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Commentary

Addressing normalization using culturally relevant approaches: An important adjunct to reducing the burden of impetigo and scabies

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Taiaroa and colleagues report high impetigo and scabies prevalence from a cross sectional, observational study among school children in rural Samoa [1]. Skin infections are confirmed as a public health priority not a benign, nuisance condition normalised by families and healthcare professionals [2]. The impetigo prevalence is amongst the highest in the world at 57•1% (95% CI 53•8–60•5%) with active (or highly transmissible) impetigo affecting almost one in three school children (263/833, 31•6% 95% CI 28•5–34•8). Scabies affected one in seven children (120/833, 14•4% 95% CI 12•1–17•0) and doubled the risk of impetigo (aOR 2•1, 95% CI 1•35–3•13). *Staphylococcus aureus* whole genome sequence (WGS) data showed putative transmission within schools, highlighting the need for early treatment to prevent transmission.

Impetigo, a bacterial infection caused by *Streptococcus pyogenes* (6•0% in this study) and *S. aureus* (24•2%) of the superficial dermis affects up to 162 million children at any one time [3]. Three out of every five school-children in Samoa have active or recently healed impetigo, far higher than the global median impetigo prevalence at 12•3% (IQR 4•2–19•4%), surpassing previous estimates for the Oceania region (excluding Australia and New Zealand: 29•7%, IQR 17•2–48•1%) [3] which correlate more closely to active impetigo (purulent or crusted) reported [1]. Although not part of the initial survey design, the researchers sought treatment for children with severe impetigo and scabies – an important consideration to incorporate in the design of all skin infection surveillance studies. Addressing normalisation is also needed: almost half (224/476, 47•1%) of children with impetigo did not identify their own skin infections.

Whilst scabies is not the complete explanation for the presence of impetigo, it is a significant contributor. Scabies prevalence of 14•4% is higher than global median prevalence (3•3%, IQR 0•7–12•9 %) and a previous surveillance study in Samoa (4•9%) [4] but is comparable to other Pacific island studies [3,5]. Scabies treatment may reduce the burden of both scabies and impetigo. Mass Drug Administration (MDA) provides a rapid and effective response to scabies, albeit with implementation challenges [1]. MDA of ivermectin for scabies was effective and also reduced impetigo prevalence at 12 and sustained at 24 months without additional antibacterial treatment [6]. Another MDA using both ivermectin and azithromycin in the Solomon Islands saw a 88% and 74% relative reduction in scabies and impetigo prevalence respectively [7].

Scabies treatment to reduce impetigo is important, [7,8] with additional public health interventions needed to reduce impetigo as a key contributor to septic (bacteraemia, skeletal infections) and post-streptococcal (glomerulonephritis and possibly rheumatic fever) complications [4]. Treatment combined with comprehensive skin control measures including health promotion and environmental health interventions may provide a way forward [9]. The authors also raise other strategies for impetigo prevention includ-

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ing the addition of impetigo alongside scabies to the Neglected Tropical Diseases list, increasing the availability of first-aid including bandages and culturally secure, embedded health literacy programmes for impetigo. In Samoa, women's groups (*komiti tumama)* have delivered public health messages to improve access to health services [10]. Novel, culturally embedded and accurate methods to assess the environmental contribution to skin infections are required. Whilst authors surveyed young children about household crowding and bed-mat sharing, the findings needed a nuanced understanding of household practices, to truly inform the analysis. Working in partnership to design studies with the communities being surveyed will improve surveillance and intervention. Early, affordable access to effective treatment to prevent transmission and sequelae, insect control and minimising minor trauma will further reduce impetigo.

This data enhances our understanding of impetigo in a context where acute rheumatic fever (ARF) is common [4]. Whilst indirect evidence, *S. pyogenes* was isolated more frequently from skin lesions (6•0%) than the pharynx (1•9%). The low burden of pharyngeal *S. pyogenes* carriage in the context of a high burden of skin infections may further our understanding of the role skin infections play in driving ARF. To prevent ARF, the contribution of impetigo to ARF pathogenesis is needed [11].

The *S. aureus* WGS cluster analysis involved almost half of all isolates with 81% of *S. aureus* clusters within one school. Treatment to reduce transmission of skin infections between children at school may benefit the community more broadly. WGS also reveals the first antimicrobial resistance data for skin infections in Samoa, with 24/349 (6.8%) *S. aureus* isolates having the genomic signal conferring methicillin resistance (MRSA).

These data compel health care practitioners to heed impetigo. By using senior medical students for data collection – strategic in mobilising a workforce to complete 833 skin assessments in two weeks, the next generation of doctors are also upskilled in diagnosis. Diagnostic training is a critical step in denormalising skin infections for health care workers, [2] so treatment can follow [12]. Inclusion of photos of impetigo and scabies lesions on dark skin is a useful diagnostic reminder for future clinicians.

In the COVID-19 era, SARS-CoV-2 transmission prevention strategies including hand hygiene and social distancing may have co-benefits for skin infections.

Author contributions

KM contributed to the literature search and writing of this commentary. AB contributed to the review, literature search and writing of this commentary.

Declaration of Interests

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Reference

[1] Taiaroa G, Matalavea B, Tafuna'i M, et al. Scabies and impetigo in Samoa: a school-based clinical and molecular epidemiological study. Lancet Region Health – West Pac 2021. doi:10.1016/j.lanwpc.2020.100081.
[2] Yeoh DK, Anderson A, Cleland G, Bowen AC. Are scabies and impetigo "normalised"? A cross-sectional comparative study of hospitalised children in northern Australia assessing clinical recognition and treatment of skin infections. PLoS Negl Trop Dis 2017;11(7) e0005726-e.
[3] Bowen AC, Mahé A, Hay RJ, et al. The global epidemiology of impetigo: a systematic review of the population prevalence of impetigo and pyoderma. PloS One 2015;10(8) e0136789-e.
[4] Steer AC, Adams J, Carlin J, Nolan T, Shann F. Rheumatic heart disease in school children in Samoa. Arch Dis Child 1999;81(4) 372-.
[5] Romani LM, Steer ACP, Whitfeld MJMD, Kaldor JMP. Prevalence of scabies and impetigo worldwide: a systematic review. Lancet Infect Dis 2015;15(8):960–7.
[6] Romani L, Whitfeld MJ, Koroivueta J, et al. Mass drug administration for scabies — 2 years of follow-up. N Engl J Med 2019;381(2):186–7.
[7] Romani L, Marks M, Sokana O, et al. Efficacy of mass drug administration with ivermectin for control of scabies and impetigo, with coadministration of azithromycin: a single-arm community intervention trial. Lancet Infect Dis 2019;19(5):510–18.
[8] Bowen AC, Tong SYC, Chatfield MD, Carapetis JR. The microbiology of impetigo in indigenous children: associations between streptococcus pyogenes, staphylococcus aureus, scabies, and nasal carriage. BMC Infect Dis 2014;14(1):727.
[9] Mullane MJ, Barnett TC, Cannon JW, et al. SToP (see, treat, prevent) skin sores and scabies trial: study protocol for a cluster randomised, stepped-wedge trial for skin disease control in remote Western Australia. BMJ Open 2019;9(9).
[10] Baghirov R, Ah-Ching J, Bollars C. Achieving UHC in samoa through revitalizing PHC and reinvigorating the role of village women groups. Health Syst Reform 2019;5(1):78–82.
[11] Bennett J, Moreland NJ, Oliver J, et al. Understanding group A streptococcal pharyngitis and skin infections as causes of rheumatic fever: protocol for a prospective disease incidence study. BMC Infect Dis 2019;19(1):633.
[12] Australian Healthy Skin Consortium. National Healthy Skin Guideline: for the Prevention. Treatment and Public Health Control of Impetigo, Scabies, Crusted Scabies and Tinea for Indigenous Populations and Communities in Australia.2018.