

In this network meta-analysis, we aimed to assess the comparative efficacy of antimicrobial CVC impregnations in reducing catheter-related infections in adults” Chong et al (2017).

Abstract:

BACKGROUND: The efficacy of antimicrobial central venous catheters (CVCs) remains questionable. In this network meta-analysis, we aimed to assess the comparative efficacy of antimicrobial CVC impregnations in reducing catheter-related infections in adults.

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METHODS: We searched 4 electronic databases (Medline, the Cochrane Central Register of Controlled Trials, Embase, CINAHL) and internet sources for randomized controlled trials, ongoing clinical trials, and unpublished studies up to August 2016. Studies that assessed CVCs with antimicrobial impregnation with nonimpregnated catheters or catheters with another impregnation were included. Primary outcomes were clinically diagnosed sepsis, catheter-related bloodstream infection (CRBSI), and all-cause mortality. We performed a network meta-analysis to estimate risk ratio (RR) with 95% confidence interval (CI).

RESULTS: Sixty studies with 17255 catheters were included. The effects of 14 impregnations were investigated. Both CRBSI and catheter colonization were the most commonly evaluated outcomes. Silver-impregnated CVCs significantly reduced clinically diagnosed sepsis compared with silver-impregnated cuffs (RR, 0.54 [95% CI, .29-.99]). When compared to no impregnation, significant CRBSI reduction was associated with minocycline-rifampicin (RR, 0.29 [95% CI, .16-.52]) and silver (RR, 0.57 [95% CI, .38-.86]) impregnations. No impregnations significantly reduced all-cause mortality. For catheter colonization, significant decreases were shown by miconazole-rifampicin (RR, 0.14 [95% CI, .05-.36]), 5-fluorouracil (RR, 0.34 [95% CI, .14-.82]), and chlorhexidine-silver sulfadiazine (RR, 0.60 [95% CI, .50-.72]) impregnations compared with no impregnation. None of the studies evaluated antibiotic/antiseptic resistance as the outcome.

CONCLUSIONS: Current evidence suggests that the minocycline-rifampicin-impregnated CVC appears to be the most effective in preventing CRBSI. However, its overall benefits in reducing clinical sepsis and mortality remain uncertain. Surveillance for antibiotic resistance attributed to the routine use of antimicrobial-impregnated CVCs should be emphasized in future trials.

Reference:

Chong, H.Y., Lai, N.M., Apisarnthanarak, A. and Chaiyakunapruk, N. (2017) Comparative Efficacy of Antimicrobial Central Venous Catheters in Reducing Catheter-Related Bloodstream Infections in Adults: Abridged Cochrane Systematic Review and Network Meta-Analysis. *Clinical infectious diseases*. 64(suppl_2), p.S131-S140.

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