

ACADEMIC

Turning the tide on the “seven-year itch” in seven months

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“Imagine you are a wealthy philanthropist with unlimited funds. Discuss the problem of scabies in the New Zealand-Australia-Pacific area. How will you use your wealth to correct the problem?”

Introduction

Scabies, or *māte māngeongeō rīha*, is a dermatological condition of significant public health concern in the Oceania region. It causes extreme itching, which can be unbearable, and can lead to debilitating sequelae, including rheumatic heart disease (RHD). In this essay, I will firstly consider scabies from a clinical perspective, before exploring the challenges this disease poses in the Pacific, Australia, and Aotearoa New Zealand. Finally, I will outline my imaginative, ambitious vision into which I would invest philanthropic funds. I believe my proposal could feasibly make substantial in-roads into control of the “seven-year itch” in seven months by harnessing synergies with coronavirus disease 2019 (COVID-19) management.

Clinical Overview

Scabies is a skin infection caused by the parasitic mite *Sarcoptes scabiei var. hominis*.¹ This common condition can affect anyone, and particularly those at the extremes of age. Risk factors include poverty, overcrowding, institutional living, and immunodeficiency. Transmission occurs via skin-skin, sexual, and indirect contact.¹ The mites induce type I and/or type IV hypersensitivity reactions, manifesting as an intensely itchy rash which has highly heterogenous clinical presentations.² Broadly speaking, scabies can be conceptualised as having asymptomatic, typical, nodular, complicated, or crusted appearances.³

Diagnostic work-up includes microscopy, skin biopsy, and dermatoscopy.¹ Consensus criteria published by the International Alliance for Control of Scabies (IACS) in 2020 guide the ultimately *clinical* diagnosis.⁴ Scabies can be treated effectively with scabicides. These may include topical permethrin or oral ivermectin; the latter is typically used for mass treatment. Other measures include laundering and sanitation measures.¹

With effective treatment, scabies generally improves within a few days, and resolves within a month. Complications include secondary impetigo, cellulitis, sepsis, post-streptococcal glomerulonephritis, and, crucially for the Aotearoa New Zealand landscape, RHD.^{5,6} Crusted scabies is a particularly contagious variant with distinct risk factors, classically presenting as a scaly rash with minimal to no itch.⁷ Institutional scabies is another subset with specific management from a public health standpoint.³

Scabies in the Pacific, Australia, and Aotearoa New Zealand

Let us now apply a population health lens to the problem of scabies in the Pacific, Australia, and Aotearoa New Zealand. Consecutive Global Burden of Disease studies have estimated the worldwide prevalence of scabies between 2010 and 2017 to vary from 100 to 200 million.^{8,9}

In 2015, scabies accounted for 0.21% of disability-adjusted life-years (DALYs) from all conditions.¹⁰ Within this global context, scabies presents a significant public health challenge in Oceania.

Despite being a common, problematic condition with frequent complications and significant impact on morbidity, quality of life, and health systems, responses to scabies in the Pacific have never been prioritised.⁹ Indeed, scabies was only added to the World Health Organisation List of Tropical Neglected Diseases in 2017.¹¹ The Pacific has the third highest age-standardised DALY burden of 21 regions globally, at 120.34 DALYs per 100,000 people.¹⁰ The Pacific nations Papua New Guinea and Fiji are among those with the highest estimated prevalence of scabies worldwide.¹⁰

Some of the largest studies of scabies have occurred in Pacific nations such as Fiji and the Solomon Islands, which provide case studies of this condition in developing Pacific nations.⁹ A landmark, world-first national survey of scabies and impetigo prevalence in Fiji involving 10,887 participants across 75 urban and rural communities estimated a national prevalence of 18.5% in 2015.¹² Alarming, prevalence was double in Indigenous iTaukei Fijians compared with non-Indigenous Indo-Fijians, and 43.7% in children aged five to nine.¹² A subsequent prospective study over 48 weeks identified 788 hospital admissions for skin and soft tissue infections (SSTIs), of which 72% were attributable to sequelae of scabies.¹³ These presentations occupied 10% of hospital bed capacity over this time, reflecting a significant health system impact. Similarly, Indigenous Fijians and those aged below five or above 55 were more likely to present with SSTI.¹³

As a further example, the picture in the Solomon Islands is similar. A recent study involved 20 villages in the Western Provinces, with nurses conducting clinical assessments on 5239 participants against 2020 IACS diagnostic criteria. Overall prevalence was estimated at 15%, with individual villages having prevalences varying between 3.3% and 42.6%.¹⁴ These findings concord with earlier estimates.¹⁵ Beyond purely medical impacts, scabies impacts quality of life, with flow-on effects for education and employment prospects.¹⁶ Research into the wider social and economic impacts of scabies is needed.⁸

Less is known about scabies in Australia and Aotearoa New Zealand, which, unacceptably, may reflect the characterisation of scabies as a condition affecting marginalised communities within developed countries.¹⁷ Australian research has tended to focus on crusted scabies in Aboriginal communities in northern Australia, who are believed to have among the highest rates of crusted scabies worldwide; approximately one in three may be infected in some communities.⁹ A two-year prospective study in the Northern Territory highlighted the difficulty in effectively managing this disease in endemic settings, building the case for public health leadership.¹⁸ A total of 80 patients experienced 92 episodes of crusted scabies, of whom 95% were Indigenous and 71% were from remote Indigenous communities. Despite successful treatment, the majority of the 33 episodes of recur-

rence were attributed to re-infection within the community. Patients required isolation precautions for a median duration of two weeks, impacting individuals, their families, and the health system. Undiagnosed community cases presented a risk for institutional outbreaks, undermining individual treatment strategies.¹⁸

In Aotearoa New Zealand, scabies is a particularly concerning public health problem because of its association with RHD, a serious, preventable, and highly inequitable disease which has been described by leading epidemiologist Professor Michael Baker as a “disease we shouldn’t have.”¹⁹ A recent cohort study following 213,957 children in Auckland revealed that those diagnosed with scabies were almost nine times more likely to develop acute rheumatic fever (ARF) or chronic RHD over five years after adjusting for confounders, providing epidemiological evidence that these diseases are linked.²⁰ Risk factors for both scabies and ARF include Māori and Pacific ethnicity, male sex, low socio-economic status, and dental caries. A subsequent study concluded scabies control could be important in reducing rates of ARF.²¹

A Vision for Scabies Disease Control

Turning now to consider how to address the challenge of scabies in Oceania, it is empowering that the framing of this essay question invites blue-sky thinking. This style of problem-solving is valuable and perhaps underemphasised in medical training. However, in what follows, I make the case that solutions need not be unattainable fantasies. Rather, the current COVID-19 environment provides a unique opportunity for philanthropic investment to make a meaningful difference to scabies control by harnessing the public health synergies between COVID-19 and scabies management.

In devising a solution, I thought pragmatically about the “here and now.” My observations as a frontline COVID-19 vaccinator inspired my thinking. I recognised that mass COVID-19 vaccination presents a unique proposition; collectively, we are wanting almost everyone to have a meaningful interaction with a trusted healthcare professional. Whilst the unequivocal message surrounding COVID-19 has rightfully been to vaccinate, vaccinate, vaccinate, what if we vaccinate, vaccinate, vaccinate — and *innovate* by combining a scabies control programme with the existing measures for COVID-19?

In essence, I am proposing that a community dermatology approach to scabies is integrated alongside the current COVID-19 response. At the broadest level, a scabies control programme would need to comprise mapping disease burden, enacting control strategies, monitoring and evaluation, and managing other major issues.²² Concretely, this would require three pillars: surveys to estimate disease prevalence, population treatment with mass drug administration (MDA) where scabies prevalence exceeds 10%, and active case management.^{17,22} Community education and addressing upstream factors would also be important.²³ Unequivocally, community partnership and Indigenous self-determination must be embedded within any response.^{6,24}

Disease prevalence surveys could be carried out seamlessly and simultaneously with a COVID-19 vaccination appointment. Simple clinical algorithms probing key features of history and examination have been shown to identify scabies with high sensitivity and specificity by non-expert clinicians in constrained conditions.⁶ These could therefore be appropriately administered by healthcare workers in vaccination clinics. An intrusive, time-consuming, full-body skin examination that has traditionally comprised the diagnostic workup would clearly not be practical in this setting. However, an abbreviated inspection of the exposed aspects of the upper and lower limbs has been shown to detect scabies with 90% sensitivity regardless of disease severity, or the presence or absence of impetigo.²⁵ Whilst this requires more training to administer, it could be conducted alongside a COVID-19 vaccination.

Population treatments for scabies, such as MDA, have demonstrated proof of concept in communities where the disease is endemic: five communities in the Solomon Islands participated in an intensive treatment programme between 1997 and 2000, comprising a single 200 mc/kg oral dose of ivermectin (or a permethrin regime where

ivermectin was contraindicated), followed by active case-finding tri-annually.²⁶ No further interventions occurred after 2000. 15-year follow-up indicates scabies has been virtually eliminated from these communities; of 388 individuals followed up, only one person was diagnosed with scabies, and 12 people reported a household contact had been diagnosed with scabies in the previous year.²⁶

For this proposal, once communities with high prevalence of scabies are identified, a single oral treatment could be offered alongside an eventual COVID-19 booster shot.²⁷ Admittedly, part of the success of the Solomon Islands study may be attributable to the relative isolation of the participating communities.²⁶ Whilst this characteristic would not be replicable in pre-COVID times, the regional lockdowns across Aotearoa New Zealand and further afield in the region that seem inevitable for the foreseeable future may go some way to providing the isolation required for MDA to be effective long-term.

Finally, the COVID-19 pandemic has necessitated resourcing significant contact tracing capacity and expertise, which could be applied to active case management of patients with scabies and their contacts. A scabies programme run in partnership between the Northern Territory government and Aboriginal communities using an active case-finding strategy demonstrated a statistically significant 44% reduction in recurrence in patients with crusted scabies, and a 75% reduction in presentations of any type of scabies in contacts.²⁴ Scabies is not currently a notifiable disease in Aotearoa New Zealand²⁸; making scabies notifiable, as the Northern Territory did in 2016, would be a valuable first step.¹⁸ Similarly to COVID-19, whilst lockdowns may lead to overcrowding and scabies transmission, this risk can be mitigated with timely identification and intervention.

Competing health priorities in resource-limited settings have often been cited as barriers hampering better scabies control^{6,9,17}; I would argue that scabies and COVID-19 ought to be thought of as *complementing* priorities. Nonetheless, this intervention would need to consider health workforce capacity to take on new initiatives, whilst also taking care not to oversaturate health consumers with information. Acceptability of MDA would need to be assessed, although qualitative research indicates attitudes may be favourable where scabies is endemic.²⁹

Whilst targeting two health conditions simultaneously may seem fanciful at best and delusional at worst, it would not be without precedent; in the Solomon Islands, scabies mapping and treatment occurs alongside programmes for trachoma and yaws.⁸ Just as sexual health physicians have embraced current pandemic settings as a “once-in-a-lifetime opportunity” to break chains of sexually transmitted infections,³⁰ ambitious, win-win thinking will allow us to maximise this window to control scabies. As with COVID-19, scabies vaccination may join the future toolkit.³¹

Conclusion

In conclusion, scabies is a parasitic infection that presents a significant, pressing, and ongoing challenge in Oceania. The parallels between scabies and COVID-19 are striking; both diseases may benefit from aggressive case-finding, population treatments, and reduced movements. Given large parts of the population are now engaged with public health discourse and measures, the COVID-19 pandemic presents a unique opportunity for a scabies control programme grounded in public health and community dermatology principles.

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About the author

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