

**INFECCIÓN ASOCIADA A CATÉTER y BACTERIEMIA
ACTUALIZACIÓN BIBLIOGRÁFICA 2009**

[Crit Care Med. 2009 Jun;37\(6\):1858-65.](#)

Comment in:

[Crit Care Med. 2009 Jun;37\(6\):2097-8.](#)

The effect of daily bathing with chlorhexidine on the acquisition of methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococcus*, and healthcare-associated bloodstream infections: results of a quasi-experimental multicenter trial.

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OBJECTIVE: Spread of multidrug-resistant organisms within the intensive care unit (ICU) results in substantial morbidity and mortality. Novel strategies are needed to reduce transmission. This study sought to determine if the use of daily chlorhexidine bathing would decrease the incidence of colonization and bloodstream infections (BSI) because of methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE) among ICU patients. **DESIGN, SETTING, AND PATIENTS:** Six ICUs at four academic centers measured the incidence of MRSA and VRE colonization and BSI during a period of bathing with routine soap for 6 months and then compared results with a 6-month period where all admitted patients received daily bathing with a chlorhexidine solution. Changes in incidence were evaluated by Poisson and segmented regression modeling. **INTERVENTIONS:** Daily bathing with a chlorhexidine-containing solution. **MEASUREMENTS AND MAIN RESULTS:** Acquisition of MRSA decreased 32% (5.04 vs. 3.44 cases/1000 patient days, $p = 0.046$) and acquisition of VRE decreased 50% (4.35 vs. 2.19 cases/1000 patient days, $p = 0.008$) following the introduction of daily chlorhexidine bathing. Segmented regression analysis demonstrated significant reductions in VRE bacteremia ($p = 0.02$) following the introduction of chlorhexidine bathing. VRE-colonized patients bathed with chlorhexidine had a lower risk of developing VRE bacteremia (relative risk 3.35; 95% confidence interval 1.13-9.87; $p = 0.035$), suggesting that reductions in the level of colonization led to the observed reductions in BSI. **CONCLUSION:** We conclude that daily chlorhexidine bathing among ICU patients may reduce the acquisition of MRSA and VRE. The approach is simple to implement and inexpensive and may be an important adjunctive intervention to barrier precautions to reduce acquisition of VRE and MRSA and the subsequent development of healthcare-associated BSI.

[Crit Care Med. 2009 Feb;37\(2\):702-12.](#)

Comment in:

[Crit Care Med. 2009 Feb;37\(2\):789-91.](#)

[Evid Based Nurs. 2009 Jul;12\(3\):80.](#)

The clinical effectiveness of central venous catheters treated with anti-infective agents in preventing catheter-related bloodstream infections: a systematic review.

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OBJECTIVES: To assess the clinical effectiveness of central venous catheters (CVCs) treated with anti-infective agents (AI-CVCs) in preventing catheter-related bloodstream infections (CRBSI). **DATA SOURCES:** MEDLINE (OVID), EMBASE, SCI//Web of Science, SCI/ISI Proceedings, and the Cochrane Library. **STUDY SELECTION:** A systematic review of the literature was conducted using internationally recognized methodology. All included articles were reports of randomized controlled trials comparing the clinical effectiveness of CVCs treated with AI-CVCs with either standard CVCs or another anti-infective treated catheter. Articles requiring in-house preparation of catheters or that only reported interim data were excluded. **DATA EXTRACTION:** Data extraction was carried out independently and crosschecked by two reviewers using a pretested data extraction form. **DATA SYNTHESIS:** Meta-analyses were conducted to assess the effectiveness of AI-CVCs in preventing CRBSI, compared with standard CVCs. Results are presented in forest plots with 95% confidence intervals. **RESULTS:** Thirty-eight randomized controlled trials met the inclusion criteria. Methodologic quality was generally poor. Meta-analyses of data from 27 trials assessing CRBSI showed a strong treatment effect in favor of AI-CVCs (odds ratio 0.49 (95% confidence interval 0.37-0.64) fixed effects, test for heterogeneity, chi-square = 28.78, df = 26, p = 0.321, I = 9.7). Results subgrouped by the different types of anti-infective treatments generally demonstrated treatment effects favoring the treated catheters. Sensitivity analyses investigating the effects of methodologic differences showed no differences to the overall conclusions of the primary analysis. **CONCLUSION:** AI-CVCs appear to be effective in reducing CRBSI compared with standard CVCs. However, it is important to establish whether this effect remains in settings where infection-prevention bundles of care are established as routine practice. This review does not address this question and further research is required.

[JAMA. 2009 Mar 25;301\(12\):1231-41.](#)

Comment in:

[JAMA. 2009 Jul 22;302\(4\):379; author reply 380.](#)

[JAMA. 2009 Jul 22;302\(4\):379; author reply 380.](#)

[JAMA. 2009 Mar 25;301\(12\):1285-7.](#)

Chlorhexidine-impregnated sponges and less frequent dressing changes for prevention of catheter-related infections in critically ill adults: a randomized controlled trial.

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CONTEXT: Use of a chlorhexidine gluconate-impregnated sponge (CHGIS) in intravascular catheter dressings may reduce catheter-related infections (CRIs). Changing catheter dressings every 3 days may be more frequent than necessary. OBJECTIVE: To assess superiority of CHGIS dressings regarding the rate of major CRIs (clinical sepsis with or without bloodstream infection) and noninferiority (less than 3% colonization-rate increase) of 7-day vs 3-day dressing changes. DESIGN, SETTING, AND PATIENTS: Assessor-blind, 2 x 2 factorial, randomized controlled trial conducted from December 2006 through June 2008 and recruiting patients from 7 intensive care units in 3 university and 2 general hospitals in France. Patients were adults (>18 years) expected to require an arterial catheter, central-vein catheter, or both inserted for 48 hours or longer. INTERVENTIONS: Use of CHGIS vs standard dressings (controls). Scheduled change of unsoiled adherent dressings every 3 vs every 7 days, with immediate change of any soiled or leaking dressings. MAIN OUTCOME MEASURES: Major CRIs for comparison of CHGIS vs control dressings; colonization rate for comparison of 3- vs 7-day dressing changes. RESULTS: Of 2095 eligible patients, 1636 (3778 catheters, 28,931 catheter-days) could be evaluated. The median duration of catheter insertion was 6 (interquartile range [IQR], 4-10) days. There was no interaction between the interventions. Use of CHGIS dressings decreased the rates of major CRIs (10/1953 [0.5%], 0.6 per 1000 catheter-days vs 19/1825 [1.1%], 1.4 per 1000 catheter-days; hazard ratio [HR], 0.39 [95% confidence interval {CI}, 0.17-0.93]; P = .03) and catheter-related bloodstream infections (6/1953 catheters, 0.40 per 1000 catheter-days vs 17/1825 catheters, 1.3 per 1000 catheter-days; HR, 0.24 [95% CI, 0.09-0.65]). Use of CHGIS dressings was not associated with greater resistance of bacteria in skin samples at catheter removal. Severe CHGIS-associated contact dermatitis occurred in 8 patients (5.3 per 1000 catheters). Use of CHGIS dressings prevented 1 major CRI per 117 catheters. Catheter colonization rates were 142 of 1657 catheters (7.8%) in the 3-day group (10.4 per 1000 catheter-days) and 168 of 1828 catheters (8.6%) in the 7-day group (11.0 per 1000 catheter-days), a mean absolute difference of 0.8% (95% CI, -1.78% to 2.15%) (HR, 0.99; 95% CI, 0.77-1.28), indicating noninferiority of 7-day changes. The median number of dressing changes per catheter was 4 (IQR, 3-6) in the 3-day group and 3 (IQR, 2-5) in the 7-day group (P < .001). CONCLUSIONS: Use of CHGIS dressings with intravascular catheters in the intensive care unit reduced risk of infection even when background infection rates were low. Reducing the frequency of changing unsoiled adherent dressings from every 3 days to every 7 days modestly reduces the total

number of dressing changes and appears safe. TRIAL REGISTRATION: clinicaltrials.gov
Identifier: NCT00417235.