

# PICC

## CARE AND MAINTENANCE OF PERIPHERALLY INSERTED CENTRAL CATHETERS

A guide for clinicians



Value Life

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# WHAT IS A PICC?

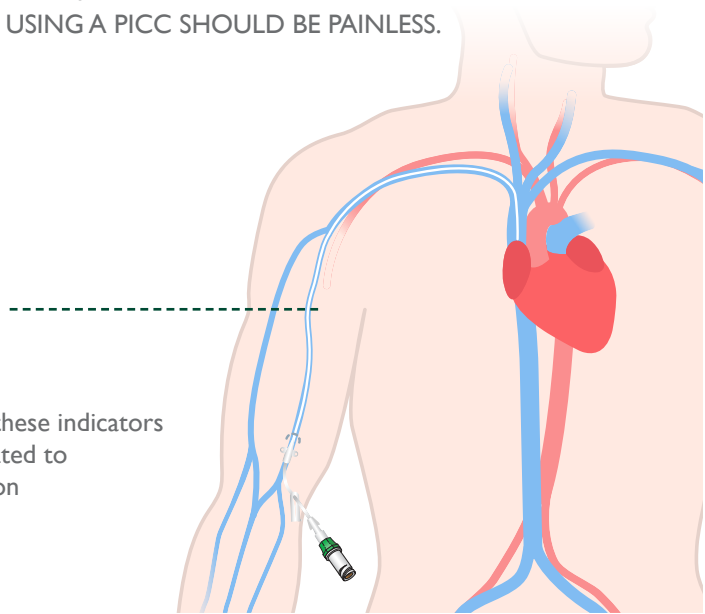
## DEFINITION

A PICC is a central venous catheter. The catheter is inserted via a peripheral vein in the mid upper arm. The veins typically used are the basilic or brachial vein. The tip of a PICC terminates in the lower superior vena cava (SVC) or the upper right atrium. Always ensure that the tip termination of the device has been confirmed and that it is in an adequate position prior to using the device.

## INDICATORS OF A WELL-FUNCTIONING PICC

- Absence of any signs of inflammation, redness, swelling or oedema either at the point of insertion or along the path of the PICC.
- Absence of any pain in the arm, at the entry site or during infusion.
- No resistance felt during flushing or infusion.
- The ability to flush and aspirate with ease.
- ALL TREATMENT USING A PICC SHOULD BE PAINLESS.

Alteration in any of these indicators needs to be investigated to understand the reason



## INDICATIONS FOR PICC USE

- Total parenteral nutrition (TPN)
- Infusates with extreme variations (of pH or osmolarity)
- Administration of vesicant drugs
- Extended duration of intravenous therapy
- Frequent blood draws required
- Patient preference

## CONTRAINDICATIONS

- Difficulty in identifying adequate target vein in arm
- Untreated coagulopathy
- Mastectomy and lymph node clearance on intended side of insertion (risk of ipsilateral lymphoedema)
- Arterio – venous fistula on side of insertion / some patients with renal disease

## POTENTIAL PICC COMPLICATIONS

- **Occlusions (total or partial):** Regular flushing with correct flush technique and the use of a suitable needle free device and occlusion management system will help to prevent catheter occlusion. NEVER ATTEMPT TO UNBLOCK A PICC UNDER PRESSURE: THERE'S A RISK OF CATHETER FRACTURE.
- **Persistent withdrawal occlusion (ability to flush freely but unable to aspirate).** This can be caused by fibrin sheath or tail or the tip position being against a vein wall. Firstly, ask patient to change the position of their arm. Attempt to flush gently with normal saline. If this is unsuccessful, the patient should be referred to the hospital for treatment with thrombolysis and/or imaging. Do not administer vesicant medications if PWO is present.

- **Total occlusion (inability to flush and aspirate).** The patient will usually have to be returned to hospital for PICC removal and replacement.
- **Phlebitis: (Irritation and Redness)** Monitor (Visual Infusion Phlebitis) VIP scale at regular intervals.
- **Extravasation / Infiltration:** Report early signs and instruct patient to report pain, discomfort, redness, swelling, leakage etc.
- **Infection (catheter-related infection):** To prevent, use an aseptic non touch technique (ANTT), good care and maintenance and regular assessment. If suspected, entry site and blood culture should be sent for investigation. Work with your microbiologist to determine the next step that could include antibiotic therapy or device removal.
- **Movement:** The PICC should be measured at each dressing change. If the device lengthens, this should be investigated prior to use. This is to ensure that the tip of the PICC remains in the SCV / right atrium.

# HOW TO USE A PICC?

## DRUG ADMINISTRATION

Always check the compatibility of using two injectable drugs simultaneously.

## TAKING BLOOD FROM A PICC

Firstly, gather all necessary equipment

- Alcohol pads
- Sterile chlorhexidine 2% in alcohol 70% solution or swab
- Clean plastic tray or dressing pack
- Non-sterile gloves (powder free) for standard ANTT
- 10ml syringe or size appropriate for lab studies
- 10ml normal saline syringes
- Needle free device
- Vacutainer blood transfer device
- Vacutainer blood collection tubes
- Waste bag / Sharps bin
- Lab Requisition with specimen labels

## STEPS TO FOLLOW WHEN TAKING BLOOD SAMPLES FROM A PICC

- Use a dressing pack and ANTT when accessing the catheter
- Scrub the needle free device using chlorhexidine 2% in 70% alcohol for at least 15 seconds and allow to fully dry.
- Depending on your local policy the needle free device might be removed at this point
- Remove the first 3ml to 5 ml of blood and discard
- Obtain blood specimen

- Consider the use of a vacutainer adapter and bottle to do this
- Follow your hospital procedure for handling of samples
- Flush the PICC with 10 to 20-ml normal saline.
- Use a push pause turbulent flush technique and a positive pressure clamping sequence (if using a negative or neutral needle free device).
- Dispose of the used syringe promptly.
- When procedure is complete, perform hand hygiene.

## BLOOD CULTURES

For blood cultures from a PICC, draw back and use that sample, no flushing, no wasting. This is the only blood sample you take without a flush and waste (Gorski, 2021). Remove the needle-free valve connector before drawing any blood culture to prevent contamination through a NFC and reduce the risk of a false positive test.

# CARE AND MAINTENANCE

## CATHETER CLEARANCE

Flushing of catheters is important for maintaining catheter patency.

- Catheters should be flushed with 0.9% normal saline.
- Devices should be flushed prior to and following each infusion and at regular intervals to ensure catheter patency.
- Catheters are designed to withstand venous infusion pressures but typically infusion pressures should never exceed 25-40 pounds per square inch (PSI). Therefore, syringes used for flushing of central venous access devices should be no smaller than 10mls. Smaller syringe sizes will generate excessive pressures and could lead to catheter fracture.
- A turbulent flush should be used by using a 'push / pause', 'stop / start' technique. This will help to remove debris from the internal catheter wall



- A positive pressure clamping sequence will help to prevent reflux of blood into the catheter tip, reducing the risk of catheter occlusion. This is accomplished by maintaining pressure on the plunger of the syringe while clamping or disconnecting the syringe from the needle free device. This technique should be done if using a neutral or negative needle free device.



## MAINTAINING A CLOSED SYSTEM

VYGON PICCs do not have internal valves and therefore a needle free device should be placed at the end of the catheter to help maintain a closed system. This should be replaced on a weekly basis.

## PICC STABILISATION

An engineered securement device (Grip-Lok® or SecurAcath®) should be applied to the catheter wings to stabilise the device prior to the application of a clear dressing. This should be replaced on a weekly basis.

## DRESSING A PICC

The function of dressings is multiple and includes providing security for the catheter to prevent dislodgement. They also provide a barrier impermeable to water and bacteria. They protect the catheter site from extrinsic contamination and discourage bacterial production at the insertion site.

- An aseptic non – touch technique (ANTT) should be used when caring for, or accessing central venous access devices.
- Dressings should be transparent to allow visual inspection of the site, they should be self-adhesive, provide stability thus reducing the risk of vein intima trauma, phlebitis and contamination.
- The dressing should be semi-permeable to protect the site from bacteria and liquid while still allowing the skin to 'breathe'.
- Dressings should be inspected at each shift change. Use your local care plan or bundle to document this.
- Dressings should be changed at least every seven days or sooner if no longer intact or if moisture collects under the dressing.
- If a patient has profuse perspiration or if the insertion site is bleeding or oozing, a sterile gauze dressing can be used. This will require daily inspection and replacement if it becomes damp, loose or soiled. The gauze dressing should be changed to a transparent dressing as soon as possible.

## REMOVING THE PICC

- As soon as the PICC is no longer required, it should be removed.
- A PICC can be removed by any clinician. However, in some countries a medical prescription is required.
- Removing a PICC should be pain-free.
- The patient should lie flat or semi recumbent with the arm away from the body.
- To reduce the risk of infection, both patient and nurse should wear a mask.
- Explain the procedure to the patient.
- Perform hand hygiene procedure and don non-sterile gloves.
- Remove dressing and securement device.
- Remove non-sterile gloves and don sterile gloves.
- Clean the skin at the entry site with chlorhexidine and alcohol (with mix chlorhex and alcohol solution).
- Carefully withdraw the catheter (no resistance should be felt).
- If there is resistance, stop! Wait for a few minutes. Consider using alternate hot and cold compresses to help reduce vein spasm. **NEVER PULL THE PICC IF THERE IS RESISTANCE!**
- After PICC removal, apply gentle pressure and affix a breathable sterile dressing.
- Check that the catheter is complete and record its length in the patient's note and in the patient diary.
- If there was suspected infection, send the distal tip for investigation according to internal protocol.

## DOCUMENTATION

Documentation should include:

- **Insertion information.**

Catheter information should include: Date of insertion, device information, vein used, catheter to vein ratio, catheter lumen size, length inserted, any insertion complications.

- **Maintenance information.**

Details of care and maintenance procedures, date and times of dressing and flushing procedures. Any complications encountered.

# GENERAL INFORMATION

## GENERAL ADVICE FOR PATIENTS

Refer the patient to the patient information sheet and PICC passport / diary. Check that the patient knows how to manage the system by him/herself and to recognise when to contact a clinician. Patients should only manage PICCs if they have received training.

General advice is:

- Do not submerge in bath water
- Shower with a PICC shower sleeve or clean cling film
- Avoid compression of the upper arm
- Avoid lifting heavy weights
- Contact the hospital if there are any problems (pain, swelling in hand, arm or face, leakage, fever or other signs of infection)

## VYGON PICC RANGE

- lifecath PICC
- maxflo expert
- CT PICC easy
- CT PICC Maestro

## WASTE DISPOSAL

Always dispose of sharps and clinical waste as per hospital policy.

## DOCUMENTATION

Document all care and maintenance procedures in the patients, notes and PICC diary / passport.

# STEP BY STEP PROCESS FOR DRESSING CHANGE

## REPLACEMENT FREQUENCY

- Initially: an absorbent dressing.
- Within 48h of inserting the PICC (between D0 and D+1): replace the absorbent dressing by a semi-permeable transparent dressing and, if, and only if, there are signs of soiling or if the dressing is dirty, change the securement device.
- Then repeat every 8 days maximum (D+7days). Dressing changes must be scheduled.

## SURVEILLANCE

- Visual inspection of the insertion point is essential for rapid detection of complications (redness, weeping, soiling) and to be able to inform the doctor.
- Any dressing that is soiled or no longer impervious must be replaced as soon as possible.
- BEFORE ANY CARE OPERATION > HHP (Hand Hygiene Procedure) - Alcohol-based handrub.

## THE KEY CHALLENGE

Avoid infecting or moving the PICC in place

## 1. DRESSING AND INSTALLING THE PATIENT

- Non-sterile gown only as a precaution against contact with patients who are infected or suffering from neutropenia, or for treatment at home.
- Install the patient in a dorsal decubitus position with the arm away from the chest.
- HHP then place a sterile drape under the patient's arm.
- Preparing the equipment:



**Nurse :** mask + cap



**Patient :** mask

## 2. REMOVING THE EXISTING DRESSING

When first using the PICC, record the length of the part of catheter that remains outside



Single use non-sterile gloves



Pull the ends of the dressing parallel with skin so as not to move the catheter.



If necessary, use the adhesive part of the bandage to secure the catheter at the entry point to prevent it coming out.



Remove the existing securement device. Sterile or non-sterile gloves according to the establishment's protocol.



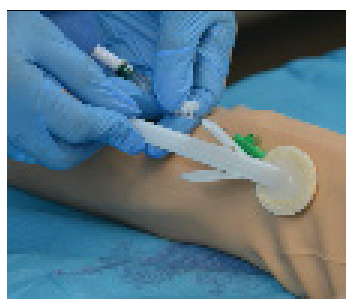
Remove the stretchable adhesive bandage (if used).

### 3. APPLYING THE NEW DRESSING



Sterile gloves

Skin  
Antisepsis



Clean 30s  
(chlorhexidine 2%. 70% alcohol)

**>> Allow to dry naturally = Maximum effectiveness of the antiseptic**



Insert the wings into the slots provided for them.



Remove the film layer and position the adhesive window over the PICC's wings. Affix the adhesive portion to the patient's arm.



Put in place the new watertight transparent dressing (gently press the dressing to remove any air pockets, cover the insertion point and the fixing system).



>> Ensure the catheter is clamped and remove the existing needleless connector (closed system) using an antiseptic wipe.

- Disinfect the catheter's Luer end
- Flush the new needle free device with normal saline.
- Insert the new needle free and protect it from possible soiling using local procedures.

- Unclamp and check the venous reflux.
- Flush (using pulsation) the catheter using a syringe filled with normal saline.
- Remove the syringe according to the needle free device manufacturer's instructions (with or without previous clamping).

## 4. WASTE DISPOSAL

- Sharp and dangerous waste objects to be put in a rigid container according to the recommendations in the local Hazardous Waste Regulations
- Soiled waste material to be placed in a waste bag as defined in local regulations.
- All other waste to be treated as normal household waste

## 5. TRACEABILITY

- To be recorded in the patient's file:
  - the treatment
  - the date the dressing was replaced
  - the state/aspect of the insertion point
- The length of the external part of the catheter.
- Schedule the next dressing change

**For further information, please contact: [info-uk@vygon.com](mailto:info-uk@vygon.com)**

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