



Vascular Access programme

INFORMATION FOR
PATIENTS

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Message from the NKF



Message from the NKF

When patients are diagnosed with chronic kidney disease (CKD), they are generally well informed by their healthcare professional about what to expect in terms of treatment for their condition or the need for regular dialysis visits.

It is important to remember, however, that many aspects of managing kidney disease can be instigated by the patient themselves. For example, for those patients on dialysis, it is vital that fistulas and dialysis catheters are well cared for, much of which the patient needs to be encouraged to do for themselves.

However, in order for the patient to manage their own condition as best as possible, renal units need to be able to educate individual patients and encourage them to take control of their condition. The National Kidney Federation fully supports the launch of the *time* programme as a valuable resource that renal units can use to achieve this goal, working hand in hand to empower their patients to become involved in their renal care.

Patient education, motivation and empowerment will ultimately prove to be the best way to improve patients' long-term outcomes and overall wellbeing.



Timothy Statham
Chief Executive
National Kidney Federation (NKF)

Foreword



Foreword

For all patients requiring long term dialysis, access is their lifeline. Safe and reliable care depends on excellent access with excellent care that minimises complications and maximises benefit. The consequences of infection or poor quality dialysis can be devastating for an individual. This guidance is a toolkit to both explain the types of vascular access and provide advice on care and usage. It cannot be absolute and we should always strive to provide for patients on an individual basis. However in providing this advice we hope to emphasise the principles of consistent, safe and reliable practice in this crucial area.



Dr Richard Fluck, Consultant Nephrologist
Consultant Nephrologist, Clinical Director Derby Renal Services

Introduction

Introduction

To undergo successful haemodialysis, you need to be connected to a dialysis machine to allow blood to be taken from you and 'cleaned' by the artificial kidney. Because the process involves blood and attaches you to the machine it is called 'vascular access'. Good vascular access reduces your risk of developing an infection and allows sufficient quantities of blood to be cleaned to provide good quality dialysis.

Disclaimer

This information is provided for guidance purposes only. Please note that each patient is treated on a case-by-case basis. Some information may not be relevant to your needs, and so it is important that you consult your doctor before following any of the advice outlined below.

How to use



Vascular access programme user guide

About *time*

The *time* programme is an information resource for people with kidney disease. It aims to promote greater understanding about kidney disease and about the treatments that people with kidney disease receive. The *time* programme also hopes to provide tips and guidance about what you can do to improve your experience as a kidney disease patient. The word *time* has been chosen as the title for this programme because with a little time and focus, great gains can be made.

This programme has been developed by healthcare professionals and patient representatives. The materials that are available to you as part of this programme are described in more detail below.

Please ask the staff in your kidney unit if you have any questions about the programme and/or any of the information in it, as they have been trained to know about the *time* programme and are available to offer assistance in any way they can.

time vascular access programme

The *time* vascular access programme provides information about different types of vascular access and guidance on vascular access care.

The following guide briefly explains the materials that are available in the vascular access programme and how they may be used. If you are interested to see any of the materials outlined here, please speak to the staff in your renal unit.

Posters

The posters are designed to let people know about the *time* programme and start them thinking about vascular access.



Flashcards

The key messages in the vascular access programme are presented on flashcards. You might see the flashcard books present in the renal ward. They are designed to give clear and consistent messages in a short space of time. In addition to the key message, each flashcard shows a frequently asked question, the answer to which this is revealed on the back of the card.



Patient information manual

This guide contains more detailed information than the flashcards.
It will be kept on the ward so that you can read it during your treatment visits.

Healthcare professional information manual

There is also a guide for kidney unit staff so that they know what is contained in the *time* programme and how to assist you with any of the suggested activities.



Top tips cards

The top tips cards are business-card sized reminders for you to keep.
They outline tips on caring for your vascular access.

Stethoscope and squeeze ball

A stethoscope and 'squeeze' balls are also available as part of the *time* programme.





Key messages



Key messages

The key messages that you should understand when discussing vascular access with your nurse are:

- Keep your access clean to avoid infection
- Check for a vibrating sensation (the 'thrill') or sound (the 'bruit')
- Check for any redness, tenderness or swelling every day
- If your access is new, make sure you exercise your arm as instructed by your nurse to help your access to heal
- Contact your dialysis unit as soon as possible if there is a problem with your access, or any noticeable changes
- Avoid wearing clothes with tight fitting sleeves
- Avoid wearing watches or tight fitting jewellery on your access arm
- Avoid carrying heavy bags with your access arm
- Avoid sleeping awkwardly on your access arm
- Never let blood samples or blood pressure recordings be taken from your access arm

Types of vascular access



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Types of vascular access

There are three types of vascular access:

- A fistula
- A graft
- A catheter

All three have the same function of making it easier to access your blood vessels, but work in slightly different ways. Each has its own set of advantages and disadvantages.

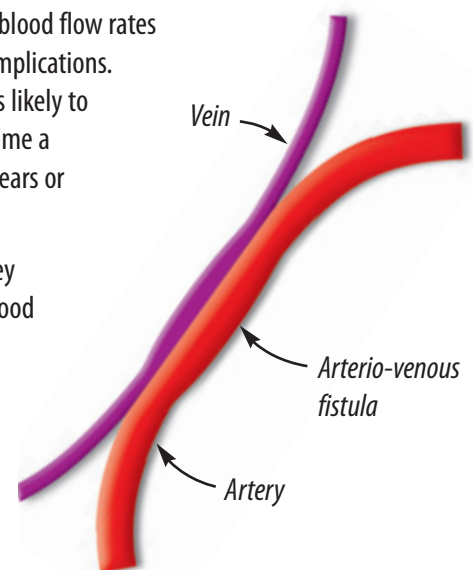
Fistulas

A fistula is made by connecting an artery and a vein together in your arm. This means that the blood flow through your vein is increased, making it bigger and stronger. The vein is easy to put needles in, since it is close to your skin, making it an ideal place to access your circulation. These fistulas are known as arterio-venous, or AV fistulas, since they are made up of an artery and a vein. Fistulas normally need at least 6–8 weeks to heal before they can be used.

For most people AV fistulas offer the best form of access. They provide better blood flow rates compared to other types of vascular access, and are associated with fewer complications. This is because they are made from parts of your own body, making them less likely to develop infections or blood clots. Also, arteries and veins self-heal, so every time a needle is inserted, the fistula heals itself. A well cared for fistula can last for years or even decades.

However, not all patients have blood vessels that are suitable for a fistula. They may be too short, not straight enough, or not big enough to allow enough blood to continue to reach the hand. Fistulas can be noticeable and may prompt questions from curious people.

AV fistulas are the preferred type of vascular access.

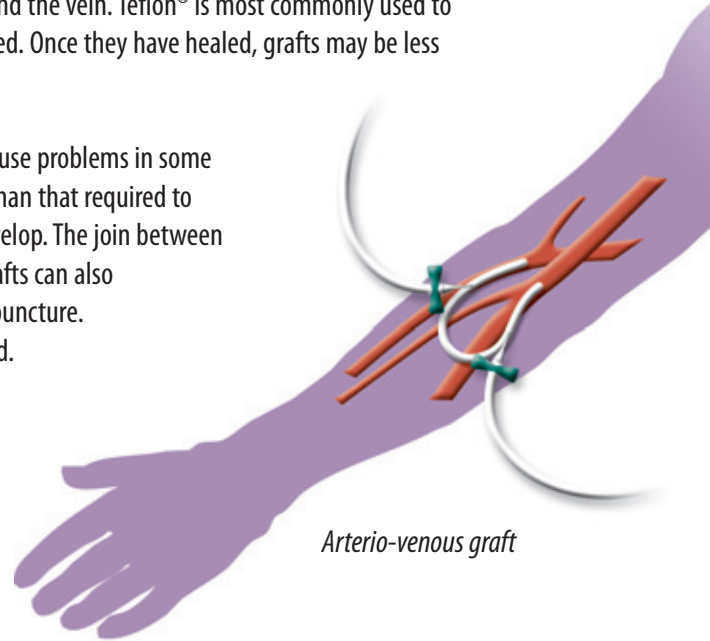


Grafts

Another vascular access option is the arterio-venous (AV) graft. This works in a similar way to the fistula, but it is an artificial graft that makes the connection between the artery and the vein. Teflon® is most commonly used to make grafts. Grafts need 2–3 weeks to heal before they can be used. Once they have healed, grafts may be less noticeable than fistulas.

However, because grafts are made of foreign material, they can cause problems in some patients. The surgery required to create a graft is more extensive than that required to create a fistula. Grafts may become infected or blood clots can develop. The join between the graft and the vein can become narrow or block off entirely. Grafts can also develop holes, since they cannot self-heal following each needle puncture. This means that grafts need to be maintained and may be replaced.

AV grafts heal more quickly than fistulas and can therefore be used more quickly. However, they may cause more problems.



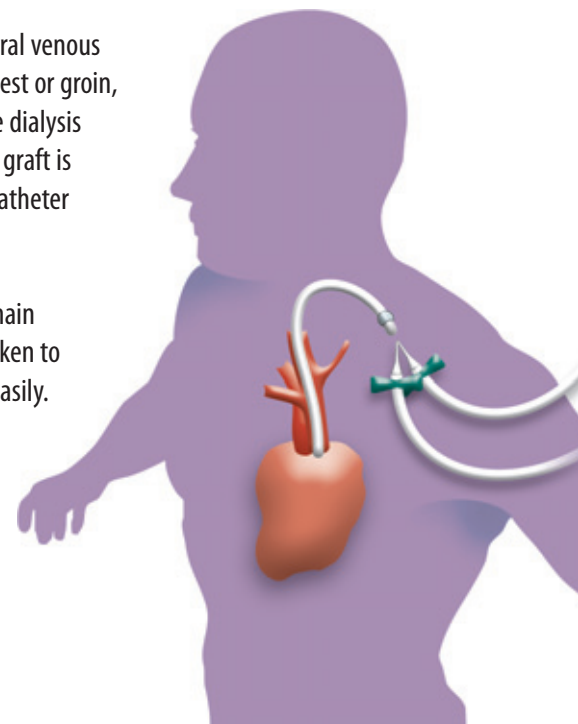
Arterio-venous graft

Catheters

The third type of vascular access is the catheter, which is also known as the central venous catheter. This is a plastic tube that is inserted into a central vein in your neck, chest or groin, with the other end remaining outside the skin to allow it to be connected to the dialysis tubing. Most catheters are only temporary, and are often used while a fistula or graft is healing. However, some patients are unable to have a fistula or graft, and so a catheter must be used as permanent access.

The main disadvantage of catheters is that they create a tunnel between your main circulation and the outside world, meaning that extreme caution needs to be taken to ensure bacteria can't get into your bloodstream. They can also become clotted easily. Blood flow rates are often poor with catheters, meaning that you may have to spend more time on the dialysis machine to get the same benefits as those seen with a fistula or graft. However, catheters can be used as soon as they are inserted, meaning that they are a good method to use in an emergency.

Catheters are the least favoured option but are good for use in an emergency.



Central venous catheter

Which type of access is best for you?

The type of access that would be best suited to you should be discussed between you and your doctor. Fistulas are the preferred type of access, but this may not be suitable for you – you may not have the right collection of blood vessels in your arm. A graft may be more suitable, or you may need immediate dialysis, in which case a catheter may be the best option. Only a few sites on your body are suitable for vascular access; the decision as to where it goes should be made by you and your doctor together to ensure it remains as clean and trouble-free as possible.

You and your doctor should decide together which type of access is best for you.

Vascular access care

Taking care of your access

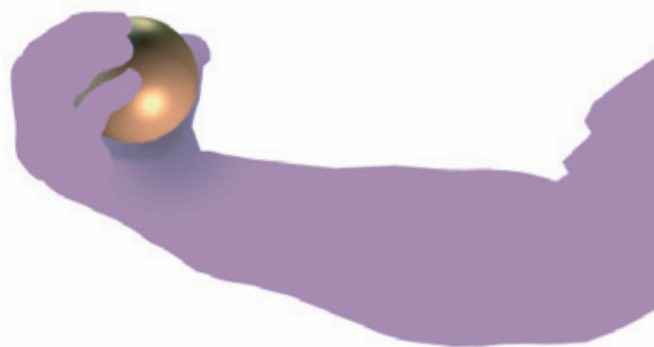
Your vascular access is, in effect, your lifeline. A good vascular access with a strong blood flow will allow you to experience the full benefits of dialysis and feel as well as possible, allowing you to lead as close to a normal life as possible. It's your responsibility to keep your access clean and healthy; a healthy access can help you to lead a more fulfilling life.

Exercising your access

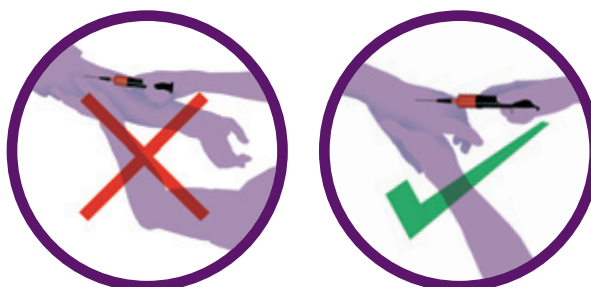
If you have had a fistula created in your arm, some simple exercises can help to encourage your fistula to heal more quickly. Making a fist or squeezing a rubber ball or handgrip with the hand of your access arm several times a day may increase blood flow to the fistula. This can help it to work better and heal quicker. Your surgeon or dialysis support staff can advise other exercises. These exercises are only needed in the early stages.

Using your access arm

It is important not to put excess pressure on your access arm. You should avoid wearing jewellery and watches, or clothes with tight-fitting sleeves. You should also avoid carrying heavy weights with your access arm or sleeping on it.



You should never allow healthcare staff to take blood pressure readings from your access arm, take blood from your access arm or to inject or insert an intravenous line into it. Blood should be taken from the back of the hand to avoid vein damage and stenosis.



Cleaning your access

Ensuring that your access is clean is vital in avoiding infection. Anyone who is going to handle your access should wash their hands thoroughly and put on sterile gloves first. If you have a fistula or graft, your access site should be cleaned before it is used for dialysis. If you have been fitted with a catheter, this should be kept clean and dry at all times with the caps securely fitted until dialysis takes place. Your renal unit staff will instruct you on how to care for the area of your skin where the access comes out of your body (the exit site), but in general you should not touch this area or apply any dressings yourself.



Checking your access for infection

Your access should be carefully examined every day for signs of infection or damage. It is a good idea for you to do this yourself at a regular time every day (e.g. first thing in the morning), even if it is not your day for dialysis. If your access is used when it is infected, bacteria may be transferred to your circulation by the needle. This can cause blood poisoning, which can be very dangerous.

Signs of infection or damage to the access include:

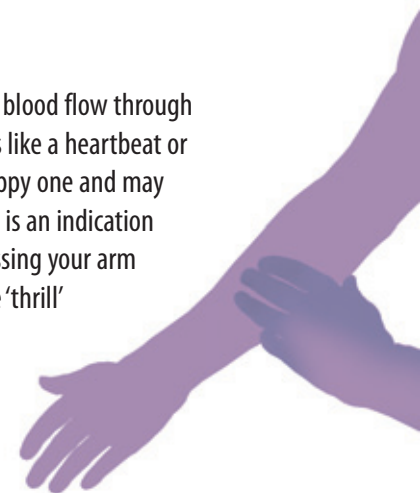
- Redness
- Swelling
- Pain
- Numbness
- Warmth
- Fever
- Pus or open sores
- Ballooning of the access (aneurysm)

However, you may not experience redness, pain or swelling at your access site even if you do have an infection. If you feel feverish or run-down, make sure you always tell your dialysis support staff before beginning dialysis.

It is essential to check your access is clean and free from infection before it is used for dialysis.

Checking your access for blockage

Even if your fistula looks like it is healthy and working properly, it is important to check that the blood flow through it is strong. You can use a stethoscope to listen to the 'bruit' (buzzing) in your fistula. This sounds like a heartbeat or a whooshing sound. If there is a blockage, the sound will change from a smooth sound to a choppy one and may get higher in pitch. The sound of your pulse will also change from a soft to a harsher sound. This is an indication that the access is failing. You should also examine your fistula with your fingers – by gently pressing your arm you can check for a constant vein diameter and the presence of aneurysms. You can also feel the 'thrill' (vibration) in your access. You should report any changes you feel.

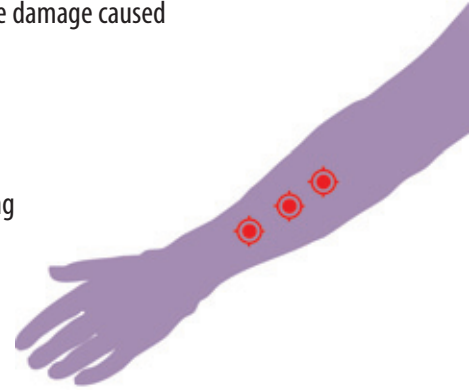


Good needling technique

It is important that a good needling technique is used during dialysis to try to minimise the damage caused to your access.

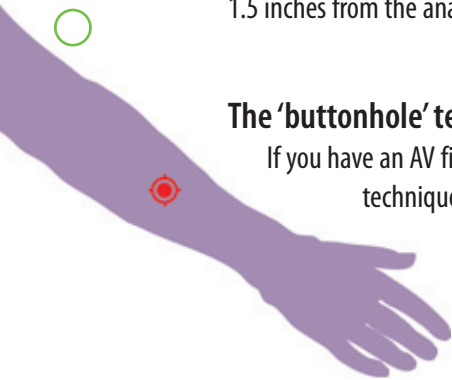
Site rotation

If you have been fitted with an AV graft, it is important that you or the person administering your dialysis rotate the sites used to insert dialysis needles. The 'rope ladder' pattern is mostly used, in which needles are inserted at least 1.5 inches apart from each other and 1.5 inches from the anastomosis (the artificial connection between the artery and vein).



The 'buttonhole' technique

If you have an AV fistula, you or the person administering your dialysis may be able to use the 'buttonhole' technique. This method involves using the same site every time a needle is inserted creating a tunnel from the surface of your skin to your blood vessel, just like ear piercing. Once this tunnel has healed, there are no nerve endings or tissues in the path of the needle when it is inserted, and therefore nothing to cause pain.



Needle rotation

Once a needle has been inserted, it is important not to turn it. Turning needles can cause damage to the access by enlarging the puncture site.

Taking care of your access – top tips

- **Check your access every day**
- If your access is new, make sure you exercise your arm to help it heal
- **Always** ensure your access is clean before using it for dialysis
- **Always** check your access for signs of infection
- **Always** check your access for signs of blockage
- **Always** report any changes you detect
- **Do not** allow blood to be taken from or IV cannulas inserted into your access arm
- **Do not** allow your blood pressure to be taken on your access arm, or lift heavy items with that arm

What can I do to help?

Ultimately, the health of your access is your responsibility. You should do everything you can to ensure your access is in the best possible condition. You can do this by:

1. Knowing the facts. Make sure you know what to look for when you are checking your access and what you can expect from your dialysis support staff
2. Make sure you check your access every day. If you don't do this, you may miss signs of an infection or damage that could quickly get worse
3. Discuss any concerns you have with your dialysis support staff. Always report any changes you notice immediately

Problem	Prevention	FAQs
Infection	<ul style="list-style-type: none"> • Keep your access clean • Ensure your access is cleaned thoroughly before it is used for dialysis. It should be washed with both antibacterial soap and iodine or alcohol • Always inform your nurse of any changes in your access, such as redness or soreness, or if you have a fever 	<ul style="list-style-type: none"> • How do I ensure my access is clean? • Do I need to make sure my access is covered when I have a shower or a bath? • Can I go swimming? • Who should I contact if I notice a change in my access or have a problem with it?
Blockage	<ul style="list-style-type: none"> • Feel for the 'thrill' and listen for the 'bruit' in your access every day • Always inform your nurse if the thrill or bruit changes • Always inform your nurse if your hand becomes cold, numb, painful or hard to move 	<ul style="list-style-type: none"> • How can my doctor or nurse tell if my access isn't working properly? • What can be done if my access gets blocked?
Injury	<ul style="list-style-type: none"> • Make sure you know how the different needle sites are rotated on your access. Ensure that the right site is used for each treatment session • Never allow blood pressure measurements or blood samples to be taken from your access arm • Never carry heavy weights with your access arm • Avoid wearing tight clothing on your access arm • Avoid putting pressure on your access arm when sleeping 	<ul style="list-style-type: none"> • How is my needle site rotated? • What is a safe weight to carry with my access arm? • Will I be able to carry more when my access has matured? • Can I wear a watch on my access arm? • How do I avoid putting pressure on my arm when I am asleep?

FAQs



FAQs

Frequently asked questions

Here are a few questions you may wish to think about and discuss with your nurse.

After surgery, when can my access be used?

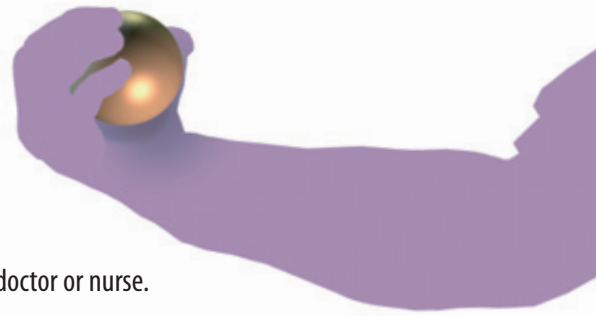
If you have an AV fistula, you should be able to use it after 6 weeks. Sometimes they can mature earlier, sometimes they take longer to mature. AV grafts can usually be used after 2 weeks, and catheters can normally be used straight away (after x-ray). However, this may change slightly depending on your unit policy.

How can I help my fistula to mature

You can help by exercising your arm regularly, as advised by your nurse.

Will it hurt?

You may experience some discomfort straight after the surgery, but this should disappear after a few days. However, if the discomfort continues, you should check your access for any signs of infection and seek advice from your doctor or nurse.



How do I clean my access?

You should clean your access regularly using soap and water at home. Before your access is used for dialysis, it should be cleaned with an antibacterial solution as advised by your dialysis unit. You should ensure that your skin is dry before a needle is inserted.



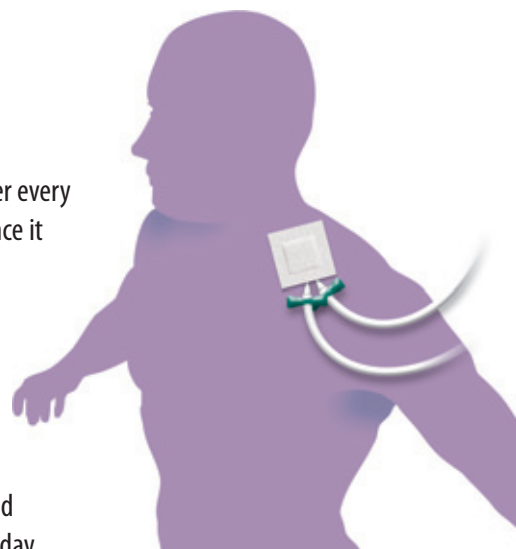
Frequently asked questions

What dressings should I use to protect my access?

If you have been fitted with a catheter, you should use a clean, dry gauze dressing after every dialysis session. If you have an AV fistula or graft, you do not need to use a dressing once it has healed after surgery.

How should I check my access?

You should check your access every day for the 'thrill' and the 'bruit'. If you have an AV graft, you may not be able to feel the 'thrill', and it is therefore very important that you check your access is working properly by listening for the 'bruit' with a stethoscope. You should make sure you check that your access is clean and that there are no signs of tenderness or redness. It is important that you do this every day.



Should my nurse wear gloves when dealing with my access?

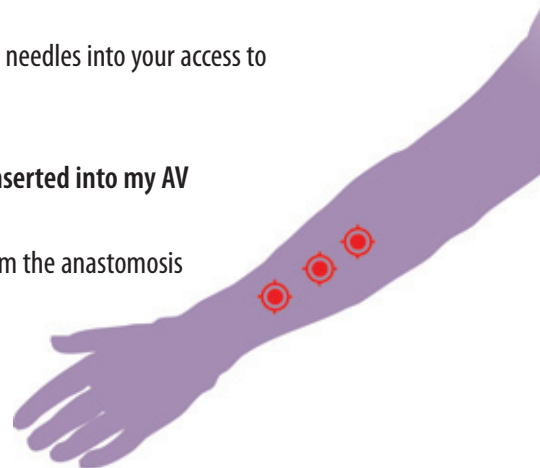
Yes. Your nurse should always wash his/her hands thoroughly and put a clean pair of gloves on before he/she handles your access.

Will the way my needles are put in affect my access?

Yes. It is important that your nurse has a good technique for inserting needles into your access to avoid causing unnecessary damage.

How far away should my needles be from each other when they are inserted into my AV fistula or graft

Your needles should be inserted at least 1.5 inches apart, and at least 1.5 inches from the anastomosis (artificial connection between your artery and vein).



Frequently asked questions

If I have an infection in my access arm, can the needles still go where the infection is?

No. It is essential that needles are not inserted into infected areas in order to avoid transferring the infection into the bloodstream, which can be very dangerous and even life-threatening.

Should I learn to put my own needles in?

Yes – your nurse will direct you as to how to do this. This means that once your access is mature, you may be responsible for inserting your own needles. This may help you to feel more at ease and reduce the risk of your access become infected with bacteria from other people.

Is it good for my needles to be turned once they have been inserted into my fistula?

No. This can cause damage to the access by enlarging the puncture site.

Should I put lots of pressure on my access when my needles have been removed?

Some pressure to stop bleeding is okay, but not too much for too long. This can lead to problems with blood flow to your access.

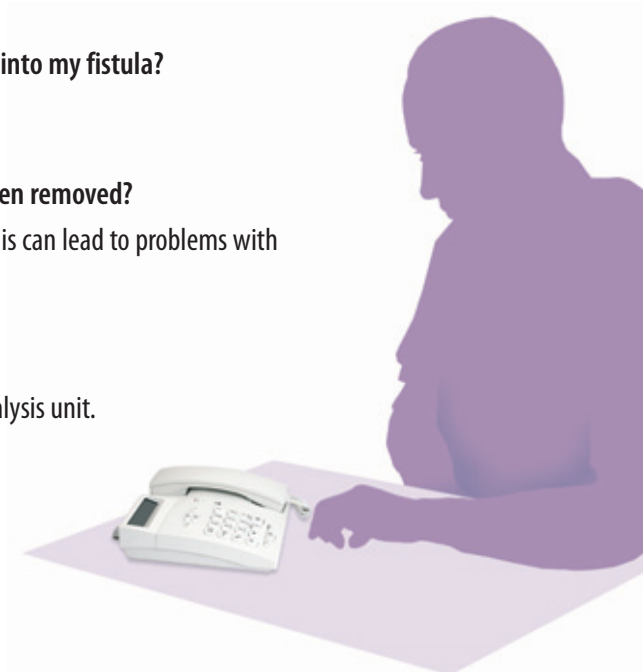
Who should I contact in the unit if I have a problem with my access

You should ensure you have the appropriate contact numbers for your dialysis unit.

What changes should I be concerned about?

You should always report any changes you see, but in particular:

- Redness or pain
- No 'bruit' (buzzing sound)
- A change in the 'bruit'
- A change in the 'thrill' (buzzing sensation) in the area of your access
- A change in your skin colour or temperature
- Numbness or pain in your hand, or difficulty moving it



Frequently asked questions

What will happen if my fistula stops working?

If your fistula stops working, your dialysis support staff will arrange appropriate tests and investigations to see what the problem is. You may be given treatment to resolve the problem. However, this may not always be possible, and you may be referred for an assessment for the formation of alternative access.



What does it mean when my fistula has 'blown'?

This means that some blood has leaked out of the vein around the needle site and has moved into the surrounding tissues. This may lead to bruising.

What is 'Steal Syndrome'?

'Steal syndrome' occurs when your access diverts too much blood from your arm during dialysis, leaving your hand cold and numb. Steal syndrome results in a lack of oxygen in the tissues and in extreme cases may lead to ulcer formation if it is not treated. It is important to be on the lookout for Steal syndrome.

Can I play sports?

Yes, although you should take care not to participate in anything too rigorous. You should always be very careful not to damage your access arm.



Can I swim in a swimming pool or lake?

If you have an AV fistula or graft, then yes you can. Unfortunately, if you have a catheter, you are not allowed to go swimming.



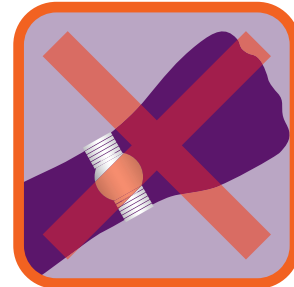
Do I need to keep it covered when I shower?

If you have an AV fistula or graft, then you do not need to keep it covered. However, if you have a catheter, then yes, you should ensure that it is covered, and change any dressing if it gets wet.

Frequently asked questions

Can I wear a watch on my access arm?

No.



Can I have blood pressure taken from my access arm?

No. You should never allow anyone to take blood pressure readings from your access arm.



Can I carry the shopping with my access arm?

You should not carry anything too heavy with your access arm. You should also never carry a bag with the handles hanging over your access.



Should I sleep with my arm on a pillow?

Not necessarily. It is important that you don't sleep awkwardly on your arm, so if a pillow makes you more comfortable then it will do the access no harm. However, it is not essential.



Patient stories



Patient stories

Anita

Anita is 46 and is a civil servant. She has been on haemodialysis for one year and has an AV fistula in order to provide vascular access for dialysis.

“When I was told I was having haemodialysis and needed a fistula I was worried about how it would look having these huge lumps on my arm. They looked really red and swollen, so I tried to cover them up with jewellery and clothing so I didn’t have to look at them or touch them.

Soon I began to feel feverish and tired all the time. I told my dialysis support staff and they said I probably had an infection because I had not been maintaining my fistula and keeping it clean.

I had to have a catheter inserted in my chest while my fistula healed. It was more uncomfortable and required more attention to ensure I didn’t get an infection. I had to spend much more time on dialysis because my blood flow rate through the catheter was quite poor and it would often get blocked due to blood clots.

Now I understand how important it is to keep my access arm healthy. I don’t wear any jewellery or watches and I make sure the area is cleaned with antibacterial solution before I insert the needle. Now my fistula has been trouble free for six months, and it doesn’t look so bad now that I have begun to take care of it.”

Muhammad

Muhammad is 38 year old investment banker. He has been on haemodialysis for two years and has dialysis using an AV fistula.

“When I was told I needed haemodialysis, I made sure I followed all the instructions that the healthcare team gave me. I did the strengthening exercises to maximise the blood flow to my arm and fistula, and made sure I kept the area as clean as possible. This meant I had to clean the area with antibacterial solutions and alcohol before I inserted the needle. Since I have a healthy fistula, it has made my dialysis much more efficient so I can spend much more time getting on with my life.

When I first started dialysis I was really scared of needles and the pain I associated with them. As a result, I followed the buttonhole technique of needle insertion, which is suitable if you have an AV fistula and allowed me to use the same site for needle insertion. Over time I found that there wasn’t as much pain associated with the inserting the needle as I had thought there would be, and so I don’t dread dialysis sessions anymore.

I’m really careful with my fistula because it is literally a lifeline for me. I used to be a die-hard tennis player, but now I avoid putting my access arm under too much stress. I avoid lifting heavy weights and have taken up football instead!”

Richard

Richard is a 65-year-old retired shopkeeper. He has been on dialysis for three years and has had dialysis using a catheter and AV fistula.

“At first I was very good at maintaining my fistula. I did the exercises for a few days to increase blood flow to the area and I always kept the area very clean. I didn’t put any stress on it either and was careful not to lift anything too heavy. But after a while I got complacent, and didn’t do my exercises. Since I didn’t check to see if the blood flow through my fistula was normal, I couldn’t tell that my fistula was failing and that there was a very poor blood flow through it.

As a result I had to have a new fistula made, which was painful because I had to undergo surgery. While I waited three months for it to mature I had to have a catheter fitted to my groin area as a temporary access point for dialysis. It wasn’t very comfortable, and because the blood flow rate is not very high, I had to spend more time on dialysis than I would if I had a fistula. It meant I didn’t have as much time to do things I wanted to do, like gardening and reading. It seemed like dialysis was taking over my life.

When my new fistula was mature and ready for needle insertion I made sure I made daily checks for blockage using a stethoscope to listen to changes in blood flow and my hands to check for vibration. I listened to the dialysis team and kept up the hand exercises to increase blood flow to the area and strengthen my fistula.

Now I know that you can’t be complacent. You need to maintain your fistula for as long as you have dialysis, so you can’t just stick to the rules in the beginning because you could be on dialysis for the rest of your life. A healthy fistula can last for years; I’ve used this one for two years now and by maintaining it properly I can focus on getting my garden in shape for summer barbeques!”

Supported by the NKF.



www.kidney.org.uk
Helpline: 0845 601 02 09

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www.anaemianurse.org
Helpline: 01483 724472

