

PROFESSION

High-tech solutions add to success of checklists in cutting bloodstream infections

Following infection-control precautions to the letter can be challenging, but the CDC says impregnated sponge dressings and catheters help.

By KEVIN B. O'REILLY, *amednews* staff. Posted Aug. 22, 2011.

Intensive care units following a package of evidence-based interventions helped cut the national rate of catheter-related bloodstream infections by 58% between 2001 and 2009. Now more hospitals are looking to high-tech solutions to help when checklists are not enough.

Among the high-tech tools that have been well studied and recommended by the Centers for Disease Control and Prevention are sponge dressings impregnated with the disinfectant chlorhexidine and catheters impregnated with antibacterials or antibiotics.

A 2006 statewide program in Michigan lowered ICU central line-associated bloodstream infections by two-thirds, helping health professionals adhere to CDC guidelines such as:

- Always washing hands.
- Using full-barrier precautions during the insertion of central venous catheters.
- Cleaning the skin with chlorhexidine.
- Avoiding the femoral site for catheter insertion when possible.
- Removing unnecessary catheters as soon as possible.

A \$5.8 million federal grant is funding an initiative to spread this checklist-driven approach to other hospitals around the country. Yet there are still more than 75,000 bloodstream infections a year among hospital and dialysis patients. As many as 25% of infected patients die, according to a CDC study published in the March 4 *Morbidity and Mortality Weekly Report*.

But in guidelines released in April, the CDC's Healthcare Infection Control Practices Advisory Committee recommended that hospitals look to high-tech solutions if the checklist bundle is not cutting bloodstream infections. For patients whose catheter is expected to be in place for longer than five days, the panel recommends using antimicrobial- or antibiotic-impregnated catheters.

Physicians now use these high-tech catheters for about half of the sickest ICU patients in America, said Dan Sirota, a vice president at Bloomington, Ind.-based Cook Medical, which makes a catheter impregnated with the antibiotics minocycline and rifampin.

Opportunities for infection

In a busy ICU, catheters may be handled 25 to 30 times a day, said Mark E. Rupp, MD, who helped write the new CDC guidelines and is professor of infectious diseases at the University of Nebraska Medical Center in Omaha.

"Every single time that catheter is accessed, there is an opportunity for something to go wrong," said Dr. Rupp, past president of the Society for Healthcare Epidemiology of America. "That's why we have this recommendation that if the catheter is going to be in place for a reasonable amount of time that physicians start thinking about some of these technologies to minimize further risk of infection."

Scott Trerotola, MD, chaired the supply-chain committee that switched the Hospital of the University of Pennsylvania in Philadelphia to Cook's high-tech catheter.

"We were seeing at least several bloodstream infections a month before," said Dr. Trerotola, the hospital's chief of interventional radiology. "In conjunction with other efforts at surveillance and better insertion technique, we've reduced bloodstream infections to nearly zero. There's no question this catheter was part of that progress."

Another catheter, made by Teleflex, is impregnated with chlorhexidine, and the antibiotic silver sulfadiazine and has been shown to reduce bloodstream infections compared with regular catheters.

Though some head-to-head research has been done, the CDC said the evidence is not strong enough to recommend one over the other.

One physician who uses the Spectrum catheter said it costs about \$40 more than Teleflex's, though Spectrum officials argue that hospitals will save money in the long run by achieving a lower central-line infection rate.

Some infectious-diseases experts initially raised concerns that the catheters' use of antibiotics could contribute to antibiotic-resistance, but studies have so far found no evidence of that.

Checklists have made it easier for physicians and other health professionals to correctly adhere to preventive guidelines, but oversights still happen and technology can help bridge the gap, Dr. Rupp said.

"If you're trying to choose between people and a gizmo, choose the gizmo every time," he said. "It takes the human-behavioral aspect out of the question."

ADDITIONAL INFORMATION:

WEBLINK

"Vital Signs: Central Line-Associated Blood Stream Infections -- United States, 2001, 2008, and 2009," *Morbidity and Mortality Weekly Report*, March 4 (www.cdc.gov/mmwr/preview/mmwrhtml/mm6008a4.htm)

"2011 Guidelines for the Prevention of Intravascular Catheter-Related Infections," Centers for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee, April (www.cdc.gov/hicpac/BSI/BSI-guidelines-2011.html)

"The clinical effectiveness of central venous catheters treated with anti-infective agents in preventing catheter-related bloodstream infections: a systematic review," *Critical Care Medicine*, February 2009 (www.ncbi.nlm.nih.gov/pubmed/19114884)

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