

### Chlorhexidine Bathing Does Not Reduce Surgical Site Infections After Operative Fixation

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**Purpose:** Preoperative chlorhexidine gluconate (CHG) baths are used to reduce the risk of surgical site infections (SSIs) in elective surgery, but their efficacy in the trauma setting is unknown. We compared the incidence of SSI in patients who received and did not receive a CHG bath before fracture surgery.

**Methods:** This is a secondary analysis of the A-PREP and PREPARE trials. The association between CHG bathing and (1) SSI within 90 days post-injury, (2) SSI within 1 year, (3) Staphylococcus aureus infection within 1 year, (4) reoperation for infection within 1 year, and (5) reoperation for wound healing within 1 year was assessed. Multivariable regression was performed to adjust for prognostic variables. A separate instrumental variable analysis was conducted to compare sites that used CHG bathing in over 90% of participants versus <1%.

**Results:** Of 10,103 participants, 26% (n = 2674) received a preoperative CHG bath, and 74% (n = 7429) did not. CHG bathing did not result in lower odds of infection or reoperation in the multivariable or instrumental variable analysis (Table 1). Fracture location and open versus closed injury did not alter the effectiveness of CHG bathing.

**Conclusion:** CHG baths increase staff time, costs, and discomfort in patients with severe fractures. These results suggest that CHG bathing does not measurably decrease SSI in fracture patients.

**Table 1.** Association between chlorhexidine bathing and study outcomes.

Outcome	Chlorhexidine Bathing N=2674	No Chlorhexidine Bathing N=7429	Adjusted Model		Instrumental Variable	
			Odds Ratio (95% CI)	P Value	Odds Ratio (95% CI)	P Value
SSI within 90 days	132 (5.1%)	284 (4.0%)	1.07 (0.86 – 1.32)	0.56	0.88 (0.62 – 1.25)	0.48
SSI within 1 year	208 (8.6%)	455 (6.9%)	1.06 (0.89 – 1.26)	0.51	0.84 (0.63 – 1.11)	0.21
<i>S aureus</i> infection within 1 year	89 (3.3%)	172 (2.3%)	1.24 (0.95 – 1.61)	0.11	1.00 (0.64 – 1.58)	0.98
Reoperation for infection within 1 year	170 (7.1%)	321 (4.9%)	1.23 (1.00 – 1.49)	0.04	1.02 (0.74 – 1.42)	0.87
Reoperation for wound healing within 1 year	1.02 (4.2%)	202 (3.1%)	1.13 (0.88 – 1.45)	0.32	0.82 (0.54 – 1.24)	0.35

Adjusted models adjust for patient's age, body mass index, functional comorbidity index, number of fractures, open fractures, pelvis fractures, lower extremity fractures, and upper extremity fractures.

Instrumental variable analysis was restricted to study sites that used chlorhexidine bathing in > 90% of study participants or <1% of participants.

No evidence of heterogeneity due to fracture location or open vs. closed fractures.