

Renal Services

Everything I need to know about vascular access for haemodialysis

Dialysis is a lifesaving treatment option for patients with end stage renal failure. In order to have regular haemodialysis treatment your blood will need to be circulated through a dialysis machine and artificial kidney. The creation/insertion of vascular access will allow this to happen.

What are the different types of vascular access?

There are three different types of vascular access used for haemodialysis, which are listed below in order of preference:

- Arteriovenous fistula (AVF) - usually referred to as your fistula
- Arteriovenous graft (AVG) - usually referred to as your graft
- Central venous catheter (CVC) - usually referred to as your line

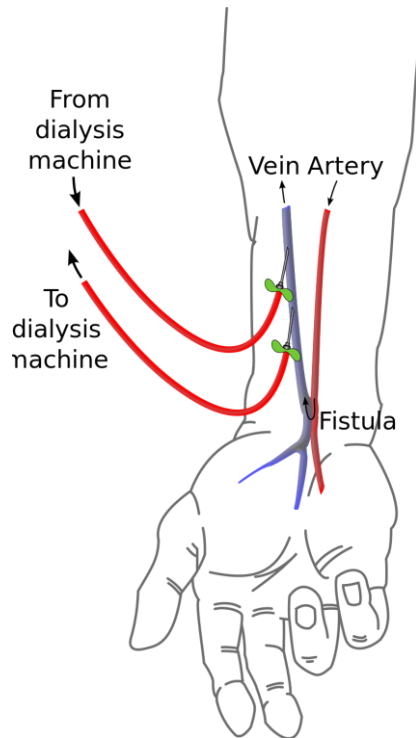
What is an arteriovenous fistula?

The arteriovenous fistula is formed during an operation to join two blood vessels, an artery and a vein, together in your arm. These form an accessible blood vessel that gives the increased flow of blood that are required for haemodialysis.

Once the fistula is formed it usually takes 6 to 8 weeks for it to heal and mature, allowing the fistula vein to become larger and enlarge sufficiently to be used for haemodialysis.



Patient Information



“[Radiocephalic fistula](#)” by [Kbik](#) at [English Wikipedia](#) is licensed under [CC BY 3.0](#)

What are the advantages having a fistula?

A fistula is considered to be the best choice for vascular access because:

- it has fewer incidents of complications
- it has low infection rates
- it uses your own arteries and veins without the need for artificial material.
- it has good blood flow for dialysis, which increases the effectiveness of treatment
- surgery is usually done on an outpatient basis, so you can return home on the same day, and under local anaesthetic, allowing for a rapid and easy recovery.
- it is more reliable and can last years longer than other forms of vascular access with generally fewer problems

What are the disadvantages of having a fistula?

- The maturation time is 6 to 8 weeks, so the fistula creation needs to be planned in advance, so that it is matured for when dialysis is needed.

Patient Information

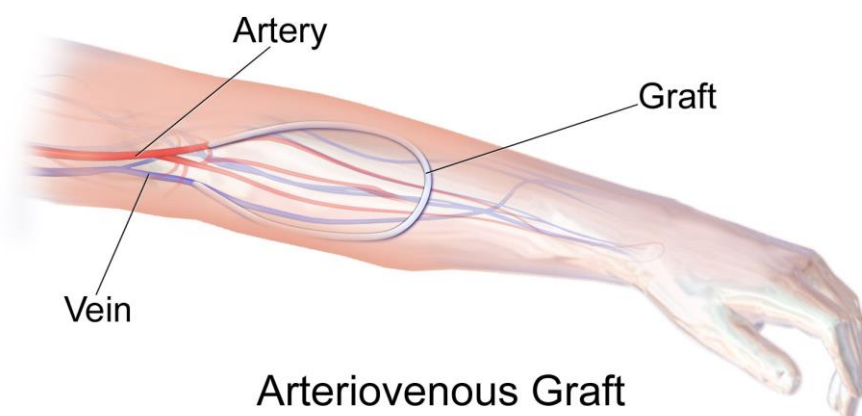
- The fistula might fail to mature, so you may need to have more fistula creation attempts or radiology intervention to assist the fistula to mature.

What is an arteriovenous graft?

This is similar to a fistula but instead of the artery being connected directly to the vein, a synthetic tube is used to link the two together. This is called a graft.

Grafts are often the access of choice when a haemodialysis patient has small or poor veins that will not likely develop properly into a fistula.

Grafts can be a straight graft, loop graft or HeRO graft.



"[Arteriovenous graft for haemodialysis](#)" by [BruceBlaus](#) is licensed under [CC BY 3.0](#)

What are the advantages of having a graft?

- Ease of having your needles put in (cannulation).
- It can be used within 24 hours.
- It has a low initial failure rate.
- It provides reliably high flow in patients who are unsuitable for a fistula.

What are the disadvantages of having a graft?

- The graft material is prone to developing holes
- Synthetic material is used in the body.

Patient Information

- There is an increased risk of clotting, aneurysms, and infections.
- The graft may not last as long as a fistula and will likely need to be replaced.

What is (HeRO) graft?

There is a separate patient information leaflet for HeRO graft – please ask your health care professional for this leaflet.

What is a central venous catheter (CVC)?

The CVC is a soft flexible man-made tube that is placed into a large vein, usually into a large vein in your chest. Occasionally it may be placed in the groin. The CVC has two openings known as lumens or ports.

During haemodialysis the lumens are connected to the haemodialysis machine, one lumen takes blood from your body to be cleaned and the blood returns to your body through the other lumen.

The point where the catheter goes through the skin is called the exit site.

A CVC can be used while you are waiting for the creation of an AVF or AVG and the maturation period.

It may need to be used as a permanent method of vascular access if for some reason an AVF or AVG cannot be made.

There are two different types of CVC:

Tunnelled (permanent)

Tunnelled CVC's are usually inserted under x-ray guidance and can be used long term, usually located in the chest. The CVC is held in place by stitches to the skin, your dialysis nurse will inform you when these can be removed.

Patient Information

Non-tunnelled (temporary)

Non-tunnelled CVC's are used short term and are usually in your neck or groin. If you have a non-tunnelled line, the stitches will need to remain in place for as long as you have the CVC in place.

What are the advantages having a central venous catheter?

- Both types are available to be used immediately if required.
- They can be used if emergency dialysis required.
- They can be used if patient unable to have an AVG/AVF.

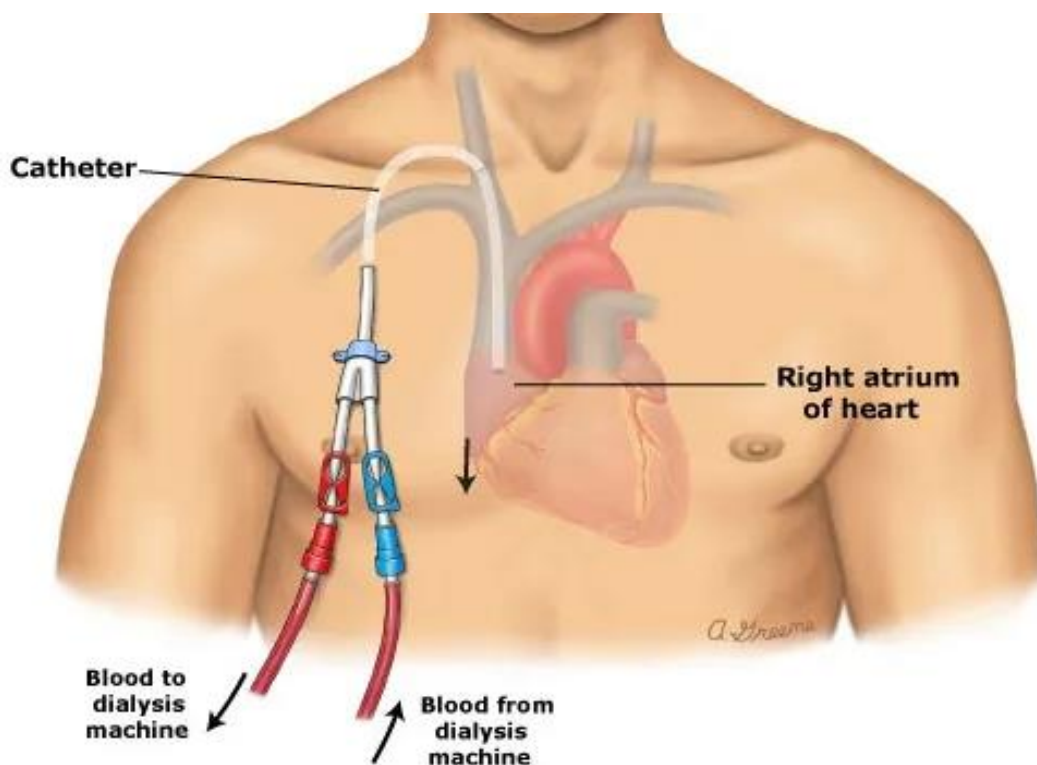


Image used with kind permissions from the [Vascular Access Society of Britain and Ireland](http://www.vas.ac.uk).

What are the disadvantages of having a central venous catheter?

They:

- are prone to infection
- are prone to clotting

Patient Information

- often provide lower blood flow than AVG/AVF.
- may require frequent changes if using a non-tunnelled CVC.

What are the complications associated with having a central venous catheter?

- Fibrin sheath formation preventing good flows for dialysis. This prevents good dialysis blood clearances.
- Narrowing of the central veins, excluding future fistula formation.
- Challenging line re-insertions due to blocked central veins.
- Highest morbidity of all accesses due to thrombosis and infection.
- The external hubs are disfiguring and can cause low patient satisfaction and self-esteem.
- Pneumothorax, haemothorax and other mechanical complications associated with catheter placement.

If you have any questions regarding your access options, please speak with your consultant or health care professional or you can contact the renal access nurses on 024 7696 8307.

General advice and consent

Most of your questions may have been answered by this leaflet but remember that this is only the starting point for discussion with your healthcare team.

Before any doctor, nurse or therapist examines or treats you, they must seek your consent or permission. In order to consent, you need to have the information from health professionals about the treatment or investigation which is being offered to you. You should always ask them more questions if you do not understand or if you want more information.

The information you receive should be about your condition, the alternatives available to you, and whether it carries risks as well as benefits.

Patient Information

If you need any further information or clarification, please contact your health care team or Renal Access Nurse on 024 7696 8307.

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 024 7696 8307 and we will do our best to meet your needs.

The Trust operates a smoke free policy.

Did we get it right?

We would like you to tell us what you think about our services. This helps us to make further improvements and to recognise members of staff who provide a good service.



Have your say. Scan the QR code or visit:
www.uhcw.nhs.uk/feedback

Document History	
Department:	Renal Services
Contact:	28307
Updated:	September 2022
Review:	September 2024
Version:	2
Reference:	HIC/LFT/2416/20