



Increasing Access to Specialized Dermatology Care: A Retrospective Study Investigating Clinical Operation and Impact of a University-Affiliated Free Clinic

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ABSTRACT

Introduction: Our objective was to study the impact and clinical operation of an integrated model for free specialized dermatology care via collaboration between an academic institution and a nonprofit outpatient clinic through an analysis of patient demographics and care provided.

Methods: Hope@UMHS is a partnership between the University of Michigan Health System (UMHS) and Hope Clinic (HC) which provides free specialty consultations to uninsured residents of Southeast Michigan. A retrospective chart review was completed for

patients referred to the UMHS Dermatology clinic as part of the HOPE@UMHS collaboration from April 2012 through February 2020.

Results: Of the 294 referred patients, 264 were managed in 30 clinic sessions over 8 years, staffed by 92 unique volunteers. Patients most commonly presented with atopic dermatitis (10.5%), seborrheic dermatitis (7.9%), and actinic keratosis (7.4%). The majority of patients (68.2%) were prescribed at least one new medication. Nine skin cancers, including one melanoma, were diagnosed and treated. There were 102 procedures performed. Eighty-seven percent of patients received conclusive evaluation and treatment at the time of their consultation. **Conclusion:** Our experience illustrates that providing free, comprehensive dermatology care in a university hospital by partnering with a nonprofit clinic is both feasible and beneficial to the greater community.

Keywords: Charity care; Free clinic; Free dermatology clinic; Free specialty care; Safety net

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Key Summary Points

Indigent patients have limited access to specialized dermatology care.

We retrospectively review a collaboration between an academic center and a community health center, providing free dermatology care in southeast Michigan over an 8-year period, to describe patient characteristics, diagnoses, management plans, and volunteerism.

Our collaboration may serve as a model for providing dermatology care to underserved patients and important volunteer and learning opportunities to physicians, staff, and students.

DIGITAL FEATURES

This article is published with digital features, including a summary slide, to facilitate understanding of the article. To view digital features for this article go to <https://doi.org/10.6084/m9.figshare.13118012>.

INTRODUCTION

The US healthcare system provides uninsured patients with only limited access to healthcare [1, 2]. Individuals without insurance experience delays when seeking care, present with more advanced disease, and experience worse clinical outcomes than their insured counterparts [1]. To address this gap in care, free “safety net” clinics deliver services at minimal to no cost through community support, government funding, and volunteers [5, 6]. In the state of Michigan (MI), there are currently 56 free clinics available to serve the state’s uninsured patients, which numbered 535,000 in 2018 [7, 8].

Uninsured patients have particular difficulty in accessing specialty care, including

dermatology [9]. Over 40% of US citizens live in areas underserved by dermatologists [12, 13]. This disparity is further pronounced among indigent patients, as nearly half of all dermatologists may not evaluate and treat uninsured patients or those with Medicaid [10, 14]. When Medicaid enrollees do receive care for skin conditions, the care is less likely to be from a dermatologist [10]. These gaps in care have ramifications, as dermatology consultations alter care significantly, improving management and outcomes in conditions ranging from acne to cellulitis to melanoma [15]. Factors such as race and insurance status have been associated with differences in mortality for melanoma and mycosis fungoides [21]. In order to improve outcomes among the uninsured in the USA, we must first improve their access to care.

Of the 56 free clinics in Michigan, only four or five provide specialty dermatology services (Ann Heler, President of the Free Clinics of Michigan, personal communication, with permission; 18 August 2020) [5]. The Hope Clinic (HC) (<https://www.thehopeclinic.org>) is a nonprofit entity located at two sites (Ypsilanti and Westland, MI) that offers free medical and social services to low-income and uninsured patients in the surrounding area. Serving more than 5000 clients annually, the clinic operates through the financial support of individuals, corporations, and foundations in conjunction with over 50,000 volunteer hours donated yearly. Services provided include medical, dental, and mental health, social services, food and laundry services, and prayer. In 2019, 1306 unique patients presented for medical care. HC has expanded its on-site primary care services to include off-site specialty consultations through a partnership with the University of Michigan Health System (UMHS), headquartered in Ann Arbor, MI, adjacent to Ypsilanti. UMHS Dermatology joined this collaboration, termed Hope@-UMHS, in 2012.

Our objective was to analyze a retrospective dataset to study the impact and clinical operation of an integrated model for providing free specialized dermatology care within an

academic institution in partnership with a nonprofit community clinic.

METHODS

Collaboration

The Hope@UMHS collaboration began with otolaryngology services in 2010 [25, 26] and expanded to include multiple other subspecialties, incorporating dermatology consultations in 2012. A Memorandum of Understanding was written and signed by UMHS and HC under the counsel of legal, risk management, senior administration, and facilities management. UMHS volunteers rendering professional services are eligible for medical malpractice coverage under the UMHS coverage program. Volunteers function within the limits of their licensure or under delegated authority with all necessary supervision required by law. A space or “rental” agreement is signed by a HC administrator each year. Patients referred from HC to UMHS Dermatology remain HC patients, and all subsequent care is coordinated through the greater HC infrastructure.

Scheduling and Logistics

Uninsured patients referred to Hope@UMHS Dermatology from HC primary care providers are scheduled for a quarterly Saturday morning clinic at the UMHS outpatient dermatology facility. HC maintains a list of dermatology referrals, contacts, and schedules, and reminds patients of their appointments. Patients are mailed appointment confirmations and receive a phone call reminder 3 days prior to the clinic visit. Those who miss and do not respond to calls over the course of two specialty appointments lose their specialty referral. Patients are given parking vouchers by UMHS and assisted in transportation needs by HC. Both Hope Clinics and the UMHS specialty clinics are accessible via public transportation.

Staffing

Clinics are staffed by volunteer UMHS dermatology employees. Clinic volume is dependent on HC referrals, typically capped at 12 patients per clinic session, and volunteers are recruited according to patient census. Each clinic ideally has a minimum of five volunteers: one at the front desk, one to two medical assistants, one to two medical students, one to four dermatology residents or physician’s assistants, and one to two attending physicians. Volunteers are recruited approximately 3–4 weeks prior to clinic to ensure appropriate personnel.

Scope of Practice

New patients may be referred for any dermatology concern beyond the comfort level of their primary provider. The clinic operates in the typical US dermatology setting, and patients receive on-site biopsies and procedures, including tangential and punch biopsy, potassium hydroxide (KOH) and mineral oil preparations, cryotherapy, intralesional triamcinolone injection (ILK), and electrodesiccation and curettage (ED&C). Patients may also be referred on the same day or on future clinic dates to other subspecialty services involved in the Hope@UMHS collaboration, including plastic surgery and otolaryngology, which provide care in close proximity to the dermatology clinic. Patients who require excision are referred to plastic surgery. All related costs are absorbed by UMHS. Dermatopathologic expertise is provided by another institution collaborating with HC. An online pharmaceutical coupon resource (GoodRx) is used to determine the most affordable, logistically feasible plan for obtaining any prescriptions at commercial pharmacies. In accordance with UMHS institutional policy, medication samples are not provided to Hope@UMHS patients, but occasionally HC has some basic medications available on-site for patient use. HC support staff communicate after the clinic with patients who need prescriptions to support compliance. Interpreter services are provided by phone or family members. Follow-up is primarily handled by HC providers, who

have open communication with UMHS providers for any patient questions or concerns that arise. Patients who require ongoing or additional specialty care are provided counseling services by HC to obtain insurance or charity care, such as through the University of Michigan's MSupport program; in rare cases in which dermatology follow-up is required and cannot be obtained otherwise, return visits are available.

Documentation

The HC prepares patient charts for each clinic and houses patient care records permanently in its facility. Dermatology consultants complete a paper record of the visit for HC documentation.

Data Analysis

A retrospective chart review was completed for patients referred and scheduled for a visit to the UMHS Dermatology clinic as part of the HOPE@UMHS collaboration from 21 April 2012 through to 29 February 2020. Data from 30 clinic sessions were analyzed. Availability of demographic data was limited and variable due to patients' ability to opt out of self-reporting. Two clinics (in which 17 patients were evaluated) were excluded from the diagnosis and management analysis due to insufficient records. Level of service was determined by dermatology consultants; corresponding Current Procedural Terminology (CPT) codes were assigned to each patient encounter.

The study was deemed exempt research by the University of Michigan Institutional Review Board (IRB) (Study eResearch ID: HUM00182333; date of IRB exempt determination: 19 May 2020).

RESULTS

From April 2012 through February 2020, 30 dermatology clinic sessions were held. A total of 294 patients were referred and scheduled for consultation; of these, ten cancelled after the appointment was scheduled, and 246 were

Table 1 Patient characteristics

Patient characteristics	<i>N</i> (% respondents)
Sex (<i>N</i> = 208)	
Male	99 (47.6)
Female	109 (52.4)
Age distribution (years) (<i>N</i> = 204)	
10–18	6 (2.9)
19–64	174 (85.3)
> 65	24 (11.8)
Ethnicity (<i>N</i> = 187)	
White (non-Hispanic)	98 (52.4)
Black/African	38 (20.3)
Asian	29 (15.5)
Hispanic/Latino	18 (9.6)
Other	4 (2.1)
Primary language (<i>N</i> = 182)	
English	121 (66.5)
Albanian	24 (13.2)
Spanish	11 (6.0)
Chinese	5 (2.7)
Other (12 languages)	21 (11.5)
Citizenship (<i>N</i> = 176)	
US Citizen	107 (60.8)
Permanent US resident	45 (25.6)
Visitor	24 (13.6)
Reason for referral (<i>N</i> = 220)	
Rash	125 (56.8)
Lesion	77 (35.0)
Hair/nails	18 (8.2)
Total referrals	
Cancellation	10 (3.4)
No show	38 (12.9)
Total patient encounters	246 (83.7)

Table 2 Dermatologic diagnoses

Diagnosis	N (% patients)
Dermatitis	51 (22.3)
Atopic	24 (10.5)
Contact	4 (1.7)
Stasis	4 (1.7)
Nummular	2 (0.9)
Unspecified	17 (7.4)
Nevi	22 (9.6)
Atypical	13 (5.7)
Benign	9 (3.9)
Wart	22 (9.6)
Genital	9 (3.9)
Plantar	2 (0.9)
Unspecified	11 (4.9)
Seborrheic dermatitis	18 (7.9)
Actinic keratosis	17 (7.4)
Acne	16 (7.0)
Tinea	16 (7.0)
Pedis	9 (3.9)
Onychomycosis	3 (1.3)
Manus	2 (0.9)
Capitis	1 (0.4)
Corporis	1 (0.4)
Alopecia	16 (7.0)
Androgenetic	3 (1.3)
Telogen effluvium	3 (1.3)
Areata	2 (0.9)
Dissecting cellulitis	1 (0.4)
Lichen planopilaris	1 (0.4)
Unspecified	6 (2.6)
Seborrheic keratosis	15 (6.6)
Folliculitis	13 (5.7)
Psoriasis	12 (5.2)
Pigmentary change	11 (4.8)

Table 2 continued

Diagnosis	N (% patients)
PIH	4 (1.7)
Vitiligo	3 (1.3)
Melasma	2 (0.9)
Hyperpigmented patches	1 (0.4)
Dyspigmentation	1 (0.4)
Rash (unspecified)	10 (4.4)
Xerosis	10 (4.4)
Skin cancer	9 (3.9)
BCC	7 (3.1)
Melanoma	1 (0.4)
Bowenoid papulosis	1 (0.4)
Cyst	9 (3.9)
Epidermoid	5 (2.2)
Pilar	1 (0.4)
Unspecified	3 (1.3)
Keloid/hypertrophic scar	7 (3.1)
Other infections	7 (3.1)
HSV	2 (0.9)
Molluscum	1 (0.4)
Impetigo	1 (0.4)
Tinea versicolor	1 (0.4)
Pityriasis rosea	1 (0.4)
Scabies	1 (0.4)
Vascular	6 (2.6)
Angioma	4 (1.7)
Stork patch	1 (0.4)
Hemangioma	1 (0.4)
Lichen simplex chronicus	6 (2.6)
Rosacea	6 (2.6)
Hidradentitis Suppurativa	5 (2.2)
Intertrigo	5 (2.2)
Photodamage	5 (2.2)

Table 2 continued

Diagnosis	N (% patients)
Skin tag	5 (2.2)
Connective tissue disease	4 (1.7)
DM	2 (0.9)
DM v. SLE	1 (0.4)
CREST	1 (0.4)
Dermatofibroma	4 (1.7)
Lichen planus	3 (1.3)
Other less common	37 (16.1)

BCC Basal cell carcinoma, *CREST* calcinosis, raynaud phenomenon, esophageal dysmotility, sclerodactyly, telangiectasia, *DM* dermatomyositis, *HSV* Herpes Simplex Virus, *PIH* post-inflammatory hyperpigmentation, *SLE* systemic lupus erythematosus,

evaluated in clinic, averaging 8.2 patients per session. The no-show rate was 13.4%. Patient characteristics and demographics are listed in Table 1. In total, 367 dermatologic diagnoses were noted in 229 patient records from data obtained from the 28 clinics available for this analysis (Table 2). The average patient had 1.6 diagnoses identified. Management strategies are outlined in Table 3. The majority of patients (68.2%) were prescribed at least one new medication, with the most common recommendation being topical steroid (31.0%). There were a total of 102 procedures performed, of which 47.1% were diagnostic (biopsy, KOH) and 52.9% were therapeutic (cryotherapy, ILK, ED&C).

Skin cancer was detected in nine patients. Seven were diagnosed with basal cell carcinoma, treated with excision or ED&C through Hope@UMHS. One case of bowenoid papulosis was diagnosed via biopsy and managed with ED&C. One melanoma, Breslow depth 0.95 mm, was diagnosed on the back of a 57-year-old woman. She was treated with wide local excision and sentinel lymph node biopsy at UMHS while pursuing insurance versus

Table 3 Management strategies

Management	N (% patients)
<i>Medical</i>	
Topical antimicrobial only	
Topical antibiotic	19 (8.3)
Topical antifungal	9 (3.9)
Topical antiviral	4 (1.8)
Topical scabicide	2 (0.9)
Systemic antimicrobial	7 (3.1)
Topical steroid only	71 (31.0)
Combination therapy	
Topical antimicrobial and steroid	20 (8.7)
Topical antimicrobial and systemic antimicrobial	7 (3.1)
Topical antimicrobial and retinoid	1 (0.4)
Systemic antimicrobial and topical steroid	1 (0.4)
Systemic antimicrobial and systemic steroid	1 (0.4)
Topical steroid and antihistamine	1 (0.4)
Other	
Oral antihistamine	3 (1.3)
Salicylic acid pads	3 (1.3)
Topical retinoids	2 (0.9)
Topical imiquimod	1 (0.4)
Topical lactic acid lotion	1 (0.4)
Topical bimatoprost	1 (0.4)
Topical minoxidil	1 (0.4)
Hydroxychloroquine	1 (0.4)
Topical pramoxine cream	1 (0.4)
<i>Procedure</i>	
Diagnostic	
Biopsy	38 (16.6)
KOH	10 (4.4)

Table 3 continued

Management	N (% patients)
Therapeutic	
Cryotherapy	44 (19.2)
Intralesional steroid injection	8 (3.5)
ED&C	2 (0.9)
<i>Referral</i>	
Referral to plastic surgery	11 (4.8)
Referral to podiatry	2 (0.9)
Referral to otolaryngology	1 (0.4)
Referral to rheumatology	1 (0.4)
Referral to allergy	1 (0.4)
Referral to urology	1 (0.4)
Referral to PMR	1 (0.4)

ED&C Electrodesiccation and curettage, PMR physical medicine and rehabilitation

UMHS charity care. Of the 229 patients, 201 (87.7%) received conclusive evaluation and treatment at the time of their initial consultation; ten warranted further dermatologic care in the setting of the UMHS@Hope collaboration; 11, all with diagnoses such as pilar or epidermoid cysts or other surgical concerns, were referred to plastic surgery for same-day Hope@-UMHS excision; and seven patients were referred for further subspecialty treatment and/or surgery that could not be provided at HC.

Patients most commonly received care consistent with New Patient Level 3 evaluation & management (Table 4). Over the time period evaluated, the clinic was staffed by 92 unique volunteers, who contributed a total of 651 hours (Table 5).

DISCUSSION

As one of very few free dermatology clinics within the entire state of Michigan, the

Table 4 Services rendered

CPT code	Level of service	N
Evaluation and management		
99202	NP Level 2	11
99203	NP Level 3	201
99204	NP Level 4	2
99212	RV Level 2	1
99213	RV Level 3	10
99214	RV Level 4	3
Procedures		
11102	Tangential biopsy of skin	17
11103	Tangential biopsy, each additional lesion	10
11104	Punch biopsy	21
11105	Punch biopsy, each additional lesion	4
11200	Skin tag removal	3
17000	Cryosurgery of premalignant lesions	20
17003	Cryosurgery of premalignant, each additional lesion	4
17110	Destruction (Cryo, ED&C) benign lesions	17
17262	ED&C malignant lesion 1.1–2.0 cm	1
11900	Intralesional injection	8
54056	Cryosurgery of penis	10
87220	Potassium Hydroxide	10

CPT Current procedural terminology, NP new patient, RV return visit

Hope@UMHS collaboration patches a gap within Southeast Michigan’s health care safety net. Over the course of 8 years, HC referred 294 uninsured patients for dermatology consultation. The no-show rate of 13.4%, lower than the average no-show rates (17–31%) for dermatology clinics reported in the literature [27], demonstrated that patients were motivated to receive care. The no-show rate is noteworthy when viewed in context of a safety net clinic, as

Table 5 Volunteer contribution log for 30 clinics, 2012–2020

Volunteer position	Number of volunteers	Number of shifts	Total number of volunteer hours
Attending physician	13	51	168
Physician's assistant	1	2	6
Resident	45	82	276
Medical student	16	16	48
MA/LPN	12	23	85.5
Front desk staff	5	19	67.5
Total	92	193	651

LPN Licensed practical nurse, *MA* medical assistant

indigent patients are more than threefold more likely than their commercially insured counterparts to miss an appointment [27]. Of the patients evaluated in the clinic, 87% received definitive care upon initial consultation. A wide range of diagnoses were made. Nine patients were diagnosed with skin cancer, including one melanoma, and received definitive treatment. Our partnership also facilitated patient follow-up at Hope Clinic, which allowed the outreach clinic to focus on new consultations and thus treat a greater number of patients. Although not formally measured in our population, patients in clinic often expressed their gratitude for our efforts. Patient perception of the care received at free clinics is resoundingly positive: one survey showed that 97% of patients are satisfied with the care received at their free clinic, and 95.3% say they will likely use the clinic again [31].

Providers also benefit from Hope@UMHS efforts. Within the general population, volunteering positively affects mental health [32]. Participating in humanitarian efforts may increase provider satisfaction and decrease burnout by increasing psychological wellness via enhanced morale, social connections, and altruism [33]. Physician volunteers are most

commonly motivated by humanitarian and prosocial desires [36], although a formal survey on volunteer satisfaction in our setting would be needed to investigate this further. Our ongoing involvement with Hope@UMHS illustrates the sustainability of volunteerism within our institution.

Involving learners in the care of underserved populations has many advantages. For medical students, volunteering allows for early exposure to dermatology and serves as an excellent clinical teaching tool through bedside learning with residents and faculty. Similarly, residents gain an opportunity to treat a demographically diverse patient population as well as to become aware of the logistical barriers to patient compliance in the underserved as well as the general population. The Accreditation Council for Graduate Medical Education (ACGME) recognizes the importance of diversity in resident training, designating the care of diverse populations (including diversity in socioeconomic status, culture, national origin, and race) as a core competency that residents must fulfill prior to graduation [37, 38]. Research shows that free clinics may also play an important, formative role in career-long service among learners. Programs that offer opportunities for learners to work with underserved individuals have a positive impact on students' attitudes toward this population and may increase the likelihood for future service-based work [39].

The support of our department and institution was critical for our ability to provide comprehensive care to Hope@UMHS patients. Our affiliation with an academic center provided us with a pool of highly trained dermatologists and ancillary staff to recruit as volunteers. Engagement with legal, risk management, senior administration, and facilities management ensured liability coverage for UMHS volunteers involved in the Hope@UMHS efforts. By utilizing UMHS clinic space, we had access to specialized equipment which allowed providers to render point-of-care services. The ability to offer conclusive evaluation and treatment was of particular importance for this population given the many barriers to patient follow-up. Although not formally measured, the literature also suggests that operating in UMHS facilities

may have increased volunteer satisfaction, as a survey of physicians at a different safety net clinic found the most commonly cited challenges to be limited supplies and subpar equipment [21].

Limitations

Management recommendations may not correlate with compliance and patient outcomes, which were not analyzed in this study. Although the longevity of the collaboration suggests a mutually satisfactory arrangement, we also did not formally measure patient or volunteer satisfaction. Because of the clinic schedule, delays occur between referral and evaluation. Referring primary care providers must triage consultations and consider alternative options (emergency department, close primary care physician follow-up) when waiting is not reasonable. While retrospective in design, our results provide direction for future prospective study and analyses.

CONCLUSION

Our experience illustrates that collaborating with a nonprofit community clinic to provide free, comprehensive dermatology care in a university hospital setting is both feasible and impactful to those providing and receiving care and to the greater community. Future directions for improvement include the addition of teledermatology, including E-consults from healthcare providers, to bridge the gap between clinic sessions, as well as expanding the model to collaborate with other primary care community outreach efforts.

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Data Availability. All data generated or analyzed during this study are included in this published article.

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