

Clinical Summary:

Chlorhexidine bathing and microbial contamination in patients' bath basins

Powers P, Peed J, Burns L, Ziemba-Davis M. American Journal of Critical Care 2012; 21:338-342

Key Points

- A previous study demonstrated that patients' bath basins may be reservoirs for bacteria.¹⁻²
- Instead of soap, a 4% chlorhexidine gluconate solution was used to address these concerns.
- Specimens from bath basins used for five days or more were cultured to assess bacterial contamination.
- Using 4% chlorhexidine gluconate solution reduced bacterial growth by 95.5% ($p < 0.001$).

Background

Patients' bath basins have been shown to be a source of microbial contamination, and potentially are associated with the development of hospital-acquired infections (HAIs).¹⁻² In one previous study, bacteria grew from 98% of basin samples.¹ This study also found an association between wash basin microbes and patient infections.

It is known that bathing with chlorhexidine solution reduces the frequency of infections with vancomycin-resistant *Enterococcus* (VRE) and methicillin-resistant *Staphylococcus aureus* (MRSA)³⁻⁸ and bloodstream infections.⁸⁻¹¹

Objectives

The purpose of this study was to assess the presence of bacterial contaminants in wash basins when 4% chlorhexidine gluconate solution is used in place of standard soap and water to wash patients.

Design

Specimens from 90 basins used to wash 90 patients in a mixed medical surgical ICU at a large tertiary care hospital were collected and cultured. Before the study began, standardized procedures for basin cleaning and storage as well as patient hygiene were in place; patients were washed with 4% chlorhexidine solution and water within six hours of admission and daily thereafter. Only basins that had been used for five days were included in the sample.

Results

Of the 90 bath basins cultured, only four tested positive for microbial growth. All of these microbes were gram-positive bacteria; three were identified as coagulase-negative *Staphylococcus*, which is commonly found on the skin.

Bathing with 4% chlorhexidine solution was associated with a 95.5% reduction in bacterial growth when compared to the previous study using soap ($p < 0.001$). While all basins positive for bacterial growth were associated with female patients, no other independent variables were significantly related to bacterial growth in the study basins.

Conclusions

In dramatic contrast to the previous study that examined basin contamination when soap and water was used, bathing patients with chlorhexidine solution reduced basin contamination by 95.5%. This reduced risk is particularly important for the critically ill who are at high risk for infection.



References

1. Johnson D, Lineweaver L, Maze L. *Am J Crit Care*. 2009; 18:31-40.
2. Marchaim D, Abreu-Lanfranco O, Taylor AR, et al. Poster presented as part of the 40th Annual Critical Care Congress of the Society of Critical Care Medicine, January 15-19, 2011, San Diego, California. http://www.sageproducts.com/documents/pdf/education/symposia/skin/21529_Marchaim_SHEA_poster.pdf. Accessed June 8, 2012.
3. Batra R, Cooper B, Whiteley C, et al. *Clin Infect Dis*. 2010; 50:210-217.
4. Ridenour G, Lampen R, Pederspiel J, et al. *Infect Control Hosp Epidemiol*. 2007; 28:1155-1161.
5. Sandri A, Dalarosa M, Ruschel de Alcantara L, et al. *Infection Control Hosp Epidemiol*. 2006; 27:185-187.
6. Vernon M, Kayden M, Trick W, et al. *Arch Intern Med*. 2006; 166:306-312.
7. Kassakian SZ, Mermel LA, Jefferson JA, Parenteau SL, Machan JT. *Infect Control Hosp Epidemiol*. 2011; 32:238-243.
8. Climo M, Sepkowitz K, Zuccotti G, et al. *Crit Care Med*. 2009; 37:1858-1865.
9. Bleasdale S, Trick W, Gonzalez I, et al. *Arch Intern Med*. 2007; 167(19): 2073-2079.
10. Munoz-Price L, Hota B, Sterner A, et al. *Infect Control Hosp Epidemiol*. 2009; 30(11): 1031-1035.
11. Popovich K, Hota B, Hayes R, et al. *Infect Control Hosp Epidemiol*. 2009; 30(10): 959-963.

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