



ACIPC Recommends

- Patients bathe or shower preoperatively with either water and plain soap or antimicrobial soap.
- A chlorhexidine gluconate-alcohol-based solution should be used for skin preparation immediately prior to surgery.
- Preparations must be used in accordance with manufacturer's instructions to eliminate the hazards associated with flammability.

1. Introduction

Surgical site infections (SSIs) occur in 2-13% of patients undergoing surgery in Australia.¹ SSIs can lead to increased morbidity and mortality as well as increased hospital stay and costs. There are a number of widely accepted and evidence-based recommendations for reducing SSIs, including use of antibiotic prophylaxis, normothermia, hyperoxygenation, glucose control and avoidance of shaving. Skin preparation with an antiseptic agent immediately prior to surgery is a universally accepted measure to reduce SSIs.

PS ID	Category	Responsible Body	Review Due	Effective Date
P1	Policy	Policy Committee	Draft not approved	Draft not approved

2. Rationale

Microbiological contamination of the surgical site may lead to the development of a surgical site infection, and efforts should be made to minimise the presence and spread of microorganisms. These may include preoperative showering or bathing, use of antiseptic impregnated drapes and application of topical antiseptics. The main types of antiseptics used are iodine or iodophors such as povidone-iodine (PI), alcohol, and chlorhexidine gluconate. Povidone-iodine and chlorhexidine gluconate may be alcohol-based or aqueous-based solutions which may have implications for effectiveness.

3. Literature Review

Preoperative showering/bathing

Existing guidelines

The 1999 Centers for Disease Control and Prevention (CDC) guidelines recommend that patients shower or bathe with an antiseptic solution the night before surgery.² An updated guideline was due to be published in 2015, but has not yet been released as of November 2016. The 2008 Clinical Practice Guidelines from the National Institute for Health and Clinical Excellence (United Kingdom) recommend preoperative bathing with soap³ as do the Queensland Health Guidelines.⁴

The Association of periOperative Registered Nurses (AORN), which published comprehensive recommendations on preoperative skin antisepsis in 2014⁵ based on a systematic review of the evidence, recommends that patients bathe or shower before surgery with either soap or an antiseptic, as there is high quality evidence that skin microbial loads are reduced, although the outcomes on SSI are unclear. The AORN make no recommendation favouring a particular agent due to lack of sufficient high quality evidence, however, suggests there is an increasing body of evidence to support the use of chlorhexidine gluconate-impregnated cloths.⁵ The Australian College of Operating Room Nurses (ACORN) 2016 standards for operating room nurses recommend preferably two preoperative baths or showers with a Therapeutic Goods Administration approved antiseptic.⁶

The newly published 2016 WHO recommendations on preoperative measures for surgical site infection are that preoperative bathing or showering should occur prior to surgery using water and either plain soap or an antimicrobial soap. The evidence showed that bathing with chlorhexidine-gluconate did

not significantly reduce SSIs compared to plain soap, although there is weak evidence that bathing using chlorhexidine-gluconate cloths was associated with a reduced rate of SSIs.⁷

Other Reviews

A 2012 systematic review compared the most common preparations for skin antisepsis for surgical bathing and skin preparation prior to surgery.⁸ The authors concluded that the methodological quality of studies was mixed, patient populations varied and products varied in terms of having an aqueous or alcohol base. Because alcohol has antiseptic properties this complicates the overall conclusions about a particular antiseptic. The authors were unable to draw a definite conclusion about which surgical site antiseptic is the most effective at preventing SSIs. A Cochrane review conducted in 2012⁹ examined seven trials with over 10,000 participants that compared bathing or showering with chlorhexidine versus placebo or normal soap or no bathing. Overall there was no improvement in relative risk when chlorhexidine was used to bathe or shower versus placebo or soap. If only the highest quality trials were included there was a reduction in relative risk to 0.95 associated with chlorhexidine use. The authors concluded that there was no clear evidence of a benefit associated with chlorhexidine washes versus any other product, although one study demonstrated a reduction in RR with chlorhexidine bathing versus no bathing at all.

Skin preparation immediately prior to surgery: choice of antiseptic agent

Existing Guidelines

The 1999 CDC guidelines,² the 2008 Clinical Practice guidelines,³ the 2014 AORN guidelines⁵ and the 2016 ACORN standards⁶ all recommend that the skin be prepared prior to surgery with an antiseptic agent, but do not recommend one agent over another due to insufficient evidence. The AORN guidelines conclude that there is no evidence that one antiseptic is more effective than another, and recommend that preoperative skin preparation should be conducted with an FDA approved antiseptic agent that is chosen based on patient assessment.⁵ Further recommendations include protective measures to avoid skin and tissue injury due to prolonged exposure to skin prep agents and additional precautions where flammable preparations are used.⁵

The Queensland Health guidelines recommend use of alcohol solutions (preferably 70% by v/v) in combination with agents that provide residual activity for skin preparation due to their greater efficacy at killing bacteria. They state that there should be no hazard if alcoholic preparations are used correctly.⁴ The 2016 WHO recommendations on the prevention of SSI report the findings of a systematic review that demonstrated that alcohol-based solutions were significantly more effective than aqueous solutions, and that SSI risk reduced significantly if an alcohol-based chlorhexidine solution was used rather than aqueous or alcohol-based iodine solutions.⁶

Other Reviews

A meta-analysis of six studies published in 2010 concluded that chlorhexidine was superior to povidone iodine for surgical skin preparation and resulted in a significant reduction in SSI after clean-contaminated surgery.¹⁰ The chlorhexidine gluconate was alcohol-based and the povidone iodine was aqueous in most of the studies. This has been seen as a criticism in that the contribution of the alcohol is not quantifiable, and alcohol may be a fire risk in operating theatres.

4.0 References

1. Australian Council for Safety and Quality in Healthcare. National Strategy to Address Health Care Associated Infections. Commonwealth of Australia; 2003
http://www.safetyandquality.gov.au/wpcontent/uploads/2012/01/NationalStrategy_web.pdf
2. Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR, Hospital Infection Control Practices Advisory Committee. Guideline for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol.* 1999; 20(4):250-278.
3. National Collaborating Centre for Women's and Children's Health. Surgical Site Infection: Prevention and Treatment of Surgical Site Infection. London: National Institute for Health and Clinical Excellence, 2008.
4. Queensland Health Guideline. Surgical Skin Antisepsis in Operating Theatres. Available from
http://www.health.qld.gov.au/chrisp/resources/rec_prac_skinprep.pdf

5. American Operating Room Nurses. AORN Guidelines for Perioperative Practice 2014. Recommended Practices for Preoperative Patient Skin Antisepsis. AORN, 2014. Available from <https://www.aorn.org/Guidelines/>
6. Australian College of Operating Room Nurses. Standards for perioperative nursing in Australia. 14th ed. Adelaide, Australia: ACORN, 2016.
7. Allegranzi B, Bischoff P, de Jonge S,...and the WHO Guidelines Development Group. New WHO recommendations on preoperative measures for surgical site infection prevention: an evidence-based global perspective. Lancet Infect Dis. 2016; Online Nov 2. [http://dx.doi.org/10.1016/s1473-3099\(16\)30398-X](http://dx.doi.org/10.1016/s1473-3099(16)30398-X)
8. Kamel C, McGahan L, Polisen J, Mierzwinski-Urban M, Embil JM. Preoperative skin antiseptic preparations for preventing surgical site infections: a systematic review. Infect Control Hosp Epidemiol. 2012; 33(6):608-617.
9. Webster, J., Osborne, S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. Cochrane Database Syst Rev 2012, Issue 9. Art. No.: CD004985. DOI: 10.1002/14651858.CD004985.pub4.
10. Noorani A, Rabey N, Walsh SR, Davies RJ. Systematic review and meta-analysis of preoperative antisepsis with chlorhexidine versus povidone-iodine in clean - contaminated surgery. Br J Surg 2010 97:1614-1620.



Note: Position statement was also sent on 17th August 2015 to the Royal Australasian College of Surgeons for a second consultation round and no correspondence was received.

Version	Date	Role	Position	Signature
1.0	08/09/15	Marija Juraja	Chair Policy Committee	
Authorized By: Executive Council			Meeting Date: 08/09/15	

Revision history

Version	Date	Additions/Amendments	Author	Review By
2.0	7/11/16	Add onto ACIPC template, minor edits and updated to new WHO recommendations	T. van de Mortel, ACIPC Policy Committee Chair	ACIPC Board of Directors