

Statin use appears to reduce risk of serious bacterial bloodstream infection

October 2 2017



Blood culture plate showing growth of *S. aureus*. Credit: Jesper Smit, MD, PhD

Users of statins, widely prescribed for prevention of cardiac disease, have a 27% lower risk of contracting a *Staphylococcus aureus* (*S. aureus*) bloodstream infection outside of a hospital, according to a new study in

Mayo Clinic Proceedings. Researchers report that statin use, especially among elderly patients with preexisting chronic conditions such as diabetes, kidney, or liver disease, may be protective against this serious bloodstream infection. As the western world's population is aging and more people live with chronic medical conditions, any potential preventive effect of statins could have important clinical implications.

To investigate whether individuals treated with statins experienced a decreased risk of [bloodstream infection](#) by *S. aureus*, researchers from the University Hospitals in Aalborg and Aarhus, Denmark and the University Hospital in Seville, Spain analyzed records of close to 30,000 people using Danish medical registries over a 12-year period. They identified 2,638 cases of community-acquired *S. aureus* bacteremia (CA-SAB). An additional 26,379 individuals were matched by age, sex, and residence against the cases. For the CA-SAB cases and the controls, 368 (14.0%) and 3,221 (12.2%), respectively, were current users of [statin](#) medications.

The team also investigated the risk of [infection](#) while taking into account the duration of current or former statin use, 90-day cumulative dose, and specific sub-groups of patients who were prescribed statins for different [chronic conditions](#) like previous myocardial infarction, peripheral arterial disease, chronic heart failure, [chronic kidney disease](#), and diabetes.

Investigators found that the risk for CA-SAB decreased gradually with increasing statin dosage, and the association was most pronounced among patients with chronic kidney disease and diabetes. Current users of statins experienced a 27% decrease in risk for CA-SAB and long-terms users (multiple prescriptions across more than 90 days) had a 30% decrease, while new users (first prescription within 90 days) showed a modest 4% decrease in risk.

"Our results indicate that statins may have an important place in the prevention of bloodstream infection caused by *S. aureus*, which would hold important clinical and public health implications. Nevertheless, our observations warrant confirmation in other settings and the biological mechanisms by which statin treatment may protect against this type of infection should be explored further," explained lead investigator Jesper Smit, MD, PhD, of the Department of Clinical Microbiology, Department of Infectious Diseases, Aalborg University Hospital, and Department of Clinical Epidemiology, Aarhus University Hospital, Denmark.

In an accompanying [editorial](#), Daniel C. DeSimone, MD, of the Division of Infectious Diseases, and Christopher V. DeSimone, MD, PhD, of the Division of Cardiovascular Diseases, Mayo Clinic, Rochester, MN, expand on the importance of the study's findings and provide additional insights with more details about *S. aureus* infections and statin pharmacology, and put these findings into clinical context. The authors comment, "The work by Smit et al raises the exciting possibility that the pleiotropic effects of statins may also harbor important antimicrobial effects that may exert a clinically relevant benefit by conferring resistance to CA-SAB." They also state that "This persuasive study should stimulate randomized, placebo-controlled trials examining this effect of statins. Such trials in the case of statins are appealing because these drugs are relatively low cost, can easily be matched against a placebo, and would allow for enrollment at the time of an already necessary antibiotic prescription." This accompanying editorial provides exciting avenues for future human clinical trials to test statin drugs for disease prevention, especially in the field of cardiovascular infections.

S. aureus is a bacterium that can colonize skin. It has the propensity to cause serious infection which can be fatal if the bacteria disperse into the bloodstream. Statins are among the most widely used drugs for prevention of cardiovascular [disease](#), but there have been some studies

that suggest a link to an antimicrobial effect against *S. aureus*. Statins may also inhibit host cell invasion by *S. aureus* and enhance the ability of phagocytes to kill the bacterium.

More information: Jesper Smit et al, Statin Use and Risk of Community-Acquired Staphylococcus aureus Bacteremia, *Mayo Clinic Proceedings* (2017). [DOI: 10.1016/j.mayocp.2017.07.008](https://doi.org/10.1016/j.mayocp.2017.07.008)

Daniel C. DeSimone et al. Beyond Vasoprotection: Statins and Risk Reduction for Community-Acquired Staphylococcus aureus Bacteremia, *Mayo Clinic Proceedings* (2017). [DOI: 10.1016/j.mayocp.2017.08.013](https://doi.org/10.1016/j.mayocp.2017.08.013)

Provided by Elsevier

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