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# Headlice: a precursor to Group A Streptococcal infection in remote Indigenous children

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## Abstract

A child is brought to a remote area nursing clinic by his mother. He appears acutely unwell, is crying and scratching his head through matted hair – he has impetigo as a result of head lice. This case report describes the comprehensive wound management considerations to reduce the risk of rheumatic heart disease or renal disease secondary to infection with Group A beta-haemolytic streptococci (GAS).

There is an extremely high incidence of impetigo secondary to scabies and head louse infestations in Northern Territory communities. Reducing the incidence of pyogenic skin disease and the more serious sequelae for children from remote Indigenous communities requires more than a course of antibiotics and educating the primary carers. It requires community wide action including promoting the importance of effective prevention and management of skin infections in infants and children and working with other sectors to address household overcrowding, a lack of health hardware, and a lack of ready access to affordable, effective topical head louse treatment.

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## Introduction

Indigenous children living in remote Australia are suffering from infections with sequelae that are causing devastating effects that will continue into adulthood. Impetigo, also known as school sores, is a contagious, superficial pyogenic skin infection; the causative organism is commonly Group A beta-haemolytic streptococci (GAS) also known as *Streptococcus pyogenes*<sup>1</sup>. GAS infections have been reported to be endemic in some Northern Territory communities, with 70% of children having impetigo as a result of infected scabies and other infestation lesions<sup>2</sup>.

A known post-infection sequelae of GAS is rheumatic heart disease; GAS is also believed to contribute to adult renal disease subsequent to post streptococcal glomerular nephritis<sup>2</sup>. Because of this prevention, early detection and aggressive management of skin infections experienced by remote Indigenous children is essential. An understanding the social determinates of health is also needed to provide comprehensive care for Indigenous children. This case study will describe the care of a small Indigenous child suffering from impetigo secondary to head louse infestation.

The effective and safe removal of human waste and the provision of adequate and safe water supply for washing, drinking and cooking have long been recognised as essential to health<sup>3,4</sup>. High infection rates are associated with poor, unsanitary living conditions, lack of access to essential health hardware, overcrowding and lack of education. Poor nutrition also contributes to the prevalence of infection. The

relationship between Indigenous poverty and poor health seems an obvious one; however, the relationship between level of income for remote Indigenous people and poor health is not clear cut. Walter & Saggars (2007)<sup>5</sup> note that a possible explanation of poor health status of remote Indigenous people is the limited access to health infrastructure and access to services, they claim that poor living conditions can not be ameliorated by individual income alone. This is supported by Baum<sup>4</sup>, who points out that health gains have been made in some poorer countries without major increases in per capita income, namely Cuba, Costa Rica and Kerala in Southern India. Both authors agree that adequate physical infrastructure and accessible primary health care services are needed to improve health.

The living conditions for Aboriginal people in remote Australia were described by Pat Anderson during her inquiry into child abuse in remote Northern Territory communities in 2007 as, "people would tell us the same story – lack of housing, inadequate housing, 10-20 people living in many homes, families relegated to a single room in a house shared with several other families, toilets and showers not working due to excessive use"<sup>6</sup>. It is against this backdrop that the following case report will describe the wound management for a small child in a remote Aboriginal community with impetigo associated with head lice infestation.

### Case study

An 18 month old child was brought to the remote area nursing clinic by his mother. He was crying, scratching his head through matted hair and appeared acutely unwell. The child had a serious case of head lice infestation, with large numbers of live lice and eggs. Once the child's hair was washed and cropped, the scalp revealed several crusty, exudate covered wounds and some pustules. On examination, the child was mildly febrile; had raised occipital and cervical nodes; and there was a clear discharge from the nose. All other systems appeared fine. Aetiology of the wound was from scratches associated with head lice infestation which had developed into a severe case of impetigo (Figures 1 & 2).

### Management

The mother was informed of the antibiotic treatment options, which were either a once only benzathine penicillin (Bicillin) injection or amoxicillin three times a day for 3-5 days. The Central Australian Rural Practitioners Association Standard Treatment Manual (CARPA STM) recommends a single stat intramuscular injection of Bicillin where there are six



Figure 1. Child with head lice and impetigo.



Figure 2. Child with head lice and impetigo.

or more infected skin lesions<sup>7</sup>. However, IM Bicillin causes pain as the preparation is thick and difficult to administer to children. Penicillins are recommended as a first line treatment for impetigo/skin sores in Aboriginal children for effective care and prevention of post streptococcal disease. It is also

recommended that treatment be commenced without waiting for pathology confirmation of the causative organism due to the contagious nature of impetigo and the likelihood of spread due to overcrowded living conditions. These issues were considered by the remote area nurse when counselling the mother about the treatment options.

The mother decided that IM Bicillin could be administered. She had no fridge where she was living and was not able to guarantee that the alternative, amoxicillin mixture, could be kept in a safe place for the duration of the treatment. Although she understood the need for the treatment, the mother was visibly concerned that she had no real alternative to her child having a painful, distressing injection.

The mother of the child was educated in hand washing and advised to avoid touching the sores due to the contagiousness of impetigo. Head lice treatment was offered to the mother for other family members and household contacts to reduce the possibility of the child recontracting head lice. Further advice was given to avoid sharing hats or caps and to stop the child sleeping in the same bed as other family members who had not received treatment. The child was reviewed 5 days after antibiotic treatment to ensure cure. Administration of a single dose of Bicillin provided the rapid resolution of the skin sores (Figure 3).

## Discussion

Head lice in suburban Australia is seen as an inconvenience, rarely requiring more than hair conditioner, or a mild insecticide lotion bought at the local chemist, and the time to administer the treatment and remove the eggs. Parents' concerns when they find a louse range from having to wash the bedding, to finding the time to treat the lice and remove the eggs. The child may experience exclusion from playgroups or school. However, the complications of GAS impetigo as a result of scratching associated with head lice infestations would not be of concern.

For an Indigenous child living in a remote area, head louse infestation is a very real concern. The conditions in which children and their family live are evident. There is clear documentation that Indigenous health is poor. The evidence cannot be ignored; Aboriginal and Torres Strait Islander infants were hospitalised for skin diseases and infectious and parasitic diseases three times more frequently than other Australian infants in 2003-04<sup>8</sup>.



Figure 3. After treatment.

Carers of children living in remote areas must be educated and empowered to be able to identify, manage and voice their concerns involving their children's health. Many people living in remote areas lack the resources needed to provide care for their children. They lack health hardware and access to appropriate primary health care services. Communal living for Indigenous families may in some cases be a result of cultural or economic factors. However, this practice contributes to increasing the disease burden in remote Australia. Tackling the problem of impetigo in remote Indigenous communities requires more than educating the primary carers; it requires a community wide appreciation of the importance of effectively preventing and managing skin infections in infants and children.

The Integrated Management of Childhood Illness (IMCI) introduced by WHO and UNICEF, focuses on improving first-line health services by using a comprehensive strategy that:

- Improves the case management skills of health workers.
- Improves health system supports required for high quality care for children coming to health facilities or outreach sites (such as supply of essential drugs, vaccines, equipment and supplies, regular supervision).



- Improves household and community practices related to child health, nutrition and development<sup>9</sup>.

It is the responsibility of health workers to educate communities on early detection and treatment of infestations and infections so that treatment can be local rather than requiring systemic antibiotics. Health workers practising in remote areas must consider the health hardware availability, such as refrigerators to store medications and washing machines when recommending treatment options. They need to work with community stores to ensure louse shampoos are available to families as they would be in regional towns and cities and that all members of the community understand the consequences of impetigo infections that can occur from the seemingly harmless head louse. Easy access to an adequate supply of water for washing is also critical to prevent infections, including skin infections. Remote health advocacy groups need to work with communities and governments to ensure that adequate water is available for drinking and washing and that health hardware is accessible for washing clothes and bedding.

## Conclusion

The seemingly harmless head louse can have devastating sequelae when infestation is complicated by GAS impetigo. These include rheumatic heart disease and glomerular nephritis. This case report highlights the need for a comprehensive primary health care response to childhood skin infections which addresses not only the clinical care of the individual child but also the complex health and social needs of children affected by poverty, particularly Indigenous children from remote communities.

By raising the awareness in the whole community of the potential risks caused by GAS infection, early intervention can be promoted to manage louse infestations. A population approach to prevention ensures that risk of re-infestation is minimised in the short-term. However, long-term solutions to overcrowding, improved access to health hardware and access to affordable and effective topical treatments for common childhood infestations need to be actively promoted by nurses and health advocacy groups.

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