What’s your ACCESS-ability?

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Are you able to identify the type of hemodialysis access you have?

Can you describe the direction in which your blood flows through your access?

Can you name the signs and symptoms of access infection?

Do you know who to call when you suspect problems with your access?

What is a VASCULAR ACCESS?

A vascular access is the point on your body where the blood required to do a dialysis treatment is removed from you and returned to you. While the blood is out of your body (less than a cup is removed at a time), it is pumped by the dialysis machine through the dialyzer (or artificial kidney) to be cleaned and have extra fluid removed. The vascular access must be able to accommodate blood moving at a large enough rate to allow for an adequate hemodialysis treatment in a relatively short period of time.

There are three types of hemodialysis access:

- A-V Fistula
- Graft
- Catheter

Which type do you have?

The ARTERIO-VENOUS FISTULA (fis-choo-la) is an artificial opening between an artery (a vessel that carries blood FROM your heart) and a vein (a vessel that carries blood back TO your heart).

Surgically connecting an artery and a vein that lie close together in your arm creates this opening. The strong arterial pressure will, over time, enlarge the vein and create a long-term vessel (vein) where the dialysis needles are easily placed. The AV Fistula lies under the skin and requires at least 6-8 weeks to “mature” before it can be used. This type of access requires the most time to develop but is the longest lasting and the most troublefree. It is worth the wait! Being prepared and having a “plan for dialysis” long before your actual starting date is important for success of the fistula as your first access. Fistulas can be placed at a later date too, but will always require time to “mature”.

After a FISTULA is placed, there are exercises that can be done to help it build up or “mature.” Squeezing a soft rubber ball with the hand of your access arm 20-30 times several times a day will help. Your surgeon or dialysis team can advise other exercises and care. Be sure to ask them for written information on the care of your access.

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Which direction does the blood flow in your A-V Fistula or Graft?

- One end of your access has a stronger pulse or “thrill” than the other. This stronger sensation helps identify the ARTERIAL end of your access.
- Ask your nephrologist or nurse which direction the blood flows in your access.
- REMEMBER THIS DIRECTION for the future.
- The needle in the VENOUS end of the access should always point TOWARD the heart or venous return direction; the ARTERIAL needle can be placed in either direction.
- Needles placed in the wrong direction can lead to under-dialysis.

Advantages of a FISTULA are:
• Simpler surgery than a graft.
• This access lasts the longest.
• Infection rate is lowest of all the types of access.
• Least chance of clotting problems.
• This is the preferred type of access.

Disadvantages of a FISTULA are:
• 6-8 weeks to develop before it can be used.
• You must have “good veins” to accommodate a fistula (only an access surgeon can tell you this for sure).

A GRAFT is a piece of artificial tubing (polytetrafluoroethylene or gortex) or bovine (cow), umbilical vessel or part of your own leg vein that is connected at one end to an artery and at the other end to a vein, usually in your arm.

This GRAFT provides a conduit for blood to flow from the higher arterial pressure area of your access to the lower venous pressure area on its way back to your heart. The dialysis needles are placed into this piece of conduit. The graft lies under the skin and requires 2-3 weeks to heal. It is best that the swelling be gone before it is used for dialysis.

Advantages of a GRAFT are:
• Can be used in 2-3 weeks.
• Needles are easily placed.

Disadvantages of a GRAFT are:
• Surgery is more extensive than a fistula.
• Shorter “life span” - they wear-out.
• Risk of infection is higher than in a fistula.
• Risk of becoming clotted between treatments is higher.
• There is a higher rate of complications requiring more frequent hospitalization.

Take Good Care of your FISTULA or GRAFT

• Do not wear tight clothing, purse-strings, or tight jewelry around your access.
• Do not sleep on your access arm.
• Be careful not to strike or cut your access arm.

The CATHETER is a “Y” shaped plastic tube. It is surgically placed so that the leg of the “Y” is placed down into a vein of your neck, chest, or occasionally, the groin. The upper 2-armed segment of the catheter exits through the skin. Blood moves in and out of the 2 tubes (called lumen) of the catheter during the dialysis treatment. One of the lumens delivers blood to the dialyzer on the machine and the other returns the blood to you. Catheters are most commonly placed in the subclavian vein of your shoulder or the internal jugular (IJ) vein in your neck. According to DOQI*, the neck is the site that will cause the least number of problems and is the preferred site.

Illustration of IJ Catheter

* DOQI is Dialysis Outcomes Quality Initiative. These are guidelines for medical practice developed by a team of experts to help improve patient outcomes.
The CATHETER is usually a temporary (short-term) access. Most often catheters are used while the fistula or graft are healing from surgery and “maturing” (becoming usable).

It is important that the arms of the catheter be clamped and capped between treatments to prevent infection and blood loss. Caution should be used in working with catheters. **Only skilled persons using sterile techniques should touch catheters.** This means the patient and the caregiver should have masks on and the caregiver should be wearing sterile gloves. **Extreme care** should be taken when working with catheters to avoid introducing bacteria into the blood.

The catheter exit site should be checked, cleaned, and redressed by a skilled person at each dialysis session. The person examining the exit site should discuss the condition of the catheter with you each treatment.

Always be on the LOOKOUT for signs and symptoms of infection:
- **REDNESS**
- **SWELLING**
- **PAIN, NUMBNESS**
- **DRAINAGE (pus) or BLEEDING**
- **INCREASED TEMPERATURE** (at the exit)
- **FEVER** with chills
- **CLOTTED CATHETER**

If any of the above are present, the charge nurse or your Nephrologist needs to be notified immediately.

Dressings on the exit site should also be changed anytime they become wet or soiled.

Do not hesitate to call your dialysis unit or Nephrologist if you have any concerns between dialysis treatments. This is your lifeline, you must protect it!

**Advantages** of a CATHETER are:
- Surgery is not extensive.
- Can be used immediately after insertion.
- No needles are required.
- Easy for dialysis personnel to connect you to the dialysis machine.

**Disadvantages** of a CATHETER are:
- Can become clotted easily.
- High risk of infection which can spread to the entire body.
- Must be cleaned and evaluated in a specific manner by a trained individual several times a week.
- Risk of high amount of blood loss if not kept capped and clamped when not in use.
- Risk of stenosis (narrowing of the vein) of vessel where catheter is placed.
- Under-dialysis can result if adequate blood flow cannot be maintained or if the catheter arms are not connected to the proper blood-lines (arterial to arterial, venous to venous).

**Which ACCESS is best for you?**

It is important for you and your doctor to make the decision TOGETHER about which access would serve you best. You only have a few sites on your body that can be used for vascular access. The access will need to be cared for and watched carefully by YOU so that it will last as long as possible and be relatively TROUBLE-FREE.

If you think an alternate type of access would be better for you, bring this up with your doctor. It is important that you “shop around” to find a surgeon who is well trained to work with you and your access. There are surgeons who specialize in vascular access.
What can I do to increase my ACCESS-ability?

• **EDUCATE** yourself.
• **DISCUSS** concerns and questions with your doctor.
• **CHECK** your access everyday! (See insert this page) If you have a catheter you do not want to remove the dressing unless you have been trained to do this properly.
• **TALK** to the dialysis team about your access.
• **INSIST** the dialysis team treat your access as if it were their access.
• **REMEMBER** – an adequate hemodialysis treatment is dependent on a well-functioning access!

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Check your Graft or Fistula EVERY DAY!

- **LOOK** at the access. Are there any signs of infection?
  - REDNESS?
  - SWELLING?
  - BLEEDING?
  - DRAINAGE?
- **FEEL** the access with your fingertips. Is anything different from yesterday?
  - PULSE present?
  - Any HARDNESS or SWELLING?
  - Any PAIN?
  - HOT to touch?
  - NUMBNESS in arm or fingers?

Call your dialysis unit RIGHT AWAY if you notice anything out of the normal.