Applying Aseptic Technique in Haemodialysis

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Government
of South Australia

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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

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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
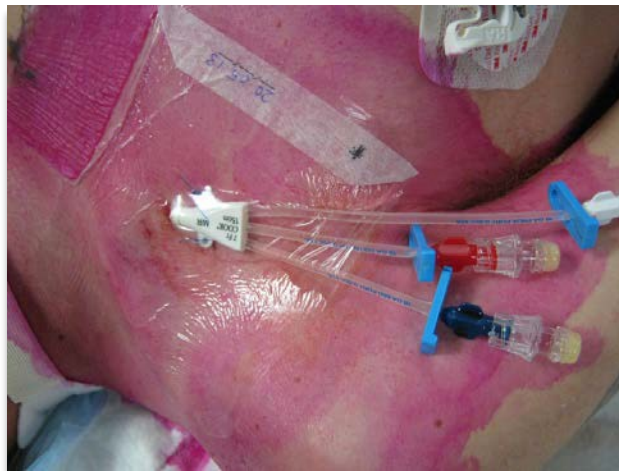
Clinical procedure types

> 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

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Examples of haemodialysis procedures requiring aseptic technique

> Most procedures during haemodialysis are **invasive** including:

- patient cannulation

- accessing Vascath or Permcath

- patient connection to the haemodialysis machine

- patient disconnection from the haemodialysis machine

- removal of needles

- haemodialysis machine 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 fistula needle
- connection points of Vascath and Permcath
- the haemodialysis machine lines
- fistula needle bevels
- syringe tips

> In haemodialysis the **key site** is:
- A-V fistula or graft access point
- Vascath/Permcath insertion site

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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)

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Hand Hygiene Technique
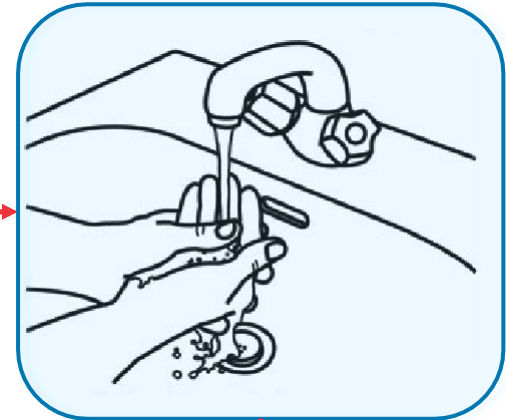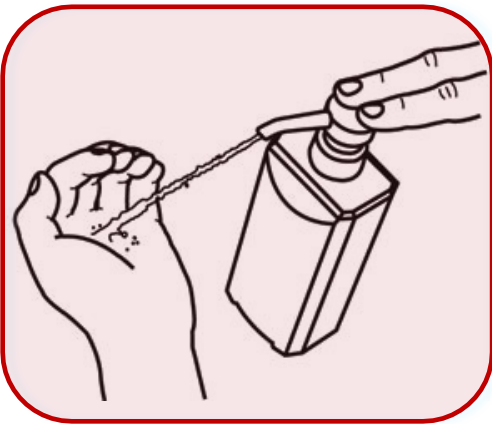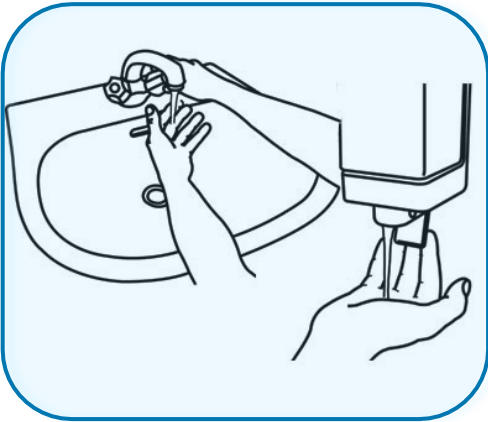
Rinse off &
pat dry with
paper towel
(40–60 secs)

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?

Preparation for accessing A-V Fistula

Please refer to unit procedures for accessing Vascath and Permcaths

Step 1 - Preparation phase

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

> **Prepare machine:**

- perform hand hygiene
- set up haemodialysis machine as per unit procedure
    - line and prime the haemodialysis machine
- perform all relevant checks on haemodialysis machine

> **Prepare patient & area:**

- perform hand hygiene
- weigh patient, take observations
- perform fluid and patient assessment
- calculate fluid removal and enter into the haemodialysis machine along with dialysis time
- perform any other checks that may be required for the patient
- apply tourniquet & place loosely on arm
- perform hand hygiene

Step 2- Disinfect Cannulation Area

> Examples include large plastic trays, dressing trolley or a patient over-way table that can be cleaned & disinfected are to be used

- ("blue sheets" or paper trays are not acceptable)

Step 2- Cannulation Area Disinfection

> Perform hand hygiene

> Disinfect cannulation area using a detergent/disinfectant or alcohol-based wipe

- ensure tray/trolley or patient over-way table is totally cleared and visibly clean
- disinfect all the surfaces (to create an aseptic field)
- disinfect using adequate friction
- ensure that the wipe remains moist – allowing all surfaces to come in contact with the disinfectant
- allow to air dry before using

Step 3 – Gathering equipment

> Ensure cannulation area is completely dry
  - if a surface remains wet then asepsis will be compromised
> Gather all equipment (medications etc.) and place them around the tray or on one side of the trolley/ patient over-way table

Step 3 – Gathering equipment

> Equipment should include:

- intravenous cannulae
- syringes (usually 10ml or 2ml 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 or on the trolley/patient over-way 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

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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
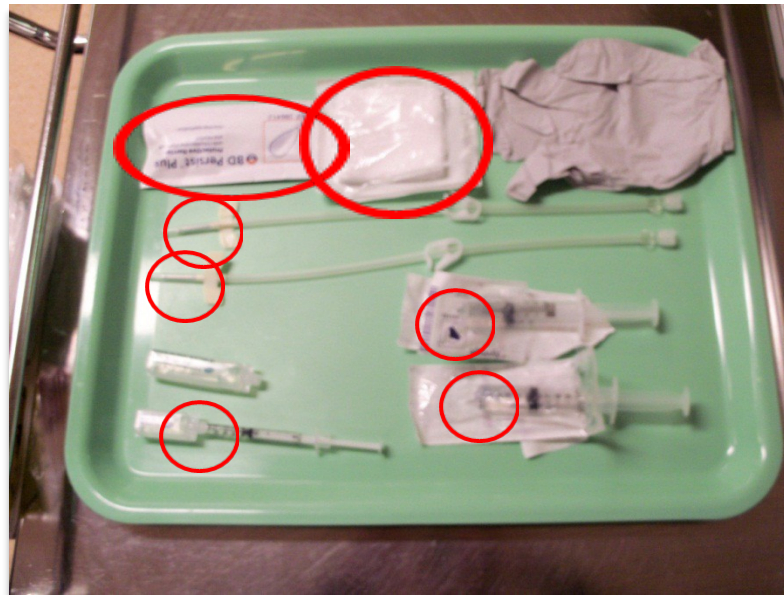
Step 4 – Cannulation set up

> Perform hand hygiene

> Open equipment and prepare cannulation area

> Protect key-parts using non-touch technique

> Perform hand hygiene

> Apply relevant PPE according to risk assessment

> After preparation of equipment proceed to the patient

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Step 5 – Disinfecting key site

> Perform hand hygiene

> Assess access for patency and skin integrity

> Determine cannulation sites

> 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

> Perform hand hygiene

> Don gloves

> 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

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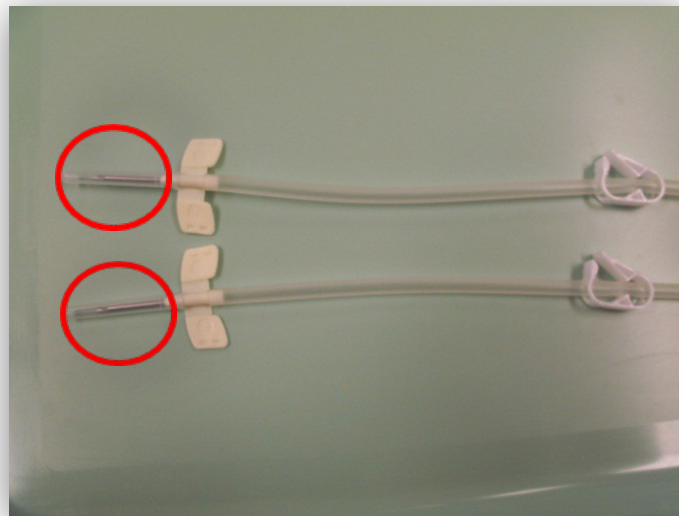
Patient Connection

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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 haemodialysis machine to commence haemodialysis
  - administer prescribed anticoagulants

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Step 8 – Cleaning Equipment

> Discard sharps

> Remove gloves, perform an additional hand hygiene & re-glove prior to cleaning equipment

> Clean the tray/trolley or patient over-way table & haemodialysis machine front using either a detergent solution or detergent/disinfectant wipe

> Remove gloves / PPE

> Perform hand hygiene

> Complete patient care

> Hand hygiene before leaving the patient area

Patient Disconnection

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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/trolley or patient over-way table with a detergent/disinfectant or an alcohol-based wipe

> Gather equipment required for "run back" as per unit procedure e.g.

- gloves
- gauze swabs
- patient dressing
- tape

Step 2 – Disconnection set up

> Perform hand hygiene

> Open equipment & prepare "runback" tray/trolley or patient over-way table include any IV medications as required

> Protect **key parts** by using a non-touch technique i.e. bloodline connections

Step 3 - Patient disconnection

> Perform hand hygiene

> Put on gloves (& other PPE as required)

> Reinfuse patients blood as per unit procedure – ensuring not to touch any **key parts**

> Continue runback procedure, don't touch anything other than haemodialysis machine & blood circuit

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Step 3 - Patient disconnection

> Once blood circuit has been returned to the patient, disconnect blood lines from patient fistula needles

- remove fistula needles
- discard all sharps appropriately

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

> Remove gloves & perform hand hygiene

> Patient to hold needle sites wearing a glove as per unit procedure

> Put on gloves and check patient sites for bleeding. Apply dressing and tape as per unit policy

> Remove gloves and perform hand hygiene

> Complete patient care, including documentation

Step 3 – Patient disconnection

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

> If you choose or need to strip the haemodialysis machine prior to covering the puncture sites, then remove gloves, perform hand hygiene

> 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/trolley or patient over-way table used for disconnection, haemodialysis machine, chair and patient environment etc. according to unit procedure

> Remove gloves & perform hand hygiene before leaving the patient area

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Further requirements

> Your organisational hand hygiene annual accreditation

> SA Health Aseptic Technique online training package
  http://digitalmedia.sahealth.sa.gov.au/

References

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