

GUIDE

Glove Selection

This guide provides recommendations for selecting the correct glove for the task, taking into consideration exposure to chemicals and pathogens. The guide is an excerpt from the [Recommendations for the Prevention, Detection and Management of Occupational Contact Dermatitis in Health Care Settings](#) and was reformatted for ease of use. For more information, please contact jpac@oahpp.ca.

The hands of health care workers (HCWs) are exposed to various hazards in the workplace. The most common exposure is wet work, including frequent hand washing and gloving, which may increase the risk of irritant contact dermatitis. Other exposures (e.g., natural rubber latex, rubber accelerators) may cause allergic contact dermatitis. Cleaning chemicals, cytotoxic drugs and bloodborne pathogens are also common exposures. Cut and puncture risks may be present in some tasks. In North America, certification for gloves with puncture resistance typically uses ASTM ([F1342-05](#), [F1790-15](#), [F2878-19](#)) or ANSI ([105-2016](#)). If no certification is present, the HCW can expect zero to minimal protection against these hazards. For improved cut and penetration protection, there may be a loss of manual dexterity. Even for gloves of the same material, protection may also be influenced by thickness and manufacturing quality. Maintaining skin integrity is the key to prevention for both acquiring and transmitting microorganisms.

Considerations for exposure risks and outcomes, glove selection for the task and best practices for hand hygiene are presented for all glove types overall ([ASTM D7103-18](#)), as well as for individual glove types.

All Glove Types

Exposure Risks and Outcomes

When performing any task, HCWs should refer to safety data sheets to select gloves that are appropriate for the exposures related to that task. See Table 20 for a list of risks and possible outcomes based on those risks.

Table 20. Exposure Risks and Possible Outcomes

Exposure Risks	Possible Outcomes
Cleaning agents, detergents, disinfectants, foods, hand cleansers, heat, perspiration, wet work	Irritant contact dermatitis
Local anesthetics, antibiotics, antiseptics, dental materials, excipients and fragrances in hand care products, formaldehyde, glutaraldehyde, liquid chloroxylenol, local anesthetics, phenothiazines, preservatives (e.g., butylated hydroxytoluene), rubber gloves (rubber accelerators)	Allergic contact dermatitis and allergic contact urticaria from latex in rubber gloves

Exposure Risks	Possible Outcomes
Hazardous drugs, cytotoxic agents	Carcinogenicity, teratogenicity or other developmental, reproductive or organ toxicity
Bloodborne pathogens	Hepatitis B, hepatitis C or HIV infection

Glove Selection for Task

HCWs should select gloves based on risk assessment to reduce the risk of exposure to wet work and natural rubber latex.

Bloodborne pathogen exposures may require additional considerations for glove selection:

- For tasks with high risk of glove punctures (e.g., orthopedics), double gloving may offer additional protection.
- When the risks of puncture cannot be adequately controlled by applying the hierarchy of controls, puncture-resistant gloves should be used. Previous test methods for measuring puncture resistance for gloves [[ASTM F1342-05\(2013\)e1](#); [ANSI/ISEA 105-2016](#)] did not reflect a puncture hazard associated with a hypodermic needle found in health care settings. The puncture probes used in these tests lack the sharp, cutting edge of a hypodermic needle. New test methods specific to hypodermic needles [[ASTM F2878-19](#)] are available and gloves meeting these standards should be used when tasks involve risk of punctures from needles. Cut resistance [[ASTM F1790M-15](#); [ANSI/ISEA 105-2016](#)] is a property of gloves separate from puncture resistance. If risk of cuts cannot be avoided, gloves with cut resistance should be considered.
- An extended cuff may be needed for different tasks (e.g., chemotherapy, endoscopy, obstetrics).

In addition to appropriate glove selection to reduce the risk of contracting bloodborne infections, employers should ensure:

- HCWs are effectively vaccinated against hepatitis B (post-vaccination level of antibody against hepatitis B is greater than 10 IU/L).
- Education and follow-up on sharps injury prevention are provided.

Best Practices for Hand Hygiene

HCWs should follow best practices for hand hygiene for all types of gloves:

- Follow the hand hygiene program requirements of their institution.
- Use alcohol-based hand rub with emollients when hands are not visibly soiled.
- Wash hands with soap and running water if hands are visibly soiled.
- Avoid antibacterial soaps (e.g., triclosan).
- Use emollient hand lotions regularly; these should be free of allergens (e.g., fragrances, formaldehyde, isothiazolinone).
- Wear gloves only as needed.

- Remove gloves and glove liners and perform hand hygiene immediately following completion of a task or before exiting the patient environment.

Individual Glove Types

General Health Care Duty Gloves

GLOVE SELECTION FOR THE TASK

HCWs should consider the following when selecting health care duty gloves:

- Vinyl is satisfactory for shorter duration activities ([ISO 11193-2:2006](#); [ASTM D5250-06\[2015\]](#)).
- Nitrile ([ISO 11193-1:2008](#); [ASTM D6319-10\[2015\]](#)) is recommended for longer duration activities.
- Polychloroprene ([ASTM D6977-04\[2016\]](#)) is an alternative to nitrile latex (low protein and powder-free ([ISO 11193-1:2008](#); [ASTM D3578-05\[2015\]](#)) is generally not recommended due to allergy risk to HCWs and patients.



EXPOSURE RISKS AND OUTCOMES

- See [Exposure Risks and Outcomes](#)

BEST PRACTICES FOR HAND HYGIENE

- See [Best Practices for Hand Hygiene](#)

Surgical Gloves

GLOVE SELECTION FOR THE TASK

Consider the following when selecting surgical gloves:

- Synthetic gloves (e.g., nitrile or neoprene [[ISO 10282:2014](#); [ASTM D3577-09\[2015\]](#)]) are preferred to latex.
- If synthetic gloves are not available, use of latex ([ISO 10282:2014](#); [ASTM D3577-09\[2015\]](#)) must be of low protein, powder-free and not in the vicinity of individuals with latex allergy.



EXPOSURE RISKS AND OUTCOMES

- See [Exposure Risks and Outcomes](#)

BEST PRACTICES FOR HAND HYGIENE

HCWs should consider:

- avoiding abrasive scrub brushes
- alcohol-based, pre-operative surgical hand preparation

General Cleaning Gloves

GLOVE SELECTION FOR THE TASK

HCWs should consider the following when selecting general cleaning gloves:

- General cleaning gloves are rated for degradation, breakthrough time and permeation rates. When selecting general cleaning gloves, HCWs should choose those that provide the best resistance to the chemical being used. Gloves should be replaced at a frequency appropriate to the ratings of the glove or if damaged or contaminated.
- In addition, nitrile ([ISO 11193-1:2008](#); [ASTM D6319-10\[2015\]](#)) is recommended for wet work of long duration and for contact with certain chemical powders and solutions (refer to manufacturer safety data sheets).



EXPOSURE RISKS AND OUTCOMES

HCWs may be at risk of the following outcomes from exposure to chemicals:

- sensitization to chemicals (e.g., quaternary products)
- irritation (e.g., sodium hypochlorite)
- irritant contact dermatitis

BEST PRACTICES FOR HAND HYGIENE

See [Best Practices for Hand Hygiene](#)

Chemotherapy Gloves

GLOVE SELECTION FOR THE TASK

HCWs should ensure that the glove has been tested against the drugs they are administering. Note also:

- Approved chemotherapy nitrile gloves ([ASTM D6978-05\[2019\]](#)) prevent cytotoxic agent penetration. This applies primarily to pharmacy, nursing or others handling cytotoxic agents (e.g., physician, learner, receiver, spills team).



- If latex gloves are used, choose those that are of low protein and powder-free ([ASTM D6978-05\[2019\]](#)) and ensure that no individuals in the vicinity of their use have allergies to latex.
- Polyurethane and neoprene ([ASTM D6978-05\[2019\]](#)) gloves may be used if they have been approved as chemotherapy gloves.

According to Cancer Care Ontario, double gloving should be used for the following tasks:

- receiving, unpacking and cleaning of packaging/vials
- sterile preparations
- preparing creams, ointments, oral solutions and crushing tablets
- topical administration
- cleaning up spill or damaged or broken container
- cleaning of preparation cabinets

Thicker gloves may be worn as an alternative. The thickness required depends on the material of the glove.

EXPOSURE RISKS AND OUTCOMES

HCWs may be exposed to hazardous drugs and cytotoxic agents; these exposures may lead to carcinogenicity, teratogenicity or other developmental toxicity, reproductive toxicity or organ toxicity.

BEST PRACTICES FOR HAND HYGIENE

Best practices for hand hygiene when using chemotherapy gloves include:

- Wear chemotherapy gloves suitable for the task.
- Change gloves every 30 minutes or less or as indicated by the manufacturer's instructions according to the agent.

Wash hands with soap and water and thoroughly rinse following the safe removal of gloves.

Food Service Gloves (Sandwich Gloves)

GLOVE SELECTION FOR THE TASK

HCWs should consider the following when selecting general cleaning gloves:

- Food service gloves (sandwich gloves) ([ASTM D7329-07\[2018\]](#)) should only be used for food handling.



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