Applying aseptic technique in Haemodialysis

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Welcome

Ngadlu tampinthi, Kaurna Miyurna yaitya yarta-mathanya Wama Tarntanyaku. Ngadlu tampinthi purkarna pukinangku, yalaka, tarrkarritya. Parnaku yailtya, parnaku tapa purruna, parnaku yarta ngadlu tampinthi. Yalaka Kaurna Miyurna itu yailtya, tapa purruna, yarta kuma puru martinthi, puru warri-apinthi, puru tangka martulayinthi.

We acknowledge the Kaurna people are the traditional custodians of the Adelaide Plains and pay respects to Elders past, present and future.
We recognise and respect their cultural heritage, beliefs and relationship with the land. We acknowledge that they are of continuing importance to the Kaurna people living today.

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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Acknowledgment

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SA HEALTH

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
  - 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

HAND HYGIENE PRODUCTS

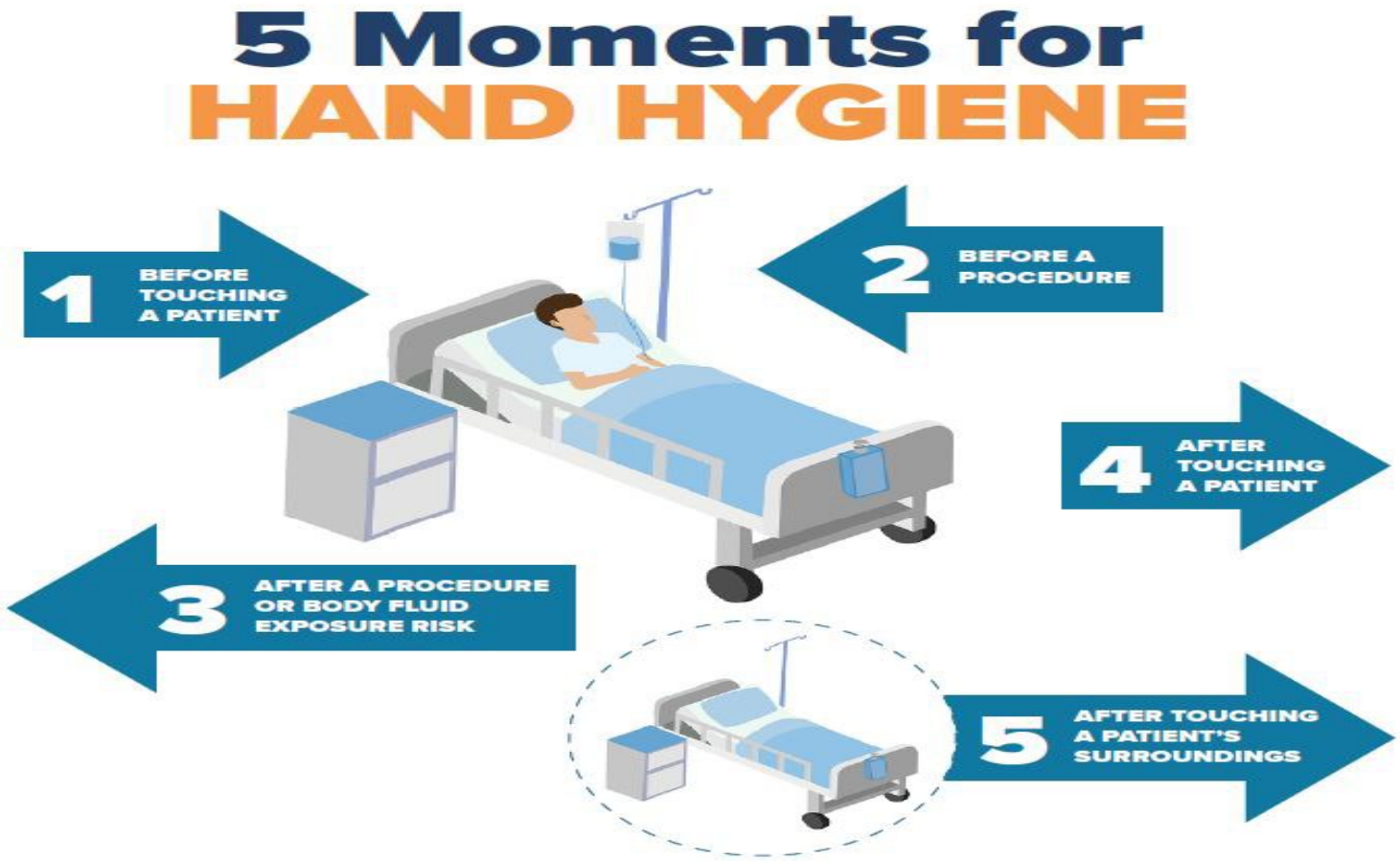
Hand Hygiene is an integral part of aseptic technique

Perform routine hand hygiene by either:

- performing a hand wash using liquid soap & water *or*
- applying an alcohol-based hand rub (ABHR)

WHO: HAND HYGIENE GUIDELINES

5 MOMENTS FOR HAND HYGIENE



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 AV FISTULA SITES

Please refer to unit procedures for accessing Vascath and Permcaths

STEP 1 - PREPARATION PHASE

Preparation is important; 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 target weight loss into the haemodialysis machine along with dialysis time
  - perform any other checks that may be required for the patient
  - apply tourniquet if required & 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

(“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,
    - Chlorhexidine pre- prepared swabs
    - Povidone Iodine solution – if patients allergic to Chlorhexidine
- 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

STEP 4 – DISINFECTING KEY SITE

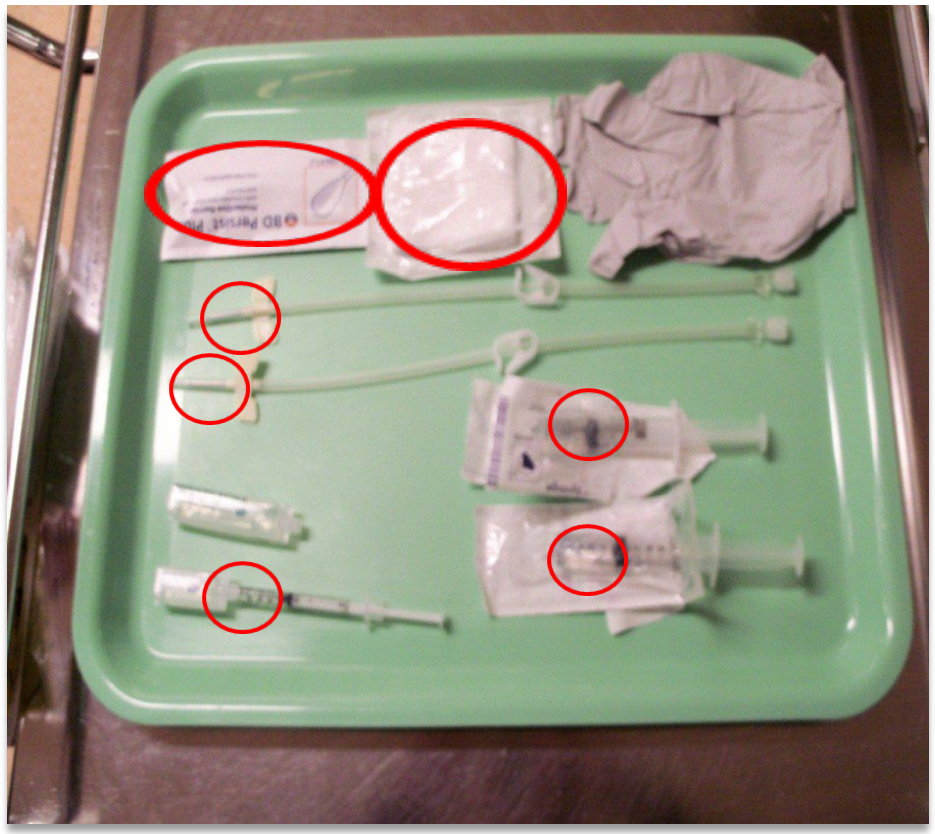
- Perform hand hygiene
- Assess access for patency and skin integrity
- Determine cannulation sites
- Disinfect patient A-V access **(key site)**
  - Cleanse the access site by applying 2% chlorhexidine gluconate / 70% isopropyl. Apply solution using back and forth friction scrub for 30 seconds. Allow area to dry. Do not blot solution.
  - Note: if the patient has a documented chlorhexidine allergy, povidone iodine 10% solution and gauze should be used. Povidone iodine needs to be applied for 2-3 minutes for its full bacteriostatic action to take effect and allowed to dry before needling
  - If neither chlorhexidine nor betadine can be used, please consult with the Vascular Access Nurse Consultant or Nephrologist for an alternative and document reasons on OACIS for Outpatients and OACIS and Sunrise (EMR) for Inpatients
- Note: If key sites aren't dry then they are not aseptic

STEP 5 – 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

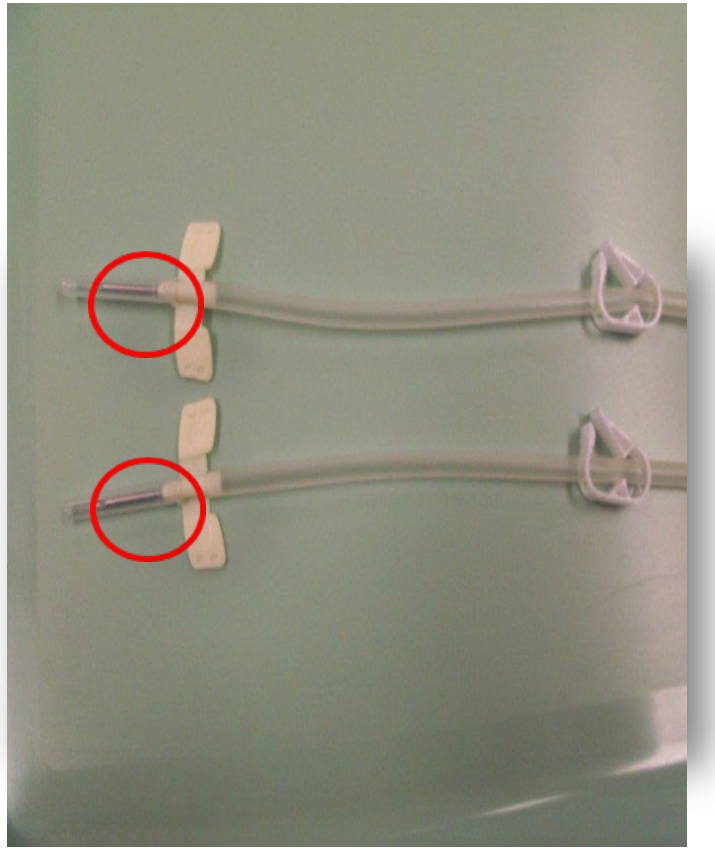
IDEAL CANNULATION TRAY SET-UP

- Wrapping paper maintains asepsis providing it is dry
  - key parts are protected by covers, caps, packaging
- Aseptic field is organised



STEP 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



PATIENT CONNECTION TO HAEMODIALYSIS MACHINE

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

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 FROM HAEMODIALYSIS

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

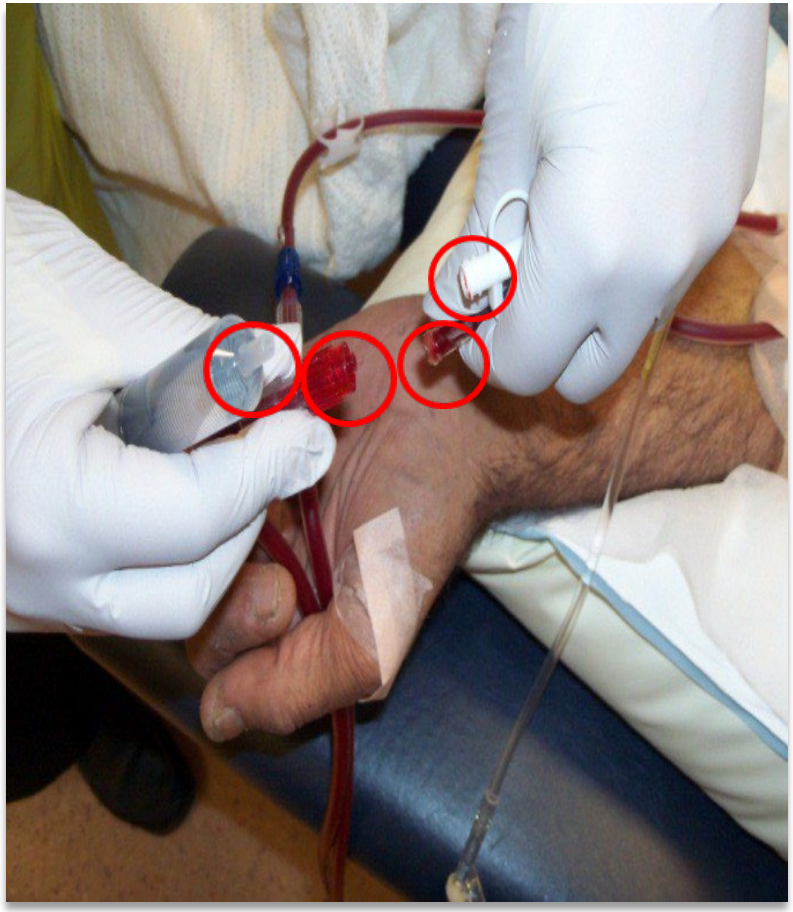
- Perform hand hygiene
- Disinfect tray/trolley or patient over-way table with a detergent/disinfectant or an alcohol-based wipe
- Gather equipment required for “run back” as per unit procedure e.g.
  - gloves
  - gauze swabs
  - patient dressing
  - tape

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 patient's 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



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

FURTHER REQUIREMENTS

- Your organisational hand hygiene annual accreditation
- SA Health Aseptic Technique online training package access via:

- Course: Aseptic Technique (Theory) (saheducation.com)

or

- Infection prevention and control education | SA Health

REFERENCES

1. Aseptic technique | SA Health
2. National Safety and Quality in Health Service Standards Australian Commission on Safety and Quality in Health Care
3. Haemodialysis insertion and removal of Arteriovenous fistula /Graft needle (Adult) excluding endovascular fistulas procedure – SALHN https://intra.sahs.sa.gov.au/public/download/?id=65134

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