

## Clinical Summary:

# Effect of hospital-wide chlorhexidine patient bathing on healthcare - associated infections

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## Key Points

- Regular bathing of hospitalized patients with Hibiclens 4% chlorhexidine gluconate solution was associated with significant reductions in *Clostridium difficile* infections (CDI).
- The incidence of *C. difficile* infections increased once chlorhexidine bathing was halted.
- Chlorhexidine solution was not associated with any adverse events.

## Background

Up to 1.7 million Healthcare Associated Infections (HAIs) occur in US hospitals each year. HAIs are responsible for approximately 100,000 deaths and costs of up to \$45 billion.<sup>1-3</sup>

Chlorhexidine gluconate solution is a broad-spectrum antimicrobial that has been used routinely for skin antisepsis prior to surgical procedures and intravascular catheter insertion.<sup>4-5</sup> Chlorhexidine solution can also be used for daily bathing of critical care patients. Its use is associated with decreases in infections, caused by organisms such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE).<sup>6-12</sup>

## Objectives

The aim of this study was to evaluate the effectiveness of bed bathing patients with 4% chlorhexidine gluconate solution (Hibiclens®) in preventing healthcare-associated infections (HAIs).

## Design

This was a quasi-experimental, dose-ranging, staged-introduction study involving three inpatient cohorts. Initially, chlorhexidine bathing was performed on three days per week. After six months, chlorhexidine bathing was carried out every day. The every-day bathing period continued for up to 13 months. After a 19-month intervention period, there was a four-month washout period during which time chlorhexidine bathing was halted.

## Results

Over 188,859 patient days, 68,302 patient baths were administered with chlorhexidine gluconate solution. The protocol was administered to all patients except neonates and infants with an adherence rate over 90%.

Infections due to *C. difficile* significantly decreased in all cohorts during the intervention period and significantly rose during the washout period.

Results show that there was a 70% decline in CDIs during the daily bathing period. Although chlorhexidine gluconate is not sporicidal, it is active against vegetative *C. difficile* cells and it inhibits spore germination. Because Hibiclens 4% chlorhexidine gluconate solution was applied via a traditional bed bath, physical removal of spores from the skin may have occurred and resulted in decreased environmental contamination. Hibiclens contains a surfactant that may aid in physical removal of spores.<sup>13</sup>

## Conclusion

Daily patient bathing with chlorhexidine gluconate is an attractive horizontal infection prevention intervention that may have beneficial effects on a number of HAIs. Chlorhexidine gluconate bathing was associated with a reduction in *C. difficile* infection rate in this hospital-wide study. This protocol was well tolerated and there were no reports of adverse events associated with the 4% chlorhexidine solution.



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