

Improving access to dermatology specialist care: review of a dermatologist- and general practitioner-integrated clinic model

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ABSTRACT

Introduction. This study presents an innovative model of integrated dermatology service delivery. Kauri HealthCare (KHC) is a general practice serving around 19 000 patients in Palmerston North, New Zealand. A ‘mini clinic’ is provided by an on-site dermatologist that is available for patients of KHC. Referring practitioners are required to attend with the patient to present their case and seek dermatologist input. This allows for patients to receive a specialist opinion, as well as for the referrer to receive practical and academic teaching, record findings, and arrange any further investigations, follow-up, or management. **Aim.** To describe the nature of patient presentations and clinical outcomes of a novel dermatologist–general practitioner integrated clinic based in a provincial healthcare practice. **Methods.** Descriptive analysis of all referrals to the Kauri HealthCare dermatology mini clinic from April 2017 to December 2022. **Results.** During the study period, 964 diagnoses were recorded across 806 patients booked into the mini clinic. The most common presenting conditions were: (1) eczema; (2) psoriasis; (3) actinic keratoses; (4) naevi; and (5) seborrheic keratosis. Practitioners sought dermatology opinion on the diagnosis and/or management of skin conditions. Further referral to secondary care was not required for 86% of patients. **Discussion.** Improvements could be made to better serve those of Māori and Pacific ethnicity, or living in high socioeconomic deprivation. Results indicate where teaching could be prioritised for practitioners, postgraduates, and medical students. Overall, this is an innovative clinic model, which seeks to provide equitable care, medical education, and collaboration between primary and secondary services.

Keywords: collaboration, dermatology, general practice, health services, integrated delivery of healthcare, medical education, primary care, skin.

Introduction

Optimal management of skin disease often requires long-term involvement of both a dermatologist and general practitioner (GP).¹ In New Zealand, there is a recognised shortage of dermatologists particularly affecting the public system, and a concern that the current state is unsustainable.^{2,3} We present an innovative model of dermatologist- and general practitioner-integrated service delivery, which seeks to provide equitable care and medical education.

Kauri HealthCare (KHC) is a large public health organisation and integrated family healthcare practice serving around 20 000 patients in the Manawatū region. In addition to GPs and various other clinical facilities, a private dermatology clinic is also available on-site. Patients can be referred through their GP or self-request an appointment. In addition to this service, there is a ‘mini clinic’ provided by this dermatologist that can be booked by GPs, nurse practitioners (NPs) or junior postgraduates; collectively referred to as ‘practitioners’. These mini clinics consist of 5- to 10-min appointments intended for patients who might not be able to afford private dermatology appointments or whose presentation might not meet the criteria for timely public dermatology care. This service

WHAT GAP THIS FILLS

What is already known: There is a recognised shortage of dermatologists in New Zealand, thus innovative strategies are required to improve access to specialist care. Collaborative services between specialists and general practitioners already exist, but have not been widely utilised in the field of dermatology.

What this study adds: This collaborative dermatologist and general practitioner clinic model is the only one of its kind in New Zealand. It acts as an effective triage service, as the majority of presenting patients do not require further referral to secondary care.

is only available for patients based at KHC. Referring practitioners are required to present their patients as a short case and seek dermatologist input. Junior postgraduates and senior medical students can also attend this clinic as an opportunity for increased exposure to, and education in, dermatology. This system allows for patients to receive a specialist opinion; the referring practitioner can also receive practical and academic teaching, record findings, and arrange any further investigations, follow-up, or management.

The aim of this study is to review the nature of referrals and appointment outcomes from this collaborative system of

specialist and generalist care. Currently, KHC is the only general practice in New Zealand that offers such a joint dermatology service. We anticipate those referred to the KHC mini clinic are representative of patients in other settings who are in need of, yet unable to receive, specialist care due to financial barriers or overwhelming demand for public services. Demographics of the mini clinic patients compared with the KHC and regional population is provided in Table 1.^{4,5} The results might highlight whether this model is able to provide effective and equitable care, and where improvements can be made. Patterns of common diagnoses and presentations to this clinic might also guide areas of further teaching that would be valuable to general practitioners, postgraduates, and senior medical students.

Methods

Descriptive analysis was carried out for all referrals to the KHC dermatology mini clinic from April 2017 to December 2022. The practice dermatologist collected data for patients referred during the study period, including demographics, nature of the referral, diagnoses made, and need for specialist follow up. Using the statistical software, SAS (SAS Institute), the data structures were re-formatted to harmonise with REDCap import standards and transcribed. REDCap is a secure, *United States Health Insurance Portability and*

Table 1. Comparison of mini clinic demographics to the general practice population.

Demographics	Dermatology mini clinic (%)	Kauri HealthCare (%)	Palmerston North (%)
Gender			
Female	63	55	51
Male	37	45	49
Ethnicity			
European	78	73	75.9
Māori	10	12	18.7
Asian	8	3	12
Middle Eastern/Latin American/African	2	1	1.5
Pacific Peoples	2	3	5.3
Other	0.4	8	1.6
Socioeconomic quintile			
			MidCentral DHB (district health board) (%)
1	22	23	7.9
2	18	17	17
3	24	23	21
4	21	22	19.9
5	16	16	34.3

Accountability Act 1996 (HIPAA) compliant web-based application hosted and supported by the Medical Research Institute of New Zealand. Sections of free text describing the dermatologist's diagnosis of each patient were analysed by investigators and manually coded via the International Classification of Diseases (ICD-11).⁶ In the case of missing or incomplete data, the KHC practice system was accessed to collect the needed information in patient records.

Ethics

The MidCentral District Health Board (DHB) Research Support Office granted locality approval for this study. The following work is out of scope for national ethics approval in New Zealand.

Results

Between April 2017 and December 2022, 806 referrals were made to the KHC dermatology mini clinic. Referred patients were more likely to be female ($n = 504$, 63%). Adults aged over 45 years comprised around half of all patients. The mean age of patients was 44 years, with a range from 4 weeks to 94 years (Fig. 1). The most represented ethnic group was European ($n = 609$, 78%), followed by Māori ($n = 80$, 10%), then Asian ($n = 60$, 8%). Patients were assigned quintile values, which reflect their socioeconomic status, as measured

by area-based composite indices. Quintile 1 represents the least deprived, whereas quintile 5 represents the most deprived. The mean quintile was 3. The least number of patients were seen in quintile 5 ($n = 121$, 16%), with the most seen in quintile 3 ($n = 180$, 24%), followed by quintile 1 ($n = 168$, 22%).

The mini clinic service was mostly utilised by GPs ($n = 647$, 83%), compared to NPs ($n = 137$, 17%). Appointments were made primarily to query diagnosis ($n = 414$, 53%) followed by management ($n = 146$, 19%), then a combination of both diagnosis and management ($n = 221$, 28%) (Table 2).

Patients often had more than one presenting complaint or differential diagnoses. Therefore, individuals might have been assigned more than one diagnosis, with a total of 964 diagnoses recorded across 806 presentations. Conditions of an inflammatory nature were most common ($n = 345$, 43%), followed by tumours ($n = 149$, 19%) and infection ($n = 89$, 11%) (Table 3). The five most common diagnoses made were: (1) eczema; (2) psoriasis; (3) actinic keratoses; (4) naevi; and (5) seborrheic keratoses (Table 4). A diagnosis of 'eczema' also included variants such as: discoid, atopic, contact dermatitis, seborrheic dermatitis, hand eczema, lower limb venous eczema, and post-COVID eczema. Patients with 'psoriasis' included subtypes such as: guttate psoriasis, acral psoriasis, nail psoriasis, sebopsoriasis, or flexural psoriasis. The range of 'naevi' seen included compound, junctional, dermal, halo, blue, and dysplastic.

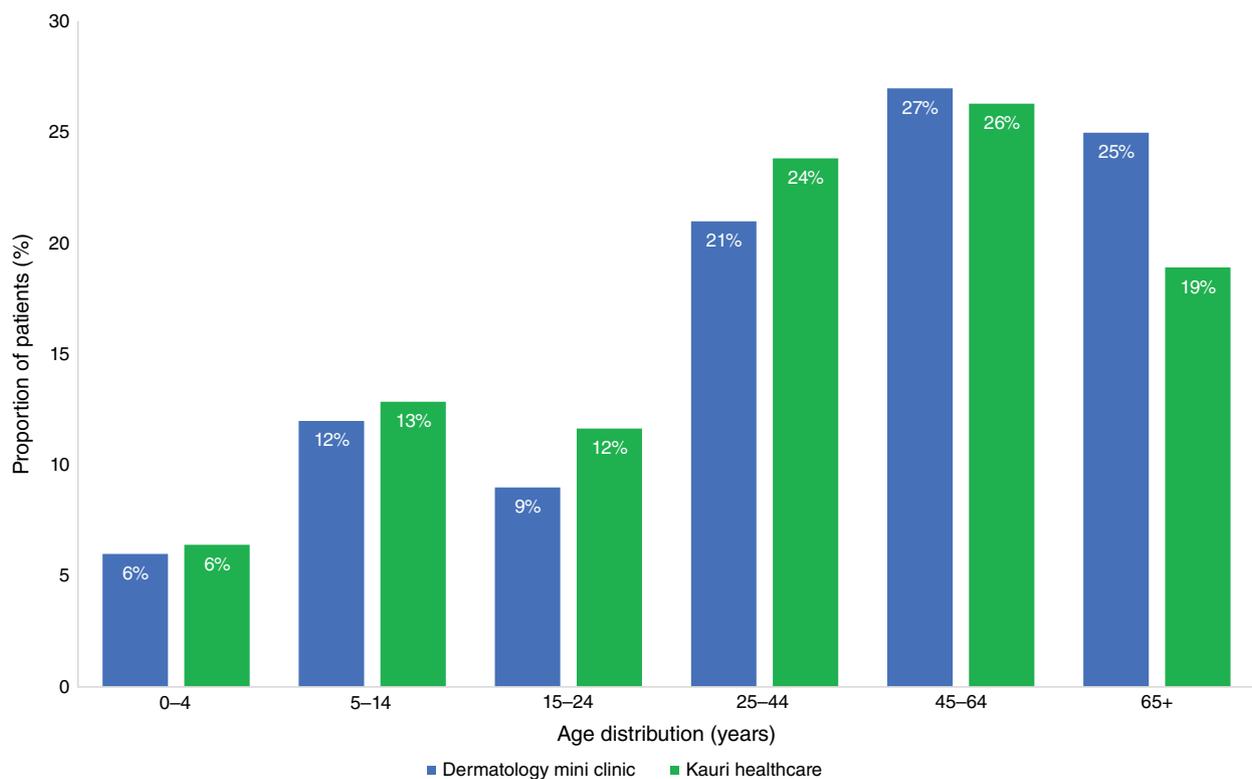


Fig. 1. Comparison of mini clinic age distribution to general practice population.

Table 2. Primary purpose of referrals for most commonly presenting conditions.

Primary purpose of referral	Diagnosis (%)	Diagnosis + management (%)	Management (%)
All presentations (N = 781)	53	28	19
Common diagnoses			
Eczema – excluding contact dermatitis (N = 117)	33	41	26
Contact dermatitis (N = 57)	44	32	25
Psoriasis (N = 52)	38	35	27
Actinic keratosis (N = 44)	73	14	14
Naevi (N = 34)	65	24	12
Seborrhoeic keratosis (N = 26)	85	0	15

Table 3. Aetiological class of presenting conditions.

Aetiological class	Proportion (%)
Inflammatory	43
Tumour	19
Infection	11
Pigmented	10
Autoimmune	6
Trauma	4
Degenerative	3
Vascular	1
Genetic	1
Other	2

After specialist assessment, attending clinicians were advised to organise further referral to secondary care for 14% ($n = 111$) of patients. Of these patients, 48% ($n = 58$) required patch testing and 21% ($n = 25$) were recommended to have a full dermatologist appointment.

Missing data might be due to incomplete record keeping or absence of the information from available patient records. Reported proportions of variables exclude unknown data from the denominator count.

Discussion

In this study, we described over 5 years' worth of data collected by the resident dermatologist of Kauri HealthCare within a unique specialist-GP integrated mini clinic. A range of information was explored including characteristics of patients, context of referrals, and potential further follow up from the appointment.

Kauri HealthCare employs the full-time equivalent of 13.4 GPs and 3.9 NPs, an approximate ratio of 3.5 GP:1 NP. Referrals to the dermatology mini clinic occur at a ratio of 5 GP:1 NP. This might be a reflection of proportionally fewer patients with skin-related complaints being seen by

NPs, or might also suggest that NPs are not utilising this service at the same rate as GPs. There was a notable gender imbalance as more females were referred to the service compared to males (Table 1). Reasons for this are likely multifactorial, but might be the result of increased health-seeking behaviours such as seeing a GP, and in general, females are more commonly affected by skin-related disorders.^{7–10} Dermatological conditions exist in patients of all ages.¹¹ This is seen in the wide age range of patients, from infants to elderly, who presented to the mini clinic (Fig. 1). The age, ethnicity and socioeconomic profile of mini clinic patients generally resembled that of all Kauri HealthCare patients, with those aged over 65 years, European and Asian patients slightly over-represented and Māori and Pacific patients slightly under-represented (Table 1). This suggests that patients living in high deprivation, and who are of Māori or Pacific ethnicity are underserved in this clinic setting. Further considerations might be made to improve the equitable utilisation of this service. A contributing factor is likely due to the KHC population consisting of a greater proportion of patients in higher socioeconomic quintiles compared to the overall region. In addition, recognised higher prevalence of skin cancer in older New Zealand Europeans might also influence results, with 89% of all mini clinic skin cancers in NZ European patients and a further 75% of this group being aged over 60 years.¹²

Our study provides some insight into the range of conditions that require escalated input beyond traditional primary care settings. In the mini clinic, 86% of patients did not require further specialist referral, thus combatting the overwhelming load placed on the public dermatology service. Skin disorders can manifest with a great variety of clinical and dermatoscopic features, which can be further complicated by uncommon or rare presentations.^{13,14} These are cases where a practitioner might have diagnostic and therapeutic uncertainty and hence utilise the dermatology mini clinic service. This model provides an opportunity for interactive education, which aims to support and enhance the skills and knowledge of clinicians. In the long term, when faced with similar scenarios, practitioners might feel more confident in diagnosing and managing these cases.

Table 4. Most commonly presenting conditions.

Diagnosis	Proportion of patients (%)	Diagnosis	Proportion of patients (%)
Eczema	21.6	Tinea	2.6
Psoriasis	6.6	Squamous cell carcinoma	2.4
Actinic keratosis	5.5	Alopecia or hair loss	2.0
Naevi	4.3	Melanoma	1.9
Seborrhoeic keratosis	3.2	Acne	1.7
Urticaria	2.7	Rosacea	1.7
Basal cell carcinoma	2.6	Molluscum contagiosum	1.6
Warts	2.6	Scabies	1.6

This study demonstrates the value in clinicians having a system of record keeping patient encounters and appointments. The mini clinic database provides insight into specific areas that could potentially be incorporated into wider education for clinicians, postgraduates, and medical students. Dermatology expertise was most often requested for inflammatory dermatoses such as eczema and psoriasis. Referrers were more likely to seek advice regarding the diagnosis of contact dermatitis, as opposed to other forms of eczema where management was an additional concern. In contrast, most patients with actinic keratoses (73%) and seborrhoeic keratoses (85%) were referred primarily for an opinion on diagnosis. Referrals regarding psoriasis were needed for a mixed combination of diagnosis and management guidance (Table 2). These are examples of areas where there could be value in prioritising targeted education for relevant health professionals. Indeed, an example of direct action, the resident dermatologist at KHC subsequently delivered a presentation to local health professionals, which aimed at upskilling their ability to recognise and manage eczema and psoriasis.

Other examples of service collaboration to enhance professional relationships and patient-centred care have been utilised in similar areas of dermatology and plastic surgery. Co-author Reiche, previously analysed a tiered practitioner, general practitioner with special interest in skin cancer, and a dermatologist clinical review pathway.¹⁵ Although that was focused on reducing excision of benign skin lesions, it was recognised that having a service, which bridges the gap between primary and secondary care, can provide patients with more efficient diagnostic opinion and earlier reassurance. The study by McGeoch *et al.* reviewed a 'see-and-treat' skin clinic based in Christchurch with plastic surgeons and local GPs.¹⁶ Hospital-based clinics provided GPs the opportunity to carry out minor excisions and biopsies under supervision of surgeons. The aim was to increase capacity for clinicians to treat and manage skin cancers in their local practices.

The article by Magin and Tng described the goal of upskilling GPs as 'simplistic' and that instead 'meaningful

collaboration' should be sought after.¹ This short case model might be more time- and resource-intensive for a specialist, but long term can improve overall efficiency, and reinforce synergistic relationships between primary and secondary care.¹⁵ The current KHC dermatology mini clinic model represents a framework that could be further improved to provide dermatology care in other settings or applied to other medical specialties. Key considerations for such a service include effective database management and equitable service provision. This study relied on a self-initiated and administered database. These records require active effort to be maintained, on top of regular clinical and day-to-day duties. The cumulative results might be useful, but if a clear and sustainable method is not set, then portions of data might be incomplete or inconsistent. The efficiency of the current data collection method is aided by the fact that the dermatology and KHC general practice patients are linked within the same electronic record. The KHC mini clinic is only available two sessions per week, which likely limits accessibility for some groups of patients.

The majority of patients were treated or managed in this service without requiring further referral to secondary care. Although this does not completely substitute the need for full dermatology assessments, it provides a sort of triage process in the context of high demand for public services. This study provides insight into the nature of patients who might not typically be able to access dermatology expertise in other settings. Thus, this unique model of dermatology delivery can provide effective care for patients who otherwise would have unmet needs. Having a dermatologist office based on-site of a general practice can enhance shared care of patients and reduce barriers to implementing a similar mini clinic. It also provides an alternative avenue for dermatologists to provide equitable care that bridges the gaps between the extremes of specialist and public hospital services. The potential benefits of adopting this model nationally could be validated in pilot trials of similar clinics, or further exploration into the current KHC model around efficiency, cost-saving, and perceived benefit from patients and clinicians.

In conclusion, this study described the characteristics of patients, types of referrals, variety of presentations, and appointment outcomes of a joint specialist–practitioner service. As such, the Kauri HealthCare dermatology mini clinic represents a scalable, novel service with potential to improve equitable care, ongoing learning for general practice professionals, and health–economic benefit to the New Zealand healthcare system.

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Data availability. The data underlying this article will be shared upon reasonable request to the corresponding author.

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