

HEARTBEAT

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An Overview of End Stage Renal Disease

End stage renal disease is permanent damage to the kidneys resulting in loss of function. Many illnesses can cause renal disease including diabetes, hypertension, lupus, urinary tract blockages, nephrotic syndrome, polycystic kidney disease, cystinosis, or interstitial nephritis.

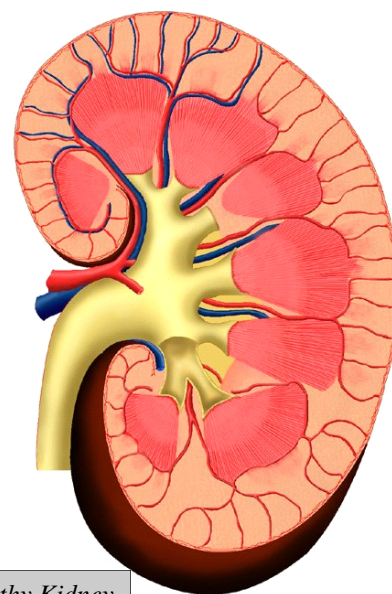
Symptoms of chronic renal failure are loss of appetite, vomiting, headache, insomnia, itching, dry skin, hearing loss, and change in mental alertness. Other symptoms include a metallic taste in the patients mouth as well as restlessness, weakness, or fatigue. Orthopedic symptoms such as bone pain or poor muscle tone may occur. Urinary symptoms include in-

continence, recurrent urinary tract infection, and high volume of urine output or no urine output.

In order to diagnose kidney disease, a thorough medical history is obtained and a physical exam is performed by the patient's physician. Blood tests to check the cell counts, electrolytes, and kidney function are performed. The workup also includes studies such as chest x-ray, bone scan, kidney ultrasound, and EKG. A kidney biopsy may be performed.

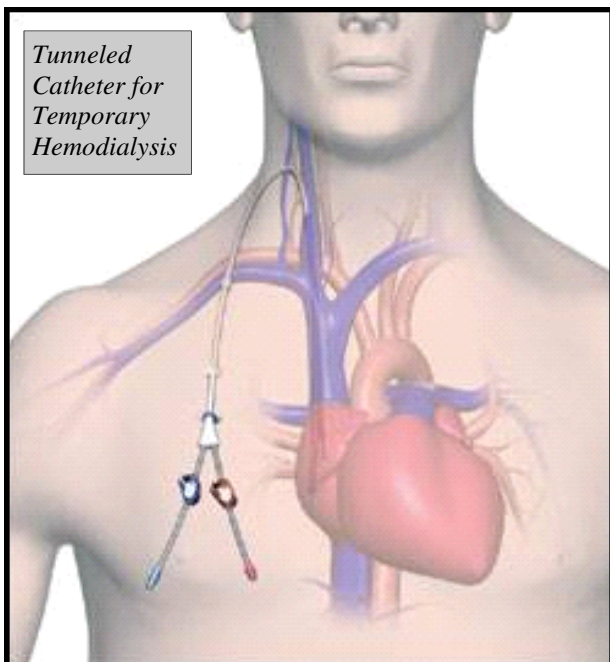
After diagnosis with end stage renal disease, patients must begin medical therapy for preventing bone loss and for preventing or treating anemia. Dietary restrictions are given to patients with kidney disease. The patient's diet should be high in protein and patients should avoid sodium or salt, potassium, and phosphorus.

The fluid and waste removal normally performed by the kidneys must be accomplished with dialysis or by acquiring a new kidney through surgical transplant. Dialysis is a procedure performed on a routine basis to remove excess fluid from the blood as well as waste substances. A transplant is an option for patients who are



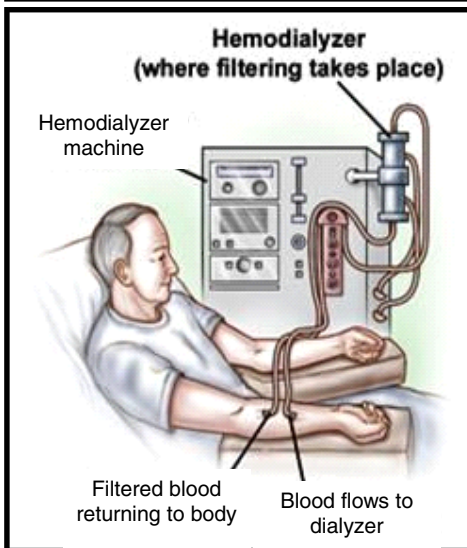
Healthy Kidney

Tunneled Catheter for Temporary Hemodialysis



able to find a kidney which matches their blood type and other unique immune system factors. Acquiring a matching kidney may be difficult, and the transplant surgery is a major operation. There are also medications which must be taken to suppress the body's immune system and prevent rejection of the new kidney. Numerous risks are involved in kidney transplantation and the transplanted kidney may fail to function properly and the patient may continue to require dialysis. The body may reject the kidney despite the patient's immunosuppressive medications.

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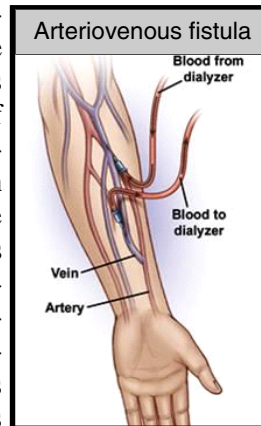


For patients without a transplant, the two types of dialysis are hemodialysis and peritoneal dialysis. Peritoneal dialysis is performed by instilling a solution into the peritoneal cavity which absorbs wastes and toxins and then removing the solution to discard the wastes and toxins. The patient may perform this procedure on their own and it is performed at home usually on a daily basis. Hemodialysis requires surgical placement of an access to the bloodstream called an arteriovenous fistula or synthetic graft. A large hemodialysis machine is connected to the patient and the blood is drained through the access and bathed in a special solution to remove toxins and wastes before returning to the patient's bloodstream. Hemodialysis is performed by trained healthcare professionals and the patient must be at the dialysis facility three times weekly for several hours per session. Hemodialysis is performed on Monday, Wednesday, and Friday or Tuesday, Thursday, and Saturday.

A nephrologist treats the patients kidney disease, and the cardiovascular surgeon is also an important part of the medical team because of their role in providing an access to the bloodstream for dialysis using an arteriovenous fistula or synthetic graft. Planning for a fistula or synthetic graft must take place as early as possible to allow time for the procedure and the site to heal prior to using for dialysis.

Sometimes, a temporary catheter is needed for immediate access to the patient's bloodstream while the fistula or synthetic graft matures. These catheters are placed in one of the patient's large veins such as the internal jugular or subclavian vein. The catheters have lower flow pressures so a high rate exists for both clotting as well as stenosis in the vein, in which the catheter is placed. Infection is a risk in the body when the catheter is present. The catheter may be tunneled under the skin if the catheter will be present for longer than 1-2 weeks.

A native arteriovenous fistula is a direct connection between a vein and an artery. Over time, the vein enlarges and becomes an access where needles are placed to provide hemodialysis for the patient. However, some patients are not candidates for fistulas. Everyone doesn't have suitable veins in the arms for this type of access. The fistula is not an immediate source for access to perform dialysis it requires 2-4 months maturity time. This access involves

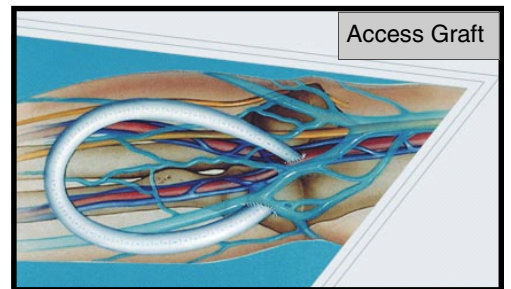


**** The Vein Center ****
Offering treatment for spider veins,
varicose veins, and venous insufficiency
Call 300.2240 for an evaluation

no foreign body implantation in the arm so the infection rate is lower.

A synthetic tube graft is an option for patients without suitable veins in their arms. The tube graft is placed in the forearm or upper arm and provides a path between a vein and an artery. Blood flows through the graft which is where the needles are placed during dialysis. This access requires a foreign body implantation which adds risk of infection and clot formation.

The physicians at Cardiovascular Associates perform operations to establish an access for patients on hemodialysis. A number of procedures related to the catheters, access grafts, and fistulas used in hemodialysis are being performed in our office operating suites currently.



Patient Corner

Heart Healthy Activity

An inactive lifestyle is one of the top risk factors for heart disease. Regular, aerobic exercise has many benefits. It can:

- ◆ Improve your circulation and help your body use oxygen better
- ◆ Help reduce body fat and help you to reach a healthy weight
- ◆ Strengthen your heart and cardiovascular system
- ◆ Help reduce stress, tension, anxiety, and depression
- ◆ Increase energy levels and endurance
- ◆ Lower blood pressure
- ◆ Improve your heart failure symptoms
- ◆ Boost self-image and self-esteem
- ◆ Improve sleep



Understanding Diabetes: When Your Sugar is Out of Control

Diabetes mellitus (DM) is characterized by a high blood sugar that results from defects in insulin secretion or action. Blood glucose levels are lowered by insulin produced by the pancreas. When the blood glucose elevates after eating, insulin is released from the pancreas to normalize the glucose level. In patients with diabetes, low levels of insulin or resistance cause hyperglycemia.

There are two major types of diabetes, type 1 and type 2. Type 1 diabetes is also called insulin dependent diabetes mellitus (IDDM), or juvenile onset diabetes mellitus. In type 1 diabetes, the pancreas is unable to make insulin. The patient with type 1 diabetes must rely on insulin medication for survival. Type 1 diabetes tends to occur in young, lean individuals.

Type 2 diabetes is also referred to as non-insulin dependent diabetes mellitus (NIDDM), or adult onset diabetes mellitus (AODM). Insufficient production of insulin, production of defec-



tive insulin, and the inability of cells to use insulin properly and efficiently leads to type 2 diabetes. These patients can still produce insulin, but do not produce enough and the fat and muscle tissue become resistant to the effects of insulin, which is known as "insulin resistance."

Symptoms for diabetes includes increased urine output, dehydration, excessive thirst, blurred vision, fatigue, nausea and vomiting. Diabetes can effect both small and large vessels and can lead to blindness, nerve damage, kidney failure, stroke, atherosclerosis or hardening of the arteries and heart disease.

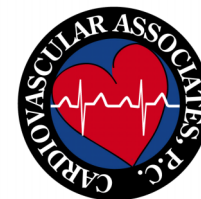
Diabetes treatment depends on the type and severity of the diabetes. Type 1 diabetes is treated with insulin, exercise, and a diabetic diet. Type 2 diabetes is first treated with weight reduction, a diabetic diet, and exercise. When these measures fail to control the elevated blood sugars, oral medications are used. If oral medications are not effective, insulin may be considered.

IN GOOD HANDS

Although many think of them simply as *heart surgeons*, the physicians at Cardiovascular Associates are trained in all areas of cardiac, thoracic, and vascular surgery. Their backgrounds include training with the distinguished surgeon Dr. Michael DeBakey of Houston, attendance at various medical schools across the country, and yearly postgraduate courses. All are Fellows of the American College of Surgeons, and hold membership in multiple professional societies.



**Cardiac, Thoracic,
& Vascular Surgery**



The Vein Center



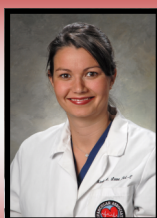
Terri Rice, RN, MSN, CCRN



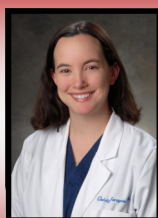
Wendi Herret, RN, BSN

(Left to Right) **Dr. David Mull, Dr. Ronald O'Gorman, Dr. Carl Maltese,
Dr. Michael Damrich, Dr. Dimitris Kyriazis, Dr. William Higgs**

Nicole Miller



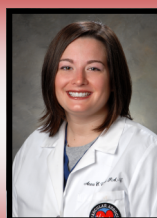
Christy Paragone



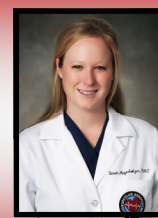
Eva Bernacik



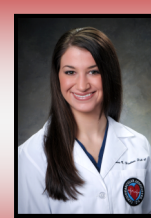
Anna Clark



Susan Angerholzer



Claire Hinton



Nationally Certified Physician Assistants

HEARTBEAT

Surgical Procedures

Vascular

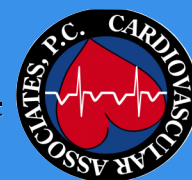
- ◆ Carotid endarterectomy
- ◆ Repair of abdominal aortic aneurysms/ Endovascular option
- ◆ Peripheral vascular surgery & peripheral balloon angioplasty
- ◆ Dialysis access grafts
- ◆ Varicose vein & other vein disease
- ◆ Vascular studies

Other

- ◆ Spinal exposure for neurosurgery and orthopedic surgery
- ◆ Consultant to hyperbaric and wound care center

Cardiac

- ◆ Coronary artery bypass
- ◆ Repair or replacement of valves of the heart
- ◆ Repair of congenital defects and patent ductus arteriosus
- ◆ Implantation of pacemaker and defibrillator devices
- ◆ Minimize for atrial fibrillation
- ◆ Repair of chest wall defects
- ◆ Lung biopsy/Removal of lung lesions/Lung cancer surgery
- ◆ Esophageal repair/Resection of esophageal cancer



In This Issue..

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