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Continuity of care in dermatology residency programs in the United States

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Abstract

Purpose: As established by the Accreditation Council for Graduate Medical Education (ACGME), dermatology residents in the United States must participate in continuity clinic. This requirement may be achieved through multiple means, allowing for program variation. To better assess continuity clinic's role in resident learning, more data on this component of graduate medical education is needed. **Methods:** An anonymous online survey was distributed via the American Board of Dermatology listserv to all U.S. dermatology residents. Continuity clinic organization, setting, frequency, and patient and preceptor characteristics were assessed; resident satisfaction and learning were compared. **Results:** Of 231 responses, 7.8% reported continuity clinic daily, 77.1% weekly, 9.1% every other week, 3.0% monthly, 0.4% once every several months, and 2.2% only during certain blocks. Of the clinics reported, 80.1% were "resident-run with attending" and 11.3% were attending-run. The rest were "resident-run with no attending" (0.9%), both resident and attending-run (3.0%), or "other" (4.8%). Trainees in resident-run clinics (with attendings) reported greater continuity of care than those in attending-run clinics ($p < 0.001$). Residents reported better teaching with attending presence during patient encounters than when attendings were present only if concerns were raised ($p < 0.01$).

Introduction

Continuity of care is a model of patient care in which recurrent visits take place between the same patient and healthcare provider over an extended period of time [1, 2]. This type of model has been associated with better longitudinal follow-up, improved patient adherence, and overall increased satisfaction for both healthcare providers and patients [3-7].

As a result, many graduate medical education programs have incorporated continuity clinics into their curricula, and the Accreditation Council for Graduate Medical Education (ACGME) has established requirements for continuity of care programs in residencies. According to the ACGME Program Requirements for Dermatology, U.S. residents must follow "a core group of individual patients throughout the majority of the program at a minimum of a once-monthly continuity of care clinic setting, as well as in follow-up of inpatients and patients seen as consults, or during night or weekend call" [8]. However, as these guidelines do not outline specific requirements, there may be potential for wide variation in implementation of continuity clinics among various residency programs.

Although studies have been performed on continuity clinic structure in residency programs for pediatrics, internal medicine, and other specialties [1, 9-14], there are no recent reports on the role of continuity clinic in U.S. dermatology programs. As continuity of care has become an integral part of medical practice, it is crucial to evaluate the impact and effectiveness of these programs in promoting the development of residents' clinical skills. Therefore, we seek to

Keywords: continuity, dermatology, graduate medical education, leadership, residency

better understand the role of continuity clinic in dermatology residency programs by describing their structure and characteristics, as well as their impact on resident satisfaction and overall learning.

Methods

An anonymous online survey was created with SurveyMonkey and distributed via the American Board of Dermatology (ABD) listserv to all dermatology residents in the U.S. and Canada. Our research plan received approval from the UCSD Institutional Review Board.

We assessed the following: respondent year and gender, clinic frequency, clinic location, clinic type, patient load, attending presence, frequency of surgical procedures, and use of systemic medications in continuity clinic. In addition, we evaluated patient and preceptor characteristics clinical abilities residents believed were enhanced through continuity clinic experience, and resident satisfaction.

Survey questions that used a five-point Likert scale were dichotomized into "do not agree" (responses 1, 2, and 3) and "agree" (responses 4 and 5). Responses to survey questions that asked about frequency of surgical procedures were divided into three groups: never/rarely, sometimes, and often/always. Data was analyzed via the independent samples t-test for continuous variables and Pearson's chi square/Fisher's exact test for binary variables, and logistic regression for multivariable analysis in SPSS Version 22. P values ≤ 0.05 were considered statistically significant.

Results

Of 1298 surveys sent, 254 responses were received (19.6% response rate), of which 96.9% (n=246) were from the U.S. and 1.6% (n=4) from Canada. Owing to the low number of Canadian respondents, we excluded them from our data analysis. We also excluded those who reported no continuity clinic (8.3%, n=21); thus, our final data analysis was performed using 231 responses.

Of these 231 responses, 24.7% (n=57) were from residents in their first year of training, 36.4% (n=84) in their second year, and 38.5% (n=89) in their third year (**Table 1**).

In terms of clinic frequency, 77.1% (n=178) occurred weekly, 9.5% (n=21) every other week, 7.8% (n=18) daily, and 3.0% (n=7) monthly (**Table 1**). The number of daily continuity clinics may be under-reported and those that occur weekly may be over-reported, as we did not initially include "daily" as an answer choice during the first three days the survey was made available to respondents. The majority i.e. 62.3% (n=144) of dermatology continuity clinics were university-based, followed by private clinics or hospitals, Veterans Affairs (VA)-associated medical facilities, county clinics, and military-based clinics (**Table 1**).

In general, with increasing year of training, residents reported a greater patient load per half day (**Table 2**).

The majority of respondents answered that they "never/rarely" performed surgical procedures during continuity clinic (52.4%, n=121), with 31.2% (n=72) responding "sometimes," and 16.0% (n=37) responding "often/always."

Most respondents (50.6%, n=117) reported that they "always/often" used systemic medications in continuity clinic, with 36.8% (n=85) responding "sometimes" and 12.6% (n=29) responding "never/rarely." Adequate diversity of medical conditions seen in clinic was reported by 80.5% (n=186) of respondents and 87.9% (n=203) reported adequate complexity of medical conditions seen in clinic (**Table 3**).

Overall, 71.0% (n=164) respondents reported that their continuity clinic patients came from a broad range of socioeconomic conditions (**Table 3**).

For clinic type, 80.1% (n=185) of respondents reported that their clinics were run by residents with attending supervision, 11.3% (n=26) were attending-run, 0.9% (n=2) were resident-run without attendings, and 3.0% (n=7) were both attending and resident-run (**Table 4**).

During patient encounters, 68.0% (n=157) of respondents reported seeing the patient with the attending physician present in the exam room, 7.4% (n=17) only had the attending review patients with them outside the exam room after the encounter,

Table 1: Demographics of respondents and continuity clinic characteristics.

		Respondents n=231 (%)
Year of Residency	1 st year ^a	57 (24.7%)
	2 nd year ^a	84 (36.4%)
	3 rd year ^a	89 (38.5%)
Sex	Male	72 (31.2%)
	Female	158 (68.4%)
Clinic Frequency	Weekly	178 (77.1%)
	Every other week	21 (9.1%)
	Once monthly	7 (3.0%)
	Once every several months	1 (0.4%)
	Only during certain blocks	5 (2.2%)
	Daily*	18 (7.8%)
Clinic location	VA	23 (10.0%)
	County clinic	18 (7.8%)
	Private clinic/hospital	36 (15.6%)
	University-based	144 (62.3%)
	Military	8 (3.5%)

*values may be underreported, as “daily” was not initially included as an answer choice during the first three days the survey was made available to respondents

Table 2. Number of patients scheduled/seen per half-day.

		Year 1 n=57 (%)	Year 2 n=84 (%)	Year 3 n=89 (%)
# Patients scheduled per ½ day	1 - 3	4 (7.0%)	0 (0.0%)	1 (1.1%)
	4 - 6	22 (38.6%)	18 (21.4%)	9 (10.1%)
	7 - 9	14 (24.6%)	27 (32.1%)	25 (28.1%)
	10 - 12	10 (17.5%)	26 (31.0%)	31 (34.8%)
	>12	7 (12.3%)	12 (14.3%)	23 (25.8%)
# Patients seen per ½ day	1 - 3	5 (8.8%)	2 (2.4%)	2 (2.2%)
	4 - 6	27 (47.4%)	28 (33.3%)	17 (19.1%)
	7 - 9	18 (31.6%)	35 (41.7%)	32 (36.0%)
	10 - 12	2 (3.5%)	16 (19.0%)	28 (31.5%)
	>12	5 (8.8%)	3 (3.6%)	10 (11.2%)

Table 3. Resident perception of clinic characteristics. Total respondents: n=231.

	Residents who Agree/Strongly Agree
The patients I see come from a broad range of socioeconomic backgrounds	164 (71.0%)
There is an adequate diversity of medical conditions seen in clinic	186 (80.5%)
The medical conditions seen in clinic have an adequate level of complexity	203 (87.9%)

Table 4. Assessment of continuity clinic leadership.

Appropriate amount of:	Autonomy	Teaching	Staff Supervision	Feedback	Continuity of care
Resident-run, with attending ^{a,b} n=185 (80.1%) ^b	151 (81.6%)*	155 (83.8%)	159 (85.9%)*	136 (73.5%)	155 (83.8%)*
Attending-run ^a n=26 (11.3%)	12 (46.2%)	17 (65.4%)	16 (61.5%)	15 (57.7%)	13 (50.0%)

a The remaining responses regarding clinic leadership were: resident-run with no attending (0.9%, n=2), both resident and attending-run (3.0%, n=7), and "other" (4.7%, n=11)

b Compared to their AR counterparts, more RR residents reported improvement in history-taking, physical exam skills, forming a differential diagnosis, selecting diagnostic tests, interpreting test results, and formulating a treatment plan, although these values did not reach significant levels.

The following values were significant (*): 1. Autonomy: resident-run with attending vs. attending-run: $p < 0.001$, 2. Staff supervision: resident-run with attending vs. attending-run: $p = 0.008$, 3. Continuity of care: resident-run with attending vs. attending-run: $p < 0.001$

Table 5. Assessment of resident continuity clinic based on method of attending physician involvement.

Appropriate amount of:	Autonomy	Teaching	Staff Supervision	Feedback	Residents expressing satisfaction
Staff in room n=157 (68.0%)	112 (71.3%)	126 (80.3%)	129 (82.2%)	121 (77.1%)*	116 (73.9%)
Staff reviews patients out of room n=17 (7.4%)	13 (76.5%)	15 (88.2%)	16 (94.1%)	9 (52.9%)	15 (88.2%)
Staff only reviews patients if concern(s) raised ^a n=34 (14.7%)	30 (88.2%)*	18 (52.9%)*	26 (76.5%)	21 (61.8%)	21 (61.8%)
Staff has varied involvement n=21 (9.1%)	21 (100.0%)	17 (81.0%)	18 (85.7%)	14 (66.7%)	16 (76.2%)

a One respondent indicated that the attending physician did not review any patients

The following values were significant (*): 1. Autonomy: Staff in room vs. staff reviews patients if concern(s) raised: 0.018 2. Teaching: Staff in room vs. staff reviews patients if concerns(s) raised: < 0.001 ; Staff out of room vs. staff reviews patients if concern(s) raised: 0.009; Staff reviewed patients if concern raised vs. staff has varied involvement: 0.038 3. Feedback: Staff in room vs. staff out of room: 0.025

14.7% (n=34) had the attending review patients only if the resident raised concerns, and 9.1% (n=21) reported varied attending involvement with each patient encounter (**Table 5**).

Regarding clinical abilities, respondents from resident-run clinics under attending supervision (RR clinics) were compared with those from attending-run clinics (AR clinics). Overall, more residents from RR clinics reported improvement in the following categories: history-taking (71.9%, n=133 RR versus 53.8%, n=14 AR), physical exam skills (74.6%, n=138 RR versus 57.7%, n=15 AR), forming a differential diagnosis (85.4%, n=158 RR clinics versus 76.9%, n=20 AR), selecting diagnostic tests (84.9%, n=157 RR versus 73.1%, n=19 AR), interpreting test results (85.4%, n=158 RR versus 73.1%, n=19 AR), and formulating a treatment plan (88.1%, n=163 RR versus 76.9%, n=20 AR).

In comparison to respondents from AR clinics (**Table 4**), more RR respondents reported that they felt they had an appropriate level of autonomy in patient management (81.6% RR versus 46.2% AR, $p < 0.001$), perception of continuity of care (83.8% RR versus 50.0% AR clinics, $p < 0.001$), and appropriate level of staff supervision (85.9% RR versus 61.3% AR, $p < 0.01$).

Attending involvement during patient encounters also differed significantly among residents who reported differing amounts of autonomy, teaching, and feedback received (**Table 5**). In particular, residents reported a greater sense of autonomy if the attending physician only reviewed patients when residents raised concerns, rather than if the attending physician entered the exam room for each encounter ($p < 0.05$). However, residents reported a significantly decreased amount of teaching if attending physicians reviewed patients only when residents raised concerns, in comparison to attendings always entering the patient room or reviewing patients with residents outside the room ($p < 0.001$ and $p < 0.01$, respectively).

Of note, we found a significant difference in satisfaction rates between first year and third year dermatology residents ($p < 0.01$), with 87.7% (n=50) of first years reporting satisfaction with continuity clinic, in contrast to 79.2% (n=57) of third years. In

addition, 77.4% (n=48/62) of first years reported having appropriate autonomy, whereas this figure was 76.9% (n=70/91) for second years and 64% (n=64/100) for third years.

Discussion

Currently, there is limited data on the characteristics of continuity clinics in dermatology residency training programs in the U.S. Our survey revealed significant findings about the characteristics and differences between dermatology continuity clinics and their impact on resident learning. These findings may highlight ways to best implement these programs.

Our study demonstrates several significant differences between RR clinics and AR clinics. Besides reporting greater improvement in clinical skills, more RR respondents also reported that they had appropriate levels of autonomy in patient management and the perception of continuity of care. Our data suggest that overall, residents who participate in RR clinics may have more opportunities to directly interact with patients and reinforce their clinical skills.

Previous studies in pediatric and internal medicine residency programs have found that residents who worked in clinics emphasizing autonomy were more likely to develop skills such as formulating a differential diagnosis, interpreting tests, and creating a treatment plan [15-17]. Our results are consistent with these observations, indicating that resident-run clinics under attending supervision may promote greater use of independent clinical judgment and encourage residents to further develop their roles as their patients' primary healthcare providers.

In addition, we found that attending involvement during the patient encounter, regardless of clinic type (RR versus AR), significantly affected resident perception of autonomy and the amount of teaching they received. Specifically, residents reported a greater sense of autonomy if the attending physician only reviewed patients when residents raised concerns. These findings reflect patterns seen in resident learning preferences as reported by Croke et al. [9]. However, our study shows that significantly fewer residents reported receiving an appropriate amount of teaching if attendings were present only when residents raised concerns, versus

when attendings were present in the exam room, or reviewed patients with residents outside of the room. Previous studies have demonstrated that residents often desire timely feedback [18, 19] and the decreased perception of appropriate teaching seen in our study may be related to the lack of immediate evaluation. Although our findings indicate that dermatology residents have a greater perception of autonomy in resident-independent clinics, the lack of timely feedback associated with these situations may contribute to decreased learning opportunities. Much of the learning in dermatology comes from discussion of morphology, subtle exam findings, and the subsequent development of a differential diagnosis based on the clinical exam. Consequently, absence of the attending in the exam room to review cutaneous findings or only occasional discussion of the exam and differential diagnosis with the attending outside of the exam room results in the loss of potential learning opportunities.

Several factors may contribute to the significant difference in satisfaction rates between year 1 and year 3 respondents. With increasing year of training, fewer respondents reported feeling that they had an appropriate amount of autonomy. In a study of anesthesiology residents, Sterkenburg et al. [20] found that PGY1 residents reported working above their level of competence but estimated their own abilities as sufficient, whereas PGY5 residents reported working below their expected level of competence. Thus, the perceived lack of autonomy among year 3 trainees may be related to discrepancies between perceptions of their clinical capabilities and the level of responsibility they are afforded.

There are some limitations to our study. First, our survey only represents a fraction of the total number of current dermatology residents in the U.S. and may not reflect upon participants of continuity clinics who did not respond (nonresponse bias). In addition, as the majority of continuity clinics appear to be resident-run under attending supervision, our data for attending-run clinics is based on a small sample size. The same issue pertains to the small sample sizes for clinics that had attendings outside the exam room or attendings present only if residents raised concerns. Finally, of all the responses received from dermatology residents in the U.S., the majority

reported having weekly continuity clinics. Although weekly continuity clinics accounted for the majority of the responses, our initial survey did not include "daily clinic" as an answer choice until three days after the survey had been distributed; therefore, the number of residents participating in daily continuity clinics may be higher than our reported values.

As continuity clinic is a required portion of ACGME-certified residency programs, having an understanding of their effect on residents' overall learning experience is crucial to further enhancing the role of these clinics in residency programs in the future. Our study reveals potential areas of evaluation in future assessments of how continuity clinic programs can be structured to best accomplish the goals of dermatology residency training. Opportunities for resident leadership, autonomy, direct patient interaction, and timely feedback from attendings are important contributing factors to the continuity clinic experience. Future studies assessing how these specific factors are incorporated into continuity clinic programs may further elucidate the findings from our study.

Conclusion: Resident-run clinics appear to promote greater perception of continuity of care. Focusing on resident leadership and attending presence during patient encounters appears effective in promoting learning. Attending involvement in patient care only when the resident raises concerns promotes resident autonomy at the expense of teaching, and may correlate with decreased resident satisfaction.

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