

CHAPTER 1

Key concepts in undertaking clinical procedures with children and young people:

B) Fundamental infection control techniques required for all clinical procedures: using aseptic non-touch technique (ANTT)

Naomi Watson

Chapter overview	12	Acknowledgement	17
What is ANTT	12	References	17
ANTT	13	Further reading	17

LEARNING OUTCOMES

Upon completion of this chapter, the reader should be able to accomplish the following:

- 1 Define aseptic non-touch technique (ANTT)
- 2 Describe the process of ANTT
- 3 List the equipment required to perform ANTT
- 4 Explain possible outcomes if ANTT is not followed
- 5 Effectively carry out the procedure

CHAPTER OVERVIEW

Each year as many as 5000 patients die of nosocomial infection within the NHS. Failed aseptic technique and poor hand washing are believed to contribute to the number of deaths.^{1,2} Over the years studies within a number of healthcare trusts have demonstrated that aseptic technique within the NHS is poor and variable, thus demonstrating that failures in hand washing, poor hand-washing technique, poor choice of aseptic field, failed management of the aseptic technique and contamination when using a non-touch technique all contribute to poor patient outcomes and death.

Rowley³ believed that a tendency in nursing to place ritual ahead of logic led to inconsistencies in practice, which contributed to poor techniques. Stephen Rowley thus devised ANTT in 1996 as a safe and efficient technique for intravenous

therapy. Today a large number of paediatric health care environments are using ANTT in one form or another for peripheral and central intravenous therapy. ANTT is the accepted policy for intravenous care within the paediatric unit here at Southampton; it is estimated that another 150 NHS hospitals have adopted ANTT. It is likely that more will follow suit as ANTT is now recommended as an aseptic technique that promotes best practice by both the Department of Health and EPIC2.

KEY WORDS

Nosocomial Asepsis Aseptic technique
Key parts Sterile

WHAT IS ANTT

ANTT is the foundation for *all* aseptic procedures.

Why ANTT

- Provides a framework for aseptic technique
- Standardises practice
- Has a part in reducing hospital nosocomial infection

Principles of the aseptic technique

To reduce the risk of introducing infection it is important that the practitioner

Definitions

Nosocomial: relates to something that was not present or incubating before the patient was admitted to hospital, therefore Nosocomial infection is an infection acquired within a hospital or healthcare environment.

Asepsis: free from infection or infectious material.

Aseptic technique: procedure or practice used to prevent the introduction of pathogens, i.e. bacteria, viruses, micro-organisms, etc.

Key parts: parts or sites which, if contaminated by micro-organisms, will increase the risk of infection, i.e. injectable bung, syringe tip, needle, intravenous connections, liquid infusion, etc.

Sterile: free from micro-organisms that could cause infection. Owing to organisms in the air it is impossible to achieve in the true sense, therefore sterile precautions must also be applied.

- recognises effective hand washing is prerequisite to all procedures;
- recognises and protects key parts;
- recognises potential sources of contamination and acts accordingly.

The main principle of ANTT is that, if a key part is not touched, it cannot therefore be infected. The aim is such that key parts, i.e. the injectable port, should contact only with other aseptic key parts or aseptic key sites. Rowley³ gives credence to the idea that practitioners should touch non-key parts with confidence, as long as at a later stage this will not impact negatively on other key parts.

When is ANTT suitable?

ANTT is the core technique and the principles of ANTT apply to *all* aseptic procedures.

Level of precautions

The ANTT technique remains unchanged and aseptic precautions must always be 'strict'.

However, the level of aseptic precaution required is dependent on potential risk factors for the procedure. Every clinical procedure must be risk assessed for the likelihood of introducing infection. Practitioners need to determine whether they can perform the procedure without directly or indirectly touching key parts.

ANTT

ANTT is suitable when the intended procedure can be performed without the practitioner touching key parts and when key parts can be protected from touching anything that is not a key part. For the majority of intravenous (IV) procedures this will be possible and therefore ANTT (non-sterile gloves) should be adhered to, e.g. IV therapy, simple wound care.

ANTT sterile precautions+

This is applicable to procedures where the practitioner considers the protection of key parts difficult and/or where the procedure cannot be performed without touching key parts directly; in such instances extra infective precautions such as sterile gloves should be used. However, the ANTT technique continues to apply and key parts should still not be touched unless essential, e.g. switch changing, central venous catheter (CVC) repairs, bung changing on CVCs, needle insertion for IVADs (indwelling venous access devices), wounds that require cleaning.

ANTT full barrier precautions

Invasive procedures such as PICC line insertion involve multiple key parts. This is a complex procedure requiring the maintenance of a large aseptic field. The core principles of the ANTT technique remain consistent but it is necessary to implement full barrier precautions in addition.

PROCEDURE: For aseptic non-touch technique (ANTT)

Procedural steps	Evidence-based rationale
1 With clean hands wash tray with soap and water. Dry thoroughly with a paper towel	Prevention of infection
2 Collect all the equipment you will need and place outside your tray. Check expiry dates	To ensure procedure runs smoothly
3 Wash and dry hands or apply alcohol gel	Prevention of infection
4 Put on non-sterile gloves	Prevention of infection
5 Prepare drugs and equipment, taking care not to touch 'key parts' (end of line, blue connector, infusion spike, needle, interlink, infusion fluid, etc.). Use a non-touch technique. Do not place anything in your tray that does not need to be there	To prevent infection and avoid cross-contamination
6 Remove gloves and wash or gel hands	To prevent spread of infection
7 Take the tray of equipment to the patient. Prepare the patient to gain free access to the IV line	To ensure the procedure runs smoothly with minimal risk of introducing infection
8 Wash or gel hands and apply new non-sterile gloves	Prevention of infection
9 Clean the access port (bung 'key part') by scrubbing the tip for 5 seconds. Repeat another four times using different parts of the same wipe. Then clean the sides of the port working away from the tip. Allow to air dry for 30 seconds and then access the IV line taking care not to contaminate the bung or any key parts	Sani-cloth wipes comply with NICE guidance and EPIC2. They contain 2 per cent chlorhexidine and 70 per cent isopropyl alcohol and therefore are the most effective cleaning agent for the prevention of infection. Using different parts of the tissue removes any contaminates
10 Administer medication using non-touch technique (see procedure for administration of fluids). Re-clean bung with sani-cloth wipe	Reduces risk of infection
11 Dispose of all equipment safely and as per hospital policy	Safe disposal of clinical waste
12 Remove gloves and wash and dry hands	Prevention of cross-infection
13 Wash and dry tray and put away	Prevention of cross-infection

1 With clean hands wash tray with soap and water. Dry thoroughly with a paper towel.

Presuming your hands have been recently washed and are socially clean you can begin by washing your tray with soap and water. Dry with clean paper towels. The tray can be cleaned with an alcohol-based cleaner but then must be allowed to air dry. Clean the tray starting on the inside of the tray, working out to the sides and finishing on the outside.

Plastic trays are ideal as the field needs to be robust, easy to clean and portable; furthermore

high sides prevent equipment falling out as well as helping to contain any spillages.

Remember: clean hands/effective hand washing is a prerequisite to all procedures!

2 Collect all the equipment you will need and place outside your tray. Check expiry dates.

Gather all the required equipment and place around aseptic field close to hand. Check the expiry dates of any equipment that you will be using.

Remember: you should put nothing in your tray that isn't required for the procedure!

3 Wash and dry hands or apply alcohol gel.

An effective hand-washing technique involves three stages: preparation, washing and rinsing, and drying. Preparation involves wetting your hands under tepid running water before applying the soap. The soap must come into contact with all surfaces of the hands and when washing you need to pay particular attention to the tips of your fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly before drying with paper towels.

If your hands are visibly clean you can use the alcohol-based gel. The seven-stage hand-washing technique should be used both for hand washing and when applying the alcohol gel.

Remember: hand washing is the single most important thing that healthcare professionals can do to reduce the risk of cross-infection within the hospital environment.

4 Put on non-sterile gloves.

Sterile gloves are not required to maintain asepsis and therefore non-sterile gloves can be used safely for most peripheral and central procedures as long as the procedure can be performed without key parts being touched directly.³

Through regular hand washing, the practitioner's hands at times will be moist or damaged; this may result in the shredding of skin and the spread of bacteria^{4,5} and therefore gloves are bacteriologically cleaner than skin.

Remember: gloves also protect us from exposure to drugs like antibiotics in accordance with COSHH regulations!

5 Prepare drugs and equipment, taking care not to touch 'key parts' (end of line, blue connector, infusion spike, needle, interlink, infusion fluid, etc.). Use a non-touch technique. Do not place anything in your tray that does not need to be there.

Assemble equipment using non-touch technique taking care not to touch key parts (i.e. infusion bag port and giving set spike).

Part of the non-touch technique is to protect key parts when they are not being used (such as syringe tip and needle). Being able to identify and then protect the key part is the most fundamental aspect of ANTT.³

In IV therapy key parts are those which come into direct or indirect contact with the liquid infusion and also parts of equipment that if contaminated could infect the patient (i.e. needle or injectable bung).

IV infusion key parts: antibiotic bottle top, needle, port on bag, IV line spike, syringe tip, patient bung – these must remain untouched at all times!

Remember: ANTT focuses on getting the basics right; it is suitable for all patients irrespective of age, diagnosis, drug given or the route of intravenous access; standards of care should be equally high for peripheral and central intravenous access!

6 Remove gloves and wash or gel hands.

When you've prepared the drug you need to remove your gloves and then wash or gel your hands. The warm damp environment under gloves means that bacteria reproduce at an alarming rate⁵.

Remember: gloves create a greenhouse effect for organisms on the hands; it is therefore imperative to clean hands immediately after gloves are removed.

7 Take the tray of equipment to the patient. Prepare the patient to gain free access to the IV line.

Take the tray of equipment straight to the patient to minimise any environmental contact. Prepare the patient to get clean access to the IV device.

Remember: when preparing the patient identify the key parts for the procedure!

8 Wash or gel hands and apply new non-sterile gloves.

If your hands have become contaminated/dirty while preparing the patient you will need to wash them again. If they are still socially clean you can use the alcohol gel instead. Put on new non-sterile gloves; these act as a barrier to prevent the de-scaling of skin on to key parts.

Maintaining the asepsis of key parts in intravenous therapy is achieved by preventing them from coming into contact with harmful organisms. This is a difficult as our hands are covered in bacteria (it's estimated that as many as 3 million bacteria are present per square centimetre of normal skin).⁵ Non-sterile gloves are bacteriologically cleaner than skin.

Remember: Gloves provide us with protection and reduce or prevent the incidence of antibiotic-resistant organisms surviving on the practitioners skin!⁹ Clean the access port (bung 'key part') for 30 seconds using several different parts of the sani-cloth wipe. Allow to air dry for 30 seconds and then access the IV line taking care not to contaminate the bung or any key parts.

- 9 **Using gentle friction, clean the injectable port on the IV access device with your sani-cloth wipe for 30 seconds.** It's essential to clean vigorously: the injectable port may look clean but microbiologically it will be very dirty.

Clean the access port (bung 'key part') by scrubbing the tip for 5 seconds. Repeat another four times using different parts of the same wipe (you will need to use different parts of the sani-cloth wipe just to prevent moving dirt around). Then clean the sides of the port working away from the tip. It is very important to allow the key part to dry before using (approximately 30 seconds).

Remember: if it's still wet then it's not aseptic and you will be placing the patient at risk!

- 10 **Administer medication using non-touch technique (see procedure for administration of fluids). Re-clean bung with sani-cloth wipe.**

Once this is dry access the IV line taking care not to contaminate the bung or any key parts, and administer the drugs using a non-touch technique.

A non-touch method when it comes to the

practitioner's hands is not letting key parts come into contact with anything apart from, of course, the equipment it is supposed to connect to, which is another key part, i.e. interlink connected to a syringe tip.

Remember: if you accidentally contaminate a key part, re-clean or change it!

- 11 **Dispose of all equipment safely and as per hospital policy.**

Dispose of all your equipment both safely and appropriately; consider what should go in the sharps bin and the yellow clinical waste bags for incineration. Do you have any waste that can go in the black domestic waste bags?

Remember: if you have used a needle never re-sheath it!

- 12 **Remove gloves and wash and dry hands.**

After removing your gloves wash your hands straight away; the most frequent breakdown in universal precautions has been identified as a lack of hand washing after glove removal.

Remember: every year between 5000 and 10 000 patients die from hospital-acquired infections; what you do does make a difference!

- 13 **Wash and dry tray and put away.**

Finally wash your tray, dry it and put it away. If you have given chemotherapy or taken blood, you may wish to wash your tray before removing your gloves.

Remember: the three principles of ANTT

- 1 Effective hand cleaning
- 2 Appropriate aseptic field
- 3 Key part protection by a non-touch technique.³



Go to the website to find the PowerPoint presentation for this chapter and MCQs to test your knowledge. www.hodderplus.com/childnursingskills

ACKNOWLEDGEMENT

The author would like to thank Stephen Rowley for his support and advice whilst writing this chapter.

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