

## Can Antibiotic-Coated Catheters Help Decrease the Incidence of Bloodstream Infections in Patients in the Intensive Care Unit?

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The full report is titled "Effect of a Second-Generation Venous Catheter Impregnated with Chlorhexidine and Silver Sulfadiazine on Central Catheter-Related Infections. A Randomized, Controlled Trial." It is in the 18 October 2005 issue of *Annals of Internal Medicine* (volume 143, pages 570-580).

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### What is the problem and what is known about it so far?

Doctors commonly insert long thin plastic tubes (catheters) into the veins of critically ill patients to deliver fluids and medicines and also to measure pressures inside blood vessels near the heart. This type of catheter (central venous catheter) is inserted into a large vein in the neck (jugular vein) or under the collarbone (subclavian). Although central venous catheters can be very useful, they also have a significant risk for becoming contaminated (colonized) with bacteria, which may then spread to the bloodstream. One potentially useful approach to preventing bacterial colonization and spread is using a catheter that has been coated with an antiseptic. A new catheter, which is coated on both its outer surface and its inner surface, has recently been developed.

### Why did the researchers do this particular study?

To find out whether this new coated catheter was effective in preventing bloodstream infections when compared with an uncoated catheter.

### Who was studied?

780 patients in the intensive care units of 9 university-affiliated medical centers.

### How was the study done?

Patients in the intensive care unit who needed a central venous catheter were randomly assigned (by chance alone) to receive a coated catheter or a standard uncoated catheter. Both types looked exactly the same, and neither the doctor nor the patient knew which one was being used. Because catheters often need to be changed during the course of treatment, approximately one third of the participants received a study catheter when a preexisting catheter was replaced. The catheter was removed when it was no longer needed, and the portion that had been placed inside the vein was cultured to detect bacteria. Patients were also observed for signs of infection, and blood samples were cultured to detect bacteria.

### What did the researchers find?

Sixteen percent of the control catheters but only 9% of the coated catheters became colonized. When existing catheters were replaced with study catheters, approximately 10% of the control catheters became colonized whereas none of the antiseptic-coated catheters were affected. Definite spread of bacteria to the bloodstream occurred from 3 control catheters but only from 1 coated catheter. Possible bloodstream infection occurred in 5 additional patients from each group. An equal number of deaths occurred in each group, all attributable to the underlying illness rather than to the catheter.

### What are the limitations of the study?

Because there were so few instances of spread of bacteria to the bloodstream in either group, the study could not determine with certainty whether the antiseptic-coated catheter actually protected against infection.

### What are the implications of this study?

Because bacterial colonization of catheters usually precedes bloodstream infection, antibiotic-coated catheters are potentially useful in preventing such infections. Also, the rate of infection in the control group (without the antiseptic-coated catheters) was lower than expected, most likely because of the careful attention paid to aseptic technique during insertion and dressing changes. This implies that serious infections in our hospitals could be avoided with simple preventive measures.

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