



Background

Aseptic technique is a set of practices that protect patients from healthcare-associated infections and protects healthcare workers (HCWs) from contact with blood, body fluid and body tissue.^{1,2}

Aseptic technique, when performed correctly will:

- Minimise contamination of key sites
- Protect patients from their own pathogenic microorganisms that may cause infection
- Reduce the transmission of microorganisms
- Maintain the sterility of equipment and key parts used for aseptic procedures.

This resource has been developed to support HCWs and clinical staff who perform procedures that require an aseptic technique. It explains the essential principles and concepts used in aseptic technique. The information presented in this resource is general in nature and can be adapted to direct patient care, laboratory, and pharmacy settings.

The difference between aseptic technique and sterile technique

Often the terms aseptic technique and sterile technique are used interchangeably, not accurately reflecting important differences between these two techniques.

An **aseptic technique** aims to prevent pathogenic organisms, in sufficient quantity to cause infection, from being introduced into susceptible body sites by the hands of staff, surfaces of equipment. It protects patients during invasive clinical procedures by utilising infection prevention and control measures that minimise the presence of micro-organisms.¹ Aseptic technique is achievable in clinical and non-clinical settings by applying the five principles of aseptic technique, and modifying practice to mitigate infection risks^{2,3,4}

Aseptic technique does include the use of standard precautions, sterile equipment, sterile personal protective equipment (PPE) and controlled environments such as operating theatres and procedural suite help to maintain a high degree of sterility of items used for aseptic technique in the clinical setting²

A **sterile technique** uses practices aimed at preventing the introduction of all microorganisms into a sterile field, equipment, and procedure site. This is near impossible to achieve in the clinical setting due to the presence of microorganism in the air and the clinical environment. True sterile conditions are only achievable in strictly controlled environments such as laminar flow hoods used in laboratories and pharmacies.⁴

This resource focuses on optimising address aseptic technique.

Aseptic technique as part of standard precautions

Aseptic technique is an important patient safety strategy and is one of the key elements of standard precautions.

Standard precautions are infection control practices that are used to prevent the transmission of infections. Standard precautions should be applied at all times during patient care regardless of infection status.

Standard precautions include:

- Hand hygiene
- Aseptic technique
- Use of personal protective equipment (PPE)
- Respiratory hygiene and cough etiquette
- Safe use of sharps
- Environmental cleaning
- Reprocessing of medical equipment
- Appropriate handling of linen and waste management.

Standard precautions should always be applied when in contact with blood, body fluid, secretions, excretions, non-intact skin and mucous membranes.^{2,5}

For optimal aseptic technique to occur, all the elements of standard precautions must be used by the healthcare worker.

The National Safety and Quality Health Services (NSQHS) Standards, [Preventing and controlling infections standard](#) Action 3.11 - Aseptic technique states that health service organisations need to have processes for aseptic technique



Aseptic technique in different settings

Aseptic technique is routinely used in clinical areas and other settings such as pharmacies and laboratories. Use of aseptic technique is required to maintain sterility of specimens, medications, and equipment. Correct use of aseptic technique will also assist in protecting HCWs from exposure to pathogens and chemicals associated with their work.

The clinical setting

In the clinical setting, aseptic technique should be used when a procedure or medical device enters one or more of the body's normal defences, such as the skin, mucous membranes, or body cavity. For example:

- Suturing a wound
- Inserting a drain or urinary catheter
- Accessing an indwelling device
- Taking a blood sample
- Preparing and administering medications via an intravenous or central line
- Performing endotracheal suctioning.

The pharmacy setting

In the pharmacy setting, aseptic technique is used to reduce the risk of contamination of medicines, for example during the preparation of chemotherapy or eye injections.⁶

The laboratory setting

In the laboratory setting, aseptic technique is used to prevent contamination during diagnostic testing to ensure accurate results to inform patient treatment.

Five essential principles of aseptic technique

There are essential principles that should be applied when performing a procedure that requires aseptic techniques.¹ These principles are:

1. Sequencing

Sequencing involves a series of actions that ensure each procedure is performed in a safe and appropriate order. Sequencing includes assessing for risks to patient safety and the HCW and identifying strategies to mitigate these risks prior to starting the procedure. When considering the steps for sequencing, the HCW should consider the following points:

Perform a risk assessment:

- Are there environmental or patient factors that increase the risk for this procedure?
- Is the procedure technically difficult or an emergency situation?
- Will this procedure require a standard or surgical aseptic technique?
- Is there a risk of infection transmission or contamination risk with this procedure?
- Do you know how to perform this procedure?
- What PPE do you need for this procedure?
- What action is required to mitigate these risks?

Pre-procedure preparation:

- Prepare the environment
- Select the correct equipment; check the condition, integrity and expiry date of each item required for the procedure
- Plan each step of the procedure to avoid a breach in asepsis
- Inform the patient and prepare them for the procedure.

Performing the procedure:

- Set up the equipment immediately prior to performing the procedure
- Maintain standard precautions
- Perform the procedure in a safe, logical order.

Post procedure practices:

- Remove gloves and perform hand hygiene
- Settle the patient
- Pack away equipment and dispose of waste
- Document the outcome from the procedure including any breaches in asepsis, any corrective actions taken at the time of the procedure to minimise any infection risks or if multiply attempts were required to complete the procedure (such as the number of attempts to insert a peripheral cannula).

2. Environmental control

There are many factors in the clinical environment which can increase the risk of infection and patient harm during a procedure. These factors include:

- Other activities that are occurring in the nearby environment that may increase the risk of contamination during the procedure (e.g. for example bed making, dusting, or cleaning)
- Whether the environment is a controlled setting, such as a laboratory, pharmacy, or operating suite, or an uncontrolled setting such as an emergency department
- The condition of the work area, surface and equipment used for this procedure (e.g. how clean is the equipment? Is the equipment required for the procedure damaged or rusty?)
- Fans and open windows can cause air turbulence and contamination of the aseptic field.

Where practical, these factors should be removed (e.g. wait until cleaning has finished, replace damaged equipment) or otherwise controlled to reduce the risk of contamination and infection transmission.

3. Hand hygiene

There are critical moments before, during and after an invasive procedure or a procedure requiring aseptic technique when hand hygiene should be performed. These moments are:

- Before and after collecting the equipment
- After setting up an aseptic field
- Immediately before donning gloves (if gloves are required),
- Immediately after completing the procedure and removing gloves
- Immediately after cleaning up and disposing of equipment and waste.

Hand and wrist jewellery must be removed prior to the procedure and performing hand hygiene. If gloves become grossly contaminated or torn during a procedure, the gloves need to be removed, hand hygiene must be performed, and new gloves applied.



Source: Australian Guidelines for the Prevention and Control of Infection in Healthcare, 2019

4. Maintenance of aseptic fields

The HCW should ensure that the aseptic field, the key parts, and key sites are always protected. The HCW should always:

- Prepare the key site with the correct solution e.g. cleanse with normal saline, chlorhexidine, or other suitable solutions
- Clean and or disinfect all the equipment and key parts to be used
- Establish an aseptic field, for example, by using a sterile tray, or using a laminar flow hood
- Use techniques that protect the key site and all key parts used for the procedure
- Use the most suitable technique for the type of procedure, e.g. a non-touch technique if suitable or use sterile gloves if you need to handle sterile equipment and the procedure site.

5. Personal protective equipment (PPE)

PPE is important for protecting both the patient and HCW during aseptic procedures. The HCW should consider the following points:

- What PPE is required to protect the patient, the aseptic field and yourself during the procedure?
- Do you require protective eyewear, a face shield and/or a surgical mask?
- Can you perform this procedure with non-sterile gloves or are sterile gloves required?
- Do you require a sterile gown or plastic apron to protect the patient, aseptic field, and yourself?
- What is the correct sequence for putting on and removing PPE?

Important aseptic technique information you should know

Asepsis: free from pathogenic material

Aseptic fields: are controlled work spaces that are designed to maintain the integrity of key parts and key sites during clinical procedures.¹ There are three types of aseptic fields which commonly need to be considered during aseptic procedures. These are:

- **Critical aseptic field:** is the area where sterile equipment is placed during an aseptic procedure. A critical aseptic field generally involves many key parts and/or large key sites, and is used for complex procedures such as a urinary catheter insertion or large burns dressings, and requires the use of sterile gloves as it is not possible to perform the procedure using a non-touch technique⁷
- **Micro critical aseptic field:** are the smaller parts of equipment that must be protected and kept sterile during an aseptic procedure, such as the tip of a needle while performing an intravenous injection⁷
- **General aseptic field:** is a simple aseptic field where there may be a small number of key parts and small key sites. A general aseptic field is used when the procedure can be undertaken using a standard non-touch aseptic technique, such as a simple wound dressing.

Key part: is the equipment or item that must be protected from contamination during an aseptic procedure (e.g. the hub of an injection port, or the contents of a dressing pack).^{1,2}

Key site: is a site on the patient that must be protected from contamination during an aseptic procedure (e.g. a drain site, a cannula site, a wound site).^{1,2}

Microorganisms: include bacteria, viruses, fungi, and protozoa. These organisms exist naturally in the environment and not all cause infection.¹

Pathogen: is an infectious agent (microorganism) that causes disease or illness to its host.²

Standard aseptic technique: is a method to conduct a simple procedure, with a small number of key parts and small key sites.^{2,7}

Sterile: free from microorganisms.

Surgical aseptic technique: is a technically complex procedure, with large open key sites and numerous key parts.^{2,7}

Supporting resources

The National Safety and Quality Health Services (NSQHS) Standards, [Preventing and Controlling Infections standard](#) has been developed in line with the recommendations and evidence in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#).

Action 3.11 sets out the requirements in relation to aseptic technique, and states that health service organisations need to have processes that:

- Identify the procedures in which aseptic technique applies
- Assess the competence of the workforce in performing aseptic technique
- Provide training to address gaps in competency
- Monitor compliance with the organisation's policies on aseptic technique.⁵

The *Implementation guide for Action 3.11 Aseptic Technique* aims to support health service organisations implement these recommendations.

The Commission has also produced several resources to support HCWs in their clinical practice, including the maintenance of aseptic technique:

- [Management of Peripheral Intravenous Catheters Clinical Care Standard](#)
- [Third and Fourth Degree Perineal Tears Clinical Care Standard](#)
- [eLearning modules for infection prevention and control](#)

Questions?

For more information concerning the National Safety and Quality in Health Service Standards, please visit the [NSQHS Standards resources](#).

You can also email the advice centre at AdviceCentre@safetyandquality.gov.au or, call 1800 304 056.

References

1. South Australia Health. Aseptic Technique: Staff training, self-assessment and competency workbook. 2020.
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7. Clinical Excellence Commission. Infection prevention and control practice handbook Sydney, Australia: 2020.