ACIPC

Aseptic Technique Healthcare Worker Workbook

**Aseptic Technique Healthcare Worker Workbook**

This workbook has been developed to provide healthcare workers with theoretical knowledge of Aseptic Technique prior to attempting to gain practical competency in procedures requiring surgical and/or standard Aseptic Technique.

All healthcare workers who perform procedures within this facility are required to read and review all content.

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## What is Aseptic Technique?

Aseptic Technique (AT) is a set of evidence-based practices that provides healthcare workers with a standardised approach to procedures ensuring adherence to the principles of Aseptic Technique.

Aseptic Technique aims to:

* Prevent microorganisms from hands, surfaces or equipment from being introduced into a susceptible site1.
* Protects patients/residents during procedures by employing infection control measures that minimise, as far as practicable possible, the presence of pathogenic microorganisms1.

## Why practice Aseptic Technique?

Aseptic Technique reduces the risk of healthcare-associated infections and has been shown to significantly improve the practices of healthcare workers performing procedures and reduce the risk of infection. It is required for all invasive procedures.

## Aseptic Technique and Healthcare-Associated Infections

Healthcare-associated infections (HAIs) are infections that are acquired as a result of healthcare interventions2. HAIs are caused by the transfer of a micro-organism to a patient/resident during an intervention or procedure.

Correct Aseptic technique prevents the contamination and transfer of micro-organisms from hands, surfaces, and equipment to the patient/resident during a procedure. This is achieved by:

* Identifying key parts and key sites and always protecting them.
* Ensuring key parts only come into contact with other key parts and/or key sites.

## What are Key Sites?

A key site is the site on a patient/resident that must be protected from contamination during an Aseptic Technique procedure. Examples include non-intact skin, urinary devices, a wound, a cannula site, or a drain site.

## What are Key Parts?

A key part is the sterile component of equipment or items, that must be protected from contamination during an Aseptic Technique procedure. Examples include the hub of an injection port, bungs, syringe tips and dressing packs.

## Preventing Infections Using Aseptic Technique

There are 5 essential principles of aseptic technique that are used to protect patients/residents from infection1.

1. Sequencing
2. Environmental Controls
3. Hand Hygiene
4. Maintenance of aseptic fields
5. Personal Protective Equipment (PPE)

## Sequencing

Sequencing includes a series of actions that are performed before an aseptic technique procedure, to ensure the procedure is performed safely. It applies to all procedures, and it will ensure an efficient, logical, and safe order of practice occurs. Practice guidelines provide direction as to the correct order in which preparation and completion of the order should be undertaken. Healthcare workers should be familiar with the sequence of events before commencing the procedure, and to ensure preparation for the procedure is complete to adhere to Aseptic Technique.

Sequencing includes:

* Performing a risk assessment:
* This includes understanding and reviewing the patient/resident and environmental risk factors for the procedure. Reviewing the technical difficulty and the healthcare workers knowledge and skill. Determining the type of Aseptic Technique required (e.g., standard or surgical), and the PPE needed. Understanding the risk of transmission of infection or contamination with the procedure, and the actions required to mitigate the identified risks3.
* Pre-procedure preparation:
* This includes preparation of the environment, selecting equipment and checking the condition, integrity and expiry dates of the selected items.
* Each step of the procedure should be planned to avoid potential breaches. And the patient/resident should be informed and prepared for the procedure3.
* Performing the procedure:
* This includes setting up equipment immediately before the procedure takes place. And maintaining standard precautions during the procedure.
* Post-procedure practices:
* This includes ensuring the patient/resident is okay, disposing of waste, and cleaning and packing away equipment. Documentation of the procedure, including any breaches and corrective actions.

## Environmental Control

There are several factors within the clinical environment that can increase the risk of infections during a procedure. Prior to an aseptic procedure taking place, healthcare workers must ensure that there are no environmental risk factors present. Where practical these factors should be removed or controlled to reduce the risk of contamination. Environmental risk factors include but are not limited to:

* If the environment is a controlled setting (e.g., laboratory, pharmacy or operating theatre) or an uncontrolled setting (e.g., emergency department, public or non-clinical setting in emergent situations)3.
* Nearby activities, including bed making, cleaning, or dusting, and the vicinity of other patients and their activities.
* The condition of the work area and surfaces used.
* Fans and open windows that can lead to contamination of the environment.

## Hand Hygiene

There are essential moments throughout an aseptic procedure that require hand hygiene to be performed, these include:

* Before collecting equipment.
* Before setting up an aseptic field.
* Immediately before donning gloves (if required) and performing the procedure (Moment 2)4.
* Immediately after completing the procedure and removing gloves (Moment 3)4.
* Immediately after disposing of equipment, waste, and cleaning.

If gloves become damaged or torn during a procedure, the gloves must be removed, hand hygiene performed, and new gloves applied. This breach must be documented in the post-procedure documentation.

The use of jewellery, watches and artificial nails/nail polish can inhibit the ability of healthcare workers to perform correct hand hygiene and should be considered as part of the risk assessment before the procedure. All hand and wrist jewellery must be removed before a procedure.

Depending on the procedure about to be performed, either routine or surgical hand hygiene is required.

**Routine Hand Hygiene**

This is the use of an alcohol-based hand rub (ABHR) or soap and water to perform hand hygiene.

Note: The recommended amount of ABHR or Soap to be used is based on the product and manufacturer’s recommendations.

*Routine hand hygiene steps using ABHR:*

1. Apply the recommended amount of ABHR onto dry hands.
2. Rub the hands together so the solution comes in contact with all parts of the hand.
3. Continue rubbing until the solution has evaporated and hands are dry (approx. 20-30 seconds), ensuring all areas of the hand have been covered.

*Routine hand hygiene steps using soap and water:*

1. Wet hands under running water and apply the recommended amount of liquid soap.
2. Rub the hands together so the soap contacts all parts of the hand.
3. Continue rubbing the hands together for 40-60 seconds, then rinse under running water.
4. Pat dry with a single-use paper towel.

**Surgical Hand Hygiene**

Surgical hand preparation aims to reduce the release of skin bacteria from the hands of the healthcare worker for the duration of the procedure, using a surgical scrub formulation1 and includes a surgical hand scrub or surgical hand rub. Principles of surgical hand antisepsis include5:

* A 5-minute surgical hand scrub that includes cleaning the fingernails should be undertaken as the first scrub of the day.
* Subsequent surgical hand scrubs shall be 3 minutes and exclude cleaning the nails.
* The skin disinfectant used for the first surgical hand antisepsis should continue to be used for all subsequent scrubs/rubs, due to the cumulative effects of skin disinfectants.
* Manufacturer’s instructions for the antimicrobial hand scrub/rub agents should be adhered to for information regarding application times and volume of product.
* Hands must be always held higher than the elbows to allow water to run from clean to dirty.
* If hands are visibly dirty, they must be washed with non-antimicrobial soap before using a surgical hand rub.
* Surgical hand scrub solutions must have adequate skin contact time as recommended by the manufacturer.

*Surgical hand scrubbing* – surgical hand antisepsis with antimicrobial soap and water5

1. Open and prepare the nail cleaner and scrub sponge. Rinse hands and forearms with water and apply skin antiseptic while nails are cleaned.
2. Apply skin antiseptic to scrub sponge and wash all surfaces of hands and forearms, working from fingers to elbows, and rinse.
3. Hands and forearms are washed and rinsed again as above.
4. Hands are washed and rinsed, and drip dried at the scrub sink.
5. Hands are dried using one half of the towel for each side.

*Surgical hand rubbing –* surgical hand antisepsis with a waterless ABHR5.

1. Dispense the volume of ABHR solution into the cupped hand, and rub onto both hands and wrists, ensuring all surfaces are kept wet throughout the procedure.
2. Dispense the volume of ABHR solution into the cupped hand and rub the product from hand to elbow, ensuring the skin area is covered, and until the ABHR solution has evaporated.
3. Repeat the above for the other hand to elbow.
4. Dispense the volume of ABHR solution into the cupped hand, and rub onto both hands and wrists, ensuring all surfaces are kept wet throughout the procedure.
5. When hands are dry, a sterile gown and gloves can be donned.

## Aseptic Field Management

Aseptic fields are important to provide a controlled aseptic working space, that will help to promote and ensure the integrity of asepsis is maintained during a procedure1.

Before the procedure, the healthcare worker should determine the type of aseptic field that is required, how the field will be managed to ensure the key parts and sites are protected, and that the aseptic field is fit for purpose. The aseptic field must be prepared as close as possible to the time of use, and the aseptic field (tray or trolley) must be of an appropriate size to ensure key parts are adequately contained within the aseptic field. The aseptic field may need to be extended onto the patient/resident, and this can be done using a sterile drape to provide additional workspace, where sterile equipment may be placed, as well as protecting the key site from contamination.

Three types of aseptic fields are used to promote and ensure asepsis:

**General aseptic field:**

* Used during standard Aseptic Technique when key parts can easily be protected using a micro-critical field and a non-touch technique.
* The procedure is generally considered simple and typically will involve non-sterile gloves.

**Critical aseptic field:**

* Used when key parts/sites cannot easily be protected at all times with covers or caps, usually due to the size and number1.
* Or when open and invasive procedures require a large working area and will take place over a long duration.
* The critical aseptic field is required to be managed as a key part (e.g. an operating theatre surgical field, where only sterile items can come in contact with it).
* The procedure is generally considered complex and of longer duration and requires barrier precautions and sterile gloves.

**Micro-critical aseptic field:**

* A sub-type of the critical aseptic field
* Used when smaller parts of equipment must be kept protected and sterile during an aseptic procedure3.
* For example, the inside of syringe caps and needle covers have been sterilised and can provide optimum covering for key parts.

## Personal Protective Equipment

Personal Protective Equipment (PPE) is required during an aseptic procedure to protect both the patient/resident and the healthcare worker and to reduce the risk of blood and body fluid exposure to the healthcare worker. It must be used according to standard precautions.

Before performing the procedure, consideration must be given to the PPE required to protect the patient/resident and the healthcare worker, including eye protection, a face shield or surgical mask, and a gown or plastic apron. PPE considerations should also enable the healthcare worker to maintain the aseptic field.

**Barrier Precautions**

Full barrier precautions may be required when using a critical aseptic field to ensure asepsis is maintained. This includes the use of a sterile gown and gloves, mask and hat.

**Glove use**

The selection of sterile or non-sterile gloves depends on the key sites/parts that will be used, as well as the healthcare worker’s competency. When preparing for the procedure the healthcare worker should determine whether touching of key sites/parts will occur and which gloves are required.

Using gloves does not replace the need for hand hygiene, and hand hygiene must be performed before and after glove use, according to the National Hand Hygiene Initiative - 5 Moments for Hand Hygiene4.

Gloves are considered single-use items.

*Non-sterile gloves:*

* If key parts/sites are not touched directly, non-sterile gloves may be used to protect the healthcare worker from blood or body fluids exposure, or during the administration of toxic medications.

*Sterile gloves:*

* If it is necessary to touch key parts/sites directly, sterile gloves must be used to minimise the risk of contamination.

## Non-Touch Technique

A non-touch technique is a technique where the healthcare worker’s hands do not touch, and therefore do not contaminate, key parts and key sites.

A non-touch technique is an important component of Aseptic Technique, even when sterile gloves are used. Correctly performed hand hygiene cannot always remove all pathogens, and at times hand hygiene is not performed correctly, therefore using a non-touch technique is a vital component of achieving asepsis and protecting key parts and sites.

The safest way to protect a key part is not to touch it.

## Type of Procedures

There are two different applications of Aseptic Technique to help guide practice, performance, and equipment dependent on the procedure about to be performed.

* **Standard Aseptic Technique1**
* Clinical procedures managed with standard Aseptic Technique are technically simple to maintain asepsis, short in duration (approximately less than 20 minutes) and involve relatively small and few key sites and key parts.
* A main general aseptic field is required, and non-sterile gloves (dependent on healthcare worker competence in performing the procedure).
* The use of a critical micro aseptic field and a non-touch technique is essential to protect key parts and key sites.
* **Surgical Aseptic Technique**
* Required when procedures are technically complex, involve extended periods of time, large open key sites, and large and numerous key parts.
* A main critical aseptic field, sterile gloves and maximum barrier precautions are required.
* A critical micro aseptic field and a non-touch technique should still be used where practical.

## Monitoring and Assessment

Ongoing training of asepsis and Aseptic Technique is required to ensure the practice is standardized, current and in line with Australian Guidelines and principles5. Monitoring and assessment of all staff clinical competence and compliance with Aseptic Technique is required.

## Self-Assessment Tool

Self-assessment is an important strategy to help healthcare workers identify strengths and areas for improvement. It will allow the healthcare worker to critically reflect on their practice and outcomes for patients/residents/clients. A self-assessment tool is available for healthcare workers and should be completed before undertaking a practical assessment.

## Performing an Aseptic Technique Procedure

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| Risk assessment:  Prior to commencing the procedure, the healthcare worker should consider the potential risks to the patient/resident and themselves as a result of the procedure, including:   * Determine the type and complexity of the procedure. * Identify the key parts and key sites and determine if they need to be touched. * Determine infection prevention measures to protect key parts and key sites. * Determine if standard or surgical Aseptic Technique is required. |
| Preparation:  The healthcare worker should apply the required environmental control measures and ensure the appropriate PPE is available for use. Followed by:   * Perform hand hygiene. * Clean the tray/trolley work surface with detergent and water/wipe and allow to dry. * Identify and gather equipment for the procedure, inspect packaging for damage, sterility indicators & expiry dates, ensure reusable equipment (e.g., tourniquet) is clean.   The healthcare worker should position the work surface where they will undertake the procedure,  followed by:   * Perform hand hygiene. * Prepare the general or critical aseptic field. * Prepare and position the patient/resident, using gloves where appropriate to protect from potential body fluid exposure. If gloves are used during preparation, they must be removed and hand hygiene performed prior to the procedure. |
| Procedure:  When the healthcare worker has completed preparation, and all required equipment is available:   * Perform hand hygiene:   *Standard Aseptic Technique – soap and water or ABHR*  *Surgical Aseptic Technique – surgical scrub/rub*   * Apply gloves:   *Standard Aseptic Technique – non-sterile gloves if potential body fluid exposure*  *Surgical Aseptic Technique – sterile gloves*   * Perform the procedure ensuring all key parts are always protected.   Sterile items must only be used once and disposed into a waste bag.  Only sterile items may come in contact with key sites and sterile items must not come in contact with non-sterile items. |
| Decontamination:  Upon completion of the procedure the healthcare worker should:   * Dispose of waste, including sharps. * Remove gloves and perform hand hygiene. * Clean equipment and perform hand hygiene. |

## Aseptic Technique in the Operating Suite

The principles of asepsis are the same for all procedures within all departments, and Aseptic Technique frameworks are required to be applied within the Operating Suite, and whenever an invasive clinical procedure is performed5.

One of the core principles of the perioperative team is to prevent surgical site infections. This is achieved through the application of infection prevention and Aseptic Technique principles including hand hygiene, surgical hand antisepsis, and the use of PPE (e.g., sterile gowns and gloves)5.

**The aseptic field**

In the perioperative environment, the aseptic field is critical for minimising the risk of exposure of microorganisms to the patient5. Items to consider are:

* The process for preparation, assembly and management of the field.
* The length of time an aseptic field has been open.

Safe management practices of the aseptic field include5:

* Appropriate transportation & storage of sterile items to protect the integrity of the item, the personnel and the patient.
* Appropriate use of PPE, including perioperative attire, sterile gowns, hats, masks, and gloves.
* Prepare the aseptic field as close as possible to the time of use, and do not cover or drape the field before use, due to the risk of contamination when removing the drape.
* Transferring and positioning of sterile drapes in a way to minimise contamination and performed with limited handling.
* Ensuring the scrubbed healthcare worker’s hands do not fall below the level of the patient or instrument table.
* Minimise movement in and out of the operating room to prevent the introduction of pathogens to the environment.

**Hand hygiene**

Surgical hand antisepsis has been identified as a pivotal factor in reducing the rates of surgical site infections (SSIs)5. Perioperative healthcare workers are required to follow organisational policies on hand hygiene practices and maintaining healthy skin and fingernails. Principles include:

* Understand and practice the 5 moments of hand hygiene4 for patient interactions.
* Perform hand hygiene in accordance with the ACORN standards when in non-clinical situations, including:
  + Before putting on gloves, and after removing gloves.
  + After removing PPE.
  + Before opening sterile items

**Adding sterile items to the aseptic field**

Adding items to the sterile field must be done in a manner that maintains and promotes asepsis5. Constant observation is required to identify and detect any breaches and ensure patient safety.

Introducing items onto the aseptic field must occur in a standardised and sequenced manner to maintain and promote asepsis5

* Only sterile items can be added to the aseptic field.
* Packaging must be inspected before opening.
* Packaging must be peeled open as designed by the manufacturer and not torn or ripped.
* Sterilised wrapped items must be opened by folding the furthest section, followed by the sides.
* Do not flip sterilized items onto the sterile field or into a receptacle, items must be passed to the instrument nurse, so they can monitor the introduction of items onto the aseptic field5.

## Performing an Aseptic Technique Procedure in the Operating Suite

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| Risk assessment:  Prior to commencing the procedure, the healthcare worker should consider the potential risks to the patient and themselves as a result of the procedure, including:   * The potential for contamination by airborne microorganisms, and surfaces where airborne particles have settled. * Movement of staff within the operating room, including moving equipment, beds, and positioning patients. |
| Preparation:  The perioperative team should apply the required environmental control measures and ensure the appropriate PPE is available for use for the procedure. Followed by:   * Perform hand hygiene. * Clean the trolley work surface with a detergent and water/wipe and allow to dry. * Identify and gather equipment for the procedure (inspect packaging for damage, check sterility indicators and expiry dates).   The trolley/work surface should be positioned in an area appropriate for set-up that will reduce the risk of environmental contamination, including from people moving near-by.   * Perform hand hygiene. * Prepare the critical aseptic field by opening sterile items according to the ACORN standards. * Do not flip sterilised items onto the sterile field or into a receptacle |
| Procedure:  When preparation has been completed and all equipment is available, the healthcare worker performing or assisting in the procedure should:   * Perform hand hygiene:   *Surgical Aseptic Technique – surgical scrub/rub*   * Apply gloves:   *Surgical Aseptic Technique – sterile gloves*   * Perform the procedure ensuring all key parts are protected at all times. |
| During the procedure:  The procedure should be undertaken to ensure all key parts are always protected.  Only sterile items may come in contact with key sites and sterile items must not come in contact with non-sterile items.  Constant observation is required to identify breaches in asepsis and ensure patient safety. |
| Decontamination:  Upon completion of the procedure the healthcare worker should:   * Dispose of waste, including sharps * Remove gloves and perform hand hygiene. * Transfer reusable medical devices (RMDs) to the appropriate area and perform hand hygiene.   Clean trolleys and equipment and perform hand hygiene |

## Aseptic Technique Terms

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| **ABHR:** | Alcohol-based hand rub, a TGA-listed product designed to remove the number of micro-organisms on the hands. |
| **Asepsis:** | Free from infection or infectious material. The aim of aseptic non-touch technique. |
| **Clean:** | Free from dirt, marks, and stains. |
| **Critical aseptic field:** | A workspace that is managed as a key part. |
| **General aseptic field:** | A workspace that promotes asepsis and is used when key parts and sites can be easily protected. |
| **Key Parts:** | The parts of the procedure equipment or solution that must remain aseptic throughout the clinical procedure, to protect the patient/resident from contamination or infection1.  Examples include – a wound dressing, catheter lubrication, syringe tip, needle. |
| **Key Sites:** | Open or broken wounds, surgical or intravenous access sites1. |
| **Micro-critical aseptic field:** | A technique that promotes the asepsis of key parts by using caps, and packaging. It is used at all times in a general aseptic field. |
| **Micro-organism:** | Organisms that exist naturally everywhere in the environment. Not all cause infection (e.g., good bacteria that makes up normal flora)1. They can be involved in the colonisation or infection.  Examples include – bacteria, viruses, fungi, parasites and prions. |
| **PPE:** | Personal Protective Equipment, a range of barriers that can be used alone or in combination to protect skin, clothing, and mucous membranes from contamination with infectious agents1.  Examples include – gloves, gowns, masks, respirators, protective eyewear, face shields. |
| **Procedure:** | An intervention where there is a risk of introduction of a pathogen to a patient/resident1. |
| **Risk assessment:** | An assessment and analysis used in the management of risks. With the aim to recogonise events that may lead to harm, and minimizing the risk of consequences1. |
| **Standard aseptic technique:** | A technique that uses a general aseptic field, micro-critical aseptic fields, and a non-touch technique to achieve asepsis. It is used for technically simple and short procedures, and procedures with few key parts and sites. |
| **Sterile:** | Free from microorganisms |
| **Surgical aseptic technique:** | A technique that uses a critical aseptic field and micro-critical fields. It is treated like a key part and used for technically complex and long procedures. |
| **Surgical hand antisepsis:** | The process of eliminating and reducing skin flora prior to surgery. It requires the removal of hand and wrist jewellery. It includes removing debris from underneath fingernails and scrubbing the hands and forearms using an antimicrobial formulation1. |
| **Surgical scrub:** | Surgical hand antisepsis with antimicrobial soap and water |
| **Surgical rub:** | Surgical hand antisepsis with a waterless ABHR |

## References

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## Version

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