

Title: RCT of Chlorhexidine vs. Soap & Water Bathing for Prevention of Hospital-Acquired Infections in SICU

Background/introduction:

Preventing four of the five most common hospital-acquired infections (HAIs) (surgical site [SSI], bloodstream [BSI], catheter-associated urinary tract [CAUTI], and ventilator-associated pneumonia [VAP]) is a national priority. Compared to soap and water (S&W) daily bathing, 2% chlorhexidine gluconate (CHG) bathing every 48 hours for up to 28 days was hypothesized to decrease the hazard ratio (HR) of acquiring these four HAIs (primary BSI, CAUTI, VAP, or incisional SSI) in surgical intensive care unit (SICU) patients.

Materials and Methods:

This single-center, pragmatic, randomized, controlled trial compared the HR for acquiring four HAIs between two bathing strategies: CHG vs. S&W. Patients and clinicians were aware of treatment group assignment; investigators who enrolled patients or determined outcomes were blinded. Adults admitted to the SICU from 07/2012 through 05/2013 with an anticipated SICU stay ≥ 48 hours were included. Patients with Braden scores < 9 , pregnancy, CHG allergy, or skin irritation were excluded. A multiple endpoint survival model with stratified Cox regression (two-sided alpha of 0.05) was used for primary analysis. This study was IRB approved with a waiver of informed consent, registered (#NCT01640925), and internally funded.

Results:

Although 350 were randomized, only 325 subjects were analyzed (164 S&W vs. 161 CHG) as 24 were excluded due to prior enrollment and 1 subject withdrew consent. Subjects were 57% male, 59% white, aged 60 ± 16 years, and had significant comorbidities (APACHE II scores 26 ± 9 , 38% with liver failure, and 50% with kidney failure). Subjects acquired 53 HAIs: 2 BSIs (2 vs. 0), 21 CAUTIs (14 vs. 7), 9 SSIs (6 vs. 3), and 21 VAPs (13 vs. 8) for S&W vs. CHG, respectively. Compared to S&W bathing, CHG bathing decreased the hazard of acquiring four HAIs (HR=0.555, 95% CI 0.309-0.998, P=0.049). For S&W vs. CHG, incidence rates per 1000 days at risk were 2 vs. 0 for BSI, 22 vs. 12 for CAUTI, 40 vs. 26 for VAP, and 12 vs. 6 for SSI, respectively.

Conclusion:

Compared with S&W, CHG bathing every other day decreased the hazard of acquiring these four HAIs by 44% in the SICU.