

Novel strategies target health care-associated infections

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Can probiotics prevent pneumonia in patients breathing with the help of ventilators? That's just one question researchers at Washington University School of Medicine in St. Louis hope to answer as part of innovative new studies to reduce infections in health-care settings.

Their research is funded by a grant from the U.S. [Centers for Disease Control and Prevention](#) (CDC).

"Health-care-associated infections are a significant public-health issue, nationally and internationally," says infectious diseases specialist Victoria Fraser, MD, acting chief of the Department of Medicine and principal investigator of the new research. "Working closely with the CDC for many years, we have made dramatic improvements in reducing infections in health-care settings, but significant challenges remain as the population ages and many patients are admitted to hospitals with multiple health problems."

In the United States, about one in 20 hospitalized patients get an infection during the course of their medical treatment, according to the CDC.

Washington University is one of five academic medical centers nationwide awarded a total of \$10 million by the CDC as part of the Prevention Epicenter Program to develop and test new approaches for reducing health-care-associated infections. Fraser and her colleagues will work closely with Barnes-Jewish Hospital, St. Louis Children's Hospital

and other BJC HealthCare hospitals.

"Washington University and BJC have played a long and valuable role in the Prevention Epicenter Program," says John Jernigan, MD, MS, director of CDC office of HealthCare-Associated [Infection Prevention](#) Research and Evaluation. "Their program is renowned for its leadership in the field of health-care-associated prevention research, and we look forward to continuing our research partnership together."

The innovative strategies being explored at Washington University and BJC hospitals include:

- Investigating whether live micro-organisms called probiotics can reduce the risk of pneumonia in patients on ventilators by restoring the natural balance of intestinal bacteria. Patients on ventilators often are given antibiotics and can't eat a normal diet, which alters the bacteria in their gastrointestinal tract and allows dangerous bacteria to bloom. Pneumonia can develop if the bacteria move into the lungs.
- Evaluating whether the new antibiotic fidaxomicin can prevent infection with *Clostridium difficile*, a bacteria that can cause severe diarrhea. The investigational drug has shown promise in treating the infection, but the researchers want to determine whether it also works as a preventive in high-risk patients, such as the elderly or those receiving chemotherapy.
- Investigating biomarkers to identify early signs of urinary tract infections in patients with urinary catheters. The researchers are developing tools to distinguish colonization from true infections and working to identify new ways to prevent urinary tract infections.

- Developing new strategies to reduce bloodstream infections in patients with central lines being treated outside of intensive-care units (ICUs). Bloodstream infections have decreased dramatically in ICU patients with central lines, but interventions to reduce [infection](#) rates in non-ICU patients have not been studied.

The other academic medical centers awarded CDC Epicenter grants are Rush University Medical Center, Duke University, Harvard University and the University of Pennsylvania. Washington University has been part of the CDC's Prevention Epicenter grant program since its inception in 1997.

"Discoveries made by Washington University researchers at BJC hospitals have had a tremendous impact on decreasing health-care-associated infections both locally and nationally," says Clay Dunagan, MD, BJC vice president, Center for Clinical Excellence. "We now have an opportunity to take that knowledge one step further, to develop new ways to prevent and treat these infections in our ongoing efforts to improve the care of [patients](#)."

Provided by Washington University School of Medicine

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