Aseptic technique in a hospital setting: key principles

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The term “asepsis” means an absence of potentially pathogenic microorganisms (Loveday et al., 2014). The term “aseptic technique” can be defined as a set of practices and procedures for ensuring asepsis and for preventing the transfer of potentially pathogenic microorganisms to a susceptible site on the body, or to sterile equipment/devices (Loveday et al., 2014). It can also be defined as the practice of carrying out a procedure using a method that minimises the risk of introducing contamination into a vulnerable area or onto an invasive device (Cattini & Kiernan, 2020). An aseptic technique ensures that susceptible body sites (such as an open wound or insertion site for an invasive medical device) and the sterile parts of devices in contact with susceptible sites, are not contaminated during procedures such as wound dressings, urethral catheterisation or insertion of an intravenous cannula (Loveday et al., 2014).

An effective aseptic technique requires strict application of guidance on hand hygiene and correct use of personal protective equipment (for detailed guidance on these aspects, see clinicalskills.net procedures on “Routine hand hygiene” and “Standard precautions: use of personal protective equipment”). When deciding whether to wear sterile or non-sterile gloves for aseptic technique, assess the risk that your gloves will come into contact with non-intact skin or mucous membranes during the procedure, as well as the potential for exposure to blood, body fluids, secretions and excretions (Loveday et al., 2014). A clean rather than sterile procedure may be sufficient for dressing chronic wounds, which are likely to be colonised with bacteria (Denton & Hallam, 2020). However, a sterile technique must be used if the patient is immunocompromised or has undergone surgery, which carries a high infection risk (Denton & Hallam, 2020). When using a sterile technique, the equipment, fluids and dressings used are sterile, whereas for a clean technique, clean but non-sterile single-use gloves are used with tap water (that is safe enough to drink) for cleansing (Fernandez & Griffiths, 2012). (See the clinicalskills.net procedure on “Cleansing chronic wounds”.)

The principles of aseptic technique can be applied to many different procedures. See, for example, the clinicalskills.net procedures on catheterisation and intravenous cannulation. Refer to these procedures for more specific guidance.

A report by the Royal College of Nursing (RCN) found widespread disparity in the way healthcare professionals define aseptic technique (RCN, 2020). This guideline focuses on the key principles of aseptic technique. Note that individual organisations may have their own guidelines on aseptic technique: always follow local policy. Loveday et al. (2014) recommend that organisations should provide education to ensure that healthcare professionals are competent in aseptic technique. Contents of sterile packs vary according to the manufacturer, so you will need to adapt the procedure shown accordingly.
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**Clean the working area**

The trolley or other surface (such as a tray) should be clean and dry. Use detergent or alcohol-based wipes to clean all areas effectively, then allow the surface to dry. Work systematically: clean the top shelf first, then the poles and bottom shelf. Alternatively, clean the surface according to local policy.

**Gather equipment**

Place equipment on the lower shelf of the trolley (or in tray, if used). Sterile packs usually supply medium-sized gloves only. If these do not fit you, bring a larger- or smaller-sized pack of sterile gloves. If the pack does not contain a small waste bag, add one to your equipment. You need access to alcohol-based hand sanitiser. You may also need non-sterile gloves for patient preparation before starting the aseptic procedure.

**Select and check equipment**

Select the equipment you will need, depending on the procedure. For example, the appropriate sterile pack (e.g., for wound care or catheterisation), sterile cleaning fluid if required, a sterile syringe if wound irrigation will be needed, and any other equipment (e.g., wound dressing or sterile scissors). Check the expiry dates of sterile packs and fluids, and check that the packaging is dry and intact. Make sure that solutions contain no precipitate.

**Ensure wound-cleansing fluid is not cold before use**

Healing is most effective at normal body temperature (36–38°C) and may be delayed if the temperature falls below core body temperature or rises above 42°C (Lloyd-Jones, 2013). Ensure wound-cleansing fluid is at room temperature before use, or warmed according to local policy, in order to maintain a stable wound bed temperature (Brown, 2018). Change your apron before taking the trolley to the patient’s bedside.

**Prepare the patient and environment:**

Aseptic technique should be carried out in a clean, dust-free environment. To reduce contamination, ward-cleaning activities should be minimised in the immediate vicinity while wound dressings are performed (Ayliffe et al., 2000). You may be able to take the patient to a treatment room. If working at the bedside, take the trolley to the patient and draw the curtains for privacy. Explain the steps in the procedure.

(b) Maintain privacy and dignity

Prepare the patient in a way that protects their privacy and dignity; how you do this will vary depending on the type of procedure. Position the patient as required. Expose only the relevant body area, to maintain privacy and dignity.
Open any other equipment
Carefully open any other sterile equipment (e.g., wound dressing, catheter) onto the sterile field, without touching the sterile field with the non-sterile outer packaging of the equipment.

Open any cleaning solution
Attach the bag to the side of the trolley between you and the patient so that you will not need to stretch across the trolley to dispose of waste. Pull the edge of the bag open so that you can easily drop in used items. If opening a saline sachet, clean the perforation area with an alcohol swab first, allowing it to dry.

Unfold the sterile pack
Unfold the sterile paper, holding the paper by the corner edges only. If the sterile pack you are using does not contain a waste bag, attach a waste bag to the side of the trolley now (see method for doing this below).

Unfold the sterile pack
Folded sides should be uppermost

Clean your hands by decontaminating with alcohol-based hand sanitiser or by washing with soap and water and drying with disposable paper towels. Open the outside of the sterile pack and let the inner sterile pack slide out onto the trolley surface with the folded sides uppermost. Avoid contaminating the clean surface of the trolley or sterile field with any part of your body.

Arrange the pack contents on the sterile field
Arrange the items on the sterile field using a pair of sterile forceps. Alternatively, if a plastic disposal bag is included in the pack, you can place your hand inside it to use it as a sterile “glove” to arrange the items on the sterile field (Cattini & Kiernan, 2020).

Removing a dressing
Likewise, if carrying out a wound dressing, you can keep the sterile bag over your hand to remove a soiled dressing, and then invert the bag so that the dressing is inside it. Alternatively, if you used forceps to arrange the sterile field, you can use these to remove the dressing and discard these with the dressing into the waste bag. If you need greater dexterity, you can wear non-sterile gloves to remove the dressing; having done so, remove your gloves and dispose of them; decontaminate your hands before proceeding.
Pour the cleaning solution

Then tear the perforation and pour the fluid into the sterile container on the sterile field, avoiding splashing.

Clean your hands

Clean your hands using alcohol-based hand sanitiser. Refer to clinicalskills.net procedure on “Routine hand hygiene”.

Put on sterile gloves

Put on sterile gloves using the correct technique: make sure that your skin touches only the inside of the gloves, starting at the wrist end (refer to the clinicalskills.net procedure on “Standard precautions: use of personal protective equipment”).

Use of a sterile towel

You can use the paper towel enclosed in the sterile pack to surround the working area.

Avoid contaminating sterile gloves or other sterile items

Avoid contaminating your sterile gloves during the procedure: for example, do not touch any part of the patient’s body. Do not touch the bed, other furniture, your own face or hair, or any other non-sterile areas. Once any sterile equipment has been contaminated, you must discard it and not return it to the sterile field.

Carry out the aseptic procedure

Carry out the aseptic procedure following agreed guidelines. You can find useful guidance in the appropriate clinicalskills.net procedures on, for example, catheterisation and wound care. Observe the patient throughout. Drop used items into the waste bag during the procedure so that the sterile field remains as clean as possible.
After the procedure

When the procedure is complete, check that the patient is comfortable before leaving the bedside.

Dispose of waste

At the end of the procedure, put all remaining disposable items (including the sterile field) into the waste bag. Then dispose of the waste bag in the infectious (orange) waste bin.

Remove and dispose of gloves

Remove gloves using a glove-to-glove, skin-to-skin technique (see clinicalskills.net procedure, “Standard precautions: use of personal protective equipment”). Dispose of gloves in the infectious (orange) waste bin.

Remove and dispose of apron

Break the neck strap using both hands. Avoid pulling it against your neck. Let the bib of the apron fall down in front of you. Next, without touching your clothing, break the waist straps. Grasping the inner side, and avoiding touching your clothing or the outer side (which may be contaminated), roll it up into a ball. Dispose of it into the infectious (orange) waste bin (PHE, 2020).

Wash your hands

Wash your hands thoroughly using the correct technique.

Clean the trolley

Clean the trolley or tray using an alcohol-based wipe (or in accordance with local policy). Document the procedure and update the care plans appropriately in the patient’s records.

Do not undertake or attempt any procedure unless you are, or have supervision from, a properly trained, experienced and competent person. Always first explain the procedure to the patient and obtain their consent, in line with the policies of your employer or educational institution.