NHS Somerset NHS Foundation Trust

EVIDENCE SEARCH RESULTS

Question/subject of request:	Antiseptic body wash to be used as standard for breast implant surgery (even if MRSA swabs are negative) - current protocols, guidelines, evidence or best practice.
Date requested:	13 Dec 2024
Date completed:	27 Jan 2025
Compiled by:	Roxanne Hart

CITING THIS SEARCH

If you reference this search in any paper, publication or presentation, please let us know.

The citation format is:

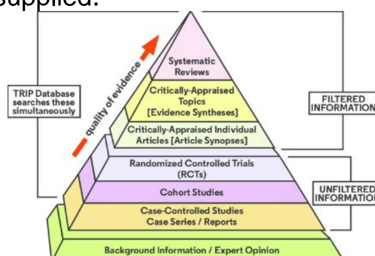
- Hart, R., (2024). *Evidence summary:antiseptic body wash for breast implant surgery,* Taunton, UK: Somerset Foundation Trust Knowledge and Library Services.

CONTACT DETAILS

Knowledge & Library Services:	**Email:** library@somersetft.nhs.uk **Telephone:** MPH (01823) 342433 or YDH (01935) 384495 / 4697 **Website:** https://somersetft-nhs.libguides.com/home **Twitter:** @SOMNHS_KLS
Quality Improvement Team:	**Email:** jessica.pawley@somersetFT.nhs.uk **Website:** Somerset Collaboration Hub - Home
Primary Care:	**Email:** LibraryPrimaryCare@somersetft.nhs.uk

Librarian's Comments:

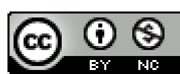
Abstracts are provided where available and relevant. Some articles have full text availability, as indicated by a corresponding link. If you have any problems accessing the links or would like an article which does not have immediate full text access, please contact a member of the library staff who will arrange for the article to be supplied.



The results are presented according to the hierarchy of evidence which is used to rank the relative strength of results obtained from scientific research.

The design of the study and the endpoints measured affect the strength of the evidence.

Evidence hierarchies are often applied in evidence-based practices and are integral to evidence-based medicine.


This work is licensed under a CC BY NC 4.0 license

Disclaimer: We will endeavour to use the best, most appropriate and most recent sources available to ensure that the information supplied is accurate, up-to-date and evidence-based. It is the responsibility of the requestor to determine the accuracy, validity and interpretation of the search results. No responsibility can be taken by the library for any action taken on the basis of this information. Read our full disclaimer here.

NHS
Somerset
NHS Foundation Trust

You will need your NHS OpenAthens account to access the full text of licenced content. This service is provided to the NHS in England by Health Education England.

Contents (click to jump to each section):

Guidelines

These guidelines are general and relate to prevention of surgical site infections generally (not exclusively breast implant surgery).

AORN, WHO, CDC all recommend preoperative washing with either soap or an antiseptic. NICE recommend patients to shower or have a bath using soap either the day of or the day before. They additionally note that if Staphylococcus aureus is a likely cause to consider nasal mupirocin in combination with a chlorhexidine body wash.

Systematic Reviews

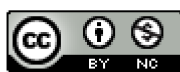
Forget et al 2022 found CHG cloths had an impact on SSI occurrence in orthopaedic surgery but acknowledged there was no comparison with usual practices.
Franco et al 2017 concluded that controlled clinical trials are needed to assess the effect of preoperative chlorhexidine bathing on infection rates following clean surgery.
Edmiston et al 2017 this paper highlights the potential for enhancing compliance with this low-risk and low-cost intervention and provides some guidance for enhancing implementation of preoperative showering with both chlorhexidine in solution and impregnated wipes.
Webster & Osborne 2015 found their review provides no clear evidence of benefit for preoperative showering or bathing with chlorhexidine over other wash products, to reduce surgical site infection

Breast

Campolina et al 2022 Preoperative showering with CHG 4% did not increase the concentration of this agent on the skin surface right before the surgical incision.
Baker et al. 2022 Though evidence specific to IBBR is lacking, there is relevant high-level evidence from other specialties that a 5-day skin decolonization protocol with CHG and mupirocin can decrease rate of SSI.
Persichino et al 2017's study results indicate that larger volumes of 4% chlorhexidine enhanced antiseptic activity against gram-negative organisms. Larger volumes did not significantly reduce the rate of SSIs in all breast surgeries
Gowda et al 2017 looked at results from a survey of current practice around breast implant reconstruction in USA. They had 253 responses. On the point of preoperative wipe and scrub protocols 57% advise patients undertake them.
Hachenberg et al 2021 found that Octenisan (active ingredient Octenidine) washing protocols are cheap, easy to follow with risks low. Patient education is crucial.

Journal Articles

Knighton et al 2022 research revealed that patients have different bathing techniques and need more education on chlorhexidine gluconate cleansing
Ory et al 2022 found in spite of data showing efficacy of AS in preventing SSIs they nevertheless showed a potential saving and benefit of generalizing AS before surgical interventions
Scholz et al 2021 found that SSIs were reduced when an infection prevention bundle was introduced consisting of, (1) full-body preoperative wash with 4% CHG cloths; (2) retraining on surgeon hand scrub; (3) retraining for surgical prep; and (4) patient education regarding wound care
Warren et al 2021's study supports the theoretical benefit of certain strategies for preoperative bathing strategies for example CHG bathing was associated with higher preoperative CHG skin concentrations.


This work is licensed under a CC BY NC 4.0 license

Cooper et al 2019 developed a patient information sheet and a standardised script to guide preadmission phone calls in order to improve the delivery of CHG information. This resulted in a moderate increase in patients using the wash the recommended two times.
Kline et al 2018 found that an outpatient preoperative antiseptic decolonization bundle aimed at 4 body sites was significantly more effective in eradicating SA than the usual disinfectant showers (ie, the control).
Edmiston et al 2015 found that a standardized preadmission shower regimen corrects deficiencies present in current nonstandardized preadmission shower protocols for patients undergoing elective surgery.

Conference Abstracts
Cernich 2020 found that universal preoperative nasal decolonization with alcohol-based nasal antiseptic, paired with CHG bathing, led to a reduction in the SSI rate and associated costs.
Gnass 2020 found that preoperative universal decolonization with alcohol based nasal antiseptic in place of nasal PVI, paired with CHG bathing, was effective in reducing SSI rate and associated costs.

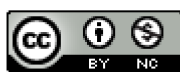
The Knowledge & Library Service have a growing archive of completed evidence summaries on inSPIRE – the organisation's knowledge, research and evidence repository. You can browse the evidence summaries here.

These results of this search will only be shared in the repository if you have given your permission to do so (we ask this in the evidence search request form).

Thank you.

Guidelines
Guideline for preoperative patient skin antisepsis. In: Guidelines for Perioperative Practice. Denver, CO:AORN, Inc; 2022. For a copy of the full text please email library@somersetft.nhs.uk
Although I could not access the full text of the above (without requesting it from elsewhere) I was able to access the AORN Guideline First look which is published by one of the authors of the guideline.

- **Stanton, C. (2021). Guideline for preoperative patient skin antisepsis. *AORN Journal*, *113*(4), P5–P7.**
  Standardized protocol for preoperative bathing should be established by an interdisciplinary team and followed for every patient undergoing a surgical or other invasive procedure.1 "High-quality evidence supports preoperative bathing to reduce the microbial flora on the patient's skin," deKay said. "It is recommended that patients perform preoperative bathing with either soap or an antiseptic." The updated guideline discusses the mainly inconclusive verdict on whether soap or an antiseptic is more beneficial for preoperative bathing.
- **Link, T. (2022). Guidelines in practice: Preoperative patient skin antisepsis. *AORN Journal, 115*(2), 156–166.**
  This article discusses recommendations from the AORN "Guideline for preoperative patient skin antisepsis" for decolonization protocols, preoperative bathing, and selection of surgical site antiseptics. A scenario describes the process a facility team


This work is licensed under a CC BY NC 4.0 license

uses to determine components of an SSI prevention bundle after recognizing an increase in infections from multidrug-resistant organisms.

WHO, Global Guidelines for the Prevention of Surgical Site Infection, 2018
Pg 58
Preoperative whole-body bathing or showering is considered good clinical practice to make the skin as clean as possible prior to surgery in order to reduce the bacterial load, especially at the site of incision. This is generally done with an antimicrobial soap (usually CHG 4% combined with a detergent or in a triclosan preparation) in settings where this is available and affordable (4, 5). Preoperative showering with antiseptic agents is a well-accepted procedure for reducing skin microflora (6-8), but it is less clear whether this procedure leads to a lower incidence of SSI (7, 8). Although rare, patient hypersensitivity and allergic reactions to CHG can occur (1). Overall, a moderate quality of evidence shows that preoperative bathing with CHG soap has neither benefit nor harm in reducing the SSI rate when compared to plain soap.

Berríos-Torres, S. I., Umscheid, C. A., Bratzler, D. W., Leas, B., Stone, E. C., Kelz, R. R., ... & Healthcare Infection Control Practices Advisory Committee. (2017). Centers for disease control and prevention guideline for the prevention of surgical site infection, 2017. *JAMA surgery*, *152*(8), 784-791.
Before surgery, patients should shower or bathe (full body) with soap (antimicrobial or nonantimicrobial) or an antiseptic agent on at least the night before the operative day.

NICE, Surgical site infections: prevention and treatment, 2019
Advise patients to shower or have a bath (or help patients to shower, bath or bed bath) using soap, either the day before, or on the day of, surgery.
Consider nasal mupirocin in combination with a chlorhexidine body wash before procedures in which Staphylococcus aureus is a likely cause of a surgical site infection.

Systematic Reviews & Review articles

Forget, V., Azzam, O., Khouri, C., & Landelle, C. (2022). What is the benefit of preoperative washing with chlorhexidine gluconate-impregnated cloths on the incidence of surgical site infections? A systematic review and meta-analysis. *Infectious Diseases Now, 52*(4), 185–192.
OBJECTIVES: While the World Health Organization has recommended preoperative washing with plain or antimicrobial soap for surgical site infection (SSI) prevention, it has not formulated recommendations on use of chlorhexidine gluconate (CHG)-impregnated cloths. The purpose of this systematic review was to evaluate the benefit of preoperative bathing with CHG-cloths on SSI incidence. **PATIENTS AND METHODS**: Publications were searched on Medline, CENTRAL, Web of Science, Clinical Trial between 01/01/1990 and 30/06/2018. Randomized controlled trials (RCT), quasi-randomized, case-control and cohort studies on patients with surgery (Population) having preoperative bathing with CHG-cloths (Intervention) or antiseptic soap, plain soap, placebo, no washing, no instruction (Comparator) were included. The main outcome was SSI occurrence. The results were synthetized using the Odds-Ratio (OR) and 95% confidence interval [95%CI]. Study quality was assessed using the Cochrane and Newcastle-Ottawa tools and evidence quality with the GRADE method. Statistics were calculated on RevMan5.3. **RESULTS**: All in all, 1108 publications were identified and 3 were included in the meta-analysis. OR of the 2 cohort studies was 0.25 [95%CI: 0.13-0.50] for use of CHG-cloths the evening and the morning before intervention versus non-compliance with preoperative

This work is licensed under a CC BY NC 4.0 license

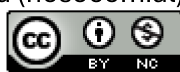
NHS Somerset NHS Foundation Trust

washing. OR of the RCT was 0.12 [95%CI: 0.02-1.00] for use of CHG-cloths the evening and the morning before intervention versus a shower with antibacterial soap the evening before the intervention. Study quality was moderate. **CONCLUSIONS**: While the available studies show a benefit for CHG-cloths on SSI occurrence in orthopaedic surgery, there is no comparison with usual practices. Further studies are needed to confirm the benefit of CHG-cloths for preoperative washing.

Franco, L. M. d. C., Cota, G. F., Pinto, T. S., & Ercole, F. F. (2017). [Preoperative bathing of the surgical site with chlorhexidine for infection prevention: Systematic review with meta-analysis.]() ***American Journal of Infection Control, 45*(4), 343–349.**
BACKGROUND: Preoperative bathing with 4% chlorhexidine is recommended as a measure to prevent surgical site infection (SSI) despite uncertainty regarding the effectiveness of the intervention. This review aimed to assess the effect of bathing with 4% chlorhexidine on the prevention of SSIs in clean surgeries compared with bathing with placebo solution or soap. **METHODS**: Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for systematic reviews and the Cochrane manual were followed. Sources were MEDLINE and Latin American and Caribbean Health Sciences Literature databases and manual search of references from evaluated studies. We included randomized studies evaluating clean surgical wounds and reporting SSIs after preoperative bathing with 4% chlorhexidine. **RESULTS**: A total of 243 primary studies were identified and 8 were considered methodologically appropriate based on the Jadad Scale. Data were gathered from 10,655 patients. The global SSI rate was 7.2%. The SSI rate for chlorhexidine bathing, placebo, and soap without antiseptic groups was 7.1%, 9.1%, and 5.1%, respectively. A significant reduction in the infection rates was not found in the comparison between patients subjected to preoperative bathing with 4% chlorhexidine versus placebo solution (relative risk, 0.91; 95% confidence interval, 0.76-1.09). The same absence of benefit was observed comparing chlorhexidine bathing with soap (relative risk, 1.06; 95% confidence interval, 0.68-1.66). **CONCLUSIONS**: Controlled clinical trials are needed to assess the effect of preoperative chlorhexidine bathing on infection rates following clean surgery before the incorporation of this intervention in health care services.

Edmiston, C. E. J., & Leaper, D. (2017). [Should preoperative showering or cleansing with chlorhexidine gluconate (CHG) be part of the surgical care bundle to prevent surgical site infection?]()**. *Journal of Infection Prevention, 18*(6), 311–314.**
Showering preoperatively with chlorhexidine gluconate is an issue that continues to promote debate; however, many studies demonstrate evidence of surgical site infection risk reduction. Methodological issues have been present in many of the studies used to compile guidelines and there has been a lack of standardisation of processes for application of the active agents in papers pre-2009. This review and commentary paper highlights the potential for enhancing compliance with this low-risk and low-cost intervention and provides some guidance for enhancing implementation of preoperative showering with both chlorhexidine in solution and impregnated wipes.

Webster, J., & Osborne, S. (2015). [Preoperative bathing or showering with skin antiseptics to prevent surgical site infection.]() ***Cochrane Database of Systematic Reviews*, , (2)CD–2015 Feb 20.**
BACKGROUND: Surgical site infections (SSIs) are wound infections that occur after invasive (surgical) procedures. Preoperative bathing or showering with an antiseptic skin wash product is a well-accepted procedure for reducing skin bacteria (microflora). It is less clear whether reducing skin microflora leads to a lower incidence of surgical site infection. **OBJECTIVES**: To review the evidence for preoperative bathing or showering with antiseptics for preventing hospital-acquired (nosocomial) surgical site infections. **SEARCH METHODS**: For this fifth

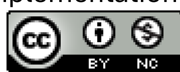

This work is licensed under a [CC BY NC 4.0 license]()

update we searched the Cochrane Wounds Group Specialised Register (searched 18 December 2014); the Cochrane Central Register of Controlled Trials (The Cochrane Library 2014 Issue 11); Ovid MEDLINE (2012 to December Week 4 2014), Ovid MEDLINE (In-Process & Other Non-Indexed Citations December 18, 2014); Ovid EMBASE (2012 to 2014 Week 51), EBSCO CINAHL (2012 to December 18 2014) and reference lists of articles. **SELECTION CRITERIA**: Randomised controlled trials comparing any antiseptic preparation used for preoperative full-body bathing or showering with non-antiseptic preparations in people undergoing surgery. **DATA COLLECTION AND ANALYSIS**: Two review authors independently assessed studies for selection, risk of bias and extracted data. Study authors were contacted for additional information. **MAIN RESULTS**: We did not identify any new trials for inclusion in this fifth update. Seven trials involving a total of 10,157 participants were included. Four of the included trials had three comparison groups. The antiseptic used in all trials was 4% chlorhexidine gluconate (Hibiscrub/Riohex). Three trials involving 7791 participants compared chlorhexidine with a placebo. Bathing with chlorhexidine compared with placebo did not result in a statistically significant reduction in SSIs; the relative risk of SSI (RR) was 0.91 (95% confidence interval (CI) 0.80 to 1.04). When only trials of high quality were included in this comparison, the RR of SSI was 0.95 (95%CI 0.82 to 1.10). Three trials of 1443 participants compared bar soap with chlorhexidine; when combined there was no difference in the risk of SSIs (RR 1.02, 95% CI 0.57 to 1.84). Three trials of 1192 patients compared bathing with chlorhexidine with no washing, one large study found a statistically significant difference in favour of bathing with chlorhexidine (RR 0.36, 95%CI 0.17 to 0.79). The smaller studies found no difference between patients who washed with chlorhexidine and those who did not wash preoperatively. **AUTHORS' CONCLUSIONS**: This review provides no clear evidence of benefit for preoperative showering or bathing with chlorhexidine over other wash products, to reduce surgical site infection. Efforts to reduce the incidence of nosocomial surgical site infection should focus on interventions where effect has been demonstrated.

Breast

Campolina, A. C., Maricevich, J. P. B., Silva, R. O., Santa-Cruz, F., Coutinho, L. R., Maricevich, M., ... & Ferraz, Á. A. (2022). [Evaluation of Chlorhexidine Concentration on the Skin After Preoperative Surgical Site Preparation in Breast Surgery—A Randomized Controlled Trial.](#) ***Aesthetic Plastic Surgery*, *46*(4), 1517-1522.**
Conclusion Preoperative showering with CHG 4% did not increase the concentration of this agent on the skin surface right before the surgical incision.

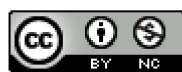
Baker, N. F., Brown, O., Hart, A. M., Danko, D., Stewart, C. M., & Thompson, P. W. (2022). [Preventing infection in implant-based breast reconstruction: evaluating the evidence for common practices and standardized protocols](#). ***Plastic and Reconstructive Surgery–Global Open*, *10*(3), e4208.**
Cutaneous bacteria are normal human microflora,
with *Staphylococcal* and *Streptococcal* species being the most prevalent. Carriage rates for *S. aureus* are approximately 37.2%, and positive carrier status has been shown to be associated with a 7.1-fold increased relative risk of developing an infection following any type of surgery.[25] Likewise, *Staphylococcal* organisms and other Gram-positive skin flora are found to be the causative pathogen in most breast implant infections.[20]
Preoperative skin decolonization protocols could potentially decrease the incidence of postoperative implant infection by reducing or eliminating the asymptomatic carriage. Twelve studies evaluated the efficacy of a chlorhexidine gluconate (CHG) or mupirocin regimen. Each of the prospective, nonrandomized studies demonstrated a significant improvement in infection rates following implementation of the skin decolonization protocol.[15–17,21–23,27] Of the randomized

*This work is licensed under a [CC BY NC 4.0 license](#)*

controlled trials (RCTs), two demonstrated a significant improvement in surgical site infections (SSIs) with use of the skin decolonization protocol,[24,26] two demonstrated a trend towards fewer infections which was not statistically significant,[18,19] and one demonstrated no difference.[28]
A multicenter prospective study published in 2015 included over 14,000 screened *S. aureus* carriers undergoing either orthopedic joint arthroplasty or cardiac surgery.[17] The rate of SSI following implementation of the protocol was significantly lower in both groups (relative risk [RR] 0.48 and 0.86, respectively). In an RCT published in the New England Journal of Medicine, 917 *S. aureus* carriers were randomized to receive 5 days of showers with CHG and intranasal mupirocin twice daily, or placebo.[29] The rate of *S. aureus* infection in the treatment group was significantly lower (RR 0.42), and the effect was most profound to deep SSIs (RR 0.21). Smith et al [26] evaluated preoperative skin decolonization versus placebo in 1350 *S. aureus* noncarriers undergoing Mohs surgery and demonstrated a 50% reduction in the rate of infection (2% versus 4%, $P = 0.03$). The effect of duration of decolonization duration was studied by Kline et al [30] in an RCT, demonstrating that a 5-day regimen of showers with CHG and intranasal mupirocin was more effective than 2 days of showers alone. In most published studies, a 5-day CHG/mupirocin regimen is considered the standard for skin decolonization.
The only plastic surgery-specific study was an RCT published by Veiga et al[31] One hundred and fifty patients undergoing plastic surgery (including 16 breast reconstructions and 9 breast augmentations) were randomized to receive either no treatment, a shower with CHG preoperatively, or shower with placebo. There was no significant difference between any group in this study; however, the overall infection rate was very low (two infections total).
Summary: Though evidence specific to IBBR is lacking, there is relevant high-level evidence from other specialties that a 5-day skin decolonization protocol with CHG and mupirocin can decrease rate of SSI.

Persichino, J., Lee, H., Sutjita, M., Talavera, K., San-Agustin, G., & Gnass, S. (2017). Reducing the rate of surgical site infections after breast surgery with the use of larger volumes of 4% chlorhexidine gluconate solution as preoperative antiseptic showering. *Infection Control & Hospital Epidemiology, 38*(3), 373–375.

Gowda, A. U., Chopra, K., Brown, E. N., Slezak, S., & Rasko, Y. (2017). Preventing breast implant contamination in breast reconstruction: a national survey of current practice. *Annals of plastic surgery*, *78*(2), 153-156.


This work is licensed under a CC BY NC 4.0 license

NHS
Somerset
NHS Foundation Trust

TABLE 2. Pre-operative Interventions

Preoperative Intervention	Implant-Based Breast Reconstruction
Do you routinely prescribe a preoperative wipe or scrub protocol?	57%
Do you routinely perform an MRSA nasal swab preoperatively?	7%
What solutions do you use to prepare the surgical site?	
ChloraPrep (chlorhexidine)	52%
DuraPrep	9%
Prevail	2%
Povidone-iodine (Betadine)	30%
Other	7%
How do you secure the drapes/towels to the patients?	
No additional attachments	30%
Towel clips	17%
Staples	35%
Ioban	9%
Other (please specify)	9%
What do you routinely use for perioperative antibiotic prophylaxis?	
Cefazolin	97%
Clindamycin	1%
Vancomycin	1%
Ciprofloxacin	0%
Trimethoprim sulfamethoxazole (Bactrim)	0%
None	1%

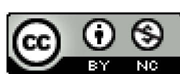
Hachenberg, J., Acis, E., Auer-Schmidt, M. M., Warm, M., Malter, W., Thangarajah, F., & Eichler, C. (2021). Preoperative Octenidine Application in Breast Reconstruction Surgery. *In vivo*, *35*(1), 549–554

Conclusion: Preoperative washing protocols involving the Octenisan® wash lotion is relatively cheap and easy to follow. There is evidence that washing protocols result in a reduction of S. aureus infections leading to a better perioperative outcome. Octenisan® is safe to use in implant-based breast reconstructive surgery and is not associated with higher risks for patients. Our study did not yield any significant reduction in perioperative and postoperative complication and infection rates. This is attributed to a relatively low study population. Wash lotion compliance was only 48.7%. Proper patient education is crucial. With those preliminary data, it is now possible to design a larger analysis since patient adherence to washing protocol with Octenisan® wash lotion has been established.

Journal articles

Knighton, S. C., Bingham, J., Pope, D., Zabarsky, T., & Donskey, C. J. (2022). Health care staff perceptions of gaps and education needs for patient-led preoperative hygiene using chlorhexidine gluconate skin cleansing products. *American Journal of Infection Control, 50*(12), 1395–1397.

Through survey-led interviews, health care staff recognizes that patients have different bathing techniques and need more education on chlorhexidine gluconate cleansing. Preliminary findings gathered will be used to develop and test electronic competency-based tools to ensure patients are provided with the same comprehensive instructions before using chlorhexidine



This work is licensed under a CC BY NC 4.0 license

gluconate bathing products. Copyright © 2022 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Ory, J., Bruyere, F., Massetti, M., & Moreau, R. (2022). Economic evaluation of pre-operative shower with antiseptic soap to prevent surgical site infections. *Journal of Hospital Infection, 124*, 9–12.

BACKGROUND: A pre-operative shower is recommended before surgery to prevent surgical site infections (SSIs). **METHODS**: We modelled the occurrence of SSIs and the potential savings for patients undergoing an antimicrobial soap (AS) shower prior to surgery at a French University Hospital level. **RESULTS**: AS shower prevented 209 SSIs, generating a potential saving of 632,210 per year. Results grouped by type of surgery showed annual savings of 26,537, 20,520 and 14,377 for orthopaedic, gynaecologic and obstetric, and digestive surgery, respectively. **CONCLUSIONS**: Despite the lack of published data surrounding the efficacy of AS in preventing SSIs, we demonstrated the potential savings and benefits of generalizing AS before surgical interventions.

Scholz, R., Smith, B. A., Adams, M. G., Shah, M., Brudner, C., Datta, A., & Hirsch, E. (2021). A multifaceted surgical site infection prevention bundle for cesarean delivery. *American Journal of Perinatology, 38*(7), 690–697.

OBJECTIVE: Surgical site infections (SSI, including wound infections, endometritis, pelvic abscess, and sepsis) may complicate cesarean section (C/S). We report outcomes before and after the introduction of an SSI prevention bundle that did not include antibiotics beyond routine prophylaxis (cefazolin, or gentamicin/clindamycin for penicillin-allergic patients). **STUDY DESIGN**: The prevention bundle was introduced following an increase in C/S-associated SSI, which itself was associated with an institutional switch in preoperative scrub from povidone-iodine to chlorhexidine gluconate (CHG)/isopropanol. Components of the bundle included: (1) full-body preoperative wash with 4% CHG cloths; (2) retraining on surgeon hand scrub; (3) retraining for surgical prep; and (4) patient education regarding wound care. Patients delivered by C/S at >=24 weeks of gestation were segregated into four epochs over 7 years: (1) baseline (18 months when povidone-iodine was used); (2) CHG scrub (18 months after skin prep was switched to CHG); (3) bundle implementation (24 months); and (4) maintenance (24 months following implementation). **RESULTS**: A total of 3,637 patients were included (n = 667, 796, 1098, and 1076, respectively, in epochs 1-4). A rise in SSI occurred with the institutional switch from povidone-iodine to CHG (i.e., from baseline to the CHG scrub epoch, 8.4-13.3%, p : A total of 3,637 patients were included (n = 667, 796, 1098, and 1076, respectively, in epochs 1-4). A rise in SSI occurred with the institutional switch from povidone-iodine to CHG (i.e., from baseline to the CHG scrub epoch, 8.4-13.3%, p : A total of 3,637 patients were included (n = 667, 796, 1098, and 1076, respectively, in epochs 1-4). A rise in SSI occurred with the institutional switch from povidone-iodine to CHG (i.e., from baseline to the CHG scrub epoch, 8.4-13.3%, p : A total of 3,637 patients were included (n = 667, 796, 1098, and 1076, respectively, in epochs 1-4). A rise in SSI occurred with the institutional switch from povidone-iodine to CHG (i.e., from baseline to the CHG scrub epoch, 8.4-13.3%, p **CONCLUSION**: Implementation of a prevention bundle was associated with a reduction in post-C/S SSI. This improvement was achieved without the use of antibiotics beyond standard preoperative dosing. Copyright Thieme. All rights reserved.

Warren, B. G., Nelson, A., Warren, D. K., Baker, M. A., Miller, C., Habrock, T., . . . Anderson, D. J. (2021). Impact of preoperative chlorhexidine gluconate (CHG) application methods on preoperative CHG skin concentration. *Infection Control & Hospital Epidemiology, 42*(4), 464–466.

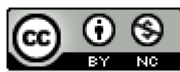
Elective surgical patients routinely bathe with chlorhexidine gluconate (CHG) at home days

This work is licensed under a CC BY NC 4.0 license

prior to their procedures. However, the impact of home CHG bathing on surgical site CHG concentration is unclear. We examined 3 different methods of applying CHG and hypothesized that different application methods would impact resulting CHG skin concentration.

Cooper, A. L., Brown, J. A., Salathiel, J., & Gollner, S. (2019). [An intervention to improve patient understanding and use of preoperative chlorhexidine washes](). *Infection, Disease & Health, 24*(4), 194–200.
BACKGROUND: Despite a lack of consensus around which type of preoperative wash is most effect in preventing surgical site infection, their use in clinical practice remains common. Chlorhexidine gluconate (CHG) is widely used however a previous study indicated issues with patient understanding and use of CHG. In response an intervention was developed which aimed to improve patient understanding and compliance with CHG. **METHODS**: A patient information sheet and a standardised script to guide preadmission phone calls were developed to improve the delivery of information to patients at the study hospital. These interventions were implemented for four months with adult surgical inpatients. A cross-sectional survey was then conducted to assess the effectiveness of the intervention. **RESULTS**: A 75% (n = 226) response rate was attained. The majority of participants (86%, n = 189) used CHG prior to their surgical procedure and of these 71% (n = 129) used CHG the recommended two times. The quality of information received from the preadmissions nurses was rated more highly than information delivered by other hospital staff. Openended questions revealed key issues including lack of information, time and access issues, and inconsistencies in CHG use. **CONCLUSION**: The value of standardised calls and information sheets was evident in participants who reported receiving these measures. A moderate increase was seen from the original study in the number of participants who used CHG washes the recommended two times. However, issues remained with inconsistent information across the hospital. Clinicians need to draw on high quality, contemporary research to inform clinical practice. Copyright © 2019 Australasian College for Infection Prevention and Control. Published by Elsevier B.V. All rights reserved.

Kline, S. E., Neaton, J. D., Lynfield, R., Ferrieri, P., Kulasingam, S., Dittes, K., . . . Johnson, J. R. (2018). [Randomized controlled trial of a self-administered five-day antiseptic bundle versus usual disinfectant soap showers for preoperative eradication of staphylococcus aureus colonization.]() *Infection Control & Hospital Epidemiology, 39*(9), 1049–1057.
OBJECTIVE: To determine the efficacy in eradicating Staphylococcus aureus (SA) carriage of a 5-day preoperative decolonization bundle compared to 2 disinfectant soap showers, with both regimens self-administered at home. **DESIGN**: Open label, single-center, randomized clinical trial. **SETTING**: Ambulatory orthopedic, urologic, neurologic, colorectal, cardiovascular, and general surgery clinics at a tertiary-care referral center in the United States. Participants Patients at the University of Minnesota Medical Center planning to have elective surgery and not on antibiotics. **METHODS**: Consenting participants were screened for SA colonization using nasal, throat, axillary, and perianal swab cultures. Carriers of SA were randomized, stratified by methicillin resistance status, to a decolonization bundle group (5 days of nasal mupirocin, chlorhexidine gluconate [CHG] bathing, and CHG mouthwash) or control group (2 preoperative showers with antiseptic soap). Colonization status was reassessed preoperatively. The primary endpoint was absence of SA at all 4 screened body sites. **RESULTS**: Of 427 participants screened between August 31, 2011, and August 9, 2016, 127 participants (29.7%) were SA carriers. Of these, 121 were randomized and 110 were eligible for efficacy analysis (57 decolonization bundle group, 53 control group). Overall, 90% of evaluable participants had methicillin-susceptible SA strains. Eradication of SA at all body sites was achieved for 41 of 57 participants (71.9%) in the decolonization bundle group and for 13 of 53 participants (24.5%) in the control group, a difference of 47.4% (95% confidence interval [CI], 29.1%-65.7%; P: Of 427 participants screened between August 31, 2011, and August 9, 2016, 127 participants (29.7%)


This work is licensed under a [CC BY NC 4.0 license]()

were SA carriers. Of these, 121 were randomized and 110 were eligible for efficacy analysis (57 decolonization bundle group, 53 control group). Overall, 90% of evaluable participants had methicillin-susceptible SA strains. Eradication of SA at all body sites was achieved for 41 of 57 participants (71.9%) in the decolonization bundle group and for 13 of 53 participants (24.5%) in the control group, a difference of 47.4% (95% confidence interval [CI], 29.1%-65.7%; P
CONCLUSION: An outpatient preoperative antiseptic decolonization bundle aimed at 4 body sites was significantly more effective in eradicating SA than the usual disinfectant showers (ie, the control).

Edmiston, C. E. J., Lee, C. J., Krepel, C. J., Spencer, M., Leaper, D., Brown, K. R., . . . Seabrook, G. R. (2015). **Evidence for a standardized preadmission showering regimen to achieve maximal antiseptic skin surface concentrations of chlorhexidine gluconate, 4%, in surgical patients.** ***JAMA Surgery, 150*****(11), 1027–1033.**
IMPORTANCE: To reduce the amount of skin surface bacteria for patients undergoing elective surgery, selective health care facilities have instituted a preadmission antiseptic skin cleansing protocol using chlorhexidine gluconate. A Cochrane Collaborative review suggests that existing data do not justify preoperative skin cleansing as a strategy to reduce surgical site infection. **OBJECTIVES**: To develop and evaluate the efficacy of a standardized preadmission showering protocol that optimizes skin surface concentrations of chlorhexidine gluconate and to compare the findings with the design and methods of published studies on preoperative skin preparation. **DESIGN, SETTING, AND PARTICIPANTS**: A randomized prospective analysis in 120 healthy volunteers was conducted at an academic tertiary care medical center from June 1, 2014, to September, 30, 2014. Data analysis was performed from October 13, 2014, to October 27, 2014. A standardized process of dose, duration, and timing was used to maximize antiseptic skin surface concentrations of chlorhexidine gluconate applied during preoperative showering. The volunteers were randomized to 2 chlorhexidine gluconate, 4%, showering groups (2 vs 3 showers), containing 60 participants each, and 3 subgroups (no pause, 1-minute pause, or 2-minute pause before rinsing), containing 20 participants each. Volunteers used 118 mL of chlorhexidine gluconate, 4%, for each shower. Skin surface concentrations of chlorhexidine gluconate were analyzed using colorimetric assay at 5 separate anatomic sites. Individual groups were analyzed using paired t test and analysis of variance. **INTERVENTION**: Preadmission showers using chlorhexidine gluconate, 4%. **MAIN OUTCOMES AND MEASURES**: The primary outcome was to develop a standardized approach for administering the preadmission shower with chlorhexidine gluconate, 4%, resulting in maximal, persistent skin antisepsis by delineating a precise dose (volume) of chlorhexidine gluconate, 4%; duration (number of showers); and timing (pause) before rinsing. **RESULTS**: The mean (SD) composite chlorhexidine gluconate concentrations were significantly higher (P : The mean (SD) composite chlorhexidine gluconate concentrations were significantly higher (P **CONCLUSIONS AND RELEVANCE**: A standardized preadmission shower regimen that includes 118 mL of aqueous chlorhexidine gluconate, 4%, per shower; a minimum of 2 sequential showers; and a 1-minute pause before rinsing results in maximal skin surface (16.5 microg/cm2) concentrations of chlorhexidine gluconate that are sufficient to inhibit or kill gram-positive or gram-negative surgical wound pathogens. This showering regimen corrects deficiencies present in current nonstandardized preadmission shower protocols for patients undergoing elective surgery.

Conference Abstracts and poster presentations

Cernich, C. M.(2020)Universal preoperative antiseptic nasal and skin decolonization for reduction in SSI and associated costs.
Background: Preventing surgical site infections (SSI) is more important than ever, as the number

This work is licensed under a CC BY NC 4.0 license

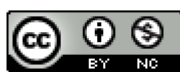
and complexity of procedures, the co-morbidities of the patients and antimicrobial resistant pathogens are all increasing over time. Additionally, it has been estimated that as many as half of all SSI are preventable when evidence-based strategies are applied. Given this, one of 7 hospitals in a multihospital system in Florida, planned a trial of universal pre-operative nasal and skin decolonization for all surgical procedures.

Gnass, S. I.(2020)[Improving outcomes with revised preoperative universal decolonization protocol.]()

Background. In order to improve outcomes, including reduced surgical infection rate and costs, a revised universal preoperative decolonization protocol was implemented on a trial basis. Methods. In a 12 month before and after study at a public teaching hospital in southern California, an alcohol based nasal antiseptic was introduced in place of nasal povidone iodine (PVI) for all surgical patients pre-operatively, paired with chlorhexidine (CHG) bathing which was already in place. All surgical procedures were included, the most common being cholecystectomy, cesarean section and hip fracture. The alcohol nasal antiseptic was selected to replace the PVI nasal antiseptic based on efficacy, staff preference and cost. At the same time, surgical team members began self-application of the alcohol nasal antiseptic each day prior to surgical procedures. This was not mandatory and compliance was not tracked, though informal feedback and observation revealed most surgical team members were applying the nasal antiseptic prior to cases daily. Results. In comparison to the 6 month baseline period where there were 27 SSI in 1188 procedures, during the 6 month study period there were 10 SSI in 1253 procedures, representing a 63% reduction (p=.0162) for all types of procedures. We have observed a reduction of 17 SSIs in 2019, compared to the previous year, during the 6 months period. That means a saving of $589,420 during the same period. Conclusion. Preoperative universal decolonization with alcohol based nasal antiseptic in place of nasal PVI, paired with CHG bathing, was effective in reducing SSI rate and associated costs. Further study is needed to measure and assess the impact of surgical team member nasal decolonization on patient infection risk and rate.

FOR OFFICE USE ONLY

DATABASES AND INFORMATION SOURCES USED					
	Pubmed		**HMIC**		**BMJ Best Practice**
X	**Medline**		**Social Policy and Practice**		**Cochrane Library**
	Emcare		**CINAHL**		**TRIP**
X	**Embase**		**PsycINFO**	X	**Grey Literature**
	AMED		**UpToDate**	X	**AORN** **NICE** **WHO** **CDC**


This work is licensed under a [CC BY NC 4.0 license]()

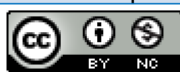
NHS
Somerset
NHS Foundation Trust

PURPOSE OF SEARCH			
	Patient info/health & well being	**X**	**Clinical decision making (inc. patient care)**
	Executive Team support		**Research/Education/Professional development**
	Quality Improvement		**Primary Care & Neighbourhoods Directorate support**
	KM/Management decision making		**Other**

USER CATEGORY OF REQUESTOR			
	Medical students		**Patients/public**
	Nursing/midwifery students		**Physician Associates**
	Junior doctors		**Public Health (Somerset CC)**
	Nurses/Midwives		**Other**
X	**Allied Health professionals**		

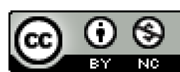
HAS PERMISSION TO SHARE THE RESULTS BEEN OBTAINED FROM THE REQUESTOR?			
X	**YES - share**		**NO – do not share**

KEY WORDS/SEARCH STRATEGY INCLUDING MESH HEADINGS	LIMITS USED
Database: Ovid MEDLINE(R) ALL <1946 to January 24, 2025> **Search Strategy:** **1** octenisan.af. (6) **2** skin decolonisation.ti,ab. (4) **3** skin decolonization.ti,ab. (32) **4** (preoperative bath* or pre operative bath* or preoperative shower* or pre operative shower* or preoperative wash* or pre operative wash* or preoperative clean* or pre operative clean*).ti,ab. (154) **5** ((preoperative adj1 decolonization) or (preoperative adj1 decolonisation)).ti,ab. (46) **6** ((pre operative adj1 decolonization) or (pre operative adj1 decolonisation)).ti,ab. (8) **7** (preadmission shower* or pre admission shower* or preadmission bath* or pre admission bath*).ti,ab. (5) **8** (preoperative chlorhexidine or pre operative chlorhexidine).ti,ab. (72)	


This work is licensed under a CC BY NC 4.0 license

NHS Somerset NHS Foundation Trust

9 (preoperative hygiene or pre operative hygiene).ti,ab. (6) **10** or/1-9 (314)	


This work is licensed under a CC BY NC 4.0 license