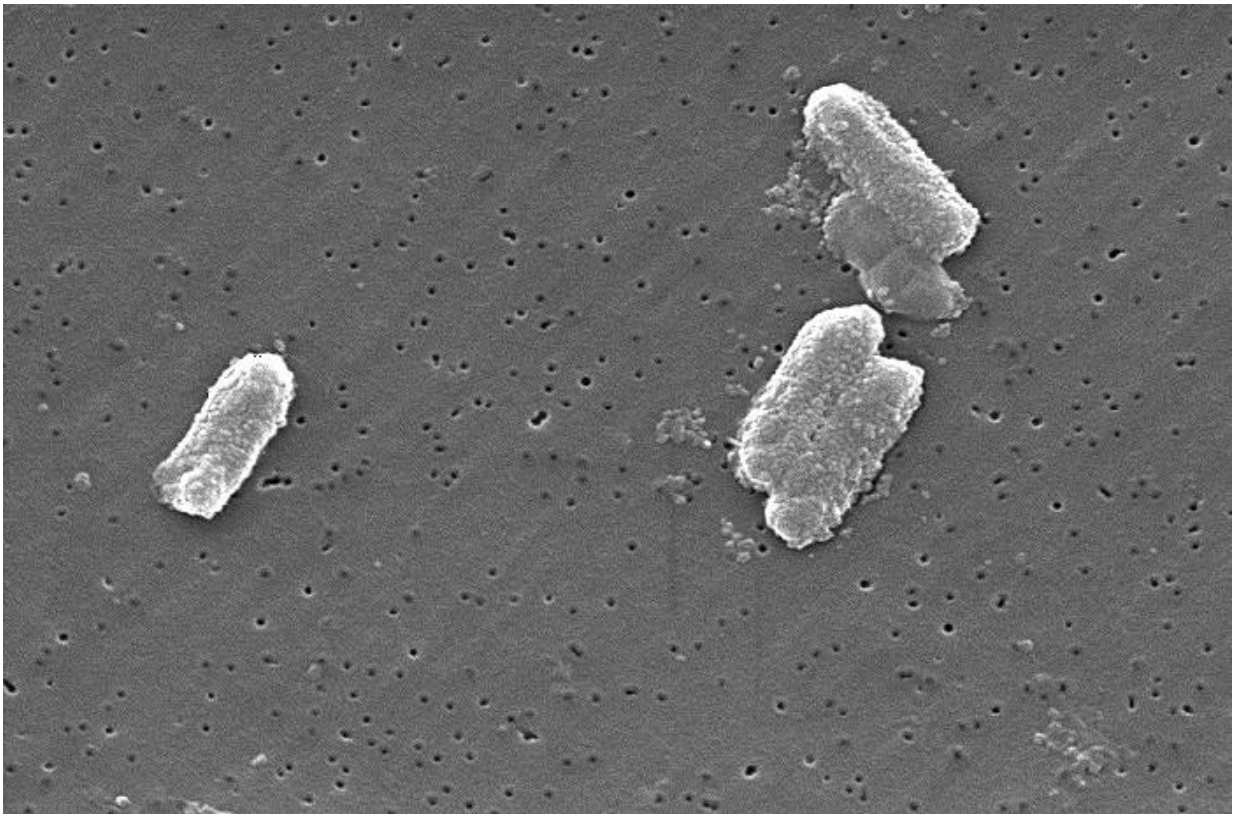


# Patient registries could help control spread of antibiotic bacteria

May 9 2019

---



Enterobacteriaceae. *Citrobacter freundii*, one member of the family. Credit: Public Domain

A new study led by researchers at the Johns Hopkins Bloomberg School of Public Health finds that the spread of carbapenem-resistant Enterobacteriaceae (CRE)—bacteria that have high levels of resistance

to most antibiotics—could be reduced if only 25 percent of the largest health care facilities in a region used a patient registry, a database that can track which patients are carrying CRE.

The Centers for Disease Control and Prevention (CDC) estimates that at least two million people become infected each year with antibiotic-resistant bacteria, resulting in at least 23,000 deaths. Antibiotic-resistant bacteria, which do not respond to many different treatments, can quickly spread across [health care facilities](#) as doctors and hospital personnel may not realize which [patients](#), including new ones entering a facility, are infected. This represents a missed opportunity for stemming the spread of the bacteria. CRE has been dubbed the "nightmare bacteria" because it is resistant to many of the most powerful antibiotics available and has been spreading throughout health care facilities in the U.S.

For the study, the team developed a detailed computer simulation model of all 462 health care facilities (e.g., hospitals, long-term acute care hospitals, skilled nursing facilities and ventilator-capable skilled nursing facilities) that serve a population of 9.9 million people in the Chicago metropolitan area. The study area included parts of Illinois, Wisconsin and Indiana. The model included virtual representations of patients and simulated their movements between their communities and different health care facilities as well as within each health care facility. Each virtual patient can either carry or not carry CRE.

The findings, which will be published online May 9 in the journal *Clinical Infectious Diseases*, suggest that maintaining a computer registry that can track patients who carry CRE and warn health care facilities to take appropriate action when such patients are admitted could in turn reduce the spread of CRE by 15.5 percent over three years.

The researchers found that when 25 percent of the largest health care facilities used a registry that included 60 percent of CRE carriers, there

were 9.1 percent fewer new CRE carriers regionwide after three years. When all 402 Illinois health care facilities participated, the registry reduced the number of new CRE carriers by 11.7 percent and CRE prevalence by 7.6 percent over three years. When half of the Illinois healthcare facilities participated, the registry reduced the number of new CRE carriers by 10.7 percent and CRE prevalence by 5.6 percent over the course of three years.

"This study shows the value of data-sharing among health care facilities in a region, even those that may compete with each other," says Bruce Y. Lee, MD, MBA, executive director of the Global Obesity Prevention Center (GOPC) at the Bloomberg School and lead author of the study. "Antibiotic-resistant bacteria like CRE are a common, major growing enemy for all patients and health care facilities. When dealing with such bacteria, it is important to remember that health care facilities in a region form a complex interconnected system. Cooperation and more information-sharing among the facilities in this system may help better contain this enemy."

The CDC has been recommending a "Detect and Protect" strategy to deal with threats like CRE. This process entails identifying the patients who are carrying a CRE and then isolating them from other patients so that they won't spread the antibiotic-resistant bacteria to others. However, having to test and retest patients for CRE each time they enter a health care facility takes time, effort and money. As a result, in 2013 the Illinois Department of Public Health launched an electronic registry that could allow health care facilities to share information about which patients are carrying CRE. Other regions have been considering implementing similar registries but have lacked information on the benefits of such an investment. There was also concern that not all health care facilities would consent to releasing such information.

The study showed that such a registry could yield significant benefits,

even when only a fraction of health care facilities agree to participate and exchange such information. Knowing in advance which patients should require special attention can help better control [bacteria](#) that can silently spread from patient to health care personnel to other patients. In fact, the study showed how such a registry could even reduce CRE in health care facilities that do not participate. That is because health care facilities in a region are extensively connected through sharing patients, and a reduction in CRE in just some of the health care facilities in a region would then lower the number of patients carrying and spreading CRE in other health care facilities.

"Identifying CRE patients with a registry can save considerable resources and time, especially if known carriers do not need to be reidentified," says Sarah M. Bartsch, MPH, faculty at the GOPC and co-author of the study. "Thus, a registry for extensively drug-resistant organisms could be an effective tool in combatting the spread of [antibiotic-resistant bacteria](#) between [health](#) care facilities in a region."

**More information:** "How Introducing a Registry with Automated Alerts for Carbapenem-Resistant Enterobacteriaceae (CRE) May Help Control CRE Spread in a Region" *Clinical Infectious Diseases* (2019).

Provided by Johns Hopkins University Bloomberg School of Public Health

Citation: Patient registries could help control spread of antibiotic bacteria (2019, May 9) retrieved 27 April 2024 from <https://medicalxpress.com/news/2019-05-patient-registries-antibiotic-bacteria.html>

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.