

Section G

Aseptic Technique

1 Introduction and Background Information

Health Care Associated Infections (HCAIs), or **Hospital Acquired Infections (HAIs)**, are infections that were neither present nor incubating at the time of the patient's hospital admission. The third national prevalence survey of HCAIs carried out in 2006 identified an infection rate of 8.2%. The National Audit Office estimates the cost of HCAIs, to the NHS, as £1 billion per year.

'Getting ahead of the Curve,' a report by the Chief Medical Officer for England (2003) identified the area of HCAIs as needing intensified control measures. *Winning Ways: Working Together to Reduce HCAIs in England (2003)*, and *Saving Lives (2005)*, have been produced by the Department of Health in order to help address the problem. Best evidence suggests that the most effective solutions for combating HCAIs are those that direct action at the problem on many different levels and that an approach should be adopted that 'applies rigorously and consistently the measures known to be effective in reducing the risk of HCAIs.'

S Rowley (UCLH, 2003) states: "... research shows that one of the most effective ways of containing hospital acquired infections is through the application of a standardised aseptic technique for clinical procedures."

The Health Act (2006) incorporates a number of Clinical Care Protocols, to which NHS bodies must adhere, in relation to preventing and controlling the risks of HCAIs, and states the following:

- Clinical procedures should be carried out in a manner that maintains and promotes the principles of asepsis.
- Education, training and assessment in the aseptic technique should be provided to all persons undertaking such procedures.
- The technique should be standardised across the organisation.
- Audit should be undertaken to monitor compliance with aseptic technique.

It should be remembered that when a HAI occurs, not only the economic cost should be considered, but the consequences, potentially long-term, that its occurrence can have upon the patient, their significant others and the health care workers involved in their care.

2 Asepsis and Aseptic Technique

"**Asepsis** is the method by which we prevent microbial contamination during invasive procedures or care of breaches in the skin's integrity" (ICNA 2003).

Two types of asepsis can be classified: medical and surgical asepsis (Ayliffe, 2000).

Medical asepsis aims to **reduce** the number of organisms and prevent their spread and is mainly employed in ward areas and some other treatment areas, e.g. outpatient clinics.

Surgical asepsis is a strict process and includes procedures to **eliminate** micro-organisms from an area and is practised by nurses and other health care workers in operating theatres and some other treatment areas (Royal Marsden Manual, p.50). It is also appropriate in wards and other departments for invasive procedures such as the insertion of a central venous catheter.

An **aseptic technique** is the method employed to help prevent contamination of wounds and other susceptible sites by organisms that could cause infection, by ensuring that only uncontaminated equipment and fluids come into contact with sterile/susceptible body sites during certain clinical procedures. It should be used during any procedure that bypasses the body's natural defences. Organisms can be transferred from one person to another if techniques to prevent such spread are not adopted.

This policy aims to focus upon medical asepsis and the procedures that are currently carried out in ward and other treatment areas, using an aseptic, non-touch technique (ANTT). It should be noted that only staff who have received appropriate training and have been assessed as competent should carry out an aseptic procedure.

3 Aims of an Aseptic Technique

- To prevent the introduction of potentially pathogenic micro-organisms into susceptible sites such as wounds or the bladder.
- To prevent the transfer of potentially pathogenic micro-organisms from one patient to another.
- To prevent staff from acquiring an infection from the patient.

4 Indications for Aseptic Technique:

- Care of wounds healing by primary intention, e.g. surgical incisions and fresh breaks.
- Suturing of wounds.
- Insertion of urinary catheters.
- Insertion, re-siting or dressing intravenous cannulae or other intravascular devices, such as CVP lines, Hickman lines and Arterial lines.
- Insertion of gastrostomy and jejunostomy tubes.
- Insertion of tracheostomy tubes or chest drains.
- Vaginal examination using instruments (e.g. smear taking, high vaginal swabbing, colposcopy).
- Assisted delivery (e.g. forceps and ventouse).
- Biopsies.

The timing of procedures such as re-dressing wounds in a ward area, can be an important factor in helping to reduce the risk of infection. They should not be carried out when tasks such as bed-making are taking place, due to the risk of micro-organisms being dispersed into the air and potentially contaminating the sterile equipment or wound. Ideally, these should be carried out at a time when ward activities are less and cleaning activities suspended. Clean, non-infected

wounds should be dressed first; colostomies and infected wounds should be dressed last, to minimise environmental contamination and cross-infection.

5 Principles of Aseptic Non-Touch Technique

The principles of carrying out an aseptic technique remain the same, but components of the technique may vary according to the degree of risk.

- Assess the individual patient's infection risk, and plan appropriate care:
Consider:

Is the patient at increased risk of acquiring an infection from others or the environment?
Does the patient pose an infection risk to those around them? Are they currently colonised or infected with bacteria or a multi-resistant organism?
Does the patient have any invasive devices?
Consider the patient's age: the elderly and neonates are more at risk as their immune systems are less efficient.
Does the patient suffer from an underlying disease, i.e. a severe debilitating or malignant disease?
Consider the patient's prior drug therapy – the use of immunosuppressive drugs or broad-spectrum anti-microbials can increase the risk of infection.
Is the patient undergoing surgery or has the patient undergone surgery? (HCAIs are known to present in surgical incision wounds, accounting for 10 – 30% of all HCAIs).
What is the patient's general health status?
What is the patient's nutritional state?
Has the patient previously been exposed to infection, or does the patient suffer from an existing infection?

- Inform the patient and obtain consent.
- Collect appropriate PPE for the task.
- Select appropriate dressings/devices.
- Prepare the area.
- Decontaminate your hands (Section H/I, Infection Control Manual).
- Carry out the procedure (See Appendix 2).
- Ensure the correct disposal of any waste (section U, Infection control Manual).
- Document the procedure undertaken.

6 Aseptic Non-Touch Technique

The Aseptic Non-Touch Technique (ANTT) is a a standard for safe and effective practice that can be applied to all aseptic procedures such as intravenous therapy, wound care and urinary catheterisation. It standardises practice and rationalises the many different techniques currently in use. The ANTT is rolling out nationally to all areas and will soon be audited by the DOH.

An ANTT means that when handling sterile equipment, only the part of the equipment **not** in contact with the susceptible site is handled (Hart, 2007).

It is essential to ensure that hands, even though they have been washed, do not contaminate the sterile equipment or the patient.

The aim is for asepsis not sterility. The individual healthcare professionals need to decide between sterile or non sterile field/gloves and simply ask themselves ‘ can I do this procedure without touching key-parts?’

If the answer is **NO** – they use a sterile dressing pack and sterile gloves.

If **YES** – they wear non-sterile gloves.

The principle is that you cannot infect a key part if it is not touched. Any key part must only come into contact with other key parts (ie syringe tip and needle hub); non-key parts should be touched with confidence.

- **A**lways wash hands effectively
- **N**ever contaminate key parts
- **T**ouch non key - parts with confidence
- **T**ake appropriate infective precautions

7 Clean Technique – What Is It?

‘A clean technique is a modified aseptic technique and aims to avoid introducing micro-organisms to a susceptible site and also to prevent cross-infection to patients and staff’ (Royal Marsden Manual). It differs from an aseptic technique, as the use of sterile equipment and the environment are not as crucial as would be required for asepsis. The non-touch technique is incorporated as part of a clean procedure i.e. the ends of sterile connections should not be touched or other items that could contaminate a susceptible site. Clean, single-use gloves are worn rather than sterile gloves.

8 When Could a Clean Technique Be Used?

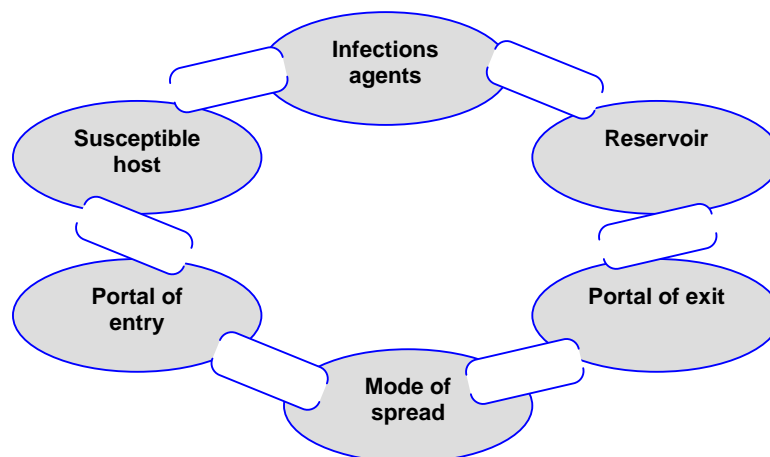
- Dressing procedures for wounds that are healing by secondary intention such as chronic leg ulcers.
- Tracheostomy site dressings.
- Removing drains or sutures.
- Endotracheal suction.

NB: if wounds enter deep, sterile body areas, then an **aseptic technique** must be used.

INFECTION

Infection is the 'invasion and multiplication of micro-organisms within tissue, which then results in destruction of the tissue' (ICNA 2003). It is part of a chain of events that can occur within the healthcare setting.

The Chain of Infection



Links in the Chain of Infection

- **Infectious agents** such as bacteria, viruses, fungi or parasites.
- **A reservoir** that supports the infectious agent, allowing it to survive and multiply.
- **A portal of exit** that allows the infectious agent to leave the reservoir.
- **A mode of spread** i.e. through direct or indirect contact or via airborne droplets.
- **A portal of entry** – often the same route as the portal of exit e.g. the skin, respiratory, gastrointestinal, circulatory, urinary or reproductive system.
- **A susceptible host** – i.e. a person at risk of infection. People are more vulnerable to infection when the balance of the body's defence system is upset, due to disease or devices that breach the body's defences.

Breaking any link in the chain will assist in preventing the spread of micro-organisms (ICNA 2003).

Techniques used to contribute to breaking the links of the chain are:

- A) Standard Precautions** (formerly Universal Precautions - see Section C of the Infection Control Manual): hand hygiene; wearing personal, protective equipment; aseptic techniques; safe handling of sharps, waste and linen.
- B) Decontamination** of patient care equipment (Section F, Infection Control Manual).

- C) Environmental cleanliness** – ensuring that standards of hygiene and cleanliness adhere to local and national guidelines, as outlined in the Infection Control Manual. Various policies contain specific information regarding environmental cleaning, including Section C - Standard Precautions; Section F - Decontamination and Disinfection Policy; Section K – Isolation Policy; Section L – Laundry Policy; Section S – TB Policy; Section T – Management of patients colonised or infected with multi-resistant organisms.

The most usual means for spread of infection include:

Direct contact – e.g. the hands of others.

Indirect contact – objects such as instruments, clothes and equipment.

Dust particles or droplet nuclei suspended in the atmosphere.

HAND HYGIENE

Hand hygiene is a means of achieving a reduction in, or removal of, visible soiling and transient or resident micro-organisms.

Transient micro-organisms are picked up during daily activities and shed on skin scales. They can be effectively removed, or reduced to a low level by hand washing.

Resident micro-organisms are permanently resident on the skin and can only be reduced to a low level for a short time.

Hand washing is the single most important means of preventing the spread of HCAs.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Gloves must be worn for invasive procedures, contact with sterile sites, non-intact skin or mucous membranes, and all activities where a risk assessment indicates that exposure to blood, body fluids, secretions, excretions and contaminated instruments can occur. Wearing PPE, such as gloves and apron will provide a barrier between micro-organisms present on hands and clothing and the susceptible site.

It has been reported that prolonged glove use can produce occlusion conditions that encourage the rapid growth of skin flora on nurses' hands. It is therefore essential to clean hands both before applying gloves and following their removal (Pereira et al, 1997).

When performing an aseptic technique, the health care practitioner should ensure that all his/her actions minimise the likelihood of potentially pathogenic micro-organisms being introduced to the site, or being spread to other patients or colleagues.

GUIDELINES FOR CARRYING OUT A WOUND DRESSING USING AN ASEPTIC TECHNIQUE

1. Explain and discuss the procedure with the patient, ensuring privacy as much as possible.
2. Trolleys should be cleaned with detergent and water then dried to remove any debris, alternatively wipe using a detergent wipe.
3. Assemble all necessary equipment, make sure that all the packaging of sterile equipment is intact and in date.
4. A dispenser of alcohol hand gel should be placed on the lower shelf of the trolley, to allow hands to be decontaminated during the aseptic procedure.
5. Prepare the area.
6. Position the patient.
7. Decontaminate hands
8. Apply disposable apron.
9. Apply clean gloves if required.
10. Loosen the dressing tape.
11. Remove gloves (if used); wash and dry hands or use alcohol gel to cleanse hands.
12. Open the dressing pack and, using the corners of the paper, create a sterile field. A hand may be placed in the sterile, disposable bag in order to arrange the contents of the dressing pack. This may then be used to carefully remove the used dressing (a large amount of micro-organisms are shed into the air).
13. Invert the bag, ensuring that the contents remain within, and attach to the dressing trolley, using the adhesive strip. Decontaminate hands again if required.
14. Ensure that all necessary items are assembled onto the sterile field including any lotions that may be required. Tip fluids/lotion into containers on the sterile field using a non-touch technique. Ensure that sterile gloves are available and ready for use.
15. Put on sterile gloves.
16. Carry out the procedure.
17. Remove gloves and wash hands.
18. Ensure that all waste is disposed of according to the waste disposal policy (section U Infection Control manual).
19. Make sure that the patient is comfortable.
20. Wash and dry hands thoroughly.
21. Document the procedure.

NB: Additional steps may be required in the aseptic technique procedure; a risk assessment carried out prior to the procedure will define these e.g. is a wound swab required?

Full details of Clinical Nursing Procedures can be found in the Royal Marsden Hospital Manual of Clinical Nursing Procedures (6th edition). An up-to-date copy of this manual should be kept in all clinical areas.

GLOSSARY OF TERMS

Aseptic Non-Touch Technique (ANTT).

Asepsis – the complete absence of bacteria, fungi, viruses or other micro-organisms that could cause disease.

Aseptic Technique – a method developed to ensure that only uncontaminated objects / fluids make contact with sterile / susceptible sites.

Clean Technique – a modified aseptic technique.

Decontamination – the process of rendering an article safe to handle, by cleaning with or without disinfection or sterilization.

HAI – Hospital Acquired Infection.

HCAI – Health Care Associated Infection.

Infection – the invasion and multiplication of micro-organisms within tissue which then results in destruction of the tissue.

Invasive – involving puncture or incision of the skin or insertion of an instrument or foreign material into the body.

Non-touch technique (NTT) – identifying the 'key parts' of a procedure and not touching them either directly or indirectly.

Primary Intention – where wound edges are brought together and held in place by mechanical means, e.g. adhesive strips, staples or sutures.

Risk assessment – the method used to quantify the risk to human health and the environment.

Secondary Intention – where the wound is left 'open' (although usually covered with an appropriate dressing) and the edges come together naturally by means of granulation and contraction.

Standard precautions – infection control precautions that should be applied as standard principles by **all** healthcare staff to the care of **all** patients at **all** times. (See Section C of the Infection Control Manual).

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