

THE GOLDEN STAPH SUPERBUG AND HOW WE STOP IT

THE NEED

When we think about golden staph, most people think about hospitals. Its incidence is an oft-cited measure of hospital quality and safety, and rightly so, given that golden staph quietly accounts for more Australian deaths per year than the annual road toll. The good news is that in hospitals at least, infection rates are declining. It will always be a threat, but extra vigilance around hand-washing and tighter procedures for intravenous lines means that hospitals are winning against golden staph.

In remote Aboriginal communities across Northern Australia however, it's a different story. The bad news – and for the tiny babies and elderly who are most susceptible to staph especially so – is that in these communities, it's rising rapidly. The annual incidence of golden staph bloodstream infections is now six times higher among Indigenous Australians than their non-Indigenous counterparts. It kills approximately one in four of its victims.

In most cases, golden staph is harmless, but if it enters the body through a cut in the skin, it's life threatening. As a bloodstream infection it causes high fever, sweating, chills, boils, crippling pain, and can lead to serious complications such as necrotising pneumonia, which eats away at the lungs, or osteomyelitis, which eats your bones. In remote communities, we're seeing an antibiotic-resistant form of staph, making standard penicillin-like drugs completely ineffective. This is a disturbing development indeed. Many of these community based golden staphs create tissue destroying toxins, helping it to penetrate through the skin and then leading to destruction of internal organs like the lungs and bones.

THE PARTNERSHIP OPPORTUNITY

Researchers believe the growing staph epidemic in remote communities is related to poor skin health (resulting in frequent antibiotic use) and poor quality, overcrowded housing. Skin disease means more open sores through which staph can enter the blood stream and issues of housing quality (without adequate washing and bathing facilities) and hygiene assist its rapid spread. Controlling the staph epidemic in remote Aboriginal communities will involve better housing, concerted community education strategies, and medical research discovery. Menzies seeks support for the latter.

The new drug-resistant staph strains appearing in remote communities produce dangerous toxins that destroy human tissue. In a petri dish, Menzies researchers have identified a combination of antibiotics that reduces toxin levels significantly. But there's no proof as yet as to whether it will work in humans. Our goal now is to conduct a randomised controlled human trial, interpret the results, and if it works, start using this treatment regime, as a matter of urgency. For patients presenting to hospital with severe staph infections and evidence of toxins causing tissue destruction, we will test whether combination treatment with anti-toxin drugs improves outcomes and saves lives.

THE IMPACT

Methicillin-resistant golden staph is a growing scourge across Northern Australia's remote Aboriginal communities, causing premature deaths, particularly among infants and the elderly. The impact of this project is the development of a frontline medical treatment that is in all our best interests. If this treatment works, it will change policy and save lives all around the world.

PARTNERSHIP

Menzies requires \$800,000 to conduct this project over 4 years, including \$500,000 to support the salary of a project manager; \$70,000 to set up and maintain a clinical trial database; \$30,000 for the costs of arranging ethics applications, clinical trials research agreements, insurance; and \$200,000 to support appropriate monitoring of involved sites.

STATS AND FACTS

- In remote communities endemic skin sores and skin disease, which allow golden staph to enter the bloodstream, are an epidemic. At any one time, 50% of Indigenous children will have a severe skin sore.
- Studies point to serious issues of overcrowding in Aboriginal houses, with up to 7.5 people per bedroom. The same research found that 60% of houses had no working facilities for washing either children or clothes.
- There are approximately 6,000 golden staph infections in Australia each year, with around 1,200 deaths. This is more than the annual road toll.
- In the United States, more people die from golden staph bloodstream infections than from HIV or meningococcal disease.

“The sorts of conditions people endure in remote communities make it very challenging to control scabies and other skin diseases. This leads to frequent antibiotic use and ultimately, to development of resistant strains of staph. We need to do two things and we need to do them urgently – we must work with communities to improve the standard of housing and hygiene and we must find effective antibiotic treatments to reduce the sickness, suffering, and most of all, deaths caused by golden staph bloodstream infections.” – Associate Professor Steven Tong

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