Medical News

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Efficacy of Antibacterial-Impregnated Central Venous Catheters

Central venous catheters (CVCs) impregnated with chlorhexidine and silver sulfadiazine have been introduced recently for the prevention of catheter-related infections. However, there remains some uncertainty regarding the efficacy of these catheters because of conflicting reports in the literature.

Veenstra and coinvestigators recently conducted a meta-analysis to evaluate the efficacy of chlorhexidine-silver sulfadiazine-impregnated CVCs in the prevention of catheter-related bloodstream infection (CR BSI). Studies were identified from a computerized search of the MEDLINE database from January 1966 to January 1998, reference lists of identified articles, and queries of principal investigators and the catheter manufacturer. Randomized trials comparing chlorhexidine-silver sulfadiazine-impregnated CVCs with nonimpregnated catheters were included. The outcomes assessed were catheter colonization and CR BSI confirmed by catheter culture. Twelve studies involving 2,611 catheters met the inclusion criteria for catheter colonization. Eleven studies with a total of 2,603 catheters met the inclusion criteria for CR BSI. Most patients in these studies were from groups considered to be at high risk for catheter-related infections.

The summary odds ratio for catheter colonization was 0.44 (CI_{95}, 0.36-0.54; $P<.001$), indicating a significant decrease in catheter colonization with impregnated catheters. The studies examining the outcome of primary interest, CR BSI, had a summary odds ratio of 0.56 (CI_{95}, 0.37-0.84; $P=.005$).

This review indicated that CVCs impregnated with a combination of chlorhexidine and silver sulfadiazine appeared to be effective in reducing the incidence of both catheter colonization and CR BSI in patients at high risk for catheter-related infections.

FROM: Veenstra DL, Saint S, Saha S, Lumley T, Sullivan SD. Efficacy of antiseptic-impregnated central venous catheters in preventing catheter-related bloodstream infection. *JAMA* 1999;281:261-267.

Pyrogenic Reactions Related to Hemodialysis Waste Handling

Although the science and art of hemodialysis has seen some spectacular advances in the past 20 years, there seems to be an endless number of problems with the equipment used for dialysis. Jochimsen and coinvestigators from the CDC's Hospital Infections Program report on infections associated with the waste-handling system of the dialysis machine.

From June 17 through November 15, 1995, 10 episodes of *Enterobacter cloacae* bloodstream infection and three pyrogenic reactions occurred in patients at a hospital-based hemodialysis center. In a case-control study limited to events occurring during October 1-31, 1995, seven dialysis sessions resulting in *E cloacae* bacteremia or pyrogenic reaction without bacteremia were compared with 241 randomly selected control sessions. Dialysis machines were examined, cultures were obtained of dialysis fluid and equipment, and *E cloacae* isolates were genotyped by pulsed-field gel electrophoresis. Each dialysis machine had a waste-handling option (WHO) through which dialyzer priming fluid was discarded before each dialysis session; in 7 of 11 machines, one-way check valves designed to prevent backflow from the WHO into patient bloodlines were dysfunctional.

In the case-control study, case sessions were more frequent when machines with ≥ 1 dysfunctional check valves were used. *E cloacae* with identical pulsed-field gel electrophoresis patterns were isolated from case patients, dialysis fluid, station drains, and WHO units.

This investigation showed that bloodstream infections and pyrogenic reactions were caused by backflow from contaminated dialysis machine WHO units into patient bloodlines. The outbreak was terminated when WHO use was discontinued, check valves were replaced, and dialysis machine disinfection was enhanced.

FROM: Jochimsen EM, Frenette C, Delorme M, Arduino M, Aguero S, Carson L, et al. A cluster of bloodstream infections and pyrogenic reactions among hemodialysis patients traced to dialysis machine waste-handling option units. *Am J Nephrol* 1998;18:485-489.

Reducing Vancomycin Use With Computer Guidelines

Shojania and colleagues from the Brigham and Women's Hospital in Boston, Massachusetts, conducted a study to determine whether a structured ordering intervention using computer-guided physician order entry could reduce intravenous vancomycin use. Their randomized, controlled trial assessed frequency and duration of vancomycin therapy by 396 physicians treating 1,798

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