Catheter safeguards at hospitals reduce infections and save money, study shows

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U.S. hospitals are reducing bloodstream infections related to catheters by implementing rigorous safeguards that also save millions of healthcare dollars each year, according to research led by Cedars-Sinai.

"Safety interventions are a win-win for both patients and hospitals," said Teryl Nuckols, MD, MSHS, director of the Division of General Internal

Medicine in the Cedars-Sinai Department of Medicine.

Nuckols led a multicenter team that studied data published in the last decade on catheter-related bloodstream infections at 113 hospitals. The team found that safety interventions, on average, reduced the infection rate by 57 percent at these hospitals while producing net savings of $1.85 million for each site over three years. The savings came from reduced costs in treating infected patients.

The study, published in the *JAMA Internal Medicine* journal of the American Medical Association, focused on central venous catheters, also known as central lines, which are commonly used in intensive care units. These lines are placed in large veins in the arm, chest, neck or groin to deliver medications, fluids or blood to patients.

More than 60,000 primary bloodstream infections related to these catheters are estimated to occur each year in the U.S., with a fatality rate of 12 percent or more, according to recent studies.

To prevent these infections, hospitals in recent years have introduced new safety procedures. Checklists for attending staff include donning sterile gloves, covering catheters with antimicrobial dressings and checking catheters daily for signs of movement or infection. Many hospitals also have invested in extra training, equipment and supplies to improve safety.

The phasing-in of these safeguards correlated with a 49 percent reduction nationally in the rate of catheter-related bloodstream infections from 2010 to 2013, according to the federal Agency for Healthcare Research and Quality. The new Cedars-Sinai-led study shows that these safeguards, while adding to equipment and labor costs, ultimately reduced infections and saved money.

In the hospitals studied, the median cost of implementing catheter safety programs was about $270,000 per site. But for every $100,000 that a hospital spent, it realized an average $315,000 savings because it treated fewer infected patients, the investigators found. Although savings were lower in certain hospitals that already had low infection rates, adding new precautions still paid off for them.

Nuckols said the study supports the value of medical centers upgrading their safety procedures to prevent catheter infections.

"Due to the high cost of caring for patients when central-line infections develop, even sizable up-front investments in infection prevention can be associated with large net savings," Nuckols said. "On the basis of our findings, hospitals that have not yet achieved very low rates of infection can consider implementing a variety of safety practices."

More information: Teryl K. Nuckols et al. Economic Evaluation of Quality Improvement Interventions for Bloodstream Infections Related to Central Catheters, *JAMA Internal Medicine* (2016). DOI: 10.1001/jamainternmed.2016.6610

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