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An Innovative Model for Providing Dermatology Services Within Primary Care

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ABSTRACT

OBJECTIVE: Dermatologic complaints are common in outpatient pediatrics. However, pediatric dermatology specialty care can be difficult to access. We aimed to test the feasibility of co-locating dermatology services within primary care and increase the proportion of patients treated for basic skin complaints within the medical home while decreasing wait times.

METHODS: The Rapid Assessment of Skin Health (RASH) clinic was created within a hospital-based primary care clinic in 11/2013. The clinic was staffed by 2 pediatricians trained in the dermatology department and supported with specialist advice as needed. Referral volume and wait times to dermatology and RASH clinic were tracked for visits between 11/1/12 and 10/31/18. A chart review was also conducted on a subset of RASH clinic visits. Primary care providers (PCPs) were surveyed about their experiences.

RESULTS: Fifty-eight percent of patients referred for a dermatologic complaint were scheduled in RASH clinic. Wait times for

new patient appointments in RASH clinic were significantly shorter than for new dermatology appointments in the previous 12 months (mean 36 days vs 65 days, $P < .001$). The monthly number of referrals to dermatology also decreased significantly after the RASH clinic opened (24/month vs 12/month, $P < .001$). Ten percent of RASH patients were referred on to dermatology. In a survey of PCPs ($N = 67$), 76% said the RASH clinic was "extremely/very helpful."

CONCLUSIONS: Providing dermatologic care to low or moderate complexity patients within the medical home is feasible and leads to better access to care. This innovative model could be spread to other clinics and subspecialties.

KEYWORDS: dermatology; patient-centered medical home; pediatrics; primary health care; referral and consultation

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WHAT'S NEW

It was feasible to embed a clinic within primary care for patients with dermatologic complaints using trained general pediatricians. Wait times for the embedded clinic were shorter than for dermatology, and the monthly number of dermatology referrals decreased significantly.

DERMATOLOGIC CONDITIONS ARE among the most common complaints seen in pediatric primary care.^{1,2} However, pediatric dermatology specialty care can be difficult to access due to high demand and a limited number of specialists in many regions.^{3–5} Dermatology has some of the longest wait times of any pediatric specialty, with reported average wait times up to 13 weeks.⁶ Also, inequity in the geographic distribution of pediatric dermatologists exists, including multiple states without any pediatric dermatologists.⁶ A 2007 survey of pediatricians suggested

that pediatric dermatology was one of the most difficult subspecialty services to access, with more than 80% reporting a shortage.⁷ Despite the difficulty accessing pediatric dermatology subspecialty care, pediatric residencies only provide minimal exposure,⁸ and many practicing pediatricians report feeling undertrained.²

Several strategies have been used to address the mismatch of dermatologic demand with access. Some adult centers have implemented urgent referral clinics, which enable referring PCPs to obtain rapid appointments for their patients. These clinics have increased referring PCP satisfaction, but there have been challenges in triaging patients to the urgent clinics appropriately.^{9,10} Others have used telemedicine and e-consult systems to provide more timely dermatologic care to patients.^{11–13} Again, these systems have generally been well-received by both patients and PCPs. However, there continue to be challenges around reimbursement, technology and legal liability. Patients also report a preference for face-to-face consultations.¹⁴

We created a new care model in which a small number of primary care providers (PCPs) were trained to manage low to moderate complexity dermatologic complaints within the patient-centered medical home (PCMH). We aimed to test the feasibility and efficacy of co-locating these services within primary care by increasing the capacity of PCPs to provide care for dermatologic complaints. We hypothesized that the Rapid Assessment of Skin Health (RASH) clinic would increase the proportion of patients treated for basic skin complaints within the PCMH, and decrease wait times for patients referred for dermatologic concerns.

METHODS

RASH CLINIC MODEL

The RASH clinic was embedded within a hospital-based pediatric clinic at Boston Children's Hospital (BCH) in November 2013. The clinic serves approximately 14,000 patients, which represents about 43,000 visits per year. Most patients live in urban areas surrounding the clinic and have public insurance. The clinic has 24 attendings and nurse practitioners, as well as 72 residents and fellows. One attending physician and one fellow based in primary care created the RASH clinic. In preparation for starting the RASH clinic, they shadowed dermatologists at BCH for one or two half-day sessions per week over a period of 3 months. The first few sessions of the RASH clinic were also staffed by a BCH dermatologist who saw patients alongside the RASH providers and discussed their diagnoses and treatment plans. This dermatologist remained available for consultation for RASH patients, which occurred monthly for the first 6 months, and on an ad hoc basis thereafter. RASH providers saw patients for 30 minutes compared with the usual 15-minute clinic visit slots to enable more time for patient education. Initially PCPs were asked to e-mail referral requests to the RASH providers for review, and if a patient was deemed too complex the RASH providers facilitated a dermatology referral. In April 2014, the clinic created a referral process through the Electronic Medical Record that enabled PCPs to request expedited appointments as well as routine appointments in RASH clinic, and also to ask for advice regarding specific cases.¹⁵ RASH providers also reviewed referrals to dermatology and offered to see those patients in RASH clinic when appropriate. The RASH clinic started as a monthly half-day session, but as demand grew, it occurred twice monthly and then weekly. In July 2014, the dermatology clinic at BCH closed to new, nonurgent patients for a period of 18 months due to high demand. PCPs referred patients to outside dermatologists during this time period when needed.

In addition to seeing patients within primary care, RASH providers delivered education and resources to the clinic. They regularly gave lectures to faculty and residents on basic dermatologic topics such as atopic dermatitis and acne. They also created an Eczema Care

Plan¹⁶ which was routinely used in the general primary care clinic as well as RASH clinic to provide detailed patient instructions, obtained supplies such as liquid nitrogen for the clinic, and conducted procedural teaching. Finally, RASH providers were frequently "curb-sided" by PCPs about patients being seen in the general practice.

ANALYSIS

We used BCHMicrostrategy 360 to obtain appointment and demographic data for patients who attended the dermatology and RASH clinics between November 2012 and October 2018. Descriptive statistics were used to describe demographic characteristics of the patients. We examined the dermatology referral volume, including both internal and external referrals, before and after introduction of the RASH clinic as well as wait times to scheduled RASH and BCH dermatology appointments using 2-sided *t* tests. We conducted a chart review of a subset of 500 RASH visits between November 2013 and October 2016 to quantify the most frequent diagnoses seen in RASH clinic, as well as the percentage of patients who needed to be referred to dermatology after a RASH visit, and the proportion of RASH visits that also included a primary care service such as vaccine administration or treatment for an unrelated concern. Finally, we conducted a survey of PCPs in November 2018 to assess provider satisfaction with the RASH clinic. This study was approved by the BCH Internal Review Board. Statistical analyses were conducted using SAS 9.4 (SAS Institute, Cary, NC).

RESULTS

Five hundred seventy-two unique patients were seen in the RASH clinic between November 1, 2013 and October 31, 2018, representing 828 visits. Of these, 52% were female, 33% were Black, 39% were Hispanic/Latino, and 68% had public insurance (Table 1). The mean age at the first visit was 6.5 (standard deviation 5.2) years.

Table 1. Demographic Characteristics of Patients Seen in RASH Clinic (11/1/13–10/31/18) Compared With General Clinic Population (5/15)

Characteristic	RASH (n = 572) (%)	Primary Care Clinic (n = 14,285) (%)
Gender, female	299 (52)	6931 (49)
Race/ethnicity*‡		
Asian	17 (3)	372 (3)
Black	190 (33)	6030 (42)
Hispanic/Latino	222 (39)	4494 (31)
White	31 (5)	883 (6)
Other	82 (14)	1562 (11)
Health insurance type†		
Public	391 (68)	9272 (65)
Private	178 (31)	4703 (33)
Other	4 (1)	135 (1)

RASH indicates Rapid Assessment of Skin Health.

*Missing 974 for race/ethnicity.

†Missing 176 for health insurance type.

‡*P* < .001.

Table 2. Prevalence of Dermatologic Conditions Seen in RASH Clinic (11/1/13–10/31/16), n = 500 visits

Dermatologic Condition	Percent of Visits
Atopic dermatitis	34
Fungal infection	10
Acne	7
Molluscum contagiosum	6
Warts	6
Cellulitis	4
Seborrheic dermatitis	4
Keratosis pilaris	3
Contact dermatitis	2
Nevus	2
Alopecia	2
Scabies	2
Folliculitis	1
Other	17

RASH indicates Rapid Assessment of Skin Health.

Compared with the remaining clinic population during the same time period, the RASH clinic saw a slightly higher proportion of Hispanic/Latino patients and a lower proportion of Black patients.

The most common diagnoses seen in RASH clinic included: atopic dermatitis (34% of visits), fungal infection (10%), acne (7%), molluscum contagiosum (6%), and viral warts (6%) (Table 2). Ten percent of visits resulted in a dermatology referral after being seen in RASH clinic for conditions such as erythema nodosum, severe psoriasis, and atypical nevi. In addition, 25% of visits included at least 1 additional primary care need.

Of the 1709 new referrals for a dermatologic complaint between 11/1/13 and 10/31/18, 58% were scheduled in RASH clinic instead of dermatology. Average monthly wait times for new patient appointments in RASH clinic between 11/1/13 and 10/31/18 were significantly shorter than for new BCH dermatology appointments during the

previous 12 months (11/1/12–10/31/13) (mean 36 days vs 65 days, $P < .001$). The mean monthly number of referrals to dermatology decreased from 24/month in the 12 months prior to the opening of the RASH clinic, to 12/month in the post period ($P < .001$; Figure). If the time period when BCH dermatology was closed to new patients is excluded from the analysis, the monthly number of referrals to dermatology decreased from 24/month to 14/month after the opening of the RASH clinic ($P < .001$). Two hundred thirty-three visits were completed in RASH clinic during the period of time when BCH dermatology was closed.

In a survey of PCPs (N = 67, RR 69%) in November 2018, 76% said the RASH clinic was “extremely” or “very helpful.” When PCPs were asked to rank the benefits of the RASH clinic, they said the speed of access to RASH appointments was the primary benefit (51%), followed by the expertise of RASH providers (21%), the convenience for families (10%), and the additional time offered for visits (10%). PCPs said the care provided in RASH clinic for basic dermatologic conditions was definitely (61%) or somewhat (31%) comparable or better than the care provided in dermatology clinic. When asked how RASH clinic could be improved, the most common request was for additional educational sessions and materials (24%).

DISCUSSION

The RASH clinic model successfully decreased wait times for patients with dermatologic complaints and reduced the need for referral to dermatology from primary care. Twenty-five percent of patients also received a primary care service during their RASH appointment, such as vaccine administration or treatment for an unrelated condition, which would otherwise not be provided in a

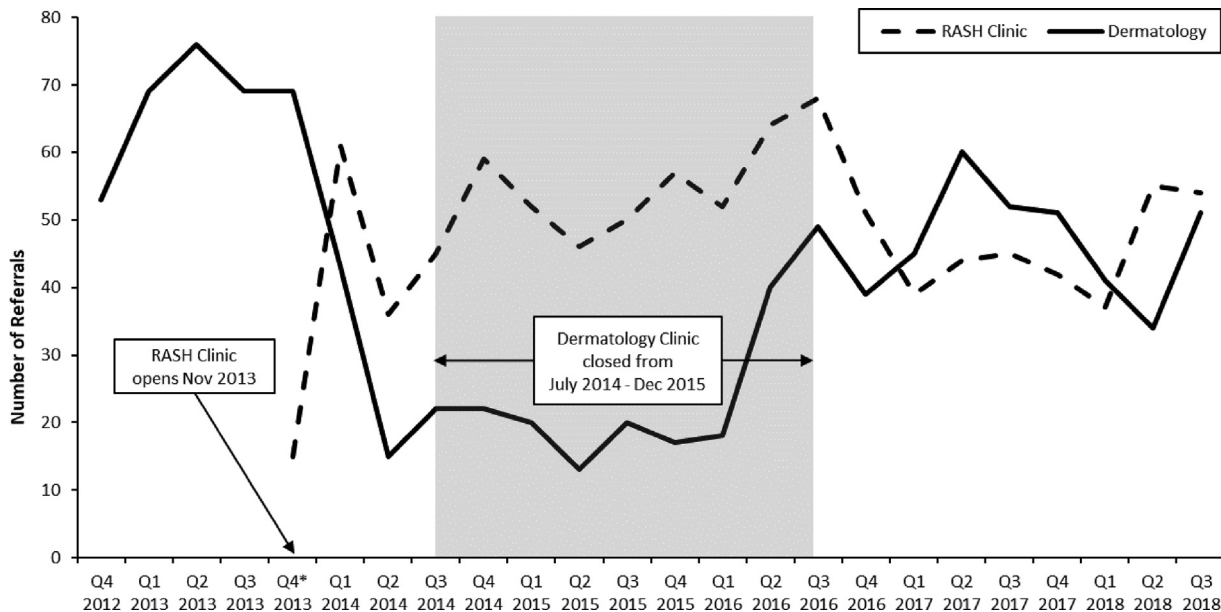


Figure. Number of referrals to RASH clinic or to dermatology by year and quarter, 10/1/12 to 9/30/18. RASH indicates Rapid Assessment of Skin Health.

specialist consultation visit. The RASH clinic was popular with PCPs, particularly due to the shorter appointment wait times.

There is a shortage of pediatric subspecialists in the United States, especially in the field of dermatology which has some of the longest wait times for appointments.^{5,6,17} Although one solution would be to train more pediatric dermatology specialists, there have been challenges recruiting to the field,¹⁸ as well as inequities in geographic distribution of the pediatric dermatologists who are available.⁶ Thus, it is critical to explore new health care models to provide high-quality care to patients. Previous studies estimate that as many as 40% of specialty visits could be managed in primary care, and suggest that primary care physicians could manage more conditions with enhanced training.^{19–21} By employing trained primary care pediatricians, the RASH clinic successfully decreased wait times for patients with low to moderate complexity skin complaints, with only 10% of patients requiring subsequent referral to dermatology. In fact, the RASH clinic served a critical role for patients when the BCH dermatology clinic closed to most new patients for a period of 18 months due to a shortage of providers. Compared with the general clinic population, RASH also saw a slightly higher proportion of Hispanic/Latino patients, and a lower proportion of Black patients. While these differences were small and may not be clinically meaningful, they may suggest language barriers or cultural factors played a role in referral patterns.

A number of care models have been tested to improve specialty access for patients. Some institutions embed general pediatricians within subspecialty clinics to expand capacity for patients.^{22,23} These models have been shown to reduce wait times while maintaining care quality.^{24,25} However, in studies of co-located mental health services, families report that care embedded within the PCMH is more convenient, comfortable, and accessible than separately located specialty care. PCPs also note there is better patient follow-through and enhanced communication with specialty providers.^{26–28} Other institutions have used telemedicine and e-consult systems to provide more timely care to patients, particularly in the field of dermatology.^{11–13} These services have been vastly expanded during the COVID-19 pandemic to facilitate social distancing. Studies of these systems indicate that patients prefer face-to-face consultations, as well as being able to pose questions directly to specialists. Dermatologists have also voiced concerns about diagnosing through pictures alone, as well as legal and reimbursement questions, challenges with technology and ensuring patient privacy.^{14,29} The RASH clinic provided an alternative option to retain care within the PCMH for low to moderate complexity conditions. This strategy had the advantage of providing care within a familiar setting and allowing easy communication with PCPs, as well as delivery of additional primary care services during the same visit. It also enabled the trained pediatricians to share their knowledge through lectures, as well as practical tools such as liquid nitrogen and the Eczema Care Plan, which enhanced the care of

patients throughout the clinic. We are not aware of any similar studies of co-located specialty services for non-mental health conditions.

This study had several limitations. It was conducted at a large academic center with relatively good access to dermatology training and advice, and thus may be difficult to replicate in a different setting. Furthermore, although we asked PCPs to continue to place referral orders for outside dermatology referrals during the 18 months when BCH dermatology was closed, they may have advised patients to call directly as the appointments would have to be scheduled outside BCH. We also could not track wait times for external referrals, although the majority of specialty referrals from our clinic are internal. A model of this type also requires enhanced training for pediatricians and the potential need to offset other primary care activities, which may not be possible in every practice. Finally, given that the RASH pediatricians did not receive comprehensive dermatology training, there was the potential for delayed or inappropriate care if an unusual diagnosis was missed.

Given the success of the RASH clinic at the hospital-based primary care site, we recently expanded it to the other BCH primary care clinic located in a community setting. We have also started collecting patient feedback to help us further improve our services and reflect on this model of care. Finally, we have added a telehealth option for families given the COVID-19 pandemic, and are continuing to refine our triage process to better understand which visits can be effectively conducted virtually.

CONCLUSIONS

Providing care to patients with low or moderate complexity skin complaints within the medical home is feasible and leads to better access. The RASH clinic reduced wait times for patients with dermatologic conditions and decreased the need for outside referrals. It also enabled provision of primary care services during RASH visits, as well as enhanced education and tools for PCPs in the general clinic setting. This innovative model could be spread to other clinics and subspecialties.

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