

Comparing Patient Care Models at a Local Free Clinic vs an Insurance-Based University Medical Center

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PRACTICE POINTS

- Both free clinics and insurance-based health care systems serve dermatology patients with diverse characteristics, necessitating inclusive health care models.
- Dermatologic care can be improved at both free and insurance-based clinics by strengthening communication with individuals with limited English proficiency, providing skin care education, and offering social and scheduling services such as transportation, insurance assistance, and triage.

More than 30 million Americans lack access to affordable health care, and many seek medical services such as dermatologic care at free clinics. In this study, we analyzed the dermatology patient populations at the Birmingham Free Clinic (BFC) and the University of Pittsburgh Medical Center (UPMC), both in Pittsburgh, Pennsylvania. A retrospective chart review of 76 BFC dermatology patients and a time-matched sample of 322 UPMC dermatology patients was performed for the period from January 2020 to May 2022. Dermatologic care at both clinics can be improved by strengthening communication with patients with limited English proficiency (LEP), providing skin care education, and offering social and scheduling services such as transportation, insurance assistance, and triage.

Approximately 25% of Americans have at least one skin condition, and 20% are estimated to develop skin cancer during their lifetime.^{1,2} However, 40%

of the US population lives in areas underserved by dermatologists.³ The severity and mortality of skin cancers such as melanoma and mycosis fungoides have been positively associated with minoritized race, lack of health insurance, and unstable housing status.⁴⁻⁶ Patients who receive health care at free clinics often are of a racial or ethnic minoritized social group, are uninsured, and/or lack stable housing; this underserved group also includes recent immigrants to the United States who have limited English proficiency (LEP).⁷ Only 25% of free clinics offer specialty care services such as dermatology.^{7,8}

Of the 42 free clinics and Federally Qualified Health Centers in Pittsburgh, Pennsylvania, the Birmingham Free Clinic (BFC) is one of the few that offers specialty care services including dermatology.⁹ Founded in 1994, the BFC serves as a safety net for Pittsburgh's medically underserved population, offering primary and acute care, medication access, and social services. From January 2020 to May 2022, the BFC offered 27 dermatology clinics that provided approximately 100 people with comprehensive care including full-body skin examinations, dermatologic diagnoses and treatments, minor procedures, and dermatopathology services.

In this study, we compared the BFC dermatology patient care model with that of the dermatology department at the University of Pittsburgh Medical Center (UPMC), an insurance-based tertiary referral health care system in western Pennsylvania. By analyzing the demographics, dermatologic diagnoses, and management strategies of both the BFC and UPMC, we gained an understanding of how these patient care models

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differ and how they can be improved to care for diverse patient populations.

Methods

A retrospective chart review of dermatology patients seen in person at the BFC and UPMC during the period from January 2020 to May 2022 was performed. The UPMC group included patients seen by 3 general dermatologists (including A.J.L.) at matched time points. Data were collected from patients' first in-person visit during the study period. Variables of interest included patient age, sex, race, ethnicity, primary language, zip code, health insurance status, distance to clinic (estimated using Google Maps to calculate the shortest driving distance from the patient's zip code to the clinic), history of skin cancer, dermatologic diagnoses, and management strategies. These variables were not collected for patients who cancelled or no-showed their first in-person appointments. All patient charts and notes corresponding to the date and visit of interest were accessed through the electronic medical record (EMR). Patient data were de-identified and stored in a password-protected spreadsheet. Comparisons between the BFC and UPMC patient populations were performed using χ^2 tests of independence, Fisher exact tests, and Mann-Whitney U tests via SPSS software (IBM). Statistical significance was set at $P < .05$.

Results

Patient Characteristics—Our analysis included 76 initial appointments at the BFC and 322 at UPMC (Table 1). The mean age for patients at the BFC and UPMC was 39.6 years and 47.8 years, respectively ($P = .001$). Males accounted for 39 (51.3%) and 112 (34.8%) of BFC and UPMC patients, respectively ($P = .008$); 2 (0.6%) patients from UPMC were transgender. Of the BFC and UPMC patients, 44.7% (34/76) and 0.9% (3/322) were Hispanic, respectively ($P < .001$). With regard to race, 52.6% (40/76) of BFC patients were White, 19.7% (15/76) were Black, 6.6% (5/76) were Asian/Pacific Islander (Chinese, 1.3% [1/76]; other Asian, 5.3% [4/76]), and 21.1% (16/76) were American Indian/other/unspecified (American Indian, 1.3% [1/76]; other, 13.2% [10/76]; unspecified, 6.6% [5/76]). At UPMC, 61.2% (197/322) of patients were White, 28.0% (90/322) were Black, 5.3% (17/322) were Asian/Pacific Islander (Chinese, 1.2% [4/322]; Indian [Asian], 1.9% [6/322]; Japanese, 0.3% [1/322]; other Asian, 1.6% [5/322]; other Asian/American Indian, 0.3% [1/322]), and 5.6% (18/322) were American Indian/other/unspecified (American Indian, 0.3% [1/322]; other, 0.3% [1/322]; unspecified, 5.0% [16/322]). Overall, the BFC patient population was more ethnically and racially diverse than that of UPMC ($P < .001$).

Forty-six percent (35/76) of BFC patients and 4.3% (14/322) of UPMC patients had LEP ($P < .001$). Primary languages among BFC patients were 53.9% (41/76) English, 40.8% (31/76) Spanish, and 5.2% (4/76) other/unspecified (Chinese, 1.3% [1/76]; Indonesian, 2.6%

[2/76]; unspecified, 1.3% [1/76]). Primary languages among UPMC patients were 95.7% (308/322) English and 4.3% (14/322) other/unspecified (Chinese, 0.6% [2/322]; Nepali, 0.6% [2/322]; Pali, 0.3% [1/322]; Russian, 0.3% [1/322]; unspecified, 2.5% [8/322]). There were notable differences in insurance status at the BFC vs UPMC ($P < .001$), with more UPMC patients having private insurance (52.8% [170/322] vs 11.8% [9/76]) and more BFC patients being uninsured (52.8% [51/76] vs 1.9% [6/322]). There was no significant difference in distance to clinic between the 2 groups ($P = .183$). More UPMC patients had a history of skin cancer ($P = .003$). More patients at the BFC were no-shows for their appointments ($P < .001$), and UPMC patients more frequently canceled their appointments ($P < .001$).

Dermatologic Diagnoses—The most commonly diagnosed dermatologic conditions at the BFC were dermatitis (23.7% [18/76]), neoplasm of uncertain behavior (15.8% [12/76]), alopecia (11.8% [9/76]), and acne (10.5% [8/76]) (Table 2). The most commonly diagnosed conditions at UPMC were nevi (26.4% [85/322]), dermatitis (22.7% [73/322]), seborrheic keratosis (21.7% [70/322]), and skin cancer screening (21.4% [70/322]). Neoplasm of uncertain behavior was more common in BFC vs UPMC patients ($P = .040$), while UPMC patients were more frequently diagnosed with nevi ($P < .001$), seborrheic keratosis ($P < .001$), and skin cancer screening ($P < .001$). There was no significant difference between the incidence of skin cancer diagnoses in the BFC (1.3% [1/76]) and UPMC (0.6% [2/76]) patient populations ($P = .471$). Among the biopsied neoplasms, there was also no significant difference in malignant (BFC, 50.0% [5/10]; UPMC, 32.0% [8/25]) and benign (BFC, 50.0% [5/10]; UPMC, 36.0% [9/25]) neoplasms diagnosed at each clinic ($P = .444$).

Management Strategies—Systemic antibiotics were more frequently prescribed ($P < .001$) and laboratory testing/imaging were more frequently ordered ($P = .005$) at the BFC vs UPMC (Table 3). Patients at the BFC also more frequently required emergency insurance ($P = .036$). Patients at UPMC were more frequently recommended sunscreen ($P = .003$) and received education about skin cancer signs by review of the ABCDEs of melanoma ($P < .001$), sun-protective behaviors ($P = .001$), and skin examination frequency ($P < .001$). Notes in the EMR for UPMC patients more frequently specified patient follow-up instructions ($P < .001$).

Comment

As of 2020, the city of Pittsburgh had an estimated population of nearly 303,000 based on US Census data.¹⁰ Its population is predominantly White (62.7%) followed by Black/African American (22.8%) and Asian (6.5%); 5.9% identify as 2 or more races. Approximately 3.8% identify as Hispanic or Latino. More than 11% of the Pittsburgh population aged 5 years and older speaks a language other than English as their primary language, including Spanish (2.3%), other Indo-European languages (3.9%),

TABLE 1. Comparison of Patient Characteristics at BFC vs UPMC

| Characteristic | BFC (n=76) | UPMC (n=322) | P value |
|--|-----------------|-----------------|---------|
| Mean age (SD), y | 39.6 (17.2) | 47.8 (17.7) | .001 |
| Sex, n (%) | | | .008 |
| Male | 39 (51.3) | 112 (34.8) | |
| Female | 37 (48.7) | 210 (65.2) | |
| Hispanic, n (%) | | | <.001 |
| Yes | 34 (44.7) | 3 (0.9) | |
| Unspecified | 3 (3.9) | 22 (6.8) | |
| Race, n (%) | | | <.001 |
| White | 40 (52.6) | 197 (61.2) | |
| Black | 15 (19.7) | 90 (28.0) | |
| Asian/Pacific Islander | 5 (6.6) | 17 (5.3) | |
| American Indian/other/unspecified | 16 (21.1) | 18 (5.6) | |
| Primary language, n (%) | | | <.001 |
| English | 41 (53.9) | 308 (95.7) | |
| Spanish | 31 (40.8) | 0 (0.0) | |
| Other/unspecified | 4 (5.2) | 14 (4.3) | |
| Insurance status, n (%) | | | <.001 |
| Private | 9 (11.8) | 170 (52.8) | |
| Medicaid | 4 (5.3) | 33 (10.2) | |
| Medicare | 0 (0.0) | 58 (18.0) | |
| Uninsured | 51 (67.1) | 6 (1.9) | |
| Other | 12 (15.8) | 55 (17.1) | |
| Median distance to clinic (IQR), mi | 9.1 (4.9, 16.3) | 8.1 (3.9, 13.0) | .183 |
| History of skin cancer, n (%) | 0 (0.0) | 34 (10.6) | .003 |
| Appointment status, n (%) ^a | | | |
| Complete | 76 (73.8) | 322 (70.9) | .562 |
| No-show | 21 (20.4) | 35 (7.7) | <.001 |
| Cancel | 6 (5.8) | 97 (21.4) | <.001 |

Abbreviations: BFC, Birmingham Free Clinic; IQR, interquartile range; UPMC, University of Pittsburgh Medical Center.

^aWith no-shows and cancellations, total number of appointments was 103 for the BFC and 454 for UPMC.

TABLE 2. Comparison of Dermatologic Diagnoses at BFC vs UPMC

| Condition | BFC, n (%) (n=76) | UPMC, n (%) (n=322) | P value |
|--------------------------------|-------------------|---------------------|---------|
| Acne | 8 (10.5) | 38 (11.8) | .755 |
| Alopecia | 9 (11.8) | 29 (9.0) | .449 |
| Biopsied neoplasm ^a | | | .444 |
| Malignant | 5 (50.0) | 8 (32.0) | |
| Benign | 5 (50.0) | 9 (36.0) | |
| Dermatitis | 18 (23.7) | 73 (22.7) | .850 |
| Neoplasm of uncertain behavior | 12 (15.8) | 26 (8.1) | .040 |
| Nevi | 4 (5.3) | 85 (26.4) | <.001 |
| Seborrheic keratosis | 2 (2.6) | 70 (21.7) | <.001 |
| Skin cancer | 1 (1.3) | 2 (0.6) | .471 |
| Skin cancer screening | 1 (1.3) | 69 (21.4) | <.001 |

Abbreviations: BFC, Birmingham Free Clinic; UPMC, University of Pittsburgh Medical Center.

^aTotal number of neoplasms biopsied and sent for pathological analysis was 10 for BFC and 25 for UPMC.

and Asian and Pacific Island languages (3.5%).¹¹ More than 5% of the Pittsburgh population does not have health insurance.¹²

The BFC is located in Pittsburgh's South Side area, while one of UPMC's primary dermatology clinics is located in the Oakland district; however, most patients who seek care at these clinics live outside these areas. Our study results indicated that the BFC and UPMC serve distinct groups of people within the Pittsburgh population. The BFC patient population was younger with a higher percentage of patients who were male, Hispanic, racially diverse, and with LEP compared with the UPMC patient population. In this clinical setting, the BFC health care team engages with people from diverse backgrounds and requires greater interpreter and medical support services.

The BFC largely is supported by volunteers, UPMC, grants, and philanthropy. Dermatology clinics are staffed by paid and volunteer team members. Paid team members include 1 nurse and 1 access lead who operates the front desk and registration. Volunteer team members include 1 board-certified dermatologist from UPMC (A.J.L), or an affiliate clinic and 1 or 2 of each of the following: UPMC dermatology residents, medical or undergraduate students from the University of Pittsburgh, AmeriCorps national service members, and student or community medical interpreters. The onsite pharmacy is run by volunteer faculty, resident, and student pharmacists from the University of Pittsburgh. Dermatology clinics are half-day clinics that occur monthly. Volunteers for each clinic are recruited approximately 1 month in advance.

Dermatology patients at the BFC are referred from the BFC general medicine clinic and nearby Federally Qualified Health Centers for simple to complex medical and surgical dermatologic skin conditions. Each BFC dermatology clinic schedules an average of 7 patients per clinic and places other patients on a wait-list unless more urgent triage is needed. Patients are notified when they are scheduled via phone or text message, and they receive a reminder call or text 1 or 2 days prior to their appointment that also asks them to confirm attendance. Patients with LEP are called with an interpreter and also may receive text reminders that can be translated using Google Translate. Patients are instructed to notify the BFC if they need to cancel or reschedule their appointment. At the end of each visit, patients are given an after-visit summary that lists follow-up instructions, medications prescribed during the visit, and upcoming appointments. The BFC offers bus tickets to help patients get to their appointments. In rare cases, the BFC may pay for a car service to drive patients to and from the clinic.

Dermatology clinics at UPMC use scheduling and self-scheduling systems through which patients can make appointments at a location of their choice with any available board-certified dermatologist or physician assistant. Patients receive a reminder phone call 3 days prior to their appointment instructing them to call the office if they are unable to keep their appointment. Patients signed up for the online portal also receive a reminder message and an option to confirm or cancel their appointment. Patients with cell phone numbers in

TABLE 3. Comparison of Management Strategies at BFC vs UPMC

| Strategy | BFC, n (%) (n=76) | UPMC, n (%) (n=322) | P value |
|--------------------------------------|-------------------|---------------------|---------|
| Medications | | | |
| Topical antibiotic | 5 (6.6) | 43 (13.4) | .103 |
| Topical antifungal | 10 (13.2) | 47 (14.6) | .747 |
| Topical steroid | 28 (36.8) | 105 (32.6) | .482 |
| Systemic antibiotic | 19 (25.0) | 24 (7.5) | <.001 |
| Retinoid | 6 (7.9) | 38 (11.8) | .329 |
| Disease-modifying antirheumatic drug | 5 (6.6) | 13 (4.0) | .357 |
| Over-the-counter products | | | |
| Sunscreen | 15 (19.7) | 121 (37.6) | .003 |
| Skin moisturizer | 12 (15.8) | 61 (18.9) | .523 |
| Biopsy | 14 (18.4) | 36 (11.2) | .087 |
| Laboratory testing/imaging | 14 (18.4) | 25 (7.8) | .005 |
| Education | | | |
| Skin cancer signs | 2 (2.6) | 84 (26.1) | <.001 |
| Sun protective behaviors | 10 (13.2) | 101 (31.4) | .001 |
| Skin examination frequency | 2 (2.6) | 80 (24.8) | <.001 |
| Emergency insurance | 2 (2.6) | 0 (0.0) | .036 |
| Social work care | 1 (1.3) | 0 (0.0) | .191 |
| Referral | 1 (1.3) | 12 (3.7) | .477 |
| Follow-up instructions specified | 63 (82.9) | 321 (99.7) | <.001 |

Abbreviations: BFC, Birmingham Free Clinic; UPMC, University of Pittsburgh Medical Center.

the UPMC system receive a text message approximately 2 days prior to their appointment that allows them to pre-register and pay their copayment in advance. They receive another text 20 minutes prior to their appointment with an option for contactless check-in. At the conclusion of their visit, patients can schedule a follow-up appointment and receive a printed copy of their after-visit summary that provides information about follow-up instructions, prescribed medications, and upcoming visits. They may alternatively access this summary via the online patient portal. Patients are not provided transportation to UPMC clinics, but they are offered parking validation.

Among the most common dermatologic diagnoses for each group, BFC patients presented for treatment of more acute dermatologic conditions, while UPMC patients presented for more benign and preventive-care

conditions. This difference may be attributable to the BFC’s referral and triage system, wherein patients with more urgent problems are given scheduling priority. This patient care model contrasts with UPMC’s scheduling process in which no known formal triage system is utilized. Interestingly, there was no difference in skin cancer incidence despite a higher percentage of preventive skin cancer screenings at UPMC.

Patients at the BFC more often required emergency insurance for surgical interventions, which is consistent with the higher percentage of uninsured individuals in this population. Patients at UPMC more frequently were recommended sunscreen and were educated about skin cancer, sun protection, and skin examination, in part due to this group’s more extensive history of skin cancer and frequent presentation for skin cancer screenings. At

the same time, educational materials for skin care at both the BFC and UPMC are populated into the EMR in English, whereas materials in other languages are less readily available.

Our retrospective study had several limitations. Demographic information that relied on clinic-dependent intake questionnaires may be limited due to variable intake processes and patients opting out of self-reporting. By comparing patient populations between 2 clinics, confounding variables such as location and hours of operation may impact the patient demographics recorded at the BFC vs UPMC. Resources and staff availability may affect the management strategies and follow-up care offered by each clinic. Our study period also was unique in that COVID-19 may have affected resources, staffing, scheduling, and logistics at both clinics.

Based on the aforementioned differences between the BFC and UPMC patient characteristics, care models should be strategically designed to support the needs of diverse populations. The BFC patient care model appropriately focuses on communication skills with patients with LEP by using interpreter services. Providing more skin care education and follow-up instructions in patients' primary languages will help them develop a better understanding of their skin conditions. Another key asset of the BFC patient care model is its provision of social services such as transportation and insurance assistance.

To improve the UPMC patient care model, providing patients with bus tickets and car services may potentially reduce appointment cancellations. Using interpreter services to call and text appointment reminders, as well as interpreter resources to facilitate patient visits and patient instructions, also can mitigate language barriers for patients with LEP. Implementing a triage system into the UPMC scheduling system may help patients with more urgent skin conditions to be seen in a timely manner.

Other investigators have analyzed costs of care and proven the value of dermatologic services at free clinics to guide allocation of supplies and resources, demonstrating an area for future investigation at the BFC.¹³ A cost analysis of care provided at the BFC compared to UPMC could inform us about the value of the BFC's services.

Conclusion

The dermatology clinics at the BFC and UPMC have distinct demographics, diagnoses, and management

strategies to provide an inclusive patient care model. The services provided by both clinics are necessary to ensure that people in Pittsburgh have access to dermatologic care regardless of social barriers (eg, lack of health insurance, LEP). To achieve greater accessibility and health equity, dermatologic care at the BFC and UPMC can be improved by strengthening communication with people with LEP, providing skin care education, and offering social and scheduling services.

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