Skin Disorders, Including Pyoderma, Scabies, and Tinea Infections

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There are 111 million children believed to have pyoderma with many also co-infected with scabies, tinea, or both.[1] Whilst not differentiated by ethnicity or socio-economic status in high prevalence areas, poverty and overcrowded living conditions are important underlying social determinants.[2] Transmission is primarily through direct skin-to-skin contact. Rarely resulting directly in hospitalization or death, there is a high and largely unmet demand for effective management at the primary health-care level, particularly for pyoderma and scabies. Despite particularly high prevalence in some settings, treatment is not sought for many children, and when sought, the clinical benefit from such consultations is variable.[3] The lack of standard, evidence-based recommendations is of much concern. The current evidence base for clinical diagnosis and treatment of these common childhood skin disorders is highlighted.

COMMON CHILDHOOD SKIN DISORDERS

The 3 most common childhood skin disorders are pyoderma, scabies, and tinea. Pyoderma, also commonly called skin sores, is a generic term used to describe a clinical diagnosis of superficial bacterial skin infection, including impetigo, impetigo contagiosa, ecthyma, folliculitis, Bockhart impetigo, furuncle, carbuncle, tropical ulcer,

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and so forth.[3] There are several other diseases that have specific skin features or occasional or accessory skin features (eg, measles, chickenpox, dengue fever and other arboviral infections, leprosy, endemic treponematoses, and filariasis), but consistent with a recent WHO review,[3] they have not been included here.

The global prevalence of pyoderma has been estimated to exceed 111 million children.[1] Most of these children live in less developed countries, or in economically disadvantaged regions of otherwise wealthy countries, and many of them will also have scabies. Although reported prevalence can vary substantially, people of the Pacific region and Australia's Aboriginal and Torres Strait Islander peoples generally have the highest reported prevalence of pyoderma, often in the range of 40% to 90%, and the highest prevalence of scabies, often from 50% to 80%.[1] In African and Asian countries, the prevalence of pyoderma has been estimated to vary from 1% to 20%, whereas scabies prevalence has been in the range of 1% to 10%.[1] The prevalence of tinea amongst children is estimated to be 7% to 33% and, like pyoderma and scabies, is reported to be most prevalent in tropical developing countries.[3]

Although the skin disease burden is generally lower in other populations, it can still be fairly high within the indigenous populace, particularly those living in the most disadvantaged settings. High rates of pyoderma and scabies were reported amongst American Indian populations in the 1950s and 60s in settings where there had also been outbreaks of acute nephritis.[4] More recently, the hospitalization rate for skin or soft tissue infections amongst Alaska's native population was reported to be 0.5%, but almost 2-fold higher for those who lived in areas where less than 80% of homes had piped "in-home" water services and associated waste water disposal facilities compared with those areas where 80% of homes had such services.[5] The findings of Hennessy and colleagues[5] are consistent with an earlier review of data on primary health-care–seeking behavior within Ontario, Canada,[6] which found presentation rates for skin infections in the first year of life were 157 per 100 person-years for indigenous children in the more remote regions, almost 3 times that of indigenous children in urban regions or nonindigenous children. Similarly, the hospitalization rate for skin infections amongst indigenous Polynesian children in New Zealand has been reported to be 138 per 100,000, almost 4 times that of children from other ethnic groups.[7] In Fiji, where the rates of skin infection are generally much higher than developed country settings, skin infection rates (pyoderma and scabies) were 3 to 5 times higher amongst indigenous Fijians than amongst nonindigenous Fijians.[8]

Acquisition of pyoderma, frequently in association with scabies, has been found to commence very early in life.[6,9] In a recent study in 2 remote Australian Aboriginal communities, Clucas and colleagues[9] found that 69% of children had a clinical diagnosis recorded for pyoderma, and 63% for scabies, before their first birthday. The first presentation for clinical care of these conditions peaked as early as 2 months of age.[9] This high rate of health-care–seeking behavior for skin infections has been reported in a separate study amongst children younger than 7 years from 2 other remote Australian Aboriginal communities.[10] Widespread antibiotic use for treatment of pyoderma undoubtedly contributes to the selection pressure facilitating the spread of antibiotic resistance such as methicillin-resistant *Staphylococcus aureus* (MRSA) in these communities.[11,12]

The interrelationship between these skin disorders, the environmental health conditions, and the potential sequelae of infection/infestation have been described in Australian Aboriginal communities (**Fig. 1**)[13] and amongst Alaskan native populations.[5] A WHO review has highlighted how the relative contribution of proposed risk factors is likely to vary according to the particular skin condition (**Table 1**).[3] It is well recognized,