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Migrants' latest health challenge: Scabies

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Scabies led to the closure of migrant camps such as these in Calais, France, in 2014. Pascal Rossignol/Reuters

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Scabies, long considered a disease of the past in the developed world, is making its way back. This highly contagious parasitic skin disease, which is caused by the burrowing itch mite *Sarcoptes scabiei* var. *hominis*, is most commonly transmitted through personal contact in close living quarters and institutional settings, such as schools, aged care facilities, hospitals and refugee camps.

We are currently investigating the treatment of scabies in human and animal trials. Our recent study examined scabies outbreaks across the globe in close living quarters and institutional settings.

On the public agenda

After years of absence from the global health agenda, in 2013, scabies was added to the World Health Organization list of neglected tropical diseases. The disease has a significant and widespread health impact that extends far beyond an itchy rash.

Scabies is very common, with a global prevalence at any one time estimated at about 300 million cases, or about 4 percent of the world's population. The disease is endemic in a number of countries, with an average prevalence of 5-10 percent in children of developing countries.

The highest rates of scabies occur in communities in tropical regions such as Central America, the Pacific islands and Northern Australia, where more than 30 percent of the residents may have scabies. In a national study of Fijian residents incorporating skin examination, 36.5 percent of children below 5 years of age and 43.7 percent of children aged 5 to 9 had scabies. A study of children in two remote Northern Australian Aboriginal communities found that by 1 year of age, 63 percent of children had presented with scabies.





A refugee child in Kutapalong, Bangladesh, on Oct. 14, 2017, shows evidence of scabies. Djohan Shahrin/Reuters

Outside of occasional institutional outbreaks, scabies has long been considered a disease of the past in the developed world. However, with the influx of immigrants, mostly from North African and Middle Eastern countries due to socioeconomic and political upheaval, we have seen scabies re-emerge as a modern-day problem.

Morbidity and complications

Scabies infestation occurs when a mite burrows into the outermost layer of our skin, the epidermis. The primary method of scabies mite transmission between humans is prolonged skin-to-skin contact, with about 15-20 minutes of close contact required for successful direct transmission.

In scabies infestation, hypersensitivity to the mite debris, eggs or feces causes severe, persistent itching, which can have an extraordinarily unpleasant and debilitating effect. Intense itching leads to disturbed sleep, which consequently affects school and work attendance and performance.

Furthermore, scabies lesions are often secondarily infected with the bacteria *Streptococcus pyogenes* (*S. pyogenes*) or *Staphylococcus aureus* (*S. aureus*). These bacteria can cause local skin infections that can be superficial (such as impetigo), or affect the deeper layers of the skin (such as cellulitis).

Infection with *S. pyogenes* can potentially lead to fatal bloodstream infections (septicaemia) and post-infection complications, including end-stage renal failure and acute rheumatic fever. Repeated episodes of this can lead to rheumatic heart disease, which is estimated to affect at least 2.4 million children worldwide, with 79 percent occurring in developing countries. It is unclear how many cases of scabies lead to acute rheumatic fever and rheumatic heart disease; however, there are significantly higher rates of *S. pyogenes* infections and rheumatic fever and rheumatic heart disease in communities with ongoing scabies infestations.

In 2010, the direct effects of scabies infestation were estimated to have resulted in more than 1.5 million disability-adjusted life years worldwide. Disability-adjusted life years is defined as years of life lost due to early death plus years lived with disability.

Impact of refugee migration

In recent years, as conflicts and instability in the Middle East and parts of Asia and North Africa have left over 65 million people displaced worldwide, scabies outbreaks have arisen among refugees to the European Union. There have also been health concerns over unscreened illegal immigrants bringing infectious diseases into the United States. For example, in 2014, a U.S. border patrol agent reported a scabies infestation among about 40 immigrants newly arrived by plane.

Refugees seeking asylum are typically being accommodated in overcrowded shelters for extended time periods after having traveled upon overloaded and unsafe boats or trucks. There are reports of significant scabies infestations among migrants traveling by boat, such as seen among the 1,074 migrants rescued at sea off Az Zawiyah, Libya, on Sept. 16, 2017.

Scabies was also the most commonly reported illness in Malaysian immigration detention centers, predominantly those accommodating stateless Muslim Rohingya refugees from Myanmar.

Why is scabies spreading?

Scabies has been recognized as a disease in humans and animals for at least 3,000 years, and was reported in ancient India, China and the Middle East. Aristotle (384-323 B.C.) described it as 'lice of the flesh,' and references to disease symptoms are included in the Old Testament.

Today, poor living conditions, lack of access to clean water and overcrowding provide an ideal environment for the spread of scabies in refugee shelters. In fact, media and public health agency reports suggest that scabies is one of the most commonly observed diseases in these refugee populations.

Authors of a recent German study found that, between 2004 and 2014, the number of disease outbreaks per year in centralized homes for asylum seekers increased, rising 10-fold as a contributor to total community shelter outbreaks. Scabies was the third most frequent cause of outbreaks after chickenpox and measles, accounting for 19 percent of the total 615 incidents among 119 reported outbreaks. Additionally, in 2014 there were more reported outbreaks than in the past 10 years, indicating that this public health problem is rapidly growing in relevance.

The French Institute for Public Health Service estimated that scabies accounted for 20 percent of medical diagnoses between the end of 2015 and mid-2016 in the now dismantled refugee camp in Calais, France.

With the continued arrival of new refugees in France and the movement of many of the Calais refugees to the Chapelle camp in Paris, the problem of scabies persists.

Current challenges in managing scabies

Modern treatments for scabies include topical permethrin, topical benzyl benzoate and oral

ivermectin for children older than 5.

However, there are a number of challenges associated with these treatment options, including poor adherence with therapy (particularly with the use of topical treatments, which require extensive skin coverage and repeated applications to treat the disease properly), unachievable costs for resource-poor communities (such as refugee populations), and increasing treatment resistance.

The possibility of reinfestation remains high when close contacts are not treated or the disease is endemic in a population.

Also, no currently available treatments possess the combined ability to kill eggs, act as an antibacterial, and have anti-inflammatory/antipruritic (anti-itch) properties. Added to this, they are all ineffective at preventing treatment relapse arising from newly hatched mites and evidence indicates the mites are becoming resistant to existing scabies treatments.

Given the current treatment challenges, and the substantial clinical and economic burden of scabies and associated complications in tropical developing countries and resource-poor societies, there have been renewed appeals for coordinated global campaigns. However, it has also been highlighted that any treatment strategies need to be simple and affordable and resonate well with the local challenges and cultures.

While treatment adherence is an important factor in controlling scabies, it must be emphasized that known environmental influences contribute to scabies outbreaks and the endemic nature of the infestation in some populations. Improved living conditions and providing adequate health care and sanitation, particularly in isolated communities and refugee camps, are essential to prevent and control outbreaks, and to reduce the burden of scabies in endemic regions.

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