A placebo-controlled trial of the effect of two preoperative baths or showers with chlorhexidine detergent on postoperative wound infection rates


Key points

• The role of the widespread skin bacterium *Staphylococcus aureus* in contaminating operative wounds is established.¹,²

• This trial examined the impact of two preoperative baths or showers using chlorhexidine (HiBiScrub®) and found that it reduced postoperative wound infection rates.

Introduction

It is common practice to bath or shower patients before elective surgical procedures but prior to this paper being published there was no evidence that this has an impact on infection rates. A number of studies had shown that bathing with soap did not reduce the number of skin bacteria – in some cases it actually increased the number of bacteria.³,⁵ This was perhaps due to the washing process spreading organisms from naturally heavily-colonised sites (groin, nose, armpits) as well as the release of bacteria from deeper layers of skin. *Staphylococcus aureus* bacteria, present in normal skin flora, are of particular importance in contaminating operative wounds.¹,²

Several trials investigating preoperative bathing or showering with chlorhexidine showed reduction in skin flora,³,⁵ lasting for several days.⁵,⁶

This trial studied whether two preoperative baths or showers using HiBiScrub® would result in a reduction in the postoperative wound infection rate, and in particular the rate of *S. aureus* infections, compared to an unmedicated soap or placebo.

Methods

• The study was carried out over a 2-year period in four surgical wards in Torbay District General Hospital and in two smaller wards at the nearby hospital in Newton Abbot, all in the UK.

• Treatments were allocated to wards on a randomised basis on a 2-monthly crossover pattern so that each ward had at least two periods using each treatment.

• All patients admitted for elective surgery were included. Patients taking antibiotics, with intercurrent infections or undergoing emergency surgery were excluded.

• Patients had two baths/showers with HiBiScrub, placebo or unmedicated soap – one the evening before on admission to the hospital, and one in the morning before surgery.
• The method of total body bathing was carefully explained to all patients with particular emphasis on washing around the nose, armpits, navel and genital areas. Patients were asked to dry themselves with a clean towel and put on clean clothing.

Results
• 2,015 patients completed the trial. 689 used HiBiScrub, 626 unmedicated soap and 700 placebo. True placebo was therefore used only for a proportion of the study.
• There was a significantly decrease in both overall infection rates and *S. aureus* infections in the HiBiScrub group compared to the soap group.
• The incidence of wound infection was 9.0% (62/689) in the HiBiScrub group, 12.8% (80/626) in the soap group and 11.7% (83/700) in the placebo group. (p<0.005)
• *S. aureus* infection rates were 2.6% (18/689) in those using HiBiScrub, 5.3% (33/626) in those using soap and 4.0% (48/700) in those using placebo. (p<0.005)
• In surgeries classified as ‘clean’ (uninfected operative wound and respiratory, digestive, genital, urinary tracts are not entered) HiBiScrub halved the incidence of *S. aureus* infections when compared to soap.

Conclusion
Two preoperative baths or showers with HiBiScrub significantly reduced total infection rate by 30%. The study authors concluded that this whole body washing regime could easily be incorporated into the routine preparation for surgery and would substantially benefit patient care.