

Influenza A potentiates pneumococcal co-infection: New details emerge

September 22 2014

Influenza infection can enhance the ability of the bacterium *Streptococcus pneumoniae* to cause ear and throat infections, according to research published ahead of print in the journal *Infection and Immunity*.

In the study, the investigators infected mice with either influenza alone, pneumococci alone, or both at once, and then monitored the populations of bacteria and virus over time. They also monitored the mice for development of [middle ear](#) infection.

Influenza infection enhanced the bacterium's ability to colonize the nasopharynx, and to infect the normally sterile middle ear.

"We learned that once [influenza virus](#) is introduced, all of the "rules" regarding phase variants are out the window," says corresponding author W. Edward Swords of Wake Forest University, Winston-Salem, NC. Phase variation refers to the fact that the colonizing bacteria have transparent cell surfaces, while those that spread within the host have opaque surfaces.

"However, in the presence of influenza, opaque variants can readily colonize the nasopharynx, and transparent variants can persist in the ear," says Swords. "This indicates that the host environs are more permissive for infection by the entire bacterial population."

Furthermore, recent research had shown that influenza interferes with innate immunity in a way that enables pneumococci to flourish. In this

research, Swords shows that that interference manifests as increased inflammatory responses at the mucosal surface in the influenza-infected mice, such as within the middle ear, and in the nasopharynx.

"As with most pneumococcal infections, it should be appreciated that localized nonlethal infections are much more common than the rapidly lethal presentations," says Swords. "For example, influenza is a contributing factor in otitis media (middle ear infections) in children."

"If we can understand why and how viral infection causes bacteria to colonize privileged sites like the middle ear, we will better know what aspects of disease to focus on with preventive or therapeutic treatments," says Swords.

More information: The manuscript can be found online at iai.asm.org/content/early/2014...856-14.full.pdf+html . The final version of the article is scheduled for the November 2014 issue of *Infection and Immunity*.

Provided by American Society for Microbiology

Citation: Influenza A potentiates pneumococcal co-infection: New details emerge (2014, September 22) retrieved 23 April 2024 from <https://medicalxpress.com/news/2014-09-influenza-potentiates-pneumococcal-co-infection-emerge.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--