

Study reveals new insight into susceptibility to pneumonia

May 3 2017, by David Stacey



Credit: University of Western Australia

A new research study of immune responses to pneumococcal vaccines, commonly given to people with compromised immune systems, young children and people over 65, has identified a type of immune cell which is important in generating antibodies that prevent people from developing pneumococcal pneumonia.

In the study conducted by researchers at The University of Western Australia, people with [human immunodeficiency virus](#) (HIV) infection, including those successfully treated with antiretroviral therapy, and people not infected by HIV were given a pneumococcal vaccine and various immune cells and their function examined in blood before and after vaccination.

The researchers found in those without HIV infection, production of antibodies was strongly associated with a type of immune cell, called T-follicular helper cells, which are critical for generating [antibody responses](#).

In contrast, people with HIV infection produced far fewer of these cells, which was related to lower antibody responses and, importantly, these abnormalities persisted in people with treated HIV infection.

The study, published today in *PLOS ONE* was carried out by Dr Laila Abudulai under the supervision of Dr Sonia Fernandez and Professor Martyn French from UWA's Faculty of Health and Medical Sciences.

Dr Abudulai said that it was the first time that T-follicular helper cells had been shown to be important in the production of antibodies to pneumococcal vaccines.

"Our findings may lead to the development of new ways to assess the effectiveness of such vaccines," she said.

Professor French said that the discoveries provided new information about why people with HIV infection were much more susceptible to pneumococcal pneumonia than those without HIV infection.

"Pneumococcal vaccines are very effective in preventing pneumonia but are less effective in people with compromised immune systems, particularly HIV-infected people," he said.

"The findings presented in this paper shed important light on the mechanisms of antibody production after pneumococcal vaccination and how this is adversely affected by HIV infection."

Identification of blood immune cells that could be used as a biomarker

to assess the efficacy of [pneumococcal vaccines](#) will be beneficial to not only HIV-infected people but also other [people](#) with an increased susceptibility to pneumococcal pneumonia.

More information: Laila N. Abudulai et al. Production of IgG antibodies to pneumococcal polysaccharides is associated with expansion of ICOS+ circulating memory T follicular-helper cells which is impaired by HIV infection, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0176641](#)

Provided by University of Western Australia

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