

National Kidney
Foundation™

Hemodialysis Access: What You Need to Know





Hemodialysis Access: What You Need To Know

Whether you already get hemodialysis treatment, or you will need to start dialysis soon, this booklet will help you better understand the ways to reach (access) your blood for hemodialysis. It tells you:

- How to choose the access that is best for you.
- About the pros and cons of the different types of access.
- Why your access is important to getting the most from your hemodialysis treatment.
- How to care for your access.
- How to keep your access working well.

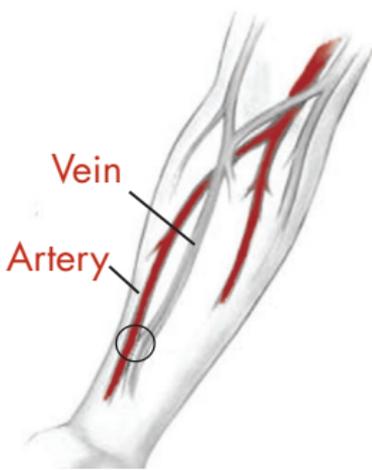
The information in this booklet is based on the recommendations from the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) Guidelines for Vascular Access. You may also be interested in checking out the Other Resources section on page 20.

What is a hemodialysis access?

Hemodialysis is a treatment that removes wastes and extra fluid from your blood when your own kidneys have failed. Before hemodialysis can be done, a connection must be made to the blood inside your blood vessels. Your hemodialysis access, or vascular access, is a way to reach your blood for hemodialysis. The access allows your blood to travel through soft tubes to the dialysis machine where it is cleaned as it passes through a special filter, called a dialyzer.

Are different types of access available?

Yes. Three different types of access can be placed for hemodialysis. They are called a *fistula*, a *graft* and a *catheter*. 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. This surgeon will evaluate you and help you choose the type of access that is best for you. Once your doctor tells you that you will need dialysis, 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.



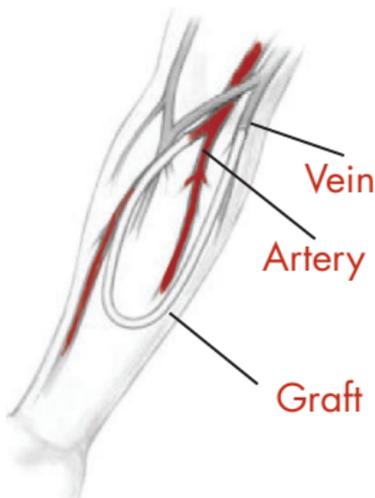
AV Fistula

A *fistula* is the best choice for hemodialysis. It is preferred because it usually lasts longer and 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 be ready when you need treatment.

Minor surgery is needed to create a 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 wrist or elbow is the preferred location for your fistula. A fistula will usually last for many years. A fistula usually takes one to four months to “mature” or enlarge before it can be used. If you are already receiving hemodialysis using a graft or catheter, ask your doctor

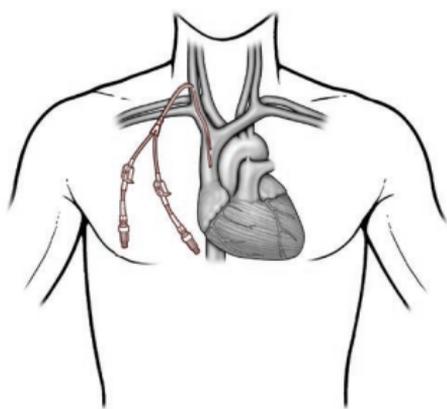
about the benefits of a fistula.



AV Graft

A *graft* is the second choice for an access. Minor surgery is done using an artificial tube between a vein and a nearby

artery. A graft is usually put inside the bend of your arm or in your upper arm. Sometimes, grafts may be placed in your leg or chest wall. Grafts generally need to be in place at least two weeks after surgery before they can be used.



Catheter

Catheters are most often used for a temporary access. For example, they are sometimes used for a short time in people who get a fistu-

la and need to start dialysis before the fistula is ready. Once the fistula is "mature," the catheter will be removed. 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.

Catheters are placed only when you need to start dialysis. They are 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 have enough blood flow for good dialysis treatment.

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.



AV Fistula

Cons:

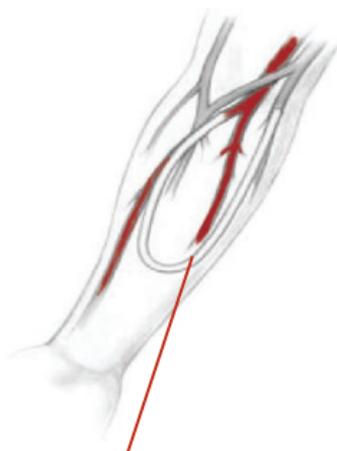
- Needs to mature one to four months before it can be used
- Needles are inserted to connect to the dialysis machine.



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.



AV Graft

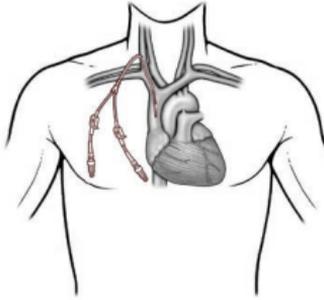
Cons:

- Lasts less time than a fistula
- More prone to infection than a 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 inserted to connect to the dialysis machine.

CATHETER PROS AND CONS

Pros:

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



Cons:

- Usually a temporary access
- Most prone to infection
- May not have the blood flow needed for enough dialysis
- May develop blood clots that block the flow of blood through your catheter
- You need to wear a protective cover for your catheter to take a shower
- Can cause narrowing of major blood vessels.

What happens after my access surgery?

After your access is placed, you should follow your doctor's orders about caring for your new access.

Tips for Caring for Your Access After Surgery

Fistula:

- Keep it dry; once it is healed you can take showers.
- Watch for bleeding.
- Take all medicine that is prescribed.
- Get enough rest.
- Call your doctor 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.
- Keep your arm straight and elevated (above your heart) while the access is healing.
- 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 “buit” pronounced “brew-ee”).
- Ask your doctor when you can start doing exercises, such as squeezing a rubber ball, to help your access mature and be ready to use.
- Your doctor should check your access to make sure it is maturing properly.

Graft:

- Keep it dry; once it is healed you can take showers.
- Watch for bleeding.
- Take all medicine prescribed for you.
- Get enough rest.

Graft Care — continued

- Call your doctor 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.
- Keep your arm straight and elevated (above your heart) while the access is healing.
- 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 “buit” pronounced “brew-ee”).

Catheter:

- Keep the dressing dry; once healed, you can take showers using a protective covering over your catheter.
- Watch for bleeding.
- Take all medicine prescribed for you.
- Get enough rest.
- Call your doctor 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 a fistula or graft, two needles are inserted into your access at the beginning of each dialysis. These needles are connected to soft plastic tubes that go to the dialysis machine. Your blood travels to the machine through one of these tubes. The blood passes through the dialyzer, or artificial kidney, where it is 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 receive. 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 dialysis, your dialysis care team will measure your delivered dose of dialysis. This tells them if enough wastes 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”). Another test that may be done to measure your delivered dose is called URR (urea reduction ratio). If you are getting the right amount of dialysis, your Kt/V should be 1.2 or more. If URR is measured, your result should be 65 percent or more. If your numbers are too low, your access may not be working well.

Will my dialysis care team do any tests to check my access?

Yes. They should check your access at least once a month. Special tests should also be done. These may include:

- Measuring flow in your access
- Measuring pressure in your access
- An imaging test called duplex ultrasound.

Tips for Everyday Care of Your Fistula or Graft

Prevent Infection

- Ask your dialysis care team to teach you about preventing infection and keeping 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 access site before every dialysis treatment. Your dialysis center has hand washing sinks and antibacterial soap.
- Do not scratch your access. Your fingernails could 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 pulled.
- Apply only gentle pressure to stop bleeding after the needles are removed. Press only where the needle was 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.





Protect Your 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. This could mean the access is not working well.
- Ask your dialysis care team how to make your needle sticks as comfortable as possible. They can use different sites for the needles during each dialysis. Or, if you have a fistula, a “button hole” technique can be used. This uses the same site for each dialysis, and may be less painful.

Tips for Everyday Care of Your Catheter

Prevent Infection

- 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 to take a shower. Ask your dialysis care team how to obtain one of these covers.
- Ask your nurse or technician to teach you or your family how to change the dressing.
- Keep extra dressing supplies at home in case you need to replace your dressing.
- Call your dialysis care team right away if your catheter cuff is showing.

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 need to be done 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 the chart on page 17. 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).

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. This will 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 on 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 of good access care to prevent infection and keep your access working well.
- Track your important test results, such as your Kt/V and your URR. Use the Dialysis Lab Log (available by calling the National Kidney Foundation (NKF) at 800.622.9010).
- Ask your dialysis care team if you have any questions about your access or any other aspects of your hemodialysis care.

Other Resources

Contact your local NKF office about resources available in your community and a listing of educational materials and programs. You can also call the national toll-free number 800.622.9010 or visit www.kidney.org . The following free NKF booklets may be helpful:

- *Choosing a Treatment for Kidney Failure* (11-10-0352)
- *Dialysis Lab Log* (11-50-0224)
- *Dining Out With Confidence* (11-10-0405)
- *Coping Effectively: A Guide for Patients and Their Families* (11-10-0503)
- *Hemodialysis Catheters: How to Keep Yours Working Well* (English 11-10-0302; Spanish 11-10-0305)
- *Hemodialysis: What You Need to Know* (11-50-0214)
- *Home Hemodialysis* (11-10-0329)
- *Kidney Transplantation* (11-10-0304)
- *If You Choose Not to Start Dialysis Treatment* (11-10-0330)
- *Nutrition and Hemodialysis* (11-50-0136)
- *Staying Fit With Chronic Kidney Disease* (11-10-0331)
- *Travel Tips for Kidney Patients* (11-10-0513)
- *What You Need to Know About Dialyzer Reuse: A Guide for Hemodialysis Patients and Their Families* (11-10-0335)

- *When Stopping Dialysis is Your Choice*
(11-10-0331)
- *Working With Kidney Disease:
Rehabilitation and Employment*
(11-10-0501)

You may be interested in becoming a member of NKF's Patient and Family Council. Membership in the council is free. For more information about the benefits of membership and to receive an application, contact the National Kidney Foundation, 30 East 33rd Street, New York, NY 10016; telephone: 212.889.2210, 800.622.9010; Web site: www.kidney.org; e-mail: pfc@kidney.org .



Team Member	Name	Phone Number
Nephrologist (kidney doctor)		
Primary Care Nurse		
Dietitian		
Social Worker		
Patient Care Technician		
Access Surgeon		

National Kidney Foundation's Kidney Disease Outcomes Quality Initiative

Did you know that the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (NKF-KDOQI) develops guidelines that help your doctor and health care team make important decisions about your medical treatment? The information in this booklet is based on the NKF-KDOQI™ recommended guidelines for hemodialysis access, and it's very important for you to know.

Stages of Chronic Kidney Disease

There are five stages of chronic kidney disease. They are shown in the table below. Your doctor determines your stage of kidney disease based on the presence of kidney damage and your *glomerular filtration rate (GFR)*, which is a measure of your level of kidney function. Your treatment is based on your stage of kidney disease. Speak to your doctor if you have any questions about your stage of kidney disease or your treatment.

Stages of Kidney Disease

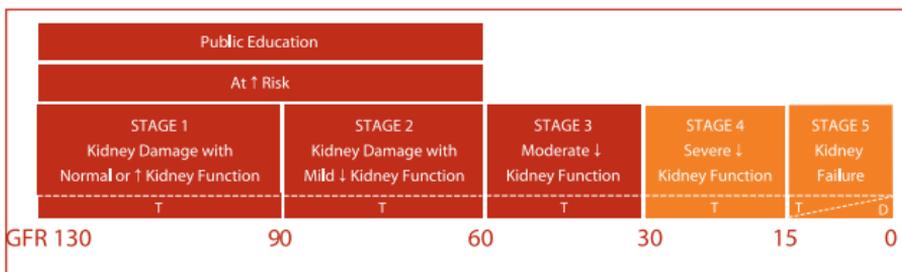
Stage	Description	Glomerular Filtration Rate (GFR)*
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above
2	Kidney damage with mild decrease in GFR	60 to 89
3	Moderate decrease in GFR	30 to 59
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

*Your GFR number tells your doctor how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't even know it. More than 20 million others are at increased risk. The National Kidney Foundation, a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected by these diseases, and increase the availability of *all* organs for transplantation. Through its 47 Affiliates nationwide, the foundation conducts programs in research, professional education, patient and community services, public education and organ donation. The work of the National Kidney Foundation is funded by public donations.

Kidney Learning Systems (KLS)™

A Curriculum for CKD Risk Reduction and Care



Lightshaded boxes indicate the scope of content targeted in this resource.
GFR = Glomerular Filtration Rate; T = Kidney Transplant; D = Dialysis

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www.kidney.org

Also available in Spanish (11-50-0220)

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