Best Practice Guideline for the Selection, Handling, Application, Use and Storage of Patient Skin Antiseptic Products for Invasive Procedures Outside of the Operating Room

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APPROVING AUTHORITY
Infection Prevention and Control Operations

PRACTICE SUPPORT DOCUMENT SPONSOR
Infection Prevention and Control

If you have any questions or comments regarding the information in this guideline, please contact Infection Prevention & Control at infectionpreventioncontrol@albertahealthservices.ca.

OBJECTIVES
This infection prevention and control (IPC) best practice guideline (BPG) for patient skin antisepsis before surgical and non-surgical invasive procedures (use of instruments to cut or puncture the skin, see Definition page 4) outside of the operating room was developed to:

- provide evidence based recommendations for the selection, handling, application, use and storage of skin antiseptic products.
- outline best practices to reduce the risk of skin antiseptic contamination and infection transmission.

Notes:
This guideline does not apply to injections.

CHG 2% with alcohol 70%, povidone iodine 10% and alcohol 70% are all acceptable skin antiseptics for the insertion and care of peripheral IVs.

The Canadian Agency for Drugs and Technologies in Health, 2014 document Use of Chlorhexidine Gluconate with Alcohol for the Prevention of Peripheral Intravenous Device Infections: A Review of the Clinical and Cost Effectiveness, and Guidelines found “the literature did not find evidence on the clinical effectiveness, safety or cost effectiveness of chlorhexidine gluconate with alcohol compared to other antiseptics for the prevention of infections associated with peripheral intravenous devices. Guidelines recommend decontamination of the skin at the insertion site with 1-2% chlorhexidine gluconate in ≥ 70% alcohol before inserting a peripheral catheter.”

APPLICABILITY
This guideline applies to all Alberta Health Services (AHS) staff, medical staff, students and other persons acting on behalf of AHS.

BEST PRACTICE GUIDELINE
1. General IPC Principles
   1.1 Use Routine Practices as they are a standard of care for all clients, at all times, to reduce the risk of infection.
   1.2 Maintain aseptic technique (actions taken to prevent microbial contamination, see Definition page 4) when applying skin antiseptics.
   1.3 Read and follow the product label when selecting, handling, applying, using and storing skin antiseptics.

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1.4 Consult the Material Safety Data Sheet (MSDS) for information about safe use of the skin antiseptic product including appropriate personal protective equipment.

1.5 Document any “off-label” use of skin antiseptics in the health record. “Off-label” use (use not approved by the manufacturer, see Definition page 5) of skin antiseptics is not recommended (e.g., use of chlorhexidine 2% with alcohol 70% on inner ear).

1.6 Health care workers should be educated, trained, and competent in the selection (e.g., based on patient assessment), application, use, and storage of skin antiseptics.

2. Skin Antisepsis Principles

2.1 General

2.1.1 Skin antiseptic products obtained for use in AHS must have a drug identification number (DIN) or a natural product number (NPN) as outlined in the Health Canada Guidance for Human-Use Antiseptic Drugs document.

Note: Skin antiseptics approved by Health Canada are manufactured according to the Good Manufacturing Practices Guideline so skin antiseptics, while not necessarily sterile, are safe for their intended use.

2.2 Selection of skin antiseptics

2.2.1 Select the most suitable skin antiseptic product and delivery system (e.g., applicator, sponge pack, bottle, large or small swabs, large or small wipe), for the task to be performed.

2.2.2 Chlorhexidine 2% with isopropyl alcohol 70% is the preferred antiseptic for skin preparation before invasive procedures on intact skin.

2.2.3 Use povidone iodine 10% as an alternative skin antiseptic when chlorhexidine 2% with alcohol 70% is contraindicated. Povidone iodine 10% should be used:

- if patients have sensitivities or allergies to chlorhexidine 2% with alcohol 70%;
- for mucous membranes such as the mouth and vagina;
- on eyes and ears;
- for infants less than 2 months old; and
- in emergent trauma when there is not sufficient time to allow chlorhexidine 2% with alcohol 70% to completely dry before incision.

Note: There is evidence that chlorhexidine 2% with alcohol 70% is safe for skin antisepsis before lumbar puncture and spinal anesthesia as long as the product is allowed to dry.

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2.2.4 Select single-use skin antiseptic preparations whenever possible. Single-use skin antiseptic preparations reduce the risk of exposure to a contaminant (e.g., diluting products with contaminated water or “topping up” of bulk products).

2.2.5 Discard single-use skin antiseptic preparations after use for a single procedure on an individual client.

2.3 Application of skin antiseptics

2.3.1 Follow the product label regarding the most effective method of application for the skin antiseptic (e.g., applied with friction in back and forth or circular motion) and for application time (e.g., 30 seconds).

2.3.2 Apply skin antiseptic agents with a sterile applicator.

2.3.3 Handle the applicator in a manner that maintains asepsis and minimizes the risk of introducing additional organisms that may be harmful to patients.

2.3.4 Use one prep sponge or applicator for a single product application on the skin and then discard. Use a new sponge or applicator for each subsequent application of the product to prevent contamination of the incision/puncture site.

2.4 Contact and drying times of skin antiseptics

2.4.1 Follow the product label for skin antiseptic contact time.

2.4.2 Allow the skin antiseptic to evaporate and completely dry according to the product label. Dry time is affected by product, product volume, body site, presence or absence of hair, humidity etc., (e.g., drying time can vary from 30 seconds for a very small volume applicator; ~2 minutes before central line insertion; and ≥3 minutes for larger volumes used for surgical site preparation). Areas with excess hair, such as axillae and groins, may take longer to dry.

2.4.3 Avoid dripping or pooling of the skin antiseptic on sheets, padding, positioning equipment, adhesive tape, and on or under the patient. Pooling of products can cause skin maceration. Pooling of alcohol based products can be a fire risk if a spark is present (e.g., cautery).

2.5 Multi-use skin antiseptics

Once a multi-use bottle of antiseptic solution is open there is an increased risk of external contamination. If a multi-use bottle must be used follow these steps:

2.5.1 Check the expiry date of the skin antiseptic and discard if past the date of expiry.

2.5.2 When the multi-use skin antiseptic is first opened record the following information on the container:

- date of opening,
- date the container is to be discarded, and
- initials of the person who opened the container.
2.5.3 After opening, discard aqueous skin antiseptic solutions (i.e., povidone iodine) after 7 days.

2.5.4 After opening, discard alcohol skin antiseptic solutions (i.e., chlorhexidine 2% with alcohol 70%) after 30 days.

2.5.5 If expired product is being regularly discarded/wasted, consider using single-use products or smaller volume containers that will be used up more quickly.

2.5.6 Do not touch the container neck, rim or inside of the cap. Do not purchase product containers that cannot be opened without touching the bottle neck, rim or inside of the cap.

2.5.7 Dispense the necessary amount of solution into a sterile container intended for immediate use on a single patient and close the bottle immediately.

2.5.8 Pouring skin antiseptics into secondary containers for use on multiple patients is not recommended. The skin antiseptic should be dispensed at the point-of-use for a specific patient and not left out of sight or unattended. Additional handling and dispensing steps increase the risk of contamination (e.g., dispensing process and refilling practices).

2.6 Storage of unopened skin antiseptics
   2.6.1 Follow the storage instructions on the product label.
   2.6.2 Store in the original container.

2.7 Warming of skin antiseptics
   2.7.1 Never heat or warm flammable skin antiseptics (i.e., chlorhexidine 2% with alcohol 70%).
   2.7.2 Warm non-flammable, unopened, skin antiseptic solutions only if the product label provides directions on how to safely do so.
   2.7.3 Never warm skin antiseptics in a microwave oven or an autoclave.

DEFINITIONS

Antiseptic means a product with antimicrobial activity. Skin antiseptic preparation aids in preventing surgical site infections (SSIs) by removing debris from, and cleansing the skin to reduce the resident and transient microbes to a minimum, and to hinder the growth of microbes during the invasive procedure.

Aseptic technique means taking actions to protect the patient by preventing or minimizing postoperative infection by creating conditions and following procedures to prevent the introduction of microbial contamination to sterile fields, sterile equipment and the operative site.

Competent means adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision.

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**Expiry date** indicates the safe period of use for a product. Degradation of the product or a component of the product may occur after the expiry date.

**Good Manufacturing Practices (GMP)** are manufacturing processes required by Health Canada to ensure that the fabrication, packaging, labelling, distribution, testing and wholesaling of drugs (e.g., human-use skin antiseptics) do not place consumers at risk due to inadequate safety and quality.

**Invasive procedure** is a procedure that invades (enters) the body, usually by cutting or puncturing the skin or by inserting instruments into the body. For the purpose of these guidelines IV starts and injections are not included as invasive procedures. Examples include, but are not limited to: insertion of central venous catheters, chest tubes, and percutaneous drains.

**Product label** means the validated, written directions provided by the manufacturer or distributor of a medical device or product that contain the necessary information for the safe and effective use of the medical device or product.

**Off-label** means the use of skin antiseptics for a purpose outside of the manufacturer’s instructions e.g., an indication, age group, dose or form of administration not approved by the manufacturer.

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REFERENCES


This document was:


- developed by an IPC working group with AHS IPC representation from each Zone.

- reviewed by representatives from the Health Technology Assessment and Innovation/Surgery Care Network (HTAI/SCN) Working Group to Implement Provincial Skin Antiseptic Protocol, the Critical Care Network, Emergency Medical Services (EMS), Diagnostic Imaging (DI), Emergency Room (ER), Workplace Health and Safety, IPC Physicians and IPC Clinical Practice Leads.

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