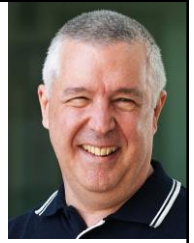


Contemporary Infection Control



2022

Emeritus Professor Laurence J. Walsh AO

BDS(c)(Hons), PhD, DDSc, GCED, FRACDS, FFOP(RCPA), FFDT RCS Edin

© May 2022

A graphic with a blue background featuring various white and red icons related to infection control. These include different shapes of viruses and bacteria, a hand being washed under a faucet, a hand being rubbed with sanitizer, a mouth being washed, and a hand being wiped. A large, prominent red virus-like icon is in the upper right corner. The text "Hand hygiene" is written in a large, bold, black font across the center of the graphic.

Hand hygiene

National Hand Hygiene Initiative



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Appropriate preparation of the hands and wrists: “Bare below the elbow”

- Avoid long sleeves for non-surgical work.
 - Long sleeves become contaminated with microorganisms from the working environment and from patients, and may impede proper handwashing.
- Keep nails both short and natural.
- Wearing nail polish, artificial fingernails, or fingernail extenders is not permitted
 - These cause larger amounts of microorganisms to be retained on the hands and particularly around the nail beds, despite hand washing.
 - Keeping nails short also prevents them puncturing gloves, and it makes hand hygiene easier to perform.

A dental practice needs a clear policy statement to be included in the infection control manual around “Bare below the Elbow” requirements for clinical staff.

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Appropriate preparation of the hands and wrists: “Bare below the elbow” 2

- All hand, wrist or nail jewellery, (e.g. rings with stones, bangles and bracelets), watches, and wearable devices such as “fitbits”, **must be removed** by clinical staff prior to putting on gloves
 - These impair correct handwashing, compromises the fit and integrity of gloves, and promote the growth of skin microorganisms.
- Areas of skin on the fingers that are beneath rings become much more heavily colonised with microorganisms than adjacent areas, and wearing rings increases the carriage rate of Gram negative bacteria on the hands of clinical staff.

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Key compliance points for “Bare below the Elbows”

- Clinical staff wear short sleeve gowns for non-surgical dentistry.
- Fingers, hands and wrists are free of items that retain micro-organisms or hinder hand hygiene.
- Nails are kept short and natural, without coatings.

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Bare below the elbow

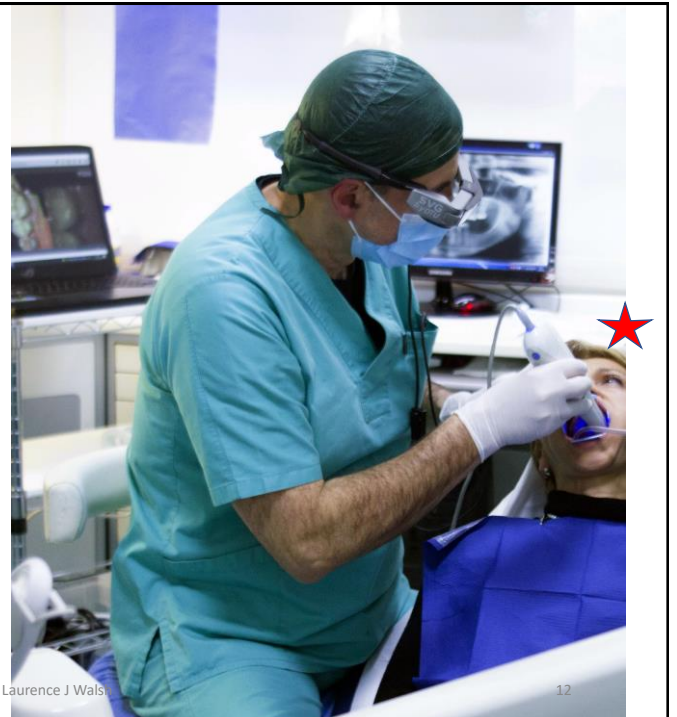
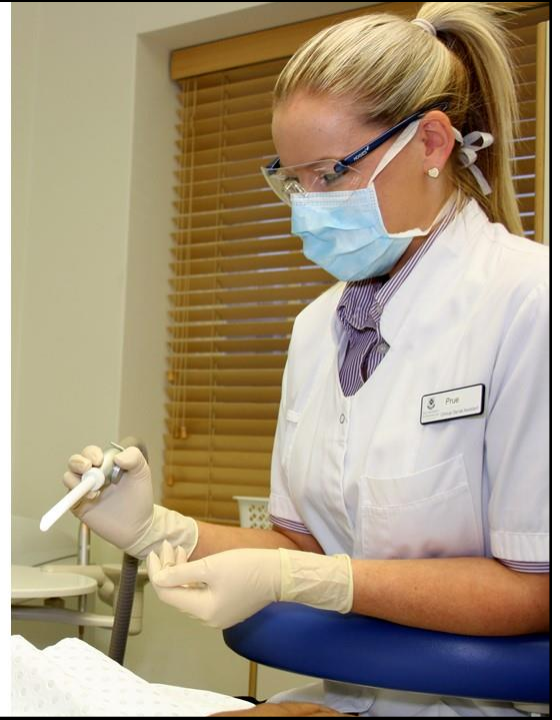


Bare below the elbow



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Fingernails

- All fingernails must be kept short to prevent glove tears and to allow thorough hand cleaning.
- No false nails or nail extensions.
- Nail polish should be clear, but preferably dental staff should not wear nail polish. Thus, **no nail varnish is best.**
- Fingernails should be short and clean.
Manicure them regularly!



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Hand hygiene

About hand hygiene

Bare below the elbows

Bare below the elbows

Bare Below the Elbows is an initiative aiming to improve the effectiveness of hand hygiene performed by health care workers.

The effectiveness of hand hygiene is improved when: skin is intact, nails are natural, short and unvarnished; hands and forearms are free of jewellery; and sleeves are above the elbow.

Hand hygiene remains one of the most important measures in prevention of hospital acquired infections. Some Hand Hygiene Culture Change Programs advocate a Bare Below the Elbows policy for all health care workers. Whilst the evidence to promote this as a formal policy is still developing, World Health Organisation (WHO) recommends that long sleeves be avoided. Long sleeves have been found to be contaminated with pathogens, and can impede appropriate hand hygiene.

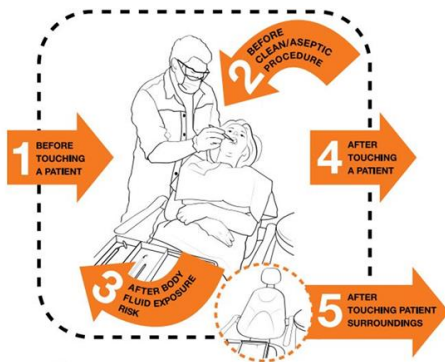
Resources ➡

- Department of Health [Guideline for Hand Hygiene](#) (PDF 448kB)
- [Fact Sheet—Bare below the Elbows](#) (PDF 123kB)
- [Presentation—Bare below the Elbows](#) (PPT 3.44MB) (large file size)
- [Audit of Compliance—Bare below the Elbows](#) (PDF 89kB)
- [Posters](#) (available from Queensland Health computers only) — courtesy of Princess Alexandra Hospital, Infection Management Services Southern Queensland

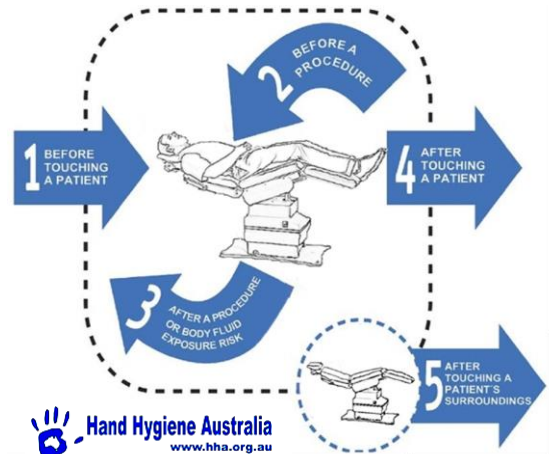
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Best practice in hand hygiene and hand care



Your 5 Moments for Hand Hygiene



Hand Hygiene Australia
www.hha.org.au



Hand Hygiene Protocol for routine dentistry

• Either

- Application of a waterless antimicrobial agent, e.g. alcohol-based hand rub (ABHR), applied onto dry hands and rubbed on for 20 seconds, after which time the hands will be dry,
- or
- Use of soap/solution (plain or antimicrobial) and water, followed by patting dry with single-use towels.



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When is physical hand washing essential?

- Hands must always be washed
 - At the start of a working session,
 - After toilet breaks,
 - When leaving the surgery.
 - When visibly dirty or contaminated with proteinaceous material,
 - When visibly soiled with blood or other body fluids,
 - When working in a nursing home or at a patient's home
- WHY?
 - It guarantees a mechanical removal effect.
 - Alcohol based hand gel products do not inactivate norovirus and other enteric viruses which spread readily from contact with contaminated surfaces.

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Non-medicated liquid handwash/ hand soap: examples of typical products

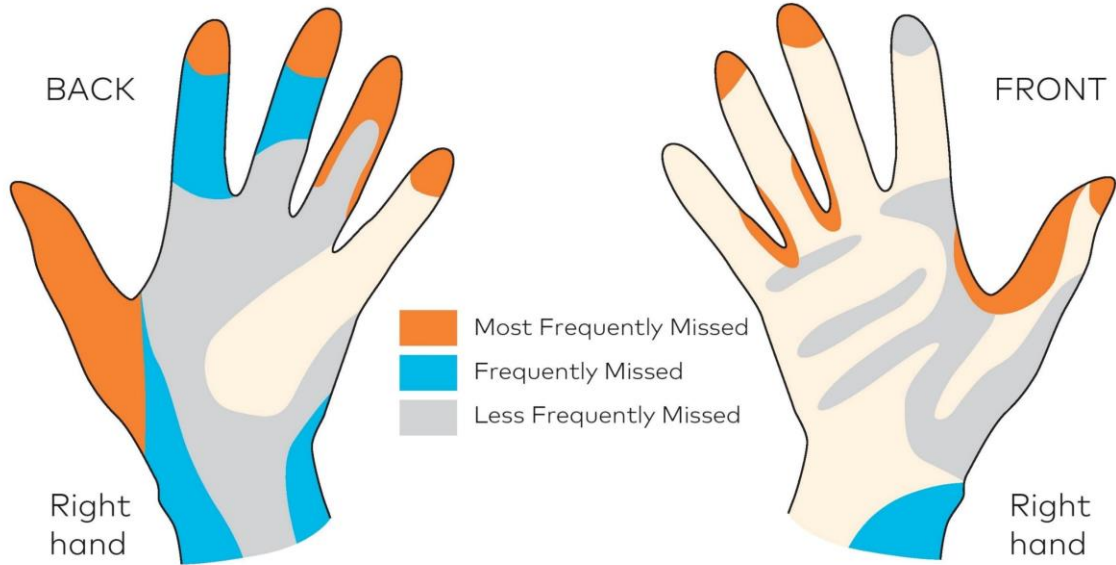


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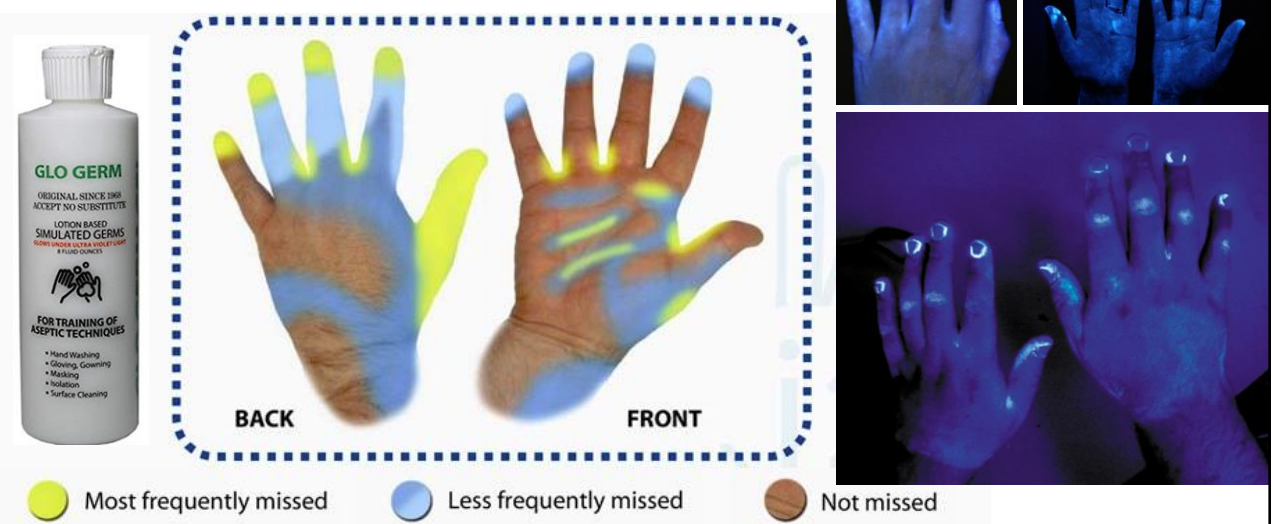
Areas most often missed



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Areas most often missed



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Ensure that these ***commonly missed areas*** are included in your method for hand washing ***and*** for applying alcohol-based hand gels.

Rinse well to remove all traces of liquid soap, and use a **moisturizer**, to prevent ***occupational dermatitis*** developing from irritancy responses to the detergent.



Irritant dermatitis from incorrect hand care

- Handwashing at high frequency
- Excess detergent
- Detergent residues left behind
- Using hot rather than lukewarm water for handwashing





ABHR



Figure 1. Hand disinfection steps according to EN1500.

doi:10.1371/journal.pone.0111969.g001

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Influence of training in proper hand gel technique

Hand Hygiene – Evaluation of Three Disinfectant Hand Sanitizers in a Community Setting

Rita Babeluk¹, Sabrina Jutz², Sarah Mertlitz², Johannes Matiassek³, Christoph Klaus^{4*}

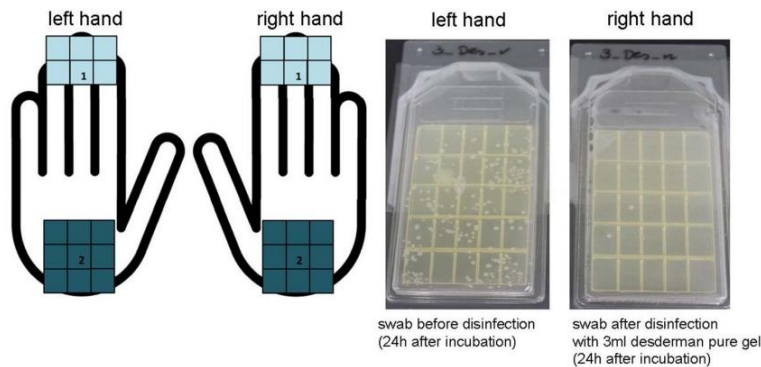


Figure 3. Standardized localisation for taking swabs of finger tips and hand palm before and after disinfection. (a) Agar plates with swabs of finger tips and hand palm before and after disinfection with desderman pure gel (phase 1); 24 h incubation at 35° C. (b). doi:10.1371/journal.pone.0111969.g003

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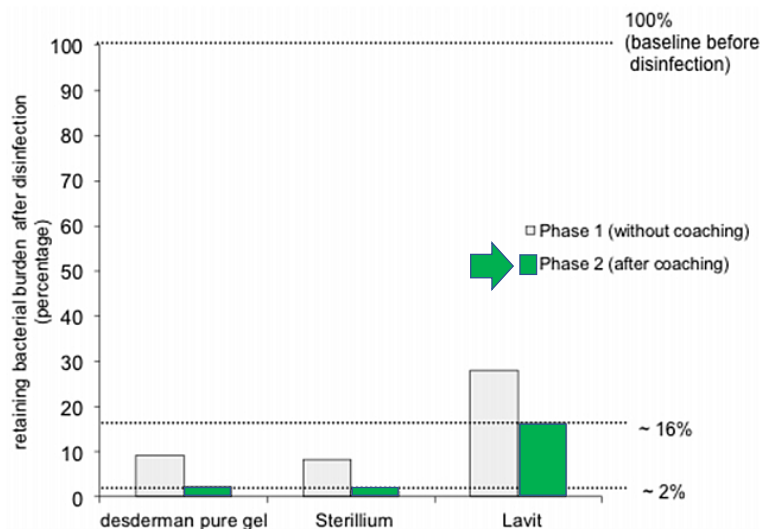


Figure 5. Relative remaining bacterial burden after disinfection. The sum of bacterial colonies in one group was taken as a baseline before disinfection (100%) and relative retaining bacterial burden was calculated with the sum of bacterial colonies of the same group after disinfection. After phase 1 (without explaining the EN1500 technique) relative retaining bacterial burden was 6.4%, 8.2% and 28.0% for desderman pure gel, Sterillium and Lavit, respectively. After phase 2 (disinfection according to EN1500) relative retaining bacterial burden was 2.1%, 1.5% and 16.2% when desderman pure gel, Sterillium or Lavit were used.

doi:10.1371/journal.pone.0111969.g005

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Choosing ABHR for clinical settings:

The product must be TGA- approved and thus included on the *Australian Register of Therapeutic Goods (ARTG)*



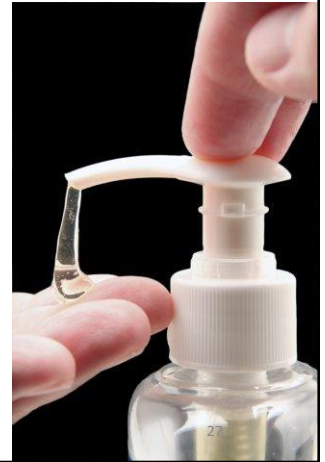
Australian Government
Department of Health and Ageing
Therapeutic Goods Administration

EN 1500 - Hygienic Handrub Method



European Standard test method that evaluates the efficacy of a hygienic handrub by measuring the number of viable bacteria remaining on the fingertips after contamination and handrub exposure, using a pure culture of a non-pathogenic strain of *Escherichia coli* is used as the inoculum on the hands.

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Australian Government
Department of Health
Therapeutic Goods Administration

Public Summary

Summary for ARTG Entry: 155397 BACTOL ALCOHOL GEL ethanol 625.81g/kg liquid topical bottle application

ARTG entry for: Medicine Registered

Sponsor: Whiteley Corporation Pty Ltd via Whiteley Medical
Postal Address: PO Box 1076, NORTH SYDNEY, NSW, 2059
Australia

ARTG Start Date: 25/09/2008

Product Category: Medicine

Status: Active

Approval Area: Non-Prescription Medicines

Conditions

Conditions applicable to all therapeutic goods as specified in the document "Standard Conditions Applying to Registered or Listed Therapeutic Goods Under Section 28 of the Therapeutic Goods Act 1989" effective 1 July 1995.

Conditions applicable to the relevant category and class of therapeutic goods as specified in the document "Standard Conditions Applying to Registered or Listed Therapeutic Goods Under Section 28 of the Therapeutic Goods Act 1989" effective 1 July 1995.

Products

1. BACTOL ALCOHOL GEL ethanol 625.81g/kg liquid topical bottle application

Product Type: Single Medicine Product Effective Date: 5/02/2018

Specific Indications

Standard Indications - Antibacterial handrub

Warnings

No Warnings included on Record

Additional Product Information

Container information

Type	Material	Life Time	Temperature	Closure	Conditions
Bottle	HDPE	2 Years	Store below 30 degrees Celsius	Neither child resistant closure nor restricted flow insert	Not recorded

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Pack Size: 80mL, carabiner,
500mL, 1L pod

BACTOL® ALCOHOL GEL

Anti-bacterial Hand Sanitiser

- Contains 70% Ethanol v/v.
- Contains natural emollients

- AUST R: 155397



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Do not use domestic hand gel in clinic

- Not included on the ARTG
- Lower levels of ethanol or isopropanol. Less effective.
- More fragrances and colours, hence allergies possible with repeated use
- No emollients
- ?? Unsure of compatibility with moisturizers



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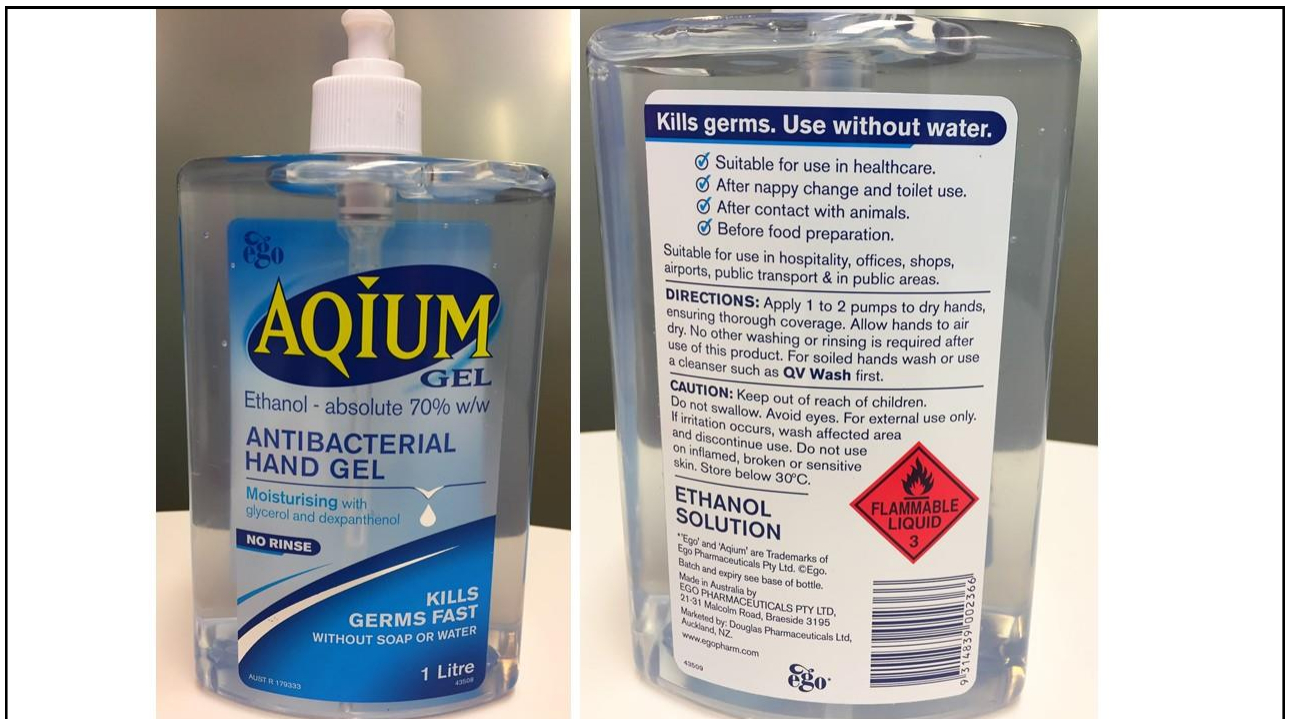
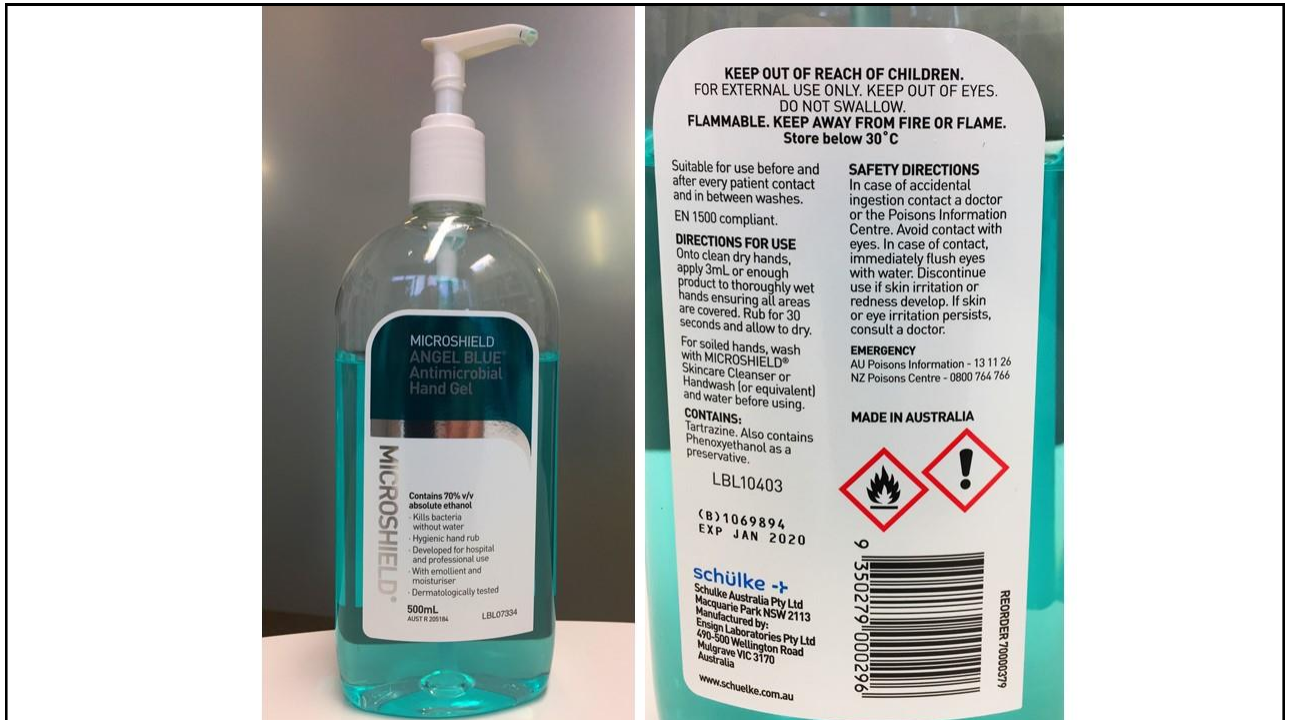
Product formulation advice

- **CHECK ARTG inclusion. EN1500 certified are better!**
- **AVOID** Fragrances and colours
 - may cause allergic reactions
 - are discouraged
- **INCLUDE** emollient agent to prevent skin drying and irritant skin reactions
 - but not leave a sticky residue on hands
 - Have staff evaluate products prior to implementation where possible
 - **May need several types to suit needs of all staff members!**
- **CHECK** drying characteristics
 - Solutions (from a pump or spray) have lower viscosity than gels and therefore tend to dry quicker (hence may need re-application)



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Hygienic hand disinfection:

- Apply undiluted Softa-Man Gel in portions of about 3 mL onto clean, dry hands and rub into the skin. All parts of the hand including the skin areas between the fingers must remain wetted for at least 30 s. Proceed until the hands are dry.

Surgical hand disinfection:

- Prior to commencing the antiseptic rub procedure, wash hands and forearms with soap and running water. Clean the subungual areas of both hands under running water using a nail cleaner. Rinse hands and forearms under running water. Dry hands and forearms with a paper towel prior to commencing antiseptic rub procedure.
- Rub several portions of about 3 mL undiluted Softa-Man Gel onto dry hands and forearms. The skin must remain completely wetted with Softa-Man over a period of at least 90 s. At completion allow to air dry thoroughly before donning sterile gloves.



Directions:

Use undiluted.

For rapid hand antisepsis

Apply to clean, dry hands. Wet hands and fingernails with product. Rub vigorously over all surfaces and allow to dry.

For external use only.

(Keep out of eyes and ears)

Store below 25°C

Do not mix with detergents or other chemicals.

➤ Please do not store in direct sunlight.

Importance of regular moisturiser use

- Regular use of skin moisturisers both at work and at home should be promoted.
- Moisturising skin care products used in the dental practice must be compatible with the ABHR.
- **For people with dry skin**, a compatible moisturiser should be applied **up to four times per day**.



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Surgical hand prep

NHMRC 2019

- Current WHO guidelines recommend the use of **an alcohol-based formulation for preoperative surgical hand preparation** given its superior antimicrobial efficacy compared to other methods.
- There are special surgical prep formulations available for use.
 - All have extended contact times (e.g. 90 secs)
 - Any such product used within Australia needs to be approved by the TGA.

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Surgical hand prep: OLD vs. NEW



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Surgical hand prep: “*Rub, not scrub*”

- Aims to reduce the release of skin bacteria from the hands of the surgical team for the duration of the procedure in case of an unnoticed puncture of the surgical glove that releases bacteria to the open wound.
- Surgical hand preparation must eliminate the transient and reduce the resident flora.

Surgical hand disinfection rub-on

Skinman™ surgical hand rub:

EN 12791: Rapid surgical hand disinfection in **90 seconds**. Apply undiluted solution to dry hands. Rub thoroughly into the hands, ensuring all areas are covered for entire contact time of 90 secs. ★

EN 1500: Regular non-surgical use: **20 secs** ✨

Test Type	Procedure	Contact Time
Surgical Hand Disinfection	According to EN 12791	90 secs ★
Hygienic Hand Rub	According to EN 1500	20 secs ✨
Bactericidal Efficacy	According to EN 13727	15 secs
Murine Norovirus	According to EN 14476	15 secs
Rotavirus	According to EN 14476	15 secs
Full Virucidal Efficacy	According to EN 14476	30 secs
Yeasticidal Efficacy	According to EN 13624	15 secs
Tuberculocidal Efficacy	According to EN 14348	20 secs



Surgical hand disinfection rub-on

Softa-Man Cutaneous Solution

Ethanol-absolute 45% w/v and Propan-1-ol 18 % w/v

Softa-Man is flammable. The flash point of the solution is 21 - 22 °C.

Surgical hand disinfection:

Prior to commencing the antiseptic rub procedure.

- Wash hands and forearms with soap and running water.
- Rinse hands and forearms under running water.

Dry hands and forearms with a paper towel prior to commencing antiseptic rub procedure.

Rub several portions of about 3 mL undiluted Softa-Man onto dry hands and forearms. **The skin must remain completely wetted with Softa-Man over a period of at least 90 sec.** At completion allow to air dry thoroughly before donning sterile gloves.



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ANTISEPTIC HAND RUB

SKINMAN 30®

Contains 90% w/w Ethanol AUST R 318921

- ☒ Hygienic hand rub
- ☒ Fast Acting
- ☒ Broad Spectrum

DIRECTIONS FOR USE:

Hygienic Hand Rub To clean dry hands apply sufficient product to ensure complete coverage of the hands. Keep the hands wet for 30 seconds, rub thoroughly until dry.

Precautions: For external use only. For use on intact skin only. Highly flammable. No smoking. Avoid contact with eyes. Keep out of reach of children.

Storage: Store below 25°C. Store in a well-ventilated place. Keep away from heat and sources of ignition.



7400270
600mL

L7400270-05/19

ANTISEPTIC ALCOHOL FOAM

SKINMAN FOAM®

Contains 77.5% w/w Ethanol AUST R 314675

- ☒ Hygienic hand rub with 30 second application.
- ☒ Surgical hand Rub with 2 minute application.

DIRECTIONS FOR USE:

Hygienic Hand Rub To clean dry hands supply sufficient product to ensure complete coverage of the hands. Maintain coverage for 30 seconds, rub thoroughly until dry.

Surgical Hand Disinfection All skin surfaces including subungual areas are to be clean and dry prior to commencing surgical rub. Surgical hand disinfection contact time is 2 minutes. Apply sufficient product to ensure complete coverage of the hands and forearms. Maintain coverage for 120 seconds by applying as many portions of undiluted product into hands as is necessary to keep them wet for 2 minutes. At completion allow hands to air dry thoroughly before donning sterile gloves.

Precautions: For external use only. For use on intact skin only. Highly flammable. No smoking. Avoid contact with eyes. Keep out of reach of children.

Storage: Store below 25°C. Store in a well-ventilated place. Keep away from heat and sources of ignition.



L7400247 - 20/03/19

Regular hand hygiene vs. Surgical hand prep



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