

Antimicrobial PICC and antithrombogenic PICC

Abstract:

Objective: To examine the effectiveness of antimicrobial and antithrombogenic materials incorporated into peripherally inserted central catheters (PICCs) to prevent bloodstream infection, thrombosis, and catheter occlusion.

Methods: Prospective cohort study involving 52 hospitals participating in the Michigan Hospital Medicine Safety Consortium. Sample included adult hospitalized medical patients who received a PICC between January 2013 and October 2019. Coated and impregnated catheters were identified by name, brand, and device marketing or regulatory materials. Multivariable Cox proportional hazards models with robust sandwich standard error estimates accounting for the clustered nature of data were used to identify factors associated with PICC complications in coated versus noncoated devices across general care, intensive care unit (ICU), and oncology patients. Results were expressed as hazard ratios (HRs) with corresponding 95% confidence intervals (CIs).

Results: Of 42,562 patients with a PICC, 39,806 (93.5%) were plain polyurethane, 2,263 (5.3%) incorporated antimicrobial materials, and 921 (2.2%) incorporated antithrombogenic materials. Most were inserted in general ward settings (n = 28,111, 66.0%), with 12,078 (28.4%) and 1,407 (3.3%) placed in ICU and oncological settings, respectively. Within the entire cohort, 540 (1.3%) developed thrombosis, 745 (1.8%) developed bloodstream infection, and 4,090 (9.6%) developed catheter occlusion. Adjusting for known risk factors, antimicrobial PICCs were not associated with infection reduction (HR, 1.16; 95% CI, 0.82-1.64), and antithrombogenic PICCs were not associated with reduction in thrombosis and occlusion (HR, 1.15; 95% CI, 0.92-1.44). Results were consistent across populations and care settings.

Conclusions: Antimicrobial and antithrombogenic PICCs were not associated with a reduction in major catheter complications. Guidance aimed at informing use of these devices, balancing benefits against cost, appear necessary.

Reference:

Ullman AJ, Paterson RS, Schults JA, Kleidon TM, August D, O'Malley M, Horowitz J, Rickard CM, Paje D, Chopra V. Do antimicrobial and antithrombogenic peripherally inserted central catheter (PICC) materials prevent catheter complications? An analysis of 42,562

hospitalized medical patients. *Infect Control Hosp Epidemiol.* 2021 Apr 28;1-8. doi: 10.1017/ice.2021.141. Epub ahead of print. PMID: 33908337.



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Antimicrobial PICCs were not linked to CLABSI reduction and antithrombogenic PICCs were not associated with thrombosis or occlusion reduction.