What is a kidney transplant?

A kidney transplant is a surgical procedure performed to give a patient whose own kidneys have failed a healthy kidney from another person. The kidney may come from a deceased organ donor (someone who has died and donated their organs) or from a living donor. Family members or individuals who are unrelated but make a good match may be able to donate one of their kidneys. This type of transplant is called a living transplant. Individuals who donate a kidney can live healthy lives with their remaining kidney.

A person receiving a transplant usually receives only one kidney, but, in rare situations, he/she may receive two kidneys from a deceased donor. In most cases, the diseased kidneys are left in place during the transplant procedure. The transplanted kidney is placed in the lower abdomen on the front side of the body.

Why is a kidney transplant recommended?

A kidney transplant is recommended for people who have serious kidney dysfunction and will not be able to live without dialysis or a transplant. Some of the most common kidney diseases for which transplants are done are listed below. However, not all cases of the following diseases require kidney transplantation. Always consult your physician for a diagnosis.

- Most common:
    - Diabetes mellitus
    - High blood pressure
    - Polycystic kidney disease
    - Glomerular disease
- Other causes may include but are not limited to:
    - Congenital kidney disorders (inherited and usually present at birth)
    - Systemic Lupus Erythematosus

How many persons in the United States need kidney transplants?

Visit the United Network for Organ Sharing (UNOS) Web site for statistics of patients awaiting a kidney transplant, and the number of patients who underwent a transplant this year.

Where do transplanted organs come from?

Living Donors:

Family members or individuals who are unrelated (spouses, friends, co-workers, neighbors, etc.) can donate one of their kidneys to someone who is in need of a kidney transplant. This type of transplant is called a living donor transplant. Individuals who donate a kidney can lead healthy lives with the kidney that remains.

Deceased Donors

Many kidneys that are transplanted come from deceased organ donors. Deceased organ donors are people who have become critically ill and will not live as a result of their illness. Parents or spouses can also agree to donate a relative's organs. Donors can come from any part of the United States. This type of transplant is called a deceased donor (also known as cadaveric) transplant.

A person receiving a deceased donor transplant usually receives only one kidney, but in rare situations, he/she may receive two from a deceased donor.

How are transplanted organs allocated?

The United Network for Organ Sharing (UNOS) is responsible for transplant organ distribution in the United States. UNOS oversees the allocation of many different types of transplants, including liver, kidney, pancreas, heart, lung, and cornea.

UNOS receives data from hospitals and medical centers throughout the country regarding adults and children who need organ transplants. The transplant team that currently follows you is responsible for sending the data to UNOS, and updating them as your condition changes.

Criteria have been developed to ensure that all people on the waiting list are judged fairly as to the severity of their illness and the urgency of receiving a transplant. Once UNOS receives the data from local hospitals, people waiting for a transplant are placed on a waiting list and given a "status" code. The people in most urgent need of a transplant are placed highest on the status list, and are given first priority when a donor kidney becomes available.

When a donor organ becomes available, a computer searches all the people on the waiting list for a kidney and sets aside those who are not good matches for the available kidney. A new list is made from the remaining candidates. The person at the top of the specialized list is considered for the transplant. If he/she is not a good candidate, for whatever reason, the next person is considered, and so forth. Some reasons that people lower on the list might be considered before a person at the top include the size of the donor organ and the geographic distance between the donor and the recipient.

How am I placed on the waiting list for a new kidney?

An extensive evaluation must be completed before you can be placed on the transplant list. Testing includes:

- blood tests
- diagnostic tests
- psychological/social evaluation

Blood tests are done to gather information that will help determine how urgent it is that you are placed on the transplant list, as well as ensure that you receive a donor organ that is a good match. Some of the tests you may already be familiar with, since they evaluate the health of your kidney and other organs. These tests may include:

- **blood chemistries** - these may include serum creatinine, electrolytes (such as sodium and potassium), cholesterol, and liver function tests.
- **clotting studies, such as prothrombin time (PT) and partial thromboplastin time (PTT)** - tests that measure the time it takes for blood to clot.

Other blood tests will help improve the chances that the donor organ will not be rejected. They may include:

- **Your blood type**
  Each person has a specific blood type: type A, B, AB,or O. When receiving a transfusion, the blood received must be a compatible type with your own, or a reaction will occur. A similar reaction will occur if the blood contained within a donor organ enters your body during a transplant. These reactions can be avoided by matching the blood types of you and the donor. In rare cases, transplants between a donor and recipient who have different blood types may occur by using medications to reduce the chance of a reaction. This is called ABO-incompatible transplantation.
- **Human Leukocyte Antigens (HLA) and Panel Reactive Antibody (PRA)**
  These tests help determine the likelihood of success of an organ transplant by checking for antibodies in your blood. Antibodies are made by the body's immune system in reaction to a foreign substance, such as a blood transfusion or a virus. Antibodies in the bloodstream will try to attack transplanted organs. Therefore, persons who receive a transplant will take medications that decrease this immune response. The higher your PRA, the more likely that an organ will be rejected.
- **Viral Studies**
  These tests determine if you have been exposed to viruses that may recur after transplant, and help us to tailor your medication regimen after transplant.

Diagnostic tests that are performed are necessary to understand your complete medical status. The following are some of the other tests that may be performed, although many of the tests are decided on an individual basis:

- **Renal ultrasound** - a non-invasive test in which a transducer is passed over the kidney producing sound waves which bounce off of the kidney, transmitting a picture of the organ on a video screen. The test is used to determine the size and shape of the kidney, and to detect a mass, kidney stone, cyst, or other obstruction or abnormalities.
- **Kidney biopsy** - a procedure in which tissue samples are removed (with a needle or during surgery) from the kidney for examination under a microscope; to determine the cause of your kidney disease.

The transplant team will consider all information from interviews, your medical history, physical examination, and diagnostic tests in determining whether you can be a candidate for kidney transplantation. After the evaluation and you have been accepted to have a kidney transplant, you will be placed on the United Network for Organ Sharing (UNOS) waiting list.

(note to designer: if you feel the kidney transplant linkis too long, you can use this copy as a link of right hand side called The transplant team)

The Transplant Team

During the evaluation process, you will be interviewed by many members of the transplant team. The following are some of the members of the team:

- **Transplant surgeons** specialize in transplantation and perform your transplant surgery. Our surgeons are trained to manage all stages (pre-, peri-, and post-operative) and aspects of transplantation, including management of your immunosuppressive regimen.
- **Nephrologist**s specialize in disorders of the kidneys. Nephrologists will help manage your condition before and after the surgery.
- **Transplant coordinators** are healthcare professionals who organize your pre-transplant evaluation. The transplant coordinator will provide patient education, and coordinates the diagnostic testing and maintenance on the waiting list.
- **Social workers** will help your family deal with many issues that may arise including lodging and transportation, finances, and legal issues.
- **Financial coordinators** work with you and your insurance company to evaluate your ability to undergo transplant and manage the costs of your transplant medications.

- **Nutritionists** help you meet your nutritional needs before and after the transplant.
- **Pharmacists** teach you about your transplant medications and help to manage your medication regimen throughout the transplant process.
- **Research Coordinators** educate you about opportunities to participate in research studies available to transplant patients.
- **Physical therapists** help you become strong and independent with movement and endurance after the transplantation.
- **Pastoral care** chaplains provide spiritual care and support.
- **Other team members** - several other team members may evaluate you before transplantation and may make recommendations to the team. These may include, but are not limited to, the following:
    - Anesthesiologist
    - Hematologist
    - Infectious disease specialist
    - Psychiatrist

How long will it take to get a new kidney?

There is no definite answer to this question. Sometimes, people wait only a few weeks or months before receiving a donor organ, usually when a living donor kidney is available. If no living-related donor is available, it may take years on the waiting list before a suitable donor organ is available. During this time, you will receive close follow-up with your physicians and the transplant team. Various support groups are also available to assist you during this waiting time.

How am I notified when a kidney is available?

Each transplant team has their own specific guidelines regarding waiting on the transplant list and being notified when a donor organ is available. In most instances, you will be notified by phone or pager that an organ is available. You will be told to come to the hospital immediately so that you can be prepared for the transplant. Even if you are called in to the hospital, it does not guarantee that you will receive that kidney; sometimes the kidney may go to someone higher on the list at another center. In addition, there may be a reaction when the donor's blood is mixed with your blood (called a crossmatch) which may indicate that you should not receive that organ due to high risk of rejection.

What is rejection?

Rejection is a normal reaction of the body to a foreign object. When a new kidney is placed in a person's body, the body sees the transplanted organ as a threat and tries to attack it. The immune system makes antibodies to try to kill the new organ, not realizing that the transplanted kidney is beneficial. To allow the organ to successfully live in a new body, medications must be given to suppress the immune system from attacking the organ for as long as the transplant continues to function.

What is done to prevent rejection?

Medications must be given for the rest of the life of your transplant kidney to fight rejection. Each person is individual, and the transplant team customizes your medication regimen to your specific needs. The anti-rejection medications most commonly used include:

- Rabbit anti-thymocyte globulin (Thymoglobulin)
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Some patients may also receive one or more of the following medications:

- Prednisone
- Rituximab (Rituxan)
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New anti-rejection medications are continually being studied. You may be offered the opportunity to participate in a clinical research study of a new transplant immunosuppressant or other transplant-related medication. Physicians tailor drug regimes to meet the needs of each individual patient.

Usually several anti-rejection medications are given initially. The doses of these medications may change frequently as your response to them changes. Because anti-rejection medications affect the immune system, persons who receive a transplant will be at higher risk for infections. A balance must be maintained between preventing rejection and making you very susceptible to infection. Blood tests to measure the amount of medication in the body are done periodically to make sure you do not get too much or too little of the medications. White blood cells are also an important indicator of how much medication you need.

This risk of infection may be higher in the first few months after transplant because higher doses of anti-rejection medications are given during this time. In the first few

months after your transplant, you will be given three medications to prevent certain types of infection.

What are the signs of rejection?

The following are some of the most common symptoms of rejection. However, each individual may experience symptoms differently. Symptoms may include:

- fever
- tenderness over the kidney
- decease in urine output
- elevated blood creatinine level
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Your transplant team will instruct you on whom to call immediately if any of these symptoms occur.

Long-term outlook for a person after a kidney transplant:

Living with a transplant is a life-long process. Medications must be given to suppress the immune system so it will not attack the transplanted organ. Other medications must be given to prevent side effects of the anti-rejection medications, such as infection. Frequent visits to and contact with the transplant team are essential. Knowing the signs of organ rejection and watching for them on a daily basis are critical.

Every person is different and every transplant is different. The new anti-rejection medications that are being studied are very exciting. Results improve continually as physicians and scientists learn more about how the body deals with transplanted organs and search for ways to improve the success of transplantation.

On page http://www.cornellsurgery.org/patients/services/transplantation/index.html
Under health library on right hand side, please replace all the existing health library links except for kidney transplantation with these new ones:

Transplant Living Website

National Kidney Foundation

Transplant Patient Educational Brochures

Transplant Fact Sheets

Additional Links to Transplant-Related Websites

Kidney Transplanation

(see below for the new copy for Kidney Transplantation under health library, replace existing copy with the copy found below for this link)

For the kidney transplantation link under health library, please replace the existing copy under that link with the copy below:

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