

Central Venous Access Devices (CVAD)

Information for patients

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Introduction

Some of the treatment you require will need to be given directly into your bloodstream. In order to do this, we will place a device into your vein, called a venous access device. This enables us to have access to your venous system to give your treatment. There are several different types of devices available.

A commonly used device is a peripheral cannula, which is a small plastic tube inserted into a vein in your lower arm or hand using a needle. Before starting any treatment, we will check your veins for suitability for a cannula and if we have difficulty finding a suitable vein, we will discuss the possibility of using a central venous access device (CVAD). Prolonged treatments can sometimes make veins harder to use, and in such cases, we might suggest a CVAD instead. Some treatment drugs cannot be given into the veins of the hand or the arm and can only be given through a CVAD into a larger vein leading to your heart. This may be required if you need to have infusion chemotherapy via a pump.

Please note CVAD maintenance and insertion require a health care professional specifically trained to complete these tasks.

What is a central venous access device (CVAD)?

A central venous access device (CVAD) is made of a non-irritant material, for example, silicone or polyurethane, which means it can be left in for as long as clinically indicated. The CVAD may contain one or more tubes. Each tube is referred to as a lumen.

What are the advantages of having a CVAD?

All types of CVAD can be used to give you fluids and drugs and they may also be used to take blood samples. The CVAD will prevent you from having repeated needle pricks from blood taking or insertion of cannulas during treatment. Having a CVAD can potentially reduce the risk of peripheral cannula associated complications, for example extravasation (treatment leaking into the tissue) or thrombophlebitis (inflammation of the veins). Some CVADs may also be used for injecting contrast for CT or MRI scans (depending on the type of CVAD).

What types of CVADs are available?

There are three main types of CVADs:

- A peripherally inserted central catheter (PICC)
- A Skin-Tunnelled Catheter (STC) sometimes called a Hickman line
- A Totally Implantable Venous Access Device (TIVAD), often referred to as a Portacath or Port.

Each of these devices is described in more detail on the pages listed above. There are risks and benefits associated with each device, and these will be discussed with you prior to any CVAD being inserted.

Are there any risks involved in the insertion of a CVAD?

Occasionally there can be complications when inserting a CVAD:

- During insertion of a TIVAD (portacath) or STC, the needle or guide wire can puncture the top of your lung causing an air pocket (pneumothorax). This happens very rarely, and you would

probably be unaware of this, but you may become slightly breathless. A chest x-ray is taken after the catheter has been inserted to check that it is correctly positioned. This x-ray also checks to see whether there is a pneumothorax. If there is one, it can be treated straight away. Once treated, a pneumothorax will not cause any long-term problems.

- The PICC may not thread into the correct position and the tip may not be in the correct vein. ECG Technology may be used during this procedure to confirm reduce this complication and confirm PICC position, if this is not available an X-ray will be performed.
- Sometimes there may be bruising or bleeding at the site where the needle went into your vein, or there might be damage to an artery or nerve.

Are there any risks once the CVAD has been inserted?

- There is a risk of infection. You may be able to have antibiotics to treat the infection if it is local around the CVAD site. If not, the CVAD may need to be removed.
- Once the CVAD is in place, there is a risk of a clot (thrombosis) forming around the CVAD. Depending on your diagnosis, treatment or if you have had a clot before, the risk may be higher. You may need to take blood thinning (anticoagulant) medication and the CVAD may need to be removed if the blood clot does not respond to the medication.
- The CVAD may become blocked. This can usually be unblocked by nursing staff, however, if it cannot be unblocked, the CVAD will have to be removed.
- The CVAD may split or become damaged; this may cause an extravasation, where treatment leaks into the tissue.
- The CVAD may become dislodged and if no longer in the correct position, it will need to be removed.

In what circumstances should I contact the hospital?

Contact the hospital immediately if you notice any of the following:

- Fever, chills, or flu-like symptoms – this could indicate an infection.
- Swelling or pain in your arm, neck, or shoulder – may be a sign of a blood clot.
- Pain or burning when the catheter is flushed.
- Cracked or broken catheter – fold or clamp the tubing above the break and tape it securely.
- Catheter pulled out – the tip may no longer be in the correct position.
- Redness, swelling, or discharge at the insertion site (after the first week) – could be early signs of infection.
- If you have a PICC or STC line and your dressing becomes loose, dislodged, wet, dirty, or it allows water to seep underneath.
- PICC or STC partially pulled out – if more of the catheter is visible than your team advised is safe. Do not try to push it back in.

Who to contact

Oncology Patients (Solid Tumours)

- If treated within the last 6 weeks (chemotherapy, immunotherapy, or targeted therapy):
Call: **Cancer Treatment Helpline – 0800 917 7711**
- If not yet started treatment or it's been more than 6 weeks since last treatment:
Call: **Cancer Assessment Unit – 0131 537 4050**



Haematology Patients

- Western General Hospital
Call: **Haematology Emergency Line – 07972 251 464**
- St. John's Hospital
 - Mon–Fri, 09:00–16:00 Call: **07973 903 708**
 - Outside these hours Call: **07972 251 464**

How will I know which device to choose?

You may be offered one of three main types of Central Venous Access Devices (CVADs), depending on your treatment type, duration, and physical condition. In some cases, your options may be limited—for example, if you have unsuitable veins, cannot have sedation, or have had lymph nodes removed during breast surgery.

Even if the type of device is predetermined, you can usually discuss how and where it will be placed. We will consider your preferred side for insertion, though this may change on the day for clinical reasons.

A summary table of the three CVAD types is provided on the next page, followed by more detailed information. Please speak with your nurse to help decide which option is best for you.

Practical Comparison of CVAD Types

Question	PICC Line	Skin Tunnelled Catheter (Hickman)	Implanted Port (Portacath)
Do I need to go to theatre or have an anaesthetic?	No	Local anaesthetic and sedation	Local anaesthetic and sedation
Will it leave scars?	Minimal puncture scar	2–3 small scars	One 2.5 cm scar on chest and one small neck scar
Can I bathe or shower with it?	Showers- yes, but you must cover you PICC with a waterproof sleeve, baths are not possible	Shower - Yes, but don't submerge your chest, you must not have a bath	Yes – if the huber needle is not in situ
Will I still need needles for treatment?	No	No	Yes
Can I swim with it?	No	No	Yes (if no huber needle in place)
Does it need dressing changes?	Yes, weekly	Yes, weekly	No
Does it need flushing?	Yes, weekly	Yes, weekly	Yes, every 8 weeks

Peripherally inserted central catheters (PICCs)

What is a PICC?

A peripherally inserted central catheter (PICC) is a tube which is inserted into a vein in the top of your arm, above the bend of the elbow. It is moved up into the large vein leading to your heart. A PICC may be placed in either arm, but certain conditions may limit you to one arm.



Figure 1: Photograph of PICC prior to insertion

What are the advantages of a PICC?

- You do not have to go to theatre to have it inserted.
- Some PICC lines may allow us to give you CT contrast solution through, but your team will discuss this with you.
- You do not need a surgical procedure to insert or remove it.
- It keeps scarring to a minimum (only a small puncture scar).
- There is less risk of complication during insertion.

What are the disadvantages of a PICC?

- The dressing needs to be changed once a week by a nurse. The PICC will also need to be bled and flushed to keep the lumens working. The PICC position will be rechecked at every dressing change and if moved will need to be re X-rayed to ensure safe to use.
- You cannot go swimming with a PICC, and it may restrict you from continuing with other vigorous sporting activities.

How is the PICC inserted?

We will ask you to get your bloods checked prior to insertion and will advise if you need to pause any medication. A PICC insertion normally takes around 2 hours, including consent, vein assessment, PICC insertion, and a short observation period. Local anaesthetic (a numbing injection) is used as part of the procedure, which is usually very effective. If you have concerns either before or during the procedure, please speak to the practitioner.

A trained practitioner will perform this procedure in an outpatient setting, after assessing a suitable vein in your upper arm. The practitioner will wear a mask, gown, and sterile gloves, and you'll be covered in drapes while lying flat with your arm outstretched. A paddle and ECG stickers on your chest will help us monitor the PICC line's position during insertion, assisted by an ultrasound machine to ensure correct placement. Sometimes, an X-ray is needed afterward to check the PICC line's position, which may prolong the visit. If there is any bruising, it is safe to take painkillers, and you will be advised on suitable options.

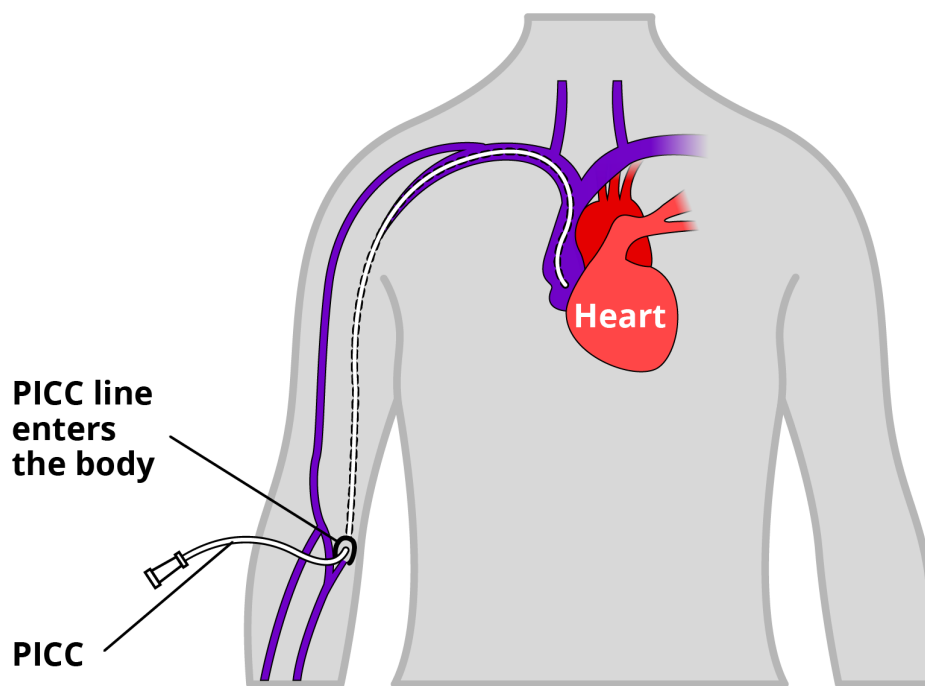


Figure 2: Diagram of an inserted PICC

What is needed to maintain a PICC?

The dressing will need to be changed once a week. This may be done in community or by attending the hospital or a nurse in the community. Please take care not to get the PICC or extension set wet. The dressing must remain clean, dry, and stuck firmly to your skin, the dressing helps to prevent infection and helps to keep the PICC in the correct place. You should wear a waterproof sleeve to wear in the shower to protect the PICC. The PICC will need to be bled and flushed once a week, this will usually be done at the same time as your dressing is changed, either in the hospital or by a nurse in the community. You will be given a diary to be completed by the nurse doing your PICC care, which should be completed at every visit.

If your dressing has become dislodged, fallen off, or become loose, contact the hospital on the numbers listed above as you will need to have this replaced. Do not allow the area to become wet as this can increase the risk of infection.

How is the PICC removed?

Post your last treatment we will discuss when the PICC will be removed, we will aim to do this as quickly as possible. PICC's are easily removed by a trained practitioner. A practitioner trained in removing PICC's will place your arm on a pillow and remove the dressing. The nurse will gently remove the securing device and pull the PICC out of the vein. A dressing will then be applied to the site. The dressing can be removed after 24 hours.

Skin-tunnelled catheters (STCs)

What is a STC?

A skin-tunnelled catheter is a tube (sometimes called a Hickman line) which is inserted through your chest into a large vein leading to your heart. Along the catheter, there is a small cuff which you may be able to feel through your skin. This cuff prevents the catheter from moving or falling out. The catheter can be inserted on either side of your chest.

What are the advantages of a STC?

- It can have one, two, or multiple lumens.
- It will leave less scarring than a TIVAD and is easier to implant and remove.

What are the disadvantages of a STC?

- You will need to go to theatre or radiology to have the catheter inserted. This is carried out under sedation to relax you, and local anaesthetic is used to numb the areas where the catheter will be inserted.
- It requires a surgical procedure when removing it (but not always in theatre).
- You will be left with three small scars – one over your collarbone and one where the catheter comes out of the skin. On removal, another small cut is needed to get the catheter out – about 5cm from the exit site.
- You cannot go swimming while you have a skin-tunnelled catheter, but your other activities should not be restricted.

How is the STC inserted?

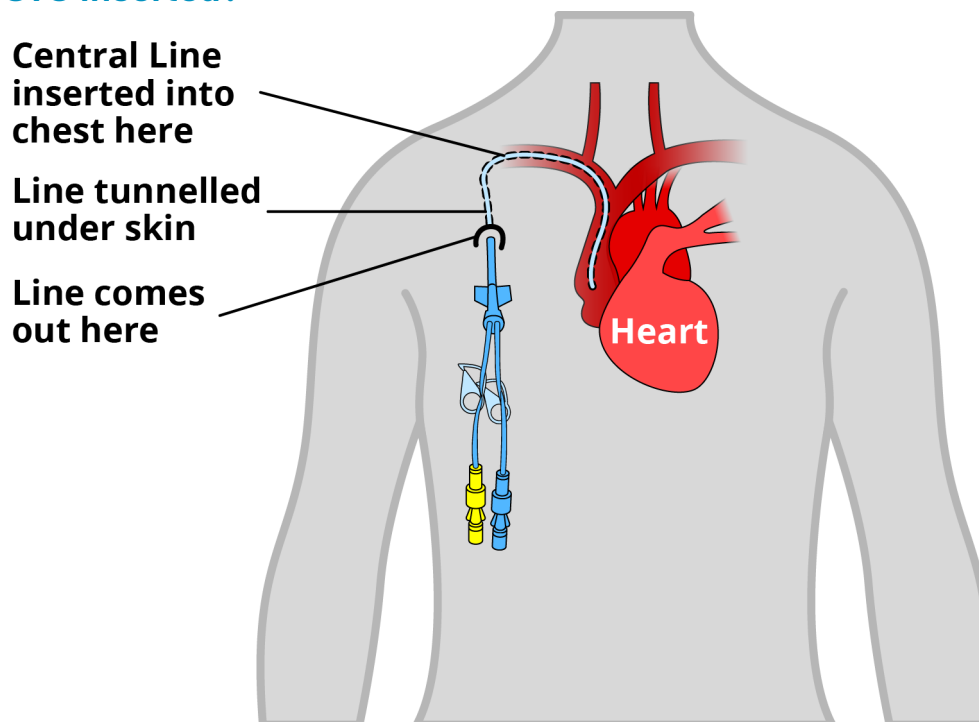


Figure 3: Diagram of an inserted STC

The practitioner will insert the catheter after numbing an area on your chest with local anaesthetic. You may receive a sedative to relax you: a general anaesthetic is not routinely used. Two small cuts

will be made on your chest: one to tunnel the catheter and the other over your collarbone to insert it into your vein. A chest X-ray will be taken to ensure the catheter is in the right place.

Each cut will have one stitch, which should be removed; the stitch near the collarbone needs to be removed 7-10 days after insertion and the stitches around the top of the line removed 21 days after insertion. This can be done at the hospital or by a nurse in the community.

After the catheter is inserted, your shoulder and chest area may feel stiff and painful for a couple of days. Painkillers can help relieve the discomfort and the practitioner will advise you on which ones would be suitable.

How is the STC cared for?

Your STC requires weekly care to ensure the line does not become blocked and to reduce the risk of infection. This involves bleeding and flushing each lumen of your line, changing the caps on the end of the line and changing your dressing. The dressing helps to prevent infection from entering the line. The dressing change will be done by a nurse in either the hospital or the community. You will be given a diary to be completed by the nurse doing your STC care, which should be completed at every visit.

If your dressing has become dislodged, fallen off, or become loose, contact the hospital on the numbers listed above as you will need to have this replaced. Do not allow the area to become wet whilst the dressing is not place.

How is the STC removed?

STC removal will be discussed after your treatment is finished. We will take some bloods to and ask if you on blood thinning medication prior to your appointment for removal. Your appointment for STC removal will last approximately 2 hours, this will include consent, removal using local anaesthetic and a short observation period. You can eat and drink on the day of the procedure.

You'll lie flat for the removal, please inform staff if you have difficulty with this. A local anaesthetic will be injected, and the catheter removed. You may feel a pulling sensation but should not feel pain. More anaesthetic can be given if needed. After removal, the cut will be stitched and dressed. You will need to lie flat for a short period. If there is no further bleeding, you can leave the hospital and drive home. Dress the area daily until the stitches are removed or until the stitches are clean and dry. If you need more dressings, they will be provided before discharge.

If the wound bleeds within the first 24 hours, apply another dressing. If bleeding continues or you are concerned, contact the ward. Bruising is normal. For pain, take your usual painkillers.

Following removal:

Avoid heavy lifting for 24 hours. Keep the stitches dry, and contact your GP practice to have the stitches removed after seven days.

TIVADs (portacath or PORT)

What is a TIVAD?

A totally implanted vascular access device (TIVAD), sometimes called a 'portacath,' is a device inserted under the skin into your body. It is usually positioned on the chest, but it may also be placed on either side of the chest or the upper arm.

The port consists of a portal body connected via a thin tube (catheter) inserted into one of the veins. The port can be felt through the skin. Access to the port is gained by puncturing the silicone membrane with a special type of needle, often called a huber needle or gripper needle, which is attached to a length of tubing (an extension set). This allows you to receive treatment or have blood samples taken from it. Once the port site has healed, inserting a huber needle should not be painful. If there is any discomfort, we can apply a local anaesthetic gel to the area 30 minutes before to numb the skin.

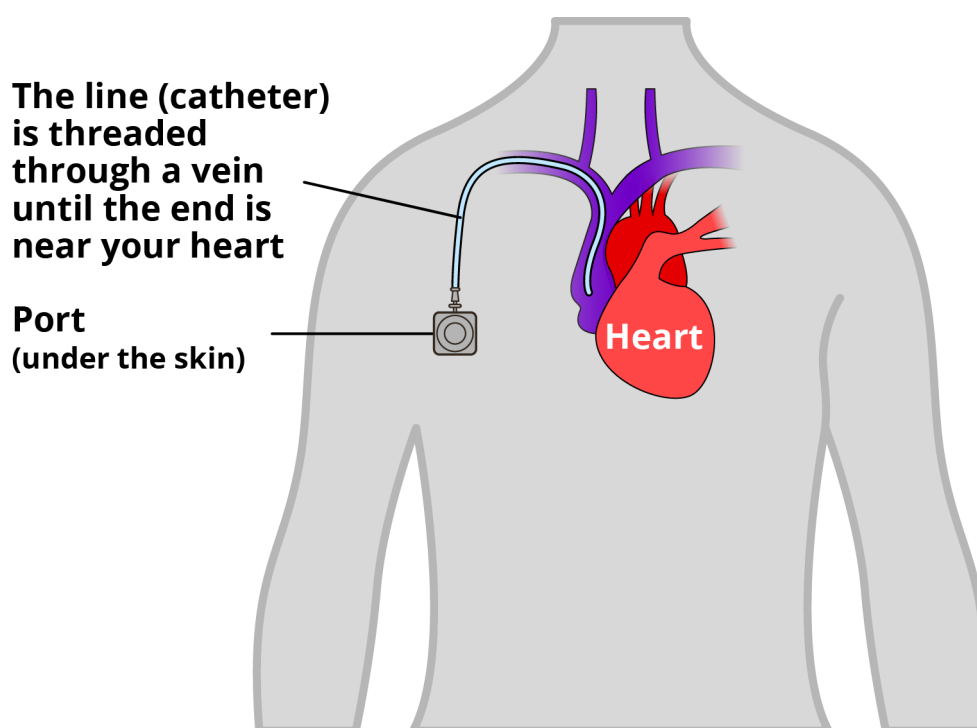


Figure 5: Diagram of an inserted port

What are the advantages of a TIVAD?

- It only needs to have the needle put in when we need to use it.
- The needle is removed in between treatments, and you will not have to worry about any dressings or flushing the catheter.
- It does not restrict your normal activities including swimming.
- They only need to be flushed every 8 weeks when not in use.

What are the disadvantages of a TIVAD?

- You need to have a needle inserted each time the port is used. The port can sometimes be difficult to access particularly within the first one to two weeks following insertion as the area is tender to touch.

- In the case of a chest port, you will need to go to theatre or another specific department for the insertion and removal, which may be carried out under local anaesthetic (with sedation) or very rarely under general anesthetic. You should not eat or drink from midnight the night before the port insertion.
- It will leave some scars – if you are worried about scars then discuss this with the operator. In order for the surgeon to position the port to reduce scars, the nurses may find it more difficult to gain access to it. As a result, you may find the needle access procedure more uncomfortable.
- If you need to have blood tests, for example at your GP surgery or local hospital, you may find that the surgery staff are not trained to take blood from a port.

How is the TIVAD inserted?

You will usually be admitted to hospital for the day. It is advisable not to drive if you are in for the day and you should arrange for someone to collect you after the procedure. **On the day you are required to fast in advance of the procedure. This means no solid foods for 6 hours and no liquids 2 hours prior to the procedure.**

The port is inserted by a practitioner, which usually takes place under local anaesthetic with sedation. Two small cuts will be made. One to form a pocket for the port to sit in and the other, an entry site used to put the catheter through. The stitches over the pocket are usually dissolvable. The stitches at the entry site may need to be removed after seven to ten days or may also be dissolvable. You will be advised of the type of stitches you have. We will take a chest x-ray to check that the port and catheter are in the right place. After the TIVAD has been inserted we will observe you in a ward for a few hours. Whilst in hospital the nursing staff will explain your aftercare and follow up to you. A TIVAD can be used as soon as it has been inserted.

How is the TIVAD cared for?

The needle is removed in between treatments, and you will not have to worry about any dressings or flushing the port. If you are in between treatments, you may need to have an appointment in the community or at the hospital for the port to be flushed every 8 weeks.

How is the TIVAD removed?

The port is removed surgically under local anaesthetic (with a sedative, if appropriate) and you will usually be able to go home the same day.

Following removal you will remain on bed rest post procedure for up to two hours and with regular monitoring of observations. You will likely have stitches that require removal at your local GP practice 7-10 days post insertion.

It's OK to Ask

When you understand what's going on with your health, you can make better decisions around your care and treatment.

www.nhsinform.scot/campaigns/its-ok-to-ask/



SCAN ME