

Promising new treatment joins the war on superbugs

December 1 2015, by Kate Bourne

The fight against superbugs has been bolstered thanks to a promising new therapy discovered by University of Adelaide researchers.

Katharina Richter, a PhD student from the University's Discipline of Surgery, and the Ear Nose and Throat (ENT) Surgery Department at The Queen Elizabeth Hospital (TQEH) have developed a treatment which can be applied at the site of an infection, releasing compounds that are expected to destroy [antibiotic-resistant bacteria](#).

"Many people have experience with antibiotics being ineffective at alleviating the symptoms of an infection, and antibiotic-resistant bacteria are becoming increasingly concerning," says Ms Richter, who is based at the Basil Hetzel Institute for Translational Health Research and is working alongside leading University of Adelaide ENT surgeon, Professor Peter-John Wormald.

"Severe and [chronic infections](#) present as a cluster of bacterial cells covered in a slimy matrix (biofilms). Biofilms act like an armour and protect the bacteria from the immune system and medications – the thicker the biofilm, the less likely antibiotics will work.

"Due to the spread of antibiotic resistance, millions of people suffer and die from devastating and recurring biofilm infections, like endocarditis, chronic wounds, cystic fibrosis or osteomyelitis," she says.

Ms Richter says her new treatment captures the food source required for

bacteria to survive and grow.

"I've identified pathways which are essential for bacterial growth and survival," says Ms Richter.

"From this finding, I've discovered how to attack biofilms with two compounds that are not based on antibiotics. The first compound depletes nutrients from bacteria, leaving the cells vulnerable, while the second kills the bacteria.

"And, because this treatment works differently to antibiotics, we haven't faced any resistant bacteria yet," she says.

Ms Richter's research is specifically looking at how to combat chronic sinus infections, which are highly prevalent and affect people of all ages.

"One in six Australians suffers from a chronic infection of the sinuses and the primary goal of my PhD research is to improve medical therapies for the treatment of severe and recurring sinus infections," says Ms Richter.

"My results have been very promising and show that this combination therapy is an efficient and safe way to kill bacterial biofilms. And based on my research, TQEH ENT Surgery Department will commence the first human trial next year.

"The trial will combine the two compounds in a drug-delivery device to aid wound healing and combat disease causing bacteria.

"A successful clinical trial will hopefully lead us to further refine the treatment so it can eventually be used to treat people suffering from a broad range of chronic infections," she says.

Provided by University of Adelaide

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