

Chlorhexidine Bathing and Health Care–Associated InfectionsA Randomized Clinical Trial

Importance Daily bathing of critically ill patients with the broad-spectrum, topical antimicrobial agent chlorhexidine is widely performed and may reduce health care–associated infections.

Objective To determine if daily bathing of critically ill patients with chlorhexidine decreases the incidence of health care–associated infections.

Design, Setting, and Participants A pragmatic cluster randomized, crossover study of 9340 patients admitted to 5 adult intensive care units of a tertiary medical center in Nashville, Tennessee, from July 2012 through July 2013.

Interventions Units performed once-daily bathing of all patients with disposable cloths impregnated with 2% chlorhexidine or nonantimicrobial cloths as a control. Bathing treatments were performed for a 10-week period followed by a 2-week washout period during which patients were bathed with nonantimicrobial disposable cloths, before crossover to the alternate bathing treatment for 10 weeks. Each unit crossed over between bathing assignments 3 times during the study.

Main Outcomes and Measures The primary prespecified outcome was a composite of central line–associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), ventilator-associated pneumonia (VAP), and *Clostridium difficile* infections. Secondary outcomes included rates of clinical cultures that tested positive for multidrug-resistant organisms, blood culture contamination, health care–associated bloodstream infections, and rates of the primary outcome by ICU.

Results During the chlorhexidine bathing period, 55 infections occurred: 4 CLABSI, 21 CAUTI, 17 VAP, and 13 *C difficile*. During the control bathing period, 60 infections occurred: 4 CLABSI, 32 CAUTI, 8 VAP, and 16 *C difficile*. The primary outcome rate was 2.86 per 1000 patient-days during the chlorhexidine and 2.90 per 1000 patient-days during the control bathing periods (rate difference, -0.04 ; 95% CI, -1.10 to 1.01 ; $P = .95$). After adjusting for baseline variables, no difference between groups in the rate of the primary outcome was detected. Chlorhexidine bathing did not change rates of infection-related secondary outcomes including hospital-acquired bloodstream infections, blood culture contamination, or clinical cultures yielding multidrug-resistant organisms. In a prespecified subgroup analysis, no difference in the primary outcome was detected in any individual intensive care unit.

Conclusion and Relevance In this pragmatic trial, daily bathing with chlorhexidine did not reduce the incidence of health care–associated infections including CLABSIs, CAUTIs, VAP, or *C difficile*. These findings do not support daily bathing of critically ill patients with chlorhexidine.

Trial Registration clinicaltrials.gov Identifier: [NCT02033187](https://clinicaltrials.gov/ct2/show/study/NCT02033187)