



# Government of **Western Australia** Department of **Health**

## Procedure Specific Information Sheet

### TP04 Creating an Arteriovenous Fistula

Expires end of December 2025

**Write questions or notes here:**

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## What is an arteriovenous fistula?

An arteriovenous fistula is where a vein and an artery in your arm are joined directly together under your skin. The blood in the artery flows into the vein with high pressure, making the vein larger. The vein is then usually large enough to work for your dialysis treatment after 4 to 8 weeks.

Your doctor has suggested an operation to create an arteriovenous fistula. However, it is your decision to go ahead with the operation or not. This document will give you information about the benefits and risks to help you to make an informed decision.

If you have any questions that this document does not answer, it is important that you ask your surgeon or the healthcare team. Once all your questions have been answered and you feel ready to go ahead with the procedure, you will be asked to sign the informed consent form. This is the final step in the decision-making process. However, you can still change your mind at any point.

## Why has an arteriovenous fistula been recommended?

You have kidney failure so you need treatment to filter wastes and excess fluid from your bloodstream (dialysis). A kidney transplant is suitable for only about 1 in 3 people with kidney failure. If you are suitable, it can take 2 to 3 years (or sometimes more) for a kidney to become available. There are two types of dialysis.

- Peritoneal dialysis – A dialysis fluid is run into the peritoneal cavity (the space that contains your bowels and other abdominal organs) using a small tube that is placed in your abdomen. Wastes then filter into the fluid through the peritoneum (the lining of the peritoneal cavity). The fluid with the wastes is removed through the tube and replaced with more fluid.
- Haemodialysis – Wastes and excess fluid are filtered from the blood using a dialysis machine. You need an arteriovenous fistula for haemodialysis because the veins in your arm are not big enough and they do not have enough blood flowing through them for

dialysis to work. Two needles are inserted in the vein that is made larger by the join. One of the needles takes blood to the dialysis machine, and the other needle returns blood into your bloodstream.

Haemodialysis has been recommended as the best form of dialysis for you.

## Are there any alternatives to an arteriovenous fistula?

It is possible to use a permanent plastic catheter (tube) under your skin and into one of the large veins in your neck or groin. This does not last as long as an arteriovenous fistula but can be replaced. A permanent catheter can cause a serious infection. Another option is to have an arteriovenous graft. This uses an artificial material to link the artery and vein together. A graft has a higher risk of infection and failure.

## What will happen if I decide not to have the operation?

Without regular dialysis your condition will become life-threatening. If you decide not to have an arteriovenous fistula, you should discuss this carefully with your doctor.

## What does the operation involve?

The healthcare team will carry out a number of checks to make sure you have the operation you came in for and on the correct side. You can help by confirming to your surgeon and the healthcare team your name and the operation you are having.

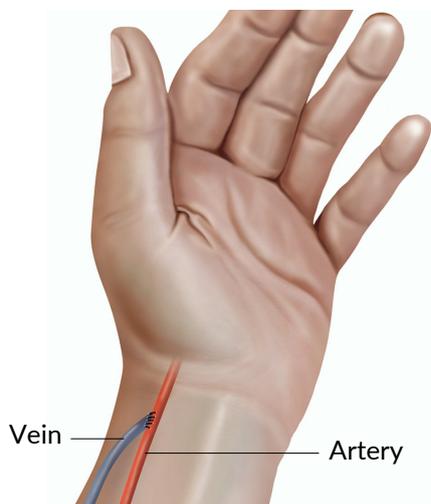
Various anaesthetic techniques are possible. Your anaesthetist and your surgeon will discuss the options with you. During the operation, you may also have injections of local anaesthetic to help with the pain after the operation. You may be given antibiotics during the operation to reduce the risk of infection. The operation usually takes less than an hour.

The operation involves joining together a vein and an artery in your arm. The join is usually made at your wrist or elbow, depending on how good your blood vessels are in your arm. It is better to

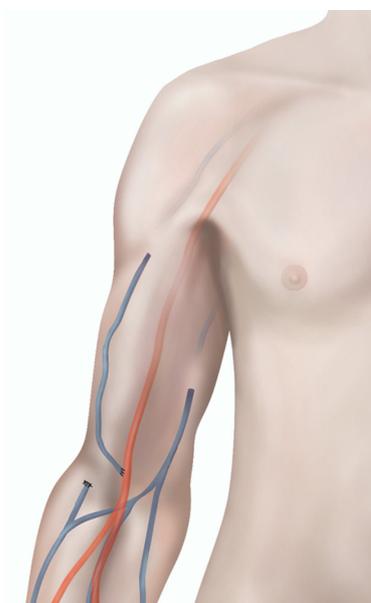
make the join at your wrist as this allows a longer length of vein to be available for haemodialysis.

Your surgeon will make a small cut, usually 3 to 5 centimetres long, on the thumb side of your wrist or in the crease of your elbow. They will join the vein to the artery using small stitches.

Your surgeon will close the cut with stitches.



An artery and vein joined at the wrist



An artery and vein joined at the elbow

## What should I do about my medication?

Make sure your healthcare team knows about all the medication you take and follow their advice. This includes all blood-thinning medication as well as herbal and complementary remedies, dietary supplements, and medication you can buy over the counter.

The healthcare team will advise you how many days before the operation you need to stop taking any blood thinning medications to avoid bleeding during or after the operation.

## What can I do to help make the operation a success?

If you smoke, stopping smoking now may reduce your risk of developing complications and will improve your long-term health.

Try to maintain a healthy weight. You have a higher risk of developing complications if you are overweight.

Regular exercise should help to prepare you for the operation, help you to recover and improve your long-term health. Before you start exercising, ask the healthcare team or your GP for advice.

You can reduce your risk of infection in a surgical wound.

- In the week before the operation, do not shave or wax the area where a cut is likely to be made.
- Try to have a bath or shower either the day before or on the day of the operation.
- Keep warm around the time of the operation. Let the healthcare team know if you feel cold.
- If you are diabetic, keep your blood sugar levels under control around the time of your procedure.

Speak to the healthcare team about any vaccinations you might need to reduce your risk of serious illness while you recover. When you come into hospital, practise social distancing and hand washing and wear a face covering when asked.

## What complications can happen?

The healthcare team will try to reduce the risk of complications.

Any numbers which relate to risk are from studies of people who have had this operation. Your doctor may be able to tell you if the risk of a complication is higher or lower for you. Some risks are higher if you are older, obese, you are a smoker or have other health problems. These health problems include diabetes, heart disease or lung disease.

Some complications can be serious and can even cause death.

You should ask your doctor if there is anything you do not understand.

Your anaesthetist will be able to discuss with you the possible complications of having an anaesthetic.

### General complications of any operation

- Bleeding during or after the operation. This may result in a swelling under your wound.
- Infection of the surgical site (wound) (risk: 2 in 100). It is usually safe to shower after 2 days but you should check with the healthcare team. Let the healthcare team know if you get a high temperature, notice pus in your wound, or if your wound becomes red, sore or painful. An infection usually settles with antibiotics but you may need special dressings and your wound may take some time to heal. In some cases another operation might be needed. Do not take antibiotics unless you are told you need them.
- Allergic reaction to the equipment, materials or medication. The healthcare team is trained to detect and treat any reactions that might happen. Let your doctor know if you have any allergies or if you have reacted to any medication or tests in the past.
- Chest infection. Your risk will be lower if you have stopped smoking and you are free of Covid-19 (coronavirus) symptoms for at least 7 weeks before the operation.

## Specific complications of this operation

- Thrombosis (clotting) of the fistula. This can happen at any time but is more common in the first 24 hours. The fistula will probably fail (risk: less than 3 in 10 in 1 year). If it is performed not long after the first procedure, an operation to remove the clot may save the fistula.
- Infection of the fistula (risk: 4 in 100). If antibiotics do not help, the infected part may need to be removed. An infection on the join of an artery to a vein can cause the join to fall apart. This can be dangerous and needs to be treated quickly.
- Narrowing (stenosis) or swelling (aneurysm) of the fistula. If this affects your dialysis, you may need another operation or radiology-assisted treatment (involves x-rays).
- Large and unsightly appearance of the vein, if the vein is used for dialysis over a number of years. This should not affect the quality of your dialysis.
- Steal syndrome, where the fistula causes too much blood to flow from the artery to the vein (risk: 2 in 100). Less blood goes to your hand, causing numbness, pain and a feeling of cold. It can also affect the nerves and muscles in your hand (risk: 5 in 1,000). You will usually need another operation to reduce the amount of blood flowing into the vein. These problems are more likely if you have diabetes.
- Swelling of your arm, if the main veins in your arm get blocked (risk: 2 in 100). They can get blocked for no apparent reason or because the veins in your shoulder or neck have been used for dialysis for a long time. It may be possible for your surgeon to open the blocked vein or to insert a stent (tube) inside the vein. If the problem does not improve, the fistula will need to be tied off using a thread.

### Consequences of this procedure

- Pain. The healthcare team will give you medication to control the pain and it is important that you take it as you are told so you can move your arm about freely.

- Unsightly scarring of your skin, although the cut usually heals to a neat scar.

## How soon will I recover?

### In hospital

After the operation you will be transferred to the recovery area and then to the ward.

You should be able to go home the same day or the day after. However, your doctor may recommend that you stay a little longer.

You should be able to feel a vibration in your arm (called a thrill), which shows that the fistula is working properly. If you do not feel this, let your doctor know.

If you are worried about anything, in hospital or at home, contact the healthcare team. They should be able to reassure you or identify and treat any complications.

### Returning to normal activities

If you had sedation or a general anaesthetic and you do go home the same day:

- a responsible adult should take you home in a car or taxi and stay with you for at least 24 hours;
- you should be near a telephone in case of an emergency;
- do not drive, operate machinery or do any potentially dangerous activities (this includes cooking) for at least 24 hours and not until you have fully recovered feeling, movement and co-ordination; and
- do not sign legal documents or drink alcohol for at least 24 hours.

You should be able to return to normal activities as soon as your arm feels comfortable. Do not lift anything heavy, such as shopping, for 1 to 2 weeks.

Avoid putting pressure on top of the vein in your arm that has been used for the fistula as this can stop the blood flow, causing the fistula to fail.

Look after your arm as your doctor tells you, to reduce the risk of complications. You will also be given exercises to help the vein get larger and stronger.

Regular exercise should help you to return to normal activities as soon as possible. Before you start exercising, ask the healthcare team or your GP for advice.

Do not drive until you can control your vehicle, including in an emergency, and always check your insurance policy and with the healthcare team.

### The future

It usually takes from 4 to 8 weeks for the vein to have enough blood flowing through it for dialysis to work.

Do not wear clothes with tight sleeves. Unless it is an emergency, do not have your blood pressure taken or give any blood from your arm that has the fistula. If the fistula was made at your wrist, do not wear a watch or bracelet. If it was made at your elbow, do not bend your arm for long periods because this increases the risk of the fistula becoming blocked.

There is a small risk that the fistula may bleed through your skin. If this happens, ask someone to press firmly on your wound, keep your arm raised and call an ambulance or go immediately to your nearest Emergency department.

### Summary

Creating an arteriovenous fistula involves joining an artery to a vein in your arm. The vein should get larger and stronger, with enough blood flowing through it so that your haemodialysis treatment can work for a long time.

Surgery is usually safe and effective but complications can happen. You need to know about them to help you to make an informed decision about surgery. Knowing about them will also help to detect and treat any problems early.

Keep this information document. Use it to help you if you need to talk to the healthcare team.

Some information, such as risk and complication statistics, is taken from global studies and/or databases. Please ask your surgeon or doctor for more information about the risks that are specific to you, and they may be able to tell you about any other suitable treatments options.

This document is intended for information purposes only and should not replace advice that your relevant healthcare team would give you.