

UNDERSTANDING YOUR HEMODIALYSIS ACCESS

END STAGE RENAL DISEASE

Kidneys are one of the body's cleaning systems. The kidneys filter out wastes, or toxins from the blood. These toxins, as well as excess fluids, are stored in the bladder and removed from the body as urine. Sometimes, an infection or injury can cause the kidneys to fail without warning. This is called acute renal failure. This is usually reversible and the kidneys will start working again. Sometimes, however this may cause the kidneys to fail permanently. This is called chronic renal failure. A number of other diseases (i.e. diabetes, hypertension) over time can lead to significant kidney damage and chronic renal failure. When only 10 to 15 percent of kidney function is left, patients have end stage renal disease. At this point, a substitute for the damaged kidneys is needed to maintain life. This substitute is either dialysis or kidney transplantation.

HEMODIALYSIS

Hemodialysis is a method of cleaning your blood using a dialysis machine. It is the most common method used for treatment of end stage renal disease. The machine works as an artificial kidney, it strains the toxins and removes extra fluid that builds up when your kidneys are not working. This process takes a few hours a day, 3 times a week. During dialysis, blood is removed through a large vein, filtered and returned through the same conduit. Your nephrologist prescribes the length of your treatment.

HEMODIALYSIS ACCESS

In order to perform hemodialysis, an access must be created. An access is a site from which blood can be safely removed and returned to your body. The access site is often referred to as your lifeline. Dialysis access is often created in your arm, but can be created through blood vessels in your legs as well. Access can be in the form of a fistula or graft. For both of these types of access, there is a connection between an artery and a vein. The connection is made underneath the skin during a surgical procedure that can often be performed on an outpatient basis. This connection increases blood flow through the vein therefore causing it to become larger and stronger. Once the vein becomes larger and stronger (maturation) it can then be accessed. Fistulas and grafts differ somewhat in the amount of time it takes to mature. An arteriovenous fistula relies on your vein for access. If a person does not have adequate veins for fistula creation a graft may be used.

ARTERIO-VEIN FISTULA

An arterio-venous (AV) fistula is constructed by joining one of your superficial veins to an artery. Usually, it takes 6 to 10 weeks to allow the fistula to properly develop; although it may take longer in some cases. Fistulas may fail to mature or develop due to other health issues. It can be placed in the forearm, upper arm or thigh. It is more durable and resistant to infection compared to a graft. A fistula may not be suitable for you if you have small or scarred veins from multiple needle sticks and IVs. Frequent maintenance interventions may be required to maintain functionality over time.

Risks and complications may include:

- Decreased flow to the hand, a phenomenon called vascular steal
- Nerve and lymphatic damage
- Superficial vein clot
- Bleeding, swelling or significant enlargement

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GRAFT

Grafts are similar to AV fistulas. A fistula, is created by the direct connection of an artery to a vein. If you do not have an adequate vein, a graft can be used. The graft is a soft, synthetic tube that connects to an artery at one end and a vein at the other. The tube acts like a natural vein, allowing blood to flow through it and is inserted under the skin for easier access. Usually it can be used within two weeks. It can be placed in the forearm, upper arm, thigh or chest, and can be straight or have a loop configuration. Frequent maintenance interventions may be required.

Risks and complications may include:

- Clotting of the graft that may require re-opening
- Decrease flow to the hand, a phenomenon called vascular steal
- Nerve and lymphatic damage
- Superficial vein clot
- Bleeding, swelling or significant enlargement

AFTER CARE FOR YOUR FISTULA OR GRAFT

After 48 hours, the dressing can be removed, and you can shower and pat the area dry with a clean towel. Do not soak the wound in a bath or in the swimming pool for at least one week or until the skin heals to help prevent infection. Keep the wound out of sunlight to prevent darkening of the scar. Avoid applying creams such as vitamin E or other creams, they may cause skin maceration (the skin is softened and broken down by excess wetness or moisture).

Feel the access site with your fingertips every day and note if anything is different from the previous day.

The “thrill” is the sensation you feel when you touch your access site — it could feel like a cat purring, a vibration or a very strong pulse. It should be checked over the scar line where the surgeon made the incision. Note if there is any hardness or swelling at the access site. Look to see if there is a balloon-like appearance at the access site.

Contact your vascular surgeon’s office immediately and notify the staff if you notice any of the following:

- You are unable to feel the “thrill” or vibration over your fistula or graft
- Your bandage becomes soaked with blood
- Your stitches come apart
- You develop a high temperature of greater than 101°F
- Your fingers become cold, blue or numb
- You have significant pain
- Your incision is swollen, red, warm or you see drainage — these are signs of infection
- * You have difficulty moving your fingers

Do not wear tight clothing, purse-straps, or tight jewelry around your access site.

Do not sleep on your access arm.

Be careful not to strike or cut your access arm.

Do not carry heavy loads (groceries, laundry) over your access arm.

Do not let anyone take blood from or put IVs into your access arm.

No blood pressures should be taken from your access arm.

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Do not scratch or pick at the skin on your access arm.

Keep the access arm clean and the skin moist.

Make sure your needles are placed properly and rotated once you start dialysis.

Wash the skin over the access site with soap and water daily and before dialysis.

Notify your doctor if you experience low blood pressure, dizziness, or lightheadedness.

You can wear a medical alert bracelet to notify healthcare providers that you are on dialysis and the location and type of your vascular access. Also, be sure to let your healthcare providers know that **NO blood pressures or blood draws** are to be done on your access limb.

EXERCISE

Begin exercising your hand or arm one week after your surgery. If your access is in your lower arm, squeeze a small rubber ball several times a day for five minutes at a time. If your access site is in your upper arm, hold on to a soup can or bottle of water and do curls — bending your arm slowly at the elbow, then stretching it out.

Educate yourself.

Discuss concerns and questions with your doctor.

Check your access site every day.

Talk to the dialysis team about your access.

Remember, an adequate hemodialysis treatment is dependent on a well-functioning access.

FOLLOW-UP APPOINTMENT

After your surgery, you will be discharged home with a list of instructions and medications.

You will need to schedule an appointment to see your surgeon 1 to 2 weeks after your surgical procedure. You will follow up at one of our outpatient clinics. **To make an appointment please call 631.638.1670.**

QUESTIONS TO ASK MY PROVIDER

NOTES

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RESOURCE LIST

Organizations

American Association of Kidney Patients

Provides educational materials on treatment options and resources
 2701 N. Rocky Point Drive, Suite 150, Tampa, FL 33607
 (800) 749-2257
aakp.org

Life Options

Provides educational materials on kidney disease and kidney failure
 c/o Medical Education Institute
 414 D'Onofrio Drive, Suite 200, Madison, WI 53719
 (800) 468-7777
lifeoptions.org

National Kidney Foundation

Provides information about kidney disease, treatment options and resources
 30 East 33rd Street, New York, NY 10016
 (800) 622-9010
kidney.org

Educational Materials

Free Video Classes and Booklets: How to have a good future with kidney disease
Lifeoptions.org/resource-library/

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Just the Facts: Vascular Access

Patient education on access

Life Options

lifeoptions.org/catalog/pdfs/teaching/VA.pdf

Understanding Your Hemodialysis Access Options

Information on permanent and temporary access placements, and strengths and limitations of each

American Association of Kidney Patients

[aakp.org/wp-](http://aakp.org/wp-content/uploads/2019/09/AAKP_Understanding_Hemo_Options_071719_FINAL_ONLINE.pdf)

[content/uploads/2019/09/AAKP_Understanding_Hemo_Options_071719_FINAL_ONLINE.pdf](http://aakp.org/wp-content/uploads/2019/09/AAKP_Understanding_Hemo_Options_071719_FINAL_ONLINE.pdf)

Inserting Your Own Needles

Information for patients on how to cannulate themselves

Life Options

lifeoptions.org/stories/john-newmann