

Hand Hygiene Clinical Guideline

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Government
of South Australia

SA Health

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Hand Hygiene Clinical Guideline

1. Introduction

Hand hygiene is one of the most effective and basic measures to prevent the spread of infection.

The most common way that harmful organisms are spread between patients in health care settings is on the hands of health care workers. Systematic reviews of the published literature indicate that effective hand decontamination can significantly reduce the rate of healthcare associated infections¹.

This guideline should be read in conjunction with the SA Health Hand Hygiene Policy Directive.

2. Background

As part of the World Health Organization's First Global Patient Safety Challenge, the Australian Commission on Safety and Quality (ACSQHC) in Health Care established the National Hand Hygiene Initiative (NHHI) and previously engaged Hand Hygiene Australia to implement a culture-change program into all health services throughout Australia. The ACSQHC now manages the NHHI program.

South Australia is supporting this initiative by including hand hygiene compliance as a key performance indicator of patient safety and quality of health care delivery. Hand hygiene is a key strategy in the prevention of health care associated infection.

For further information refer to the [World Health Organization's \(WHO\) First Global Patient Safety Challenge "Clean Care is Safer Care"](#) and ACSQHC [National Hand Hygiene Initiative \(NHHI\) 5 Moments for Hand Hygiene](#).

3. Definitions

In the context of this document:

- > **Alcohol-based hand rub (ABHR):** an alcohol-containing preparation (liquid, gel or foam) designed for application to the hands in order to reduce the number of viable microorganisms with maximum efficacy and speed.
- > **Hand decontamination:** reduces the number of both transient and resident micro-organisms on the hands, accomplished by either washing with antimicrobial soap and water or by application of an alcohol or alcohol/chlorhexidine-based hand rub.
- > **Hand hygiene:** the process of hand washing or hand decontamination. Hand hygiene is based on the knowledge that hands carry two distinct populations of microorganisms (**transient** and **resident flora**) both of which have the potential to be transmitted to others.
- > **Hand washing:** involves mechanically removing transient organisms from hands with plain (i.e. non-antimicrobial), soap and water.
- > **Transient flora:** organisms are present in the health care environment and contaminate the hands of health care staff during normal work activities; this can occur in the absence of visible soiling. They can survive on the hands for several hours and can be readily passed on to another person during contact if not removed by hand hygiene.
- > **Resident flora:** organisms that normally live and multiply on the skin, particularly in the warm, moist areas of the body such as the axillae and groin, in deep crevices in the skin layers, in hair follicles and in sweat glands. These organisms can be repeatedly cultured, even after routine hand hygiene. Although these organisms are generally harmless, they are of special concern if staff are performing invasive procedures, or caring for patients at high risk of infection i.e. the immunocompromised.

4. Principles of the standards

Health facilities must:

- > adhere to the SA Health Hand Hygiene Policy Directive²
- > provide sufficient, conveniently located hand hygiene facilities and hand hygiene products at the point of care
- > have documented procedures that cover the following:
 - hand hygiene technique using alcohol-based hand rubs and liquid soap
 - surgical hand antisepsis
 - hand and nail care
 - artificial nails, nail polish and hand jewellery
- > ensure staff perform hand hygiene as described in sections 6 and 7 of this guideline
- > include patients and visitors when providing information regarding the importance of hand hygiene.

5. General

Prior to working in a clinical area, healthcare workers and staff having contact with the patient or the patient's environment must remove all hand and wrist jewellery (a single, plain, non-porous ring is exempt) including wrist watches and fitness bands. Healthcare workers and staff who have direct contact with patients need to ensure that nails are clean, short and unvarnished. Artificial nails (of all types) are not to be worn by clinicians.

When direct patient contact occurs arms should be bare below the elbows to enable adequate hand hygiene of the hands and forearms. Long sleeves are not recommended, but if worn then sleeves are required to be rolled up*.

***Note:** In emergency situations, i.e. roadside assistance by SA Ambulance Service staff or Medstar emergency evacuations, some parts of the procedure, such as rolling up sleeves, may not be applicable due to safety considerations; refer to local guidelines.

5.1. Routine hand hygiene

Hand hygiene should be performed before:

- > every patient contact
- > performing a procedure e.g. wound dressing, emptying a catheter/drain, venepuncture, changing an IV flask, delivery of IV/IM medications
- > preparing all medication (including oral, naso-gastric, PEG & intravenous)
- > handling or preparing food
- > donning (putting on) gloves or other personal protective equipment (PPE)
- > taking a break.

Hand hygiene should be performed after:

- > every patient contact
- > touching a patient's environment
- > performing a procedure or a body fluid exposure risk e.g. handling a catheter bag, venepuncture
- > doffing (taking off) gloves or other PPE
- > going to the toilet
- > taking a break.
- > Contact with own respiratory secretions (i.e. blowing nose, coughing, sneezing)

Plain soap and water wash technique

Ensure all skin surfaces are accessible i.e. remove all hand and wrist jewellery, including watches (plain, non-porous ring need not be removed), to allow all skin surfaces adequate exposure to the hand hygiene product used.³ Ensure nails are clean, short and unvarnished.

1. Wet hands thoroughly with running water (currently there is no evidence to indicate that water temperature is a critical factor for microbial removal. In fact one study demonstrates that high temperatures are associated with skin irritation⁴).
2. Lather hands with the recommended quantity of plain soap or skin cleanser and vigorously rub together for 15 – 20 seconds, paying attention to all areas.
3. Ensure that commonly missed areas such as finger tips, interdigital areas, thumbs and wrists are washed thoroughly.
4. Rinse under running water.
5. Care must be taken not to re-contaminate hands when turning off tap (if a hand-operated type). This can be achieved by turning off tap using a clean, dry paper towel.
6. Thoroughly pat dry hands with a fresh paper towel.
7. Entire procedure should take 40 – 60 seconds (refer WHO Guidelines on Hand Hygiene in Health Care⁵).

Alcohol-Based Hand Rub (ABHR) technique

1. Ensure hands are visibly clean and are dry (refer WHO Guidelines on Hand Hygiene in Health Care⁵).
2. Apply 1 squirt (1-3mls) to the palm of the hand and spread over hands for 20 – 30 seconds or until dry.
3. Cover all surfaces of hands and wrists and ensure that the fingernails are well covered with the alcohol rub.

5.2. Surgical hand antisepsis

Surgical hand antisepsis is performed to substantially reduce the number of resident and transient micro-organisms on the hands prior to performing any aseptic or surgical procedure⁶. Use of either an antimicrobial soap or an alcohol/chlorhexidine-based hand rub with persistent antimicrobial activity is recommended before donning sterile gloves. Due to the potential for skin damage scrub brushes should not be used. Surgical hand antisepsis is required prior to performing any surgical procedure that enters a sterile site.

There are many products suitable for use to ensure surgical hand antisepsis including traditional methods and more recently, alcohol-based products.

Surgical hand wash technique

Use a TGA approved antimicrobial skin cleanser.

1. Prior to commencement of hand washing remove all jewellery.
2. Ensure fingernails are clean, short and unvarnished, and free from artificial or acrylic nails.
3. First wash of the day: 5 minutes (includes cleaning fingernails).
4. Subsequent washes: 3 minutes (omit cleaning fingernails).
5. Wet hands and forearms with water.
6. Apply antimicrobial skin cleanser as per directions and rub on hands and forearms up to elbow ensuring fingertips; interdigital areas and thumbs are given adequate attention.
7. Rinse hands and forearms under running water. Ensure that water flows from finger-tips to elbow.
8. Thoroughly dry hands with sterile towel.

Surgical alcohol-based hand rub technique

Surgical hand antisepsis can also be achieved by using a specially formulated ABHR. For this application, products must meet EN12791 or an equivalent standard for surgical hand rub formulations⁵. The time required for surgical alcohol-based hand rubbing depends on the product used. Most commercially available products recommend a 3 minute contact time, which may require more than one application.

1. Prewash hands and forearms with non-antimicrobial soap and dry thoroughly then apply the rub as per manufacturer's instructions.
2. Apply the rub to all surfaces of the hands and forearms. The volume of rub should be enough to wet all surfaces throughout the entire procedure (approximately 15 mls).
3. After application of the rub, allow hands and forearms to dry thoroughly before donning sterile gloves.

For further information refer to:

- > ACORN Standards for Perioperative Nursing in Australia, 16th ed. Standard Surgical Hand Antisepsis, Gowning and Gloving section
- > WHO Guidelines on Hand Hygiene in Health Care. 2009. part 1, section 13, pages 54 & 57

5.3. Aseptic hand wash technique

Antimicrobial soap is used to reduce the number of resident and transient micro-organisms on the hands prior to performing invasive procedures not regarded as surgery e.g. insertion of intravenous catheters. Use of either an antimicrobial soap for one minute or an ABHR with persistent activity e.g. alcohol plus 0.5 to 1.0% chlorhexidine is recommended.

5.4. Hand drying

Wet hands can readily acquire and spread micro-organisms therefore the proper drying of hands is a crucial part of handwashing. Single use paper towel is recommended for hand drying, multiple use cloth towels are not suitable for health care settings. Hands should be patted dry rather than rubbed, to prevent skin damage. Hot air dryers are unsuitable for clinical areas unless the design has been proven not to be associated with the aerosolisation of pathogens⁵.

5.5. Hand hygiene product selection

Hand hygiene products should be assessed for safety, quality and efficacy. All health care workers should be educated on the application of appropriate hand hygiene methods.

Alcohol-based hand hygiene products for routine hand hygiene should meet the EN1500 testing standard for bactericidal effect and be registered with the Therapeutic Goods Administration as a medicine product. Staff acceptance of a hand hygiene product is an important factor in their compliance with hand hygiene practices; therefore their input is essential when choosing a product. No single product will likely satisfy all staff; therefore a consensus decision will be necessary. When ABHR is available in the healthcare facility the use of antimicrobial soap for routine hand hygiene is not recommended.

Plain soap

Plain soap has little antimicrobial activity, but cleans hands by its detergent properties and removes loosely adherent transient flora. A neutral pH liquid soap is recommended for clinical areas.

Antimicrobial hand cleanser

Used for non-surgical and surgical hand antisepsis, these cleansers may contain chlorhexidine gluconate, hexachlorophene, iodine, iodophors or triclosan as the active ingredient.

In certain circumstances (e.g. in the case of outbreaks of norovirus or *Clostridium difficile*) an antimicrobial hand cleanser may be temporarily recommended for routine hand hygiene. This

should be at the discretion of the infection prevention and control and worker health staff. The technique for each is as described under section 6 above.

Alcohol-based products

Evidence suggests alcohol-based rubs eliminate micro-organisms more effectively and cause less skin irritation than soap and water hand washing. Alcohol solutions in the concentration range of 60-80% give optimum antimicrobial activity. However, different alcohol types have different antimicrobial activity, and formulations should be carefully checked.

Laboratory studies have found that ABHR **liquid** preparations are generally more effective than **gels** that contain the equivalent concentration of alcohol. However, user acceptability and skin tolerance need to be taken into account when choosing a suitable product.

ABHR **foam** products are also available. Although there have been in vitro studies indicating efficacy, the literature is somewhat inconclusive on whether these formulations are equivalent to liquid preparations for routine use.³ The main question about foams has been whether there is sufficient product dispensed to allow complete coverage of the hands and remain wet for the recommended amount of time.^{8,9} However, some newer formulations have addressed this problem.

In practice, the percentage of alcohol and the contact time for disinfection (30 seconds) are of more importance than the delivery method.

For further information on product selection refer to:

- > [SA Health Alcohol-Based Hand Rub \(ABHR\) Fact Sheet](#)
- > [National Hand Hygiene Initiative Manual](#)

5.6. Hand Hygiene product dispensers

Liquid soap dispensers with disposable cartridges and nozzles are recommended. Evaluate dispenser systems to ensure they deliver an appropriate volume of product and are easy to clean. Refillable liquid soap containers are a potential source of contamination and if used, should not be topped up, but rather they should be cleaned when empty and refilled with fresh product. Cleaning of dispensers must be incorporated into the routine cleaning program of the facility. Alcohol-based product containers should be designed to minimise evaporation and should not be placed adjacent to sinks⁹.

6. Workforce implications

6.1. Skin care

Health care workers should apply hand lotion or cream to minimise the development of dermatitis. Such hand cream must be compatible with the hand hygiene products and gloves in use. Cuts and other skin breaks should be covered with a non-permeable occlusive dressing.

Alternatives to alcohol-based products for clinical staff with skin issues

The World Health Organization and National Hand Hygiene Initiative (NHHI) recommend the use of ABHR in healthcare facilities in the first instance. However there are many hand hygiene products that are available for use for people with confirmed allergies or adverse reactions to standard products used in the healthcare setting.

Importantly each facility should have a plan in place in order to assess and take steps to rectify skin integrity. Once completed and if not successful, then an alternative non-alcohol product may be used as an **interim measure** only while the skin heals.

There are alcohol free products that use Benzalkonium compounds as a disinfectant, however these are relatively new and their efficacy is no greater than soap and water.⁵

For further information, refer to the National Hand Hygiene Initiative Manual section 3.15 “Hand care issues”.¹

6.2. Fire risk:

Alcohol-based products can be flammable and therefore should be used in consultation with safety representatives from the health care facility.

7. Safety, quality and risk management

							
National Standard 1	National Standard 2	National Standard 3	National Standard 4	National Standard 5	National Standard 6	National Standard 7	National Standard 8
Clinical Governance	Partnering with Consumers	Preventing & Controlling Healthcare-Associated Infection	Medication Safety	Comprehensive Care	Communicating for Safety	Blood Management	Recognising & Responding to Acute Deterioration
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Eligibility criteria

Inclusion

All SA Health staff (clinical, non-clinical, contract) and volunteers working within SA Health facilities.²

Exclusion

None.

9. Appendices

Nil

10. Reference

1. Australian Commission on Safety and Quality in Health Care. National Hand Hygiene Initiative Manual. Sydney: ACSQHC; 2019
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3. Australian Guidelines for the Prevention and Control of Infection in Healthcare, Canberra: National Health and Medical Research Council (2019).
4. Berardesca E, et al. Effects of water temperature on surfactant-induced skin irritation. Contact Dermatitis. 1995, 32:83-87.
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7. G. Kampf et al. Efficacy of ethanol-based hand foams using clinically relevant amounts: a cross-over controlled study among health volunteers. BMC Infectious diseases 2010; 10:78.

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9. Australian Standard 1071:2015. *Placement and presentation of hand hygiene materials in relation to the basin in healthcare settings*

11. Document Ownership & History

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