
ACCESS CARE: YOUR LIFELINE

This brochure, “Access Care: Your Lifeline,” was developed by the Patient Advisory Council with the help of Sally Rice, A.C.S.W., a social worker at the University Louisville Kidney Disease Program. The purpose of this booklet is to provide important, easy to read, and clear information to patients and their family members about the dialysis patient’s blood access.

It is important to remember that these are guidelines to help you care for your access, and not standards of practice. If you have questions about your access or your dialysis treatment, be sure to talk with your physician and the nurses or technicians who provide your care.

This brochure will discuss these issues:

- ◆ Types of blood accesses.
- ◆ Routine care for the access.
- ◆ Safety and preventive care for your access.
- ◆ Identification of access problems.
- ◆ Treatments for access problems.
- ◆ Definitions of access words and abbreviations.

More than 80 percent of dialysis patients in the United States are on hemodialysis. Each of these hemodialysis patients needs a blood access. An access allows the blood in your body to be easily taken from an artery or vein through the dialysis machine and easily returned to the body through a vein.

TYPES OF BLOOD ACCESSSES

There are two primary blood accesses: permanent and

temporary. Permanent accesses are designed to stay in your body for longer than six months. Temporary accesses are in your body for a short amount of time. If you have a temporary access you should have it converted to a permanent access as soon as your doctor says it is possible.

Permanent Accesses: The three common types of permanent accesses are:

1. AV Graft
2. AV Fistula
3. Tunneled Catheter

(AV stands for arteriovenous, referring to arteries and veins in your body.)

1. **AV Graft:** An AV graft connects your artery to your vein under the skin. One type of AV graft is made from synthetic (man-made) material. Most grafts are made from PTFE material and have the brand names of Gortex and Impra.

AV grafts may also be made from a leg vein or cow (bovine) vein. These two types are not commonly used.

The AV graft may be straight or U-shaped. It is important to know which end is the artery side and which side is the vein side. There are ways to determine which side is which. Ask your dialysis team member to explain the direction that blood flows.

2. **AV Fistula:** An AV fistula is a connection made between your own artery and vein. Your artery and vein are joined together under the skin.

3. **Tunneled Catheter:** The tunneled catheter is a rubber-like tube. This tube is "tunneled" under your skin into a large vein in your body. The tunneled catheter is often referred to by its brand name, "Permcath." It is used when your own veins and arteries are damaged or too weak for a graft or fistula to be made. Tunneled catheters are commonly placed in the neck or chest area and protrude through your skin.

Temporary Access: A temporary blood access is used when a permanent access is not available. A temporary blood access can be placed very quickly and will stay in your body for a short period of time before it is removed. A plastic-type tube, called a catheter, is inserted through the skin into a large vein in your body. Large veins in your body are located on the right side, the left side, at the collarbone, neck and groin.

Three common types of temporary blood accesses are:

1. Subclavian Vein Catheter
2. Internal Jugular Vein Catheter
3. Femoral Vein Catheter

1. **Subclavian Vein Catheter:** these are placed through the skin into your body at the collarbone and neck.

2. **Internal Jugular Catheter:** these are placed through the skin into your body at the neck area.

3. **Femoral Vein Catheter:** these are placed through the skin at the groin.

ACCESS LOCATION

It is important for you and your family to know where your blood access is located on your body. In an emergency if you are unable to speak, your family member will be able to tell the doctor, nurse, or emergency medical services (EMS) person about your access.

You should be able to describe your access in the location terms listed here:

1. ARM: Right or left, upper or lower
2. NECK: Right or left
3. LEG: Right or left, upper or lower
4. CHEST: Right or left, upper or lower

Blood pressure, injections, or IV medications should not be given in your access or even close to your access to prevent access injury.

MATURATION

Maturation refers to the amount of time it takes for the access to heal and develop sufficient blood flows for hemodialysis. The amount of time before an access is to be used depends upon the type of access. Maturation is helped along through exercises such as squeezing a rubber ball several times a day. (Ask your dialysis nurse or other caregiver to show you exercises you can do to speed healing.)

- ◆ Fistula maturation generally takes three to four months for the vein to get large enough to be used for hemodialysis.
 - ◆ A graft should be healed and available for use after two to six weeks.
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- ◆ Tunneled catheters can be used immediately and are generally used until a fistula or graft has matured.

GENERAL CARE GUIDELINES

The two leading causes of access failure are infection and decreased blood flows.

Infection Prevention. Preventing access infection can be accomplished by keeping your skin healthy. Your first line of defense against infection is your skin.

1. Keep your AV graft or AV fistula clean with soap and water using an antibacterial soap, such as DIAL.

2. Be sure your nurses or technicians wear new gloves each time they handle your access. If they have worked on any other patient or touched anything else, the gloves could be contaminated. If you need to, remind the technician or nurse to change their gloves. We all need reminders at one time or another.

3. Do not apply moisturizing lotion to your skin on days when you go for dialysis. It may keep tape and bandages from sticking. The tape is necessary to hold the needles and lines in place, and the bandages are used at the end of treatment. On dialysis days you can wait until after your treatment is finished to apply lotion. It is fine to use moisturizing lotion on non-dialysis days.

4. Some skin is sensitive to tape. Leaving the bandages on for more than five or six hours after treatment can increase the chance that your skin will become irritated. Make sure you

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remove your bandages as soon as the bleeding stops to keep your skin healthy.

5. Notify your doctor or nurse immediately if your access area becomes swollen, red, or feels warm or hot to the touch. These are signs of infection.

Maintain Access Blood Flow. Decreased blood flow can lead to a clotted access. The easiest way to check for blood flow is to feel for a pulse or a rushing sensation (also called a thrill) on your access. This pulse tells you that the blood is flowing properly through the access. If you cannot feel a pulse, notify your doctor or nurse immediately.

The following are care tips you can use to make your access last as long as possible and maintain as good a blood flow as possible.

1. Rotate site of needle placement. One of the most important things you can do is rotate the needle stick sites. It takes from four to six weeks for the healing of a needle stick site. Rotating or changing the needle stick sites for each treatment will allow for that healing.

Healing time is important because, like your skin, your artery-vein graft need time to recover from the repeated needle sticks.

If the site is not rested, it will become weak. A weak spot in your access is called an aneurysm. Rotating needle stick sites will keep your access strong.

2. Follow your doctor's directions about your blood pressure medications, especially if he or she advises you not to take

these medications on dialysis days. Maintaining good blood pressure is an extra benefit to protecting your graft.

3. By controlling your fluid intake weight gains between treatment, you may also avoid periods of low blood pressure during treatment.

4. If you have an AV graft or fistula, remove your bandage when your needle sites have stopped bleeding.

5. Do not sleep on your access or that side of your body.

6. Wear clothes that are loose fitting at your access – sleeves, collars, waistbands, and pant legs.

7. If you have a hobby that restricts your movement or keeps your arm or leg in one position for a length of time be careful that you do not stay still long enough for your limb to “fall asleep.” This restriction of movement can block the blood flow through your graft and cause clotting. Remember to move around or stretch every so often.

8. Do not cross your legs if your access is in your leg.

9. Do not carry heavy objects on your access arm, such as a purse or parcels.

10. It is important to maintain a proper hematocrit (HCT) and hemoglobin. Listen to your physician’s advice regarding erythropoietin (EPO), iron, and transfusions.

11. Blood pressure, IV medications and injections should not be given in the same limb as your access.

TUNNELED CATHETER & TEMPORARY CATHETER CARE

These are special care guidelines for the tunneled or temporary catheters.

1. Be sure to keep the skin in the access area dry and make sure the bandage over the access or catheter is kept dry.
2. If a dressing is placed over the access, keep it secure. Apply tape over the previous bandage, do not remove the original dressing unless instructed to do so by the dialysis staff.
3. Ask for care instructions from the dialysis staff. They will teach you about the care of your access.

WARNING SIGNALS

Problems can develop so it is important to know the warning signs of trouble to prevent damage before it happens. Here is a list of access problems to watch for:

1. Redness or inflammation around your access.
 2. Swelling of the arm or leg that contains your access.
 3. Fever that you cannot connect to a cold or flu.
 4. Drainage or pus – this is not normal and may mean you have an infection.
 5. Numbness around the access or in your fingers or toes.
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6. Hands and/or feet are much colder than normal.
 7. Pain in or around the access.
 8. Pain in the access during or after dialysis.
 9. Loss or weakening of the pulse at the access.
 10. Loss of the pulse or rushing sensation (thrill) through the access.

Any of these signs need to be brought to the immediate attention of your health care team for evaluation.

HOW LONG WILL MY ACCESS LAST?

According to information presented during a symposium at the University of Cincinnati Medical Center, “Angio Access for Dialysis,” an AV fistula lasts longer and usually has fewer problems than does a synthetic graft (like Gortex). Both tend to last longer, with fewer instances of problems, than a bovine graft.

The most frequent problem is narrowing or clotting of the graft in the area where the graft is attached to your vein. (This area is called the venous anastomosis). These reports suggested that many clotted grafts can be repaired rather than completely replaced.

Several studies have been done to help answer the question, “How long will my access last?”

The Dialysis Outcome Quality Initiative Clinical Practice guidelines (DOQI Guidelines) were developed to assist physicians

and patients in making decisions about appropriate health care choices. The DOQI Guidelines report variation in the length of time a graft will last.

Results showed that 70 percent of grafts were functioning after one year; 60 percent of those grafts were functioning after two years and 50 percent of those grafts were functioning after three years. The tables on page 11 show a comparison of incidence of complications associated with fistulas and grafts.

Another often asked question is: “Do other surgeries that require anesthetic lead to access problems?” Experts consulted suggested that did not seem to be the case.

PROTECTING YOUR ACCESS

What can you do during the dialysis process to protect your access?

As stated before, be sure that the sites are rotated so you are not stuck in the same place.

Needles should be taped securely to keep them from moving and causing damage to the access during the dialysis treatment.

Do not insist that your heparin be reduced without discussing this with your doctor. This may allow you to stop the bleeding quickly, but it can also cause clotting in your dialyzer and result in less than adequate treatment.

When your treatment is finished, hold your site instead of using clamps for pressure. Holding your site will provide a general

**Table 11-6. Incidence of Complications
Summary of Literature 1979-1989**

Type of Access	Cimino-Brescia	Bovine	Gore-Tex
Graft-Months of Follow-Up	26,960	16,984	8,918
Authors & Year Published	Hammill '80 Tordoir '83 Winsett '85	Heterograft Hammill '80 Haimov '80 Vanderverf '79 Winsett '85 Brems '86 etc.	Vascular Graft May '79 Rappaport '81 Tordoir '83 Haimov '80 Sabanayagam '79
Thrombosis	0.72	3.37	2.96
Infection	0.07	0.79	0.63
Pseudoaneurysm	0.06	0.44	0.20
Inflammation	0.06	-	0.06
Ischemia	0.01	0.08	0.09
Steal Syndrome	0.01	0.04	0.09
Hemorrhage	0.02	0.05	-
Venous Stenosis	0.03	0.12	0.07
Low Flow	0.08	0.01	-
Tears	-	0.05	-
Others	0.05	0.10	0.07
TOTAL	1.11	5.06	4.17

**Table 11-7. Vascular Access for Hemodialysis
Complication--Free Function***

Time Since Implant	Cimino-Brescia	Bovine	Gore-Tex
1 year	88%	54%	61%
2 years	77%	30%	37%
3 years	67%	16%	22%
4 years	59%	9%	14%
5 years	51%	5%	8%

*Based on assumption of exponential distribution of interval between two complications.

Taken from the article, *Statistical Summary of Clinical Results of Vascular Access Procedures for Hemodialysis*, Shanti Megta, Ph.D., U. of Cincinnati Medical Center Symposium, October 1993.

pressure. Clamps cause direct pressure that can cause narrowing or clotting of the access above or below the site, another reason for access repairs.

Hold the site for at least five minutes before checking or looking.

This may seem like a long time but it will probably save time in the end. Waiting five minutes before checking will allow the clotting to take place without having to start all over. Checking too early may cause the bleeding to begin again.

After dialysis, tape should not be placed around the entire arm or leg when the bandage is secured. This can place undue pressure and be too tight causing constriction of vessels.

REPAIRING YOUR ACCESS

When problems do occur, several questions, diagnostic procedures, surgical history, and treatment can be used to identify and repair the access.

Access questions like these determine if an access needs to be repaired.

- ◆ Is there enough blood flowing to perform hemodialysis?
 - ◆ Is the access too deep to stick easily?
 - ◆ Is the access too shallow. If so, it may turn or roll and be hard to stick, or be injured by bumps and clothing.
 - ◆ Does the curve or shape allow good blood flow and help avoid clotting? If the curve is high and underneath the arm, rotation of needles may be difficult.
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TERMINOLOGY

Special words are used in health care to talk about accesses and the problems that may develop.

Anastomosis: the place where the graft is joined to your own vein or artery.

Aneurysm: a weak spot in the wall of the access that can balloon out and eventually break.

Arterial Anastomosis: the place where your graft is joined to your artery.

AV: arteriovenous, refers to a connection between the artery and vein.

Cumulative Patency Rate: the number of grafts that remain patent (usable) during a given time frame regardless of interventions.

DOQI Guidelines: The Dialysis Outcome Quality Initiative Clinical Practice Guidelines developed to assist caregivers and patients in making decisions about appropriate health care and treatment choices.

Hematoma: excessive bleeding between the access and surrounding tissue. This is similar to a bruise.

Heparin: medication used to thin the blood during the hemodialysis treatment.

Hyperplasia: faster growth of tissue than normal. For instance,

the tissue lining the vein may be growing faster at the place where the graft is joined, causing a narrowing which leads to blockage. This blockage is called a stenosis.

Intimal: the innermost lining of tissue in a body organ or part such as a vein or artery.

Maturation: the amount of time it takes an access to heal and develop sufficient blood flows for hemodialysis.

Occlusion: blockage.

Pseudoaneurysm: similar to an aneurysm but does not involve the entire thickness of the vessel wall. It often occurs from the repeated sticking of one site.

PTFE: the initials are the abbreviation for polytetrafluoroethylene, the chemical term for AV graft material.

Shunt: the original permanent vascular access for hemodialysis patients was an extended plastic tube which connected the artery to the vein. This was called a Scribner Shunt. This type access is rarely used in dialysis treatment today due to a high rate of infection and bleeding. However, many people continue to refer to arteriovenous grafts and fistulas as “shunts” since blood is shunted through these passageways.

Stenosis: narrowing of the tube, such as a blood vessel, which slows the flow through the tube.

Stent: a tube placed within the blood vessel to keep it open.

Steal Syndrome: this is a condition that occurs when the

access “steals” blood flow from the lower part of the arm or leg where it is located. This lowered blood flow causes the hand or foot to feel unusually cold all the time. Note: This is different from the coldness you may feel during dialysis. Steal Syndrome is a persistent condition.

Thrombus or Thrombosis: a clot which blocks the flow of blood partially or completely.

Venous Anastomosis: the place where the graft is joined to your vein.

The following are tests and/or procedures used to find problems. Sometimes it may take several procedures to correct the problem. Physicians usually begin with the least invasive procedure to see if the person can be spared a more involved procedure.

Angiogram and Venogram and Shuntogram: X-rays made by injecting a special dye into the artery (angiogram), vein (venogram), or shunt (shuntogram) and then watching its progress through the access to locate the problem.

Angioplasty: is the process of inserting an instrument into the clogged vein or artery and clearing away the blockage.

Balloon: refers to the procedure where a “balloon” is placed at the location of the narrowing and inflated to open the narrowed section (a form of angioplasty).

Doppler Study: a non-invasive (no needles or incisions), painless, test used to obtain a picture of the flow through the access to check for or locate any problems.

Revision: the repair of a closed or otherwise poorly functioning graft by inserting new graft materials.

Thrombectomy: a procedure in which a clot is removed from a graft or fistula.

PHOTOS OF GRAFT DAMAGE DUE TO LACK OF
ROTATION COURTESY OF W. L. GORE & ASSOCIATES.