B1.2.5 Gloves

Gloves can protect both patients and healthcare workers from exposure to infectious agents that may be carried on hands (Duckro et al 2005). As part of standard precautions, they are used to prevent contamination of healthcare workers’ hands when (Siegel et al 2007):

- anticipating direct contact with blood or body substances, mucous membranes, non-intact skin and other potentially infectious material; and
- handling or touching visibly or potentially contaminated patient-care equipment and environmental surfaces (Boyce and Pittet 2002; Bhalla et al 2004; Duckro et al 2005).

The capacity of gloves to protect healthcare workers from transmission of bloodborne infectious agents following a needlestick or other puncture that penetrates the glove barrier has not been determined (Siegel et al 2007).

Gloves are an essential component of contact precautions (in particular for patients with MROs) (see Sections B2.2.3 and B3.1.2) and may also be used as part of droplet precautions (see Section B2.3.3).

When and how should gloves be worn?

As with all PPE, the need for gloves is based on careful assessment of the task to be carried out and the related risk of transmission of microorganisms to the patient and the risk of contamination of the healthcare worker’s clothing and skin by the patient’s blood and body substances (Pratt et al 2001; Clark et al 2002). Risk assessment includes consideration of:

- who is at risk (whether it is the patient or the healthcare worker);
- whether sterile or non-sterile gloves are required, based on contact with susceptible sites or clinical devices and the aspect of care or treatment to be undertaken;
- the potential for exposure to blood or body substances;
- whether there will be contact with non-intact skin or mucous membranes during general care and invasive procedures; and
- whether contaminated instruments will be handled.

When gloves are worn in combination with other PPE, they are put on last (see Section B1.2.7).

When should gloves be changed?

International guidance suggests that changing of gloves is necessary:

- between episodes of care for different patients, to prevent transmission of infectious material (Pratt et al 2001; Siegel et al 2007);
- during the care of a single patient, to prevent cross-contamination of body sites (CDC 1995; Boyce and Pittet 2002); and
- if the patient interaction involves touching portable computer keyboards or other mobile equipment that is transported from room to room (Siegel et al 2007).

Prolonged and indiscriminate use of gloves should be avoided as it may cause adverse reactions and skin sensitivity (Pratt et al 2001; Clark et al 2002).

Hand hygiene should be performed before putting on gloves and after removal of gloves. Single-use gloves should not be washed, but discarded.

Recommendations
7 Wearing of gloves

Gloves must be worn as a single-use item for:

- each invasive procedure;
- contact with sterile sites and non-intact skin or mucous membranes; and
- activity that has been assessed as carrying a risk of exposure to blood, body substances, secretions and excretions.

Gloves must be changed between patients and after every episode of individual patient care.

8 Sterile gloves

Sterile gloves must be used for aseptic procedures and contact with sterile sites.

What type of gloves should be worn?

Non-sterile single-use medical gloves are available in a variety of materials, the most common being natural rubber latex (NRL) and synthetic materials (e.g. nitrile). NRL remains the material of choice due to its efficacy in protecting against bloodborne viruses and properties that enable the wearer to maintain dexterity (Pratt et al 2001; Clark et al 2002). However, sensitivity to NRL in patients, carers and healthcare workers may occur (see below) and must be documented. A local policy is required on using alternative glove types when patients have latex allergies.

The selection of glove type for non-surgical use is based on a number of factors (Korniewicz et al 1994; Bolyard et al 1998; Korniewicz and McLeskey 1998; Ranta and Ownby 2004):

- the task to be performed (i.e. glove type should be fit for purpose and aim to avoid interference with dexterity, friction, excessive sweating or finger and hand muscle fatigue);
- anticipated contact with chemicals and chemotherapeutic agents; and
- personal factors, such as latex sensitivity and size.

Facility policies for creating a latex-free environment should also be taken into account.

Table B1.7: Selection of glove type
<table>
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<th>Gloves</th>
<th>Indications for use</th>
<th>Examples</th>
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<tr>
<td>Non-sterile gloves</td>
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<td>Venepuncture</td>
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<td></td>
<td>Contact with non-intact skin or mucous membranes</td>
<td>Vaginal examination</td>
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<td></td>
<td>Dental examination</td>
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<td>Emptying a urinary catheter bag</td>
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<td>Management of minor cuts and abrasions</td>
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<tr>
<td>Sterile gloves</td>
<td>Potential for exposure to blood, body substances, secretions or excretions</td>
<td>Surgical aseptic technique procedures e.g.</td>
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<tr>
<td></td>
<td>Contact with susceptible sites or clinical devices where sterile conditions should be maintained</td>
<td>Urinary catheter insertion</td>
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<td>Reusable utility gloves</td>
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<td></td>
<td>Instrument cleaning in sterilising services unit</td>
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</tbody>
</table>

### Gloves suitable for clinical use

- **NRL (latex) gloves**
  - Preferable for clinical procedures that require manual dexterity and/or will involve more than brief patient contact
  - Select powder-free latex gloves to minimise the risk of latex sensitivity or allergies

- **Synthetic gloves**
  - Procedures involving high risk of exposure to blood-borne virus and where high barrier protection is needed
  - Provides suitable alternative to latex if there are no issues with glove fit or sensitivity

### Utility/cleaning gloves

- Intended for use when a more physically protective glove is required (e.g. for instrument cleaning and housekeeping activities)
- Reusable, cleaned according to the manufacturer’s instructions and stored dry between uses
- Should be replaced when they are showing signs of deterioration


**Latex allergy**
Latex allergy is a reaction to certain proteins in latex rubber. The amount of latex exposure needed to produce sensitisation or an allergic reaction is unknown. However, current understanding of latex allergy is as follows (NIOSH 1998):

- Increasing the exposure to latex proteins increases the risk of developing allergic symptoms — most people who are allergic to latex have had frequent exposure to latex over many years; the majority are nurses, doctors, dentists or patients who have had a number of operations;
- In sensitised people, symptoms usually begin within minutes of exposure; but they can occur hours later and can be quite varied — mild reactions involve skin redness, rash, hives, or itching; more severe reactions may involve respiratory symptoms such as runny nose, sneezing, itchy eyes, scratchy throat, and asthma (difficult breathing, coughing spells, and wheezing); and rarely, shock may occur although a life-threatening reaction is seldom the first sign of latex allergy; and
- The risk of latex allergy is influenced by the amount of protein/allergen and powder in the latex glove; not by powder alone (Hunt et al 2002).

Healthcare workers with latex allergies should inform their managers to ensure that their work areas can be latex free. If latex gloves are used, they should be non-powdered due to the risks associated with aerosolisation and an increased risk of latex allergies.

Removing and disposing of gloves

Gloves (other than utility gloves) should be treated as single-use items. They should be put on immediately before a procedure and removed as soon as the procedure is completed.

When removing gloves, care should be taken not to contaminate the hands. After gloves have been removed, hand hygiene should be performed in case infectious agents have penetrated through unrecognised tears or have contaminated the hands during glove removal (Olsen et al 1993; Tenorio et al 2001; Boyce and Pittet 2002).

Gloves must not be washed for subsequent re-use — infectious agents cannot be removed reliably from glove surfaces and continued glove integrity cannot be ensured. Glove re-use has been associated with transmission of methicillin-resistant Staphylococcus aureus (MRSA) and Gram-negative bacilli (Doebbeling et al 1988; Maki et al 1990; Olsen et al 1993).

Gloves should be disposed of as soon as they are removed, with disposal complying with local policies and standards.