

Changing part of central line could reduce hospital infections

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Simply replacing the connector in the IV system in patients with central lines could help reduce deadly bloodstream infections, researchers at Georgia Regents University have found.

A central line or central catheter is a tube placed in a patient's arm or chest to help deliver fluids, blood, or medications through the large veins near the heart. A connector sits at the top of the catheter and serves as the entry point for the fluid pathway inside – any fluid that goes in or comes out of the body, goes through the connector.

Most connectors use positive or negative pressure – either pushing fluid out or drawing blood in – when [catheters](#) are disconnected for flushing and cleaning. Ironically, it's during that process – designed to clean the catheter and ultimately reduce the chance of infection – that [germs](#) find their way into the bloodstream causing an often dangerous [blood infection](#). Nearly 250,000 central line-associated bloodstream infections happen in hospitals each year, according to the Centers for Disease Control and Prevention. Mortality rates on CLABSIs range from 12 to 25 percent.

Treating them also costs health care systems billions of dollars each year.

"We know that both positive and negative needleless connectors have been associated with higher CLABSI rates, so we decided to see what role a zero fluid displacement connector would play in infection control," said Dr. Cynthia C. Chernecky, a Professor of Nursing at GRU

and corresponding author on the study published in the *American Journal of Infection Control*.

As their name indicates, zero fluid displacement connectors cause no [reflux](#) of fluids – out or in – during disconnection and connection.

Researchers analyzed data in six acute care settings in five states and found that the number of infections decreased by 60 percent when positive connectors were replaced with zero fluid [displacement](#) connectors and by 94 percent when negative connectors were replaced with the zero connectors for central line IV therapy.

"We estimate that replacing the connector devices saved about 13 lives in the acute care settings in this study," Chernecky said. In addition to saving lives, more than \$3 million was saved on health care costs. The average central line-associated bloodstream infection costs about \$35,000 to treat.

Zero connectors cost about \$1 a piece, Chernecky said. "This is a very cost-effective way to increase patient safety."

Coauthors on the study are Thomas Joshua, an Assistant Professor of Nursing at GRU; Denise Macklin, a nurse consultant in Marietta, Ga.; and Dr. William R. Jarvis, a healthcare epidemiology and infection control consultant with Jarvis & Jarvis Associates, and former Acting Director of the CDC's Hospital Infection Program.

While the results are promising, study authors say that more research is needed.

"Central line-associated [bloodstream infections](#) can be deadly, so we must continue to investigate best practices to reduce risks and protect patients," Chernecky said.

Provided by Medical College of Georgia

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