

Hemodialysis Access

What you need to know



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Introduction

Whether you are already on hemodialysis treatment or you will soon be starting dialysis, this booklet will help you better understand the ways hemodialysis machines reach (access) your blood for filtering. Some of the covered topics include:

- Choosing the best access for you
- Pros and cons of different access types
- Your access is important for best results from hemodialysis treatment
- Access care
- Maintaining your access

What is a hemodialysis access?

A hemodialysis access, sometimes called a vascular access, is an opening made in your skin and blood vessel during a short surgical procedure.

When you have dialysis, your blood flows out of the access through soft tubes and into a hemodialysis machine.

After your blood is filtered in the machine, it goes through a soft tube to the access and back into your body.

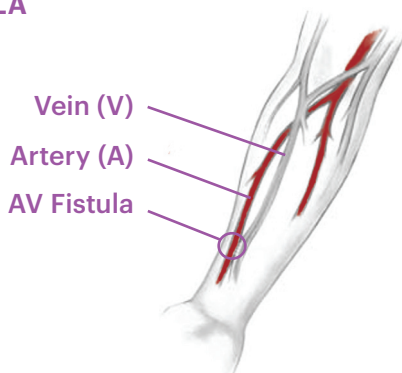
Are different types of access available?

Yes, there are three types of accesses that are used for hemodialysis. Your doctor should teach you about the pros and cons of each one.

Your doctor should refer you to a special surgeon with hemodialysis access experience at least six months before you need to start treatment. A surgeon can evaluate you and help you choose the type of access that is best for you.

When your doctor tells you that you will need dialysis in the near future, you should protect the arm where the surgery will be done. Don't allow anyone to draw blood or give you an injection in this arm. Also, never let anyone use a cuff to take your blood pressure from this arm. You should wear a medical alert bracelet to inform hospital staff about your arm.

AV FISTULA



An AV (artery-vein) fistula is the best choice for hemodialysis. It is preferred because it:

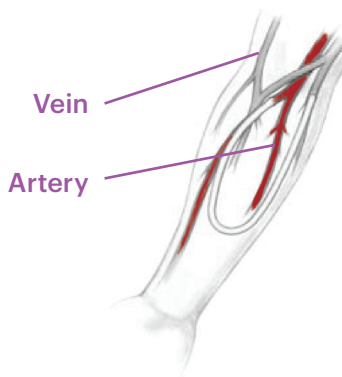
- Usually lasts longer
- Has fewer problems like clotting and infections

A fistula should be placed several months before you need to start dialysis. This allows the fistula enough time to fully heal before starting dialysis.

Minor surgery is needed to create the fistula. It is made by connecting a vein to a nearby artery, usually in your arm. This creates a large blood vessel that has a fast flow of blood. Your lower forearm (between the wrist and elbow) is the preferred location for your fistula.

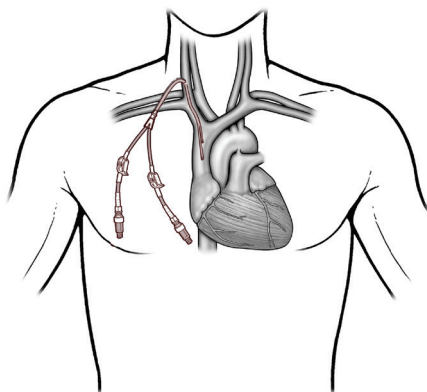
A fistula usually takes one to four months to mature, which means the vein becomes larger due to increased blood flow. Once the access has matured, dialysis treatments can start. Ask your healthcare provider when you can start doing exercises, such as squeezing a rubber ball, to help your fistula mature. Fistulas usually last for many years.

AV GRAFT



An AV (artery-vein) graft is usually the second choice for an access. Minor surgery is done using an artificial tube between a vein and a nearby artery. The AV graft generally needs to be in place at least two weeks after surgery before they can be used.

CATHETER



A catheter is most often used for a temporary access. For example, it is sometimes used for a short time in people who get an AV fistula and need to fully healed before it can be used.

Sometimes a catheter is used over a long period of time because a fistula or graft is not possible.

Catheters are made of soft plastic tubing. There are two parts, one for removing your blood and the other for returning the cleaned blood to your body.

A catheter is typically placed only when you need to start dialysis immediately. It is put in a large vein, usually in your neck but sometimes in your upper chest.

Catheters have more problems (like clotting and infections) than fistulas or grafts. They may not allow for enough blood flow for good dialysis treatment.



Pros and Cons of different access types



AV Fistula Pros and Cons

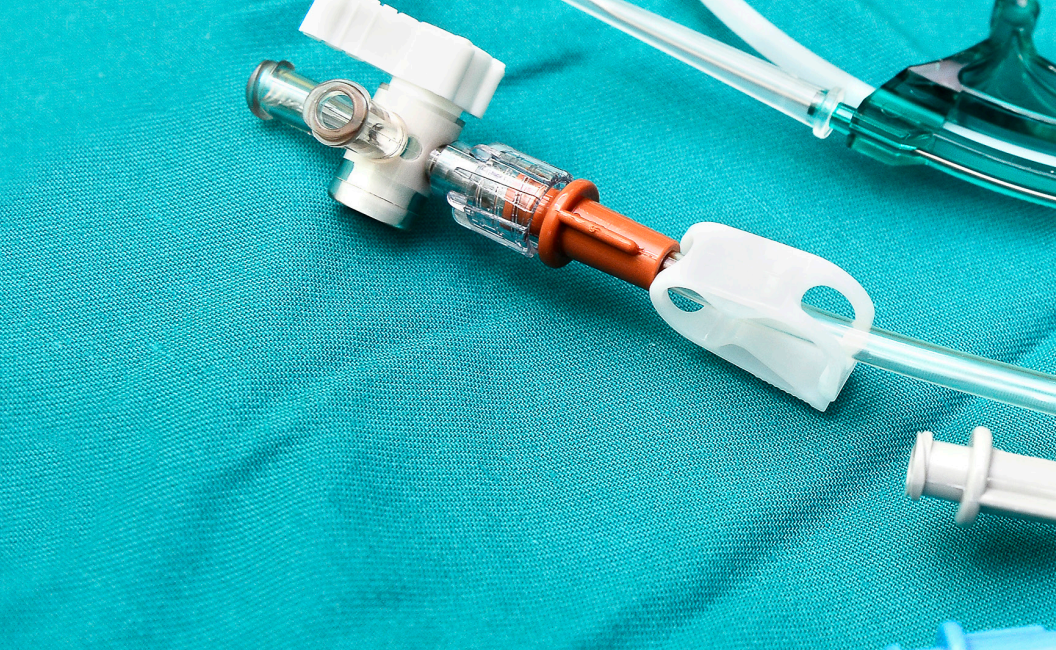
PROS:

- Lasts longer
- Not prone to infection
- Provides excellent blood flow once it is ready to use
- Less likely to develop blood clots and become blocked
- You can take showers once the access heals after surgery



CONS:

- Needs to mature, which takes one to four months, before it can be used
- Needles are used to connect to the dialysis machine



AV Graft Pros and Cons

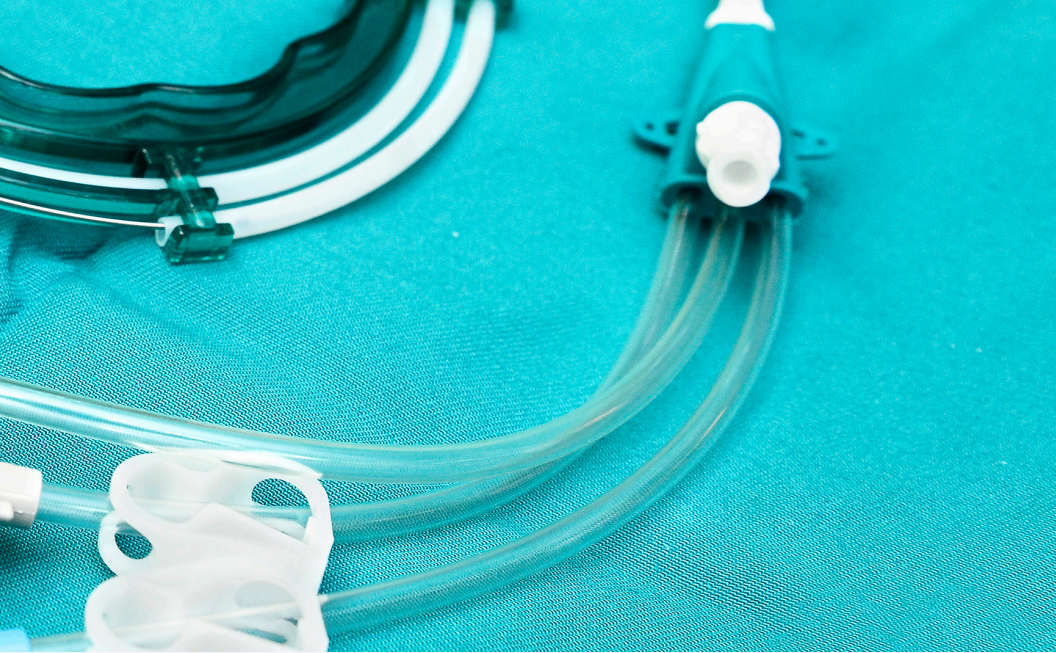
PROS:

- Provides excellent blood flow once it is ready to use
- You can take showers once the access heals after surgery

CONS:

- Does not last as long as an AV fistula
- More prone to infection than an AV fistula
- Needs at least two weeks before it can be used
- Clotting can be a problem that may require surgery or other treatment to correct
- Needles are used to connect to the dialysis machine





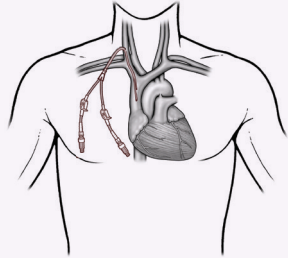
Catheter Pros and Cons

PROS:

- Can be used right away
- No needles are needed to connect to the machine.

CONS:

- Usually a temporary access
- Most prone to infection
- May not have enough blood flow for best dialysis results
- Blood clots can form that block blood flow through the catheter
- Can cause narrowing of major blood vessels
- Check with your care team to see if showering is an permitted



Caring for your access after surgery

AV FISTULA AND AV GRAFT

- Keep it dry; once it is healed you can take showers and wash gently with soap and water
- Watch for bleeding
- Do not wear tight clothing or jewelry over your access
- Do not carry or place the strap of a heavy bag over your access
- Call your healthcare provider if you:
 - » Notice redness, pain, swelling, or a feeling of warmth at the access site
 - » Feel short of breath
 - » Have flu-like symptoms
 - » Have a temperature of 99 degrees or higher
- Do not sleep with your head on your access arm
- Ask the nurse at the hospital to show you how to check your access at home for a vibration (called a “thrill”) or for a sound (called a “bruit” pronounced *brew-ee*)
- Ask your healthcare provider when you can start doing exercises, such as squeezing a rubber ball, to help your access mature and be ready to use
- Your healthcare provider should check your access to make sure it is maturing properly
- Only use your access site for dialysis

CATHETER

- Keep the dressing dry; check with your care team to see if showering is permitted
- Watch for bleeding
- Call your healthcare provider if you:
 - » Notice redness, pain, swelling, or a feeling of warmth at the access site
 - » Feel short of breath
 - » Have flu-like symptoms
 - » Have a temperature of 99 degrees or higher





What happens when I start dialysis?

If you have an AV fistula or AV graft, two needles are inserted into your access at the beginning of each dialysis. These needles are connected to soft plastic tubes that go into the dialysis machine. Your blood goes into the machine through one of the tubes. The blood passes through the dialyzer (artificial kidney), where it is filtered (cleaned). It is returned to you through the other tube.

If you have a catheter, it can be connected directly to the dialysis tubes, and no needles are used.

What happens if my access is not working well?

If your access is not working well, it can decrease the amount of dialysis you get. Getting enough dialysis is important to:

- Improve your overall health
- Help you live longer
- Improve your quality of life
- Keep you out of the hospital

To make sure you are getting the right amount of filtering, your care team will measure your delivered dose of dialysis. This tells them if enough fluids and waste products are being removed from your blood.

Your delivered dose of dialysis will be checked by doing a blood test to measure your Kt/V (pronounced *kay tee over vee*). If you are getting the right amount of dialysis, your Kt/V should be 1.2 or more.

Another test that measures your delivered dose is called urea reduction ratio (URR). Your URR result should be 65% or more.

If your Kt/V or URR numbers are too low, your access may not be working well.

Will my dialysis care team check my access?

Yes, you should have a complete physical exam of your access before every dialysis treatment.



Caring for your AV fistula or graft

- Ask your dialysis care team to teach you how to prevent infection and keep your fistula or graft working well
- Wash your access site every day with an antibacterial soap (ask your dialysis care team to recommend a good soap to use)
- Wash your access site before every dialysis treatment (your dialysis center has hand washing sinks and antibacterial soap)
- Do not scratch your access (your fingernails can be a source of infection)
- Your nurse or technician should clean your access site with an antiseptic before putting the needles in (do not touch your access area after it has been disinfected)
- Your nurse or technician should wear a surgical mask, a face shield, and clean gloves when working near your access

- Avoid coughing or sneezing on your access site during treatment
- Always wear a clean glove or use a clean gauze pad if you are holding your own access site after the needles are removed
- Apply only gentle pressure to stop bleeding after the needles are removed (press only where the needle was placed and just below—never press above where the needle was)
- Call your dialysis care team at once if the area of the access is sore, swollen, red, or feels hot—this could be a sign of infection

Protecting your AV fistula or graft

- Do not let anyone measure your blood pressure on your access arm (your other arm should be used instead)
- Do not let anyone take blood from your access arm when you are not on dialysis
- If the vibration (thrill) or sound (bruit) of your access is absent or seems different, call your dialysis care team at once because your access may not be working well
- Ask your dialysis care team how to make your needle sticks as comfortable as possible.
 - » Different sites for the needles can be used for each dialysis
 - » People who have a fistula can ask to use a button hole technique, which is a less painful way to use same site for each dialysis

Preventing catheter-related infections

- Ask your dialysis care team to teach you how to prevent infections and keep your catheter working well
- Be sure your catheter has a clean, dry dressing during and after every dialysis (make sure your nurse or technician checks your catheter for signs of infection at every dialysis)
- Make sure you wear a surgical mask when you are being connected to or disconnected from the dialysis machine
- Make sure your nurse or technician wears a surgical mask, face shield, and clean gloves when working near your catheter
- Use a protective cover for your catheter when showering (ask your dialysis care team how to get one of these covers)
- Ask your nurse or technician to teach you how to change the dressing
- Keep extra dressing supplies in your home in case you need to replace your dressing
- Contact your care team if you see or feel anything unusual with your access



Access problems

What kinds of access problems can happen? How are they treated?

Sometimes, even when you take the best care of your access, you may have problems. If an infection occurs, your doctor will order antibiotics for you.

If your access develops a clot, it needs to be treated with special medications. Sometimes this medication can be given in the dialysis unit. Other times, you may need to go to the hospital for treatment.

Sometimes surgery is needed to remove a clot or repair an access. Angioplasty may be needed to widen a narrowed fistula or graft. Your dialysis care team will check your access for problems. You, too, can help spot possible problems.

Learn the warning signs listed on pages 20-21. Contact your doctor or dialysis center right away if you notice any of them.



Warning signs of access problems

INFECTION

Warning signs:

Redness, swelling, soreness, and/or a feeling of warmth around your access site; fever, chills, and/or achy feeling.

Steps to take:

Call your doctor or dialysis care team at once.

You'll need to take antibiotic medicine prescribed by your doctor.

CLOTTING OR POOR BLOOD FLOW IN YOUR ACCESS

Warning signs:

Absence of the vibration (thrill) or sound (bruit) at your fistula or graft site; swelling of your arm; lower skin temperature around the access site; a decrease in your delivered dose of dialysis (Kt/V or URR); or changes in other lab values.

Steps to take:

Call your doctor or dialysis center. Keep a record of your Kt/V or URR and other labs. Speak to your dialysis care team when there are changes.

BLEEDING FROM YOUR ACCESS**Warning signs:**

Bleeding from a fistula or graft that lasts more than 20 minutes after your dialysis treatment is over.

Any bleeding from a catheter site or catheter tube.

Steps to take:

For bleeding from a fistula or graft, gently press your access with a clean gauze pad to stop the blood; if bleeding lasts more than 20 minutes, call your doctor or dialysis center at once.

For bleeding from a catheter site or tube, call your doctor or dialysis center at once, or go to the emergency room at your local hospital.

DECREASED CIRCULATION IN YOUR ACCESS ARM**Warning signs:**

Feelings of numbness, tingling, coldness, or weakness in your arm; blue fingers or sores at the tips of your fingers.

Steps to take:

Call your doctor or dialysis center right away (this must be treated at once to prevent nerve damage in your access arm).



Summary

Key points to remember

- Keeping your access working well will help you get the most from hemodialysis and help you feel your best.
- If your access is not working well, it can decrease the amount of dialysis you receive, which may affect your overall health and how long you live on dialysis.
- A fistula is the preferred type of access. If you are already receiving hemodialysis and you do not have a fistula, ask your doctor or dialysis care team if you are a candidate for a fistula.
- Make sure your dialysis care team checks your access often. They should do some special tests to make sure it is working well.



- Do not let anyone measure your blood pressure on your access arm, or take blood from your access arm when you are not getting dialysis. Your other arm should be used to measure blood pressure and do blood tests.
- Ask your dialysis care team to teach you the steps for good access care to prevent infection and keep your access working well.
- Know the warning signs for problems with your access.
- Track your important test results, such as your Kt/V and your URR.
- Ask your dialysis care team if you have any questions about your access or any other aspects of your hemodialysis care.

Where can I find more information?

If you have questions, speak to your doctor and other members of your healthcare team. You may also call the NKF Cares Patient Help Line toll-free at **855.NKF.CARES** (855.653.2273) or email nkfcares@kidney.org

NKF CARES

The National Kidney Foundation offers a toll-free patient help line for people affected by kidney disease, organ donation, or kidney transplant. Patients, families, and caregivers can speak with a trained specialist who will help answer questions and listen to concerns. You can also find free publications and other resources by calling, emailing, or visiting the website.

NKF PEERS

Preparing for and having a kidney transplant is associated with a range of questions and emotions. You can talk to a peer mentor who has been in a similar situation by contacting NKF Peers. Call 855.NKF.PEER (855.653.7337) or email nkfpeers@kidney.org to find out more. If you are considering donating a kidney, you can be connected with a living donor.

THE BIG ASK: THE BIG GIVE

A free, educational initiative that teaches kidney patients in need of a transplant how to ask their friends and loved ones to consider living organ donation. It provides factual, unbiased information that addresses many common concerns, and offers support to those who are making a decision about living kidney donation. Contact NKF or visit kidney.org/livingdonation for more information.

Important names and phone numbers

KIDNEY DOCTOR:

name: _____

phone: _____

NURSE PRACTITIONER/PHYSICIAN ASSISTANT

name: _____

phone: _____

PRIMARY CARE NURSE

name: _____

phone: _____

DIETITIAN:

name: _____

phone: _____

SOCIAL WORKER

name: _____

phone: _____

PATIENT CARE TECHNICIAN

name: _____

phone: _____

ACCESS SURGEON:

name: _____

phone: _____

Setting a standard for care

The National Kidney Foundation, through its *Kidney Disease Outcomes Quality Initiative* (KDOQI®), defines stages of kidney disease and offers guidelines that help your doctor and healthcare team make important decisions about your medical treatment.

The information in this booklet is based on those recommended guidelines.



The information contained in this publication is based on current data and expert guidance available at the time of publication. The information is intended to help patients become aware of their disease and its management. This publication is not intended to set out a preferred standard of care and should not be construed as one. Neither should the information be interpreted as prescribing an exclusive course of management. Patients should always consult with their healthcare providers regarding decisions about their individual plan of care.



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The National Kidney Foundation is revolutionizing the fight to save lives by eliminating preventable kidney disease, accelerating innovation for the dignity of the patient experience, and dismantling structural inequities in kidney care, dialysis, and transplantation.

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