This presentation is based on the Aseptic Technique online training package available for all SA Health staff at http://digitalmedia.sahealth.sa.gov.au/

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Principles of Aseptic Technique
What is aseptic technique?

> Asepsis is the absence of pathogenic (infectious) microorganisms.
> Aseptic technique protects patients during simple, complex, and invasive clinical procedures by using appropriate infection prevention measures that maximise and maintain asepsis.
> Infection prevention measures include environmental controls, hand hygiene, personal protective equipment (PPE) use, aseptic field management and non-touch technique.
> Aseptic technique can be applied to a range of procedures undertaken within a variety of clinical settings.
Clinical procedure types

> Simple, complex and invasive

> **Simple** procedures are non-invasive procedures which require few steps and are not technically difficult. Examples include
  - closed surgical wound dressing
  - peripheral IV insertion site dressing

> **Complex** procedures have more steps and are usually more technically difficult. Examples include
  - PICC, CVC, PA catheter and arterial line dressings
  - large open wound dressings requiring packing
Clinical procedure types

> **Invasive** procedures include any type of procedure that involves invasion of the internal body by breaking or incision of the skin, or by inserting a tube or medical device capable of entering tissue, the vascular system, cavities or organs.

> Invasive procedures can be performed with or without touching key parts and or key sites.
Clinical procedure types

> Examples of procedures performed **without** touching key parts and/or key sites include:
  
  • administration of peripheral intravenous (IV) medications, IV flush
  • peripheral IV cannulation (ensure vein is not palpated after skin preparation)

> Examples of procedures performed **with** touching key parts and/or key sites include:

  • insertion of a peripherally inserted central catheter (PICC), central venous catheter (CVC), pulmonary artery (PA) catheter, arterial line and umbilical catheter
  • insertion of an indwelling urinary catheter
Examples of haemodialysis procedures requiring aseptic technique

> Most procedures during haemodialysis are invasive including:

• patient cannulation
• patient connection to the machine
• patient disconnection from machine
• removal of needles
• haemodialysis Filtration set up
• administration of IV medication.
Infection prevention measures

> Actions performed and equipment used by the clinician to ensure aseptic technique is performed safely

- Environmental controls
- Hand hygiene
- Personal protective equipment
- Aseptic field management
- Non touch technique
Key parts and key sites

> **Key parts** - sterile parts of the procedure equipment. Examples include:
  - syringe tips
  - needle hubs
  - bungs
  - indwelling urinary catheters

> **Key sites** - open wounds, insertion and access sites. Examples include:
  - CVC or PICC insertion sites
  - open wounds
Key parts & key sites in haemodialysis

> In haemodialysis key parts include:
  • connection points of the cannulae
  • the machine lines
  • needle bevels
  • syringe tips

> In haemodialysis the key site is:
  • A-V access point
Hand hygiene products

> Hand Hygiene is an integral part of aseptic technique

> Perform routine hand hygiene by either:
  • performing a hand wash using liquid soap & water
  or
  • applying an alcohol-based hand rub (ABHR)
Hand Hygiene Technique

1. Rinse off & pat dry with paper towel (40–60 secs)
2. ABHR – rub until dry (20-30 secs)
Risk assessment

> Prior to commencing a clinical procedure requiring aseptic technique, you will need to perform a risk assessment
> Consider the risk to both the patient and yourself of acquiring an infection
> Determine if the procedure is simple, complex or invasive
> This will guide you on the infection prevention measures to apply
> Key questions to help you to identify the risks are:
  • What are the key parts and key sites?
  • Do I need to touch any key parts or key sites?
  • What are the appropriate infection prevention measures to protect key parts and key sites?

SA Health
Preparation
Step 1 - Preparation phase

Preparation is important in order to ensure proper application of aseptic technique

> Prepare patient & area:
  • perform hand hygiene
  • weigh patient, take BP
  • perform fluid assessment
  • calculate fluid removal
  • apply tourniquet & place loosely on arm

> Prepare machine:
  • enter time & fluid removal into machine
  • perform all relevant checks on machine

> Perform any other checks that may be required for the patient
Step 2- Tray disinfection

> Large plastic trays that can be cleaned & disinfected are to be used
  • (“blue sheets” or paper trays are not acceptable)
Step 2- Tray disinfection

> Perform hand hygiene

> Disinfect tray using a detergent/disinfectant or alcohol-based wipe
  • ensure plastic tray is visibly clean
  • disinfect all the surfaces of the plastic tray (to create an aseptic field)
  • disinfect the tray using adequate friction
  • ensure that the wipe remains moist – allowing all surfaces to come in contact with the disinfectant
Step 3 – Gathering equipment

> Ensure tray is completely dry
  • if a surface remains wet then asepsis will be compromised

> Gather all equipment (medications etc.) and place them around the tray
Step 3 – Gathering equipment

> Equipment should include:
  • intravenous cannulae
  • syringes (usually 10ml and 1ml tuberculin for local anaesthetic but this may vary between facilities)
  • saline & lignocaine (pre-filled syringe an option)
  • gauze swabs
  • gloves
  • skin preparation (chlorhexidine ≥ 0.5% in 70% alcohol, e.g. BD Persist Plus™ swabs)

> Nothing goes in the tray which isn’t required for the procedure

> Remember you are aiming for asepsis not sterility
  • sterility is not possible unless in a controlled environment i.e. operating room
Ideal cannulation tray set-up

> Wrapping paper maintains asepsis providing it is dry
  > key parts are protected by covers, caps, packaging

> Aseptic field is organised
Step 4 – Cannulation set up

- Perform hand hygiene
- Open equipment and prepare cannulation tray.
- Protect key-parts using non-touch technique
- Perform hand hygiene
- Apply gloves & other relevant PPE according to risk assessment
- After preparation of equipment proceed to the patient
Step 5 – Disinfecting key site

> Disinfect patient A-V access *(key site)*
>  • product should contain ≥ 0.5% chlorhexidine gluconate & 70% alcohol (e.g. BD Persist Plus™)

> Allow to dry – this usually takes around 20 seconds

> Note: If key sites aren’t dry then they are not aseptic
Step 6 – Cannulation of A-V access

> Use a non-touch technique
  • do not touch key parts i.e. cannulation needle
  • key parts must not touch anything else
> Administer local anaesthetic if required
> Cannulate patient
Patient Connection
Step 7 - Patient connection

> Connect haemodialysis lines using a non-touch technique

> Do not touch any key parts i.e.
  • in this case – the line connections

> Do not allow key parts to touch anything else
  • start the machine to commence haemodialysis
  • administer any medications
Step 8 – Cleaning Equipment

> Clean the tray & machine front using either a detergent solution or detergent/disinfectant wipe

> Discard sharps
  - if gloves are visibly soiled with blood, then remove gloves & perform an additional hand hygiene prior to cleaning equipment

> Remove gloves / PPE

> Perform hand hygiene

> Complete patient care

> Hand hygiene before leaving the patient area
Patient Disconnection
Patient disconnection

Note: Connection & disconnection of the patient from haemodialysis uses the same aseptic technique principles.

Disconnection requires the use of an aseptic field.
Step – 1 Gather equipment

- Perform hand hygiene
- Disinfect tray with a detergent/disinfectant or an alcohol-based wipe
- Gather equipment required for “run back” e.g.
  - 10ml syringe
  - recirculation connector
  - gloves
  - gauze swabs
  - patient dressing
Step 2 – Disconnection set up

> Perform hand hygiene
> Open equipment & prepare “runback” tray
  > include any IV flushes / therapy as required
> Protect key parts by using a non-touch technique
  > i.e. syringe hub
Step 3 - Patient disconnection

> Perform hand hygiene
> Put on gloves (& other PPE as required)
> Disconnect arterial line & connect to saline – ensuring not to touch any **key parts**
> Continue runback procedure, don’t touch anything other than machine & circuit
Step 3 - Patient disconnection

> Disconnect venous line from patient
  • remove needles
  • tape needle sites once bleeding has stopped
  • discard all sharps appropriately

> Note: Puncture sites are key sites, gauze swabs and tapes are key parts

> Remove gloves & perform hand hygiene

> Check patient sites for bleeding, change tape as necessary

> Complete patient care, include documentation
Step 3 – Patient disconnection

> Once puncture sites are covered the disconnection procedure is considered complete.

> If you choose or have to strip and clean the machine prior to covering the puncture sites, then another hand hygiene & re-application of gloves will be necessary before completing patient care.
Step 4 – Clean patient area

> Clean patient environment including the tray used for disconnection, haemodialysis machine, chair etc. according to facility guidelines

> Remove gloves & perform hand hygiene before leaving the patient area
Summary Steps
Preparation phase

> Perform hand hygiene

> Patient Preparation - all to be completed prior to commencing the Connection Phase:
  • weight/BP’s
  • fluid assessment
  • calculate fluid removal
  • enter time and fluid removal into machine
  • place tourniquet loosely on arm
  • all other relevant machine and patient checks that may be required
Patient connection

- Perform hand hygiene
- Disinfect tray using a detergent/disinfectant or alcohol-based wipe
- Gather equipment
- Perform hand hygiene
- Set up cannulation tray
- Open sterile equipment using a non-touch technique (NTT)
Patient connection (cont.)

> Perform hand hygiene
> Put on gloves (& other relevant PPE)
> Disinfect key sites i.e. A-V access
> Cannulate A-V access (NTT)
> Connect patient to haemodialysis machine (NTT)
> Clean tray & machine screen with either a disinfectant solution or detergent/disinfectant wipe
> Discard all sharps
> Perform hand hygiene before leaving the patient area
Patient disconnection

> Perform hand hygiene
> Disinfect tray using a detergent/disinfectant or alcohol-based wipe
> Gather equipment
> Perform hand hygiene
> Set up any IV flushes, medications etc. (NTT)
> Set up runback tray (NTT)
> Perform hand hygiene & put on gloves
> Disconnect arterial line & connect saline, runback as per procedure (NTT)
Patient disconnection (cont.)

> Disconnect venous line, remove cannula, tape needles once bleeding has stopped.
> Clean tray, & discharge clean the patient area using a disinfectant
> Remove gloves & perform hand hygiene
> If you choose, or have to, strip and clean the machine prior to covering the puncture sites then another hand hygiene & re-application of gloves will be necessary before completing patient care
Further requirements

> Your organisational hand hygiene annual accreditation

> SA Health Aseptic Technique online training package
References

> SA Health 2013, Aseptic Technique online training found at:  http://digitalmedia.sahealth.sa.gov.au


