

Vascular Access for Hemodialysis: What You Need to Know

What are hemodialysis and vascular access?

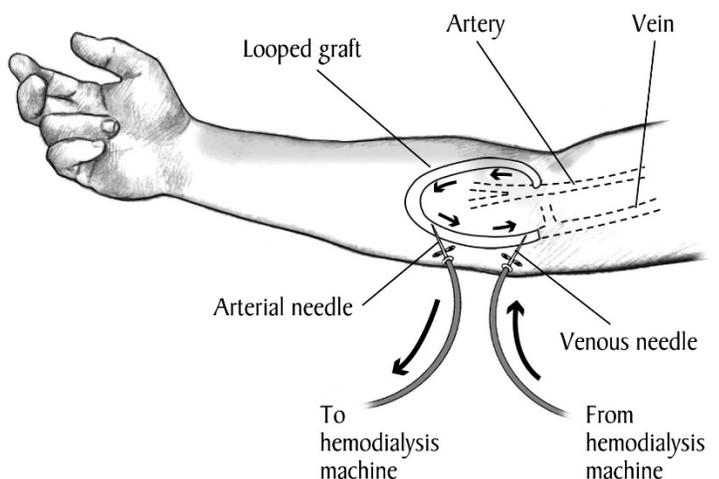
Hemodialysis uses a dialysis machine to remove poison and extra fluid from your blood when your kidneys cannot do it (kidney failure). In order to access your blood for hemodialysis, you must have surgery to reach your blood.

Vascular access is a surgical procedure that connects your artery directly to your own vein (fistula) or your artery to your vein with an artificial tube (graft). Vascular access makes lifesaving hemodialysis treatments possible

The vein or graft will be underneath your skin and the dialysis team will place needles in your vascular access to connect you to the dialysis machine. There are two basic types of permanent vascular access: arteriovenous **graft** and arteriovenous **fistula**.

What is an Arteriovenous (AV) graft?

An **Arteriovenous Graft (AV)** is a vascular access created by connecting an artery and vein in your arm using a looped, artificial tube. When you have dialysis, your blood flows out of this access into the hemodialysis machine. After your blood is cleaned in the machine, it flows back through the access site into your body.



©NIDDK

What are the benefits of an AV graft?

- You can usually use an AV graft 2-4 weeks after surgery. Your surgeon will let you know when it safe to use your graft.

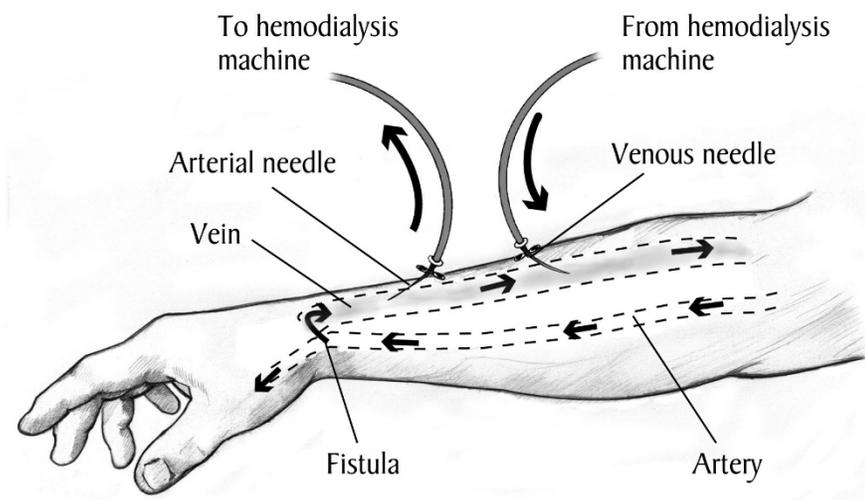
- You may shower 48 hours after your procedure. Do not soak in a bathtub, hot tub or swim in a pool or lake for 4 weeks.

There are some drawbacks to AV grafts, such as:

- Risk for blood clots and infection.
- Risk of failure.
- Hand/arm swelling.
- Hand/arm pain at rest or with activity.
- Need for further procedures.

What is an Arteriovenous Fistula (AVF)?

An **Arteriovenous Fistula (AVF)** is a vascular access created by connecting an artery directly to a vein in your arm with no tube. When you have dialysis, your blood flows out of this access into the hemodialysis machine. After your blood is cleaned in the machine, it flows back through the access site into your body.



©NIDDK

What are the benefits of an AVF?

- Lower risk of infection.
- No foreign material.
- You may shower 48 hours after your procedure. Do not soak in a bathtub, hot tub or swim in a pool or lake for 4 weeks.

There are some drawbacks to AVF, such as:

- Risk of failure.
- Risk the vein will become too large over time (aneurysm).
- Hand/arm swelling
- Hand/arm pain at rest or with activity.
- Need for further procedures.

How is vascular access surgery done?

1. You will be asleep or get medicine to help you feel relaxed during the surgery.
2. A local anesthetic will be used to numb the area where your access will be created.
3. Your doctor will make a cut (incision) on the arm you use the least. If you are right-handed, the fistula or graft will probably be put in your left forearm. If you are left-handed, it will probably be put in your right forearm.
4. Your doctor will close the incision with stitches. The incision will leave a scar that fades with time.

How do I care for my Vascular Access immediately after surgery?

You will have a surgical dressing on your arm after your procedure. Keep this dressing in place for the first 48 hours. After 48 hours, you may remove the dressing and shower as usual.

You will notice your surgeon used one of these ways to close your incision:

- Sutures or staples-will be removed at your follow up appointment
- Skin glue-will dissolve on its own

Follow these guidelines to care for your graft while bathing:

- Keep the surgical dressing dry and in place for the first 48 hours.
- Remove the surgical dressing after 48 hours and shower as usual.
- Gently wash the graft site with antibacterial soap and water using a freshly laundered washcloth with each shower. Gently pat dry using a freshly laundered towel.

- **Do not** put any creams, lotions, powders or ointments on your surgical incision(s) until they heal.
- **Do not** soak in a bathtub, hot tub or get into a swimming pool for the next 4 weeks.

What are my activity instructions?

After surgery, it is important for you to follow the simple exercise below. This exercise helps the development of your newly created fistula, allowing it to become larger and stronger.

- Perform hand exercises 3-4 times per day:
 - Hold a soft rubber ball in your fistula hand
 - Allow your arm to hang down beside your body
 - Squeeze and release the ball in your hand for 5 minutes
 - Repeat this exercise 3-4 times a day
- Prop your surgical arm on pillows and keep your elbow straight to help reduce swelling

Restrictions

Do not lift, push or pull any objects over 10 pounds after your surgery. As a reference, a gallon of milk weighs approximately 8 pounds. Your doctor will let you know when this precaution is lifted.

How do I care for and protect my Vascular Access at home?

- Keep it clean and dry at all times.
- Watch for and report signs of infection to your doctor (redness, pain, drainage, swelling or warmth) at the access site.
- Use your access for dialysis only.
- Wash your hands with soap and water before and after touching your access site.
- Change the spot where the needle goes into your graft for each dialysis treatment.

- Check for the vibration/buzzing sensation (thrill) coming from under the skin at your access site. Do **every day** to make sure your access is still working properly.
 - To feel the thrill- place your index and middle finger gently over the graft and notice if you can feel a vibration/buzzing.

Do I have any restrictions on my access arm?

- **Do not** let anyone take your blood pressure, start an intravenous line (IV) or draw blood from your access arm.
- **Do not** sleep on your access arm.
- **Do not** wear a watch, jewelry or tight clothing over your access site.
- **Be careful** not to bump or cut your access arm.
- **Do not** lift more than 10 pounds with your access arm.
- **Do not** put pressure on your access arm.

When do I need to seek emergency care?

Call 9-1-1 immediately if:

If you have any of the following **symptoms of a stroke**:

- Sudden confusion, trouble speaking or understanding others
- Sudden trouble seeing in one or both eyes
- Sudden numbness or weakness of the face, arm, or leg, usually on one side of your body
- Sudden trouble walking, dizziness, loss of balance or loss of coordination
- Sudden or severe headache with no known cause

If you have any of the symptoms list below:

- Heavy bleeding from your graft access site
- Sudden chest pain
- Shortness of breath not relieved by rest
- You believe you are experiencing a true emergency

When do I need to call my doctor?

- Redness, pain, swelling, foul smelling drainage or warmth near your access site
- The vibration (thrill) in your graft slows down or you do not feel it at all.
- Feelings of numbness, tingling, coldness or weakness in your graft arm
- Shortness of breath
- Under the tongue temperature above 101.5° F
- Bleeding from your access site during dialysis that lasts longer than 30 minutes and is not controlled by holding pressure
- You experience flu-like symptoms:
 - Aching muscles
 - Chills or sweats
 - Headache
 - Dry, persistent cough
 - Fatigue and weakness

What is the number to call?

- Call (888) 287-1082 Monday through Friday from 8:00am to 4:30pm:
 - Ask to speak to the Vascular Surgery Nurse.
- Call (734) 936-6267 after 4:30pm or on weekends or holidays:
 - Ask the hospital operator to page the Vascular Surgery Resident on call. You will receive a call back from the Resident.

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

Author: Bethany Lee-Lehner, RN, MSN
Reviewers: Chandu Vemuri, MD
Vascular Surgery Clinical Care Coordinator Nursing Group
CVC Control #1165

Patient Education by [Michigan Medicine](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License](#). Last Revised 06/2019