

New vaccine could save thousands of lives

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Work led by University of Exeter experts could help to protect thousands of people from an often fatal disease found in most tropical regions.

Academics have created a vaccine which has the potential to protect humans from the infection melioidosis, also called Whitmore's disease.

The vaccine is the result of two decades of research, and is the most protective tested to date.

Melioidosis is caused by the bacterium *Burkholderia pseudomallei*. It is thought to be spread in soil and dust, but experts do not yet know why it only affects people and animals in [tropical regions](#). Occasionally people from the UK have contracted melioidosis while on holiday abroad.

There is an urgent need for an effective vaccine. In North-East Thailand melioidosis is the third most common cause of death from infectious diseases, exceeded only by HIV and tuberculosis. In Darwin, Northern Australia, melioidosis is the most common cause of fatal community-acquired septicemic pneumonia.

Melioidosis typically causes pneumonia and sepsis, and because these symptoms are similar to many other diseases it is often misdiagnosed. This means rates of people affected could be much higher than officially recorded.

The condition is hard to treat as *B. pseudomallei* is resistant to many

antibiotics. Antibiotic courses lasting several months are usually required and patients often relapse.

Potential vaccines have been tested before, but none provided high level protection. Other vaccines against the disease tested on animals have given protection against the acute form of the disease but have failed to provide long-term control of persistent, chronic melioidosis.

Advances in technology mean experts at the University of Exeter have now been able to produce a vaccine which could help give humans protection against the disease. Preliminary studies have been carried out on mice, and it is hoped clinical trials on humans will take place in the future.

The vaccine is made up of a combination of different proteins, some of which help produce antibodies which boosts the immune system. However, unlike other melioidosis vaccines that have been tested previously, some of the proteins in the new [vaccine](#) induce immune responses to provide enhanced protection against chronic infection.

Professor Richard Titball, Professor of Molecular Microbiology, said: "Because of new technology we have been able to look at the genetic makeup of the bacterium and start to understand how the bacteria adapt to conditions during chronic infection.

"We now want to carry out further work to determine whether one or more of the proteins are responsible for this enhanced protection, and to test additional proteins to see if they can be protective antigens."

Academics from the University of Milan, the Defence Science and Technology Laboratory and the London School of Hygiene and Tropical Medicine were involved in the study, which was funded by the Fondazione CARIPLO, one of the world's main philanthropic

organizations.

Immunisation with proteins expressed during chronic murine melioidosis provides enhanced protection against disease is published in the journal *Vaccine*.

Provided by University of Exeter

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