave the hospital	o	o	o	o	o
To respond to patient questions and concerns	o	o	o	o	o
To see how post-discharge transitions of care (e.g. discharge to rehab, outpatient follow-up) affect patients and their problems	o	o	o	o	o
To practice and make patient care decisions autonomously	o	o	o	o	o
To feel confident providing patient care without attending supervision	o	o	o	o	o
To practice in an inpatient dermatology consult service after residency	o	o	o	o	o

BLOCK 2

How well would you say the following adjectives describe your experience as a provider in the dedicated post-discharge follow-up clinics during your inpatient rotations?

	Never described it	Rarely described it	Sometimes described it	Usually described it	Always described it
Hectic	o	o	o	o	o
Rewarding	o	o	o	o	o
Empowering	o	o	o	o	o
Marginalizing	o	o	o	o	o
Confidence-building	o	o	o	o	o
Humanizing	o	o	o	o	o
Stressful	o	o	o	o	o
Satisfying	o	o	o	o	o
Frustrating	o	o	o	o	o
Transformational	o	o	o	o	o
Autonomous	o	o	o	o	o

BLOCK 3

Please answer the following questions about your inpatient rotations WITH a dedicated post-discharge follow-up clinic.

	Never	Rarely	Sometimes	Often	Almost always
How often were you involved in seeing hospital patients you treated after their discharge?	o	o	o	o	o
How often were you involved in establishing relationships with patients that you would term meaningful?	o	o	o	o	o
How often did you feel you made a real difference in the health or well-being of your patients?	o	o	o	o	o

(Continued)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
My patient load in the dedicated post-discharge follow-up clinic was appropriate	o	o	o	o	o
Making an appointment to see a patient in the dedicated post-discharge clinic was uncomplicated	o	o	o	o	o
Overall, inpatient rotations WITH a dedicated post-discharge clinic were a valuable experience	o	o	o	o	o

BLOCK 4

Please answer the following questions about your inpatient rotations WITHOUT a dedicated post-discharge follow-up clinic.

	Never	Rarely	Sometimes	Often	Almost always
How often were you involved in seeing hospital patients you treated after their discharge?	o	o	o	o	o
How often were you involved in establishing relationships with patients that you would term meaningful?	o	o	o	o	o
How often did you feel you made a real difference in the health or well-being of your patients?	o	o	o	o	o

(Continued)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Making an outpatient follow-up appointment for patients after discharge was uncomplicated	o	o	o	o	o
Overall, inpatient rotations WITHOUT a dedicated post-discharge clinic were a valuable experience	o	o	o	o	o