Your Kidney Transplant: What You Need to Know

Beaumont
The Beaumont Transplant Program

More than 35 years of excellence

Since the first kidney transplant performed here in 1972, the Transplant Program at Beaumont has performed more than 2,400 adult kidney transplants. We routinely perform high-risk transplants, including patients with viral hepatitis, repeat transplants and transplants in highly sensitized individuals. We have also offered desensitization protocols for transplants across the barrier of a positive cross-match for the appropriate individual. We specially tailor immunosuppression to the individual needs of our patients.

We have some of the most extensive experience in the state in performing the technically challenging pediatric en-bloc kidney transplants.

Our center is committed to providing comprehensive medical care to patients with chronic kidney disease; and to guide them in choosing the best possible individualized treatment options for their End Stage Renal Disease.

The Beaumont Kidney Transplant Program is Medicare approved. In order for patients to receive full Medicare benefits for a transplant, they must go to a Medicare approved facility. These programs meet Medicare criteria for the number of transplants they perform and the overall quality of patient outcomes.

Patients at a Medicare approved facility may have to meet certain selection requirements to be eligible for Medicare coverage. This criterion may include a patient’s age, and the medical condition for which they may need a transplant.

Patients transplanted at Medicare approved facilities, who have Medicare Part A at the time of transplant, are eligible for immunosuppressant medication coverage at a reimbursement rate of 80 percent. Patients must have Medicare Part B at the time they purchase medication.
Non-approved Medicare facilities are unable to provide neither transplantation, nor immunosuppressant medication benefit coverage for Medicare patients.

Beaumont’s Transplant Program outcomes are available for national comparison at srtr.org. This information includes comparisons of patient and kidney survival as well as other data.

Multidisciplinary team
The specialized multidisciplinary team includes highly dedicated transplant surgeons, transplant nephrologists and immunologists, as well as transplant nurse coordinators, a transplant financial coordinator, a transplant social worker, a renal dietitian and a transplant pharmacist. We work very closely with our patients and their families, their referring physicians and other outstanding hospital disciplines and staff members to provide all the support, guidance and state-of-the-art medical care needed in the preparation for their journey through kidney failure and the transplant process.

The Beaumont Transplant Team provides coverage for outpatients, 24 hours a day, 365 days a year. There is a dedicated transplant surgeon and nephrologist available on-call at all times.

When you are called in for your transplant surgery, there will always be a member of the team to provide for your care. These may not necessarily be the same individuals you met at the time of your initial evaluation.

Introduction
We welcome you to the Beaumont Kidney Transplant Program. We believe that a kidney transplant has the potential to improve your quality and length of life. Kidney transplantation is an alternate treatment to dialysis for patients with kidney failure. Rather than having regular dialysis, patients who meet criteria for transplantation may choose to undergo surgical implantation of a donor kidney. The donor kidney can be from a living donor or a deceased donor. Once the kidney is implanted, you (the recipient) will need to take immunosuppressant medications throughout the life of the kidney to prevent your body from rejecting the kidney.

Objectives
This booklet will help you understand the following information:

• What kidney (renal) failure is.
• What three major forms of treatment are now available.
• The interviews that will take place to discuss the possibility of a kidney transplant.
• The diagnostic studies that are needed during the evaluation phase.
• The time it takes to complete the evaluation phase.
• What happens after admission to the hospital.
• What to expect before and after surgery.
• What happens after a kidney transplant.

During the evaluation phase, you will have the chance to talk with members of the Transplant team, other transplant recipients and your family. This is the time to ask questions and share any concerns you might have.

Please keep in mind that this booklet is for general information only. Your individual treatment and experience may vary.

We understand that this is new to you and we want to make sure you feel comfortable with what you read and hear.
Please feel free to ask questions any time. If what you hear doesn’t make sense, keep asking until you are completely comfortable with the answer.

This booklet serves two purposes. It will give you some initial information about the kidney transplant evaluation process plus some post-transplant information. It also adds to the information you receive when you come to our program for your kidney transplant evaluation. We hope this information will help you understand the kidney transplant evaluation process and kidney transplantation.

A signature statement is provided at the back of this booklet. We will ask that you sign a copy of it at the time of your evaluation appointment. You will be offered the opportunity to have your questions or concerns answered regarding being a kidney transplant recipient candidate.

**Patient education and support groups**

Our pre-transplant education seminars at Beaumont, Royal Oak provide another opportunity to learn more about kidney transplant. A transplant nephrologist gives a brief overview of kidney transplants as a treatment option for chronic renal failure. Post-transplant patients and kidney donors present their experiences and are available for questions and answers.

**Peer Mentoring Program**

Beaumont’s peer mentoring program, which is supported by the National Kidney Foundation of Michigan, is comprised of trained and certified post-kidney-transplant volunteers who provide a listening ear and an experienced voice to their fellow patients. As part of your evaluation process, the transplant social worker will ask you if you wish to be matched up with a peer mentor.

**General kidney information**

**Where are the kidneys?**

Everyone has two kidneys. The kidneys are bean-shaped organs that perform many functions necessary for life. Your kidneys are below your ribs in the back of your abdomen. They lie on either side of the spine. Adult kidneys weigh about four to six ounces each (see figure).

**What do kidneys do?**

Kidneys control your fluid balance, acid-base balance and electrolyte balance. Electrolytes include calcium, phosphorus, sodium, chloride and potassium. Sodium and chloride play a role in your body’s fluid balance. Calcium and phosphorus help your bones grow and keep them strong and healthy. Potassium regulates the heart muscle.

Kidneys produce the hormone that controls your blood pressure. They are also responsible for eliminating the body’s waste products. The kidneys produce the protein that stimulates the production of red blood cells. When the kidneys are not working well, you have fewer red blood cells. You might feel tired and notice that your thinking is not as clear as it used to be. This is because red blood cells carry oxygen. If you have fewer red blood cells, you have less oxygen. Some kidney patients need to take supplements such as Epogen or Aranesp to help their red blood cells maintain a normal level.

Nephrons in the kidneys continually filter waste products from your blood. Nephrons produce urine which is then stored in your bladder. When the kidneys fail, for whatever reason, these normal kidney functions and delicate balances are disturbed. As a result, the kidneys cannot remove waste products, maintain fluid balance
or make enough red blood cells. Electrolyte levels become disturbed and patients often feel more and more tired and sick.

Renal failure

Alternative Treatments
If you have renal (kidney) failure, there are three options for treatment: peritoneal dialysis, hemodialysis or a kidney transplant.

Peritoneal dialysis is done through a catheter that is surgically placed in your abdomen. Patients learn how to perform peritoneal dialysis independently. This can be done two ways:
- in your home or office at regular intervals throughout the day
- using an automated dialysis system overnight

Hemodialysis is done through a surgically created graft or fistula usually in the arm. Hemodialysis is usually performed at dialysis units three times a week, but you can also receive training to perform at home five to six times per week. It takes about three to four hours each time.

Dialysis can help restore some of the balance lost from kidney failure. However, dialysis does not return the patient to a “normal” level of kidney function.

Kidney transplant has the potential to give you a chance at a life free of kidney failure and dialysis treatments.

Kidney Transplantation

Transplants have become a widely accepted treatment option for people with end-stage organ failure. In the United States, more than 16,000 kidney transplants are performed each year. The list of organs and tissues that can be transplanted continues to grow with improved technology. Organs and tissues that can be transplanted include the heart, lung, liver, pancreas, intestine, cornea, bone, skin, and in your case, kidney.

What are the different types of kidney transplants?
Transplanted kidneys can be from a living donor (living-related or living non-related) or a deceased donor.

Living-related kidney transplants
A living-related donor is blood related such as a mother, father, sister, brother, son, daughter, cousin, aunt or uncle. Patients who have the option of a living-related kidney transplant have certain advantages. Surgery dates can be arranged for a time that is convenient for both the recipient and the donor. Typically, the kidney starts making urine immediately and the kidney will function for a longer period of time. Sometimes fewer anti-rejection medicines are used.

Living non-related kidney transplant
A living non-related donor is a person who is living, but not blood related. This could be a spouse or friend. The advantages to a living non-related kidney are similar to a living related kidney transplant.

Deceased donor kidney transplants
Deceased donors are individuals who have been declared brain dead. The individual’s family has consented to organ and tissue donation. When you are on the waiting list for a kidney, you are waiting for a deceased donor. More than 50 percent of transplanted kidneys in the country come from deceased donors. Unlike the living-related and the living non-related, the deceased-donor kidney transplant surgery cannot be scheduled ahead of time.
Criteria for renal transplant waitlist candidacy

1. Each candidate presenting for renal transplantation will undergo a detailed evaluation by a multidisciplinary team including a transplant nephrologist, transplant surgeon, renal transplant coordinator, social worker, dietitian and financial representative. This process is conducted to obtain a comprehensive medical assessment of the patient. Additional testing to clarify medical conditions that would increase the risk of surgery and chronic immunosuppression may be required. In the event that such risks are identified, patients will be counseled regarding therapy to treat these conditions, or may be advised that they are not candidates for renal transplantation.

2. Patients must have end stage renal disease necessitating dialysis or advanced chronic renal disease (estimated creatinine clearance or GFR < 20 ml/minute). Referral prior to initiation of dialysis is encouraged because it can facilitate patient education and allow transplantation before the initiation of chronic dialysis in appropriate individuals.

3. Renal transplant candidates should generally be between the ages of 18 and 75 years old. Patients over 75 years old are considered and can be referred for evaluation if the individual is highly motivated, and does not exhibit advanced atherosclerotic disease as manifested by coronary disease and peripheral vascular occlusive disease. Patients under the age of 15 should be referred to a pediatric transplant program.

4. Patients must be free of malignancy. A prior history of malignancy with current remission may be referred for evaluation, and a malignancy free period of follow-up prior to transplant will be recommended by the transplant committee individualized by malignancy type.

5. HIV positive status, Class IV New York Heart Association congestive heart failure related to cardiomyopathy or ischemic heart disease, are exclusion criteria for renal transplantation at this center.

6. Patients must be free of systemic infection at the time of transplant. Active tuberculosis, systemic sepsis and deep seeded fungal infections are all contraindications to transplant surgery. Patients may be referred as renal transplant candidates if there is a reasonable expectation that their infections will be eradicated at a future date. The presence of either Hepatitis B antigen or Hepatitis C antibody is not an absolute contraindication to transplantation.

7. Successful candidates for renal transplantation must demonstrate a level of responsibility and psychosocial support systems sufficient to achieve compliance with immunosuppressive medication regimens and frequent office follow-up visits necessary for transplant success.

8. When reviewing the option of transplant surgery, the recipient must give consideration to the financial responsibility of their decision. A suitable candidate must be able to meet out-of-pocket costs in order to avoid complications resulting from an inability to cover expenses for medications and services. The transplant committee may advise against transplant surgery if a potential recipient is unable to demonstrate the ability to meet anticipated expenses.

9. Determination for transplant candidate eligibility has been developed within the framework of the hospital's mission for the care of persons without regard to race, national origin, religion, gender and sexual orientation.
Who can benefit from a kidney transplant?
People with chronic kidney disease (CKD or kidney failure) may receive a kidney transplant if they meet criteria. They are considered whether or not they are on dialysis. There are some health and age limitations, but all interested patients are encouraged to discuss their individual situations with the transplant team and their nephrologist.

How do I get in touch with the Beaumont transplant office to discuss a kidney transplant?
If you are interested in pursuing a kidney transplant, ask your nephrologist or dialysis unit to refer you to the Beaumont Kidney Transplant Program. Or, you can call and make an appointment on your own.

When you call to set up your transplant evaluation appointment, you will be asked some health history questions, demographic information and insurance questions. If your evaluation appointment interferes with your dialysis day, please contact your dialysis center about the possibility of a different dialysis time or day.

Transplant evaluation process and scheduling an appointment
Each potential recipient is required to undergo education and evaluation by a multi-disciplinary team including a transplant nephrologist, transplant surgeon, renal transplant coordinator, social worker, dietitian and financial coordinator. This process is conducted to obtain a comprehensive medical assessment. Additional testing may be required to clarify medical conditions that could increase the risk of surgery and chronic immunosuppression.

The transplant team compiles your information. If the team decides that kidney transplant would increase your survival or quality of life in comparison to staying on dialysis, you will be notified about your acceptance for candidacy. In the event the risks for transplant are too high, you will be counseled regarding your options.

Determination for transplant candidate eligibility has been developed within the framework of the hospital’s mission for the care of persons without regard to race, national origin, religion, gender and sexual orientation.

Who will I see?
During your transplant evaluation, you will meet the following people:

Transplant nurse coordinator: The transplant coordinator’s role is to provide continuity of care while you are being evaluated for your kidney transplant. The transplant coordinator will work closely with you to be sure that tests are being scheduled and completed, results are being sent to the transplant office for review, communication lines are staying open, and questions are being answered. It is very important that you keep in touch with your coordinator. Any test results that you might have from other hospitals should be sent directly to your coordinator.

Your transplant coordinator is a liaison between the nephrologist and you to be sure that accurate information is being shared and recorded in your medical record. Your work-up is successfully completed when all of the necessary medical information has been reviewed and approved by the transplant team. The transplant coordinator will place your name on the National and Michigan Kidney Transplant Waiting List after this approval.

Transplant social worker: The social worker’s role is to make sure you have adequate emotional support and resources to help in your adjustment to a kidney transplant. The social worker’s goal is to help you find healthy ways to manage any stress you may have during your pre-transplant work-up, your wait for a kidney transplant and after you receive your kidney transplant. At the time of your evaluation, the social worker will meet with you, and possibly your support person, to discuss how you are adjusting to your kidney failure and how you plan on coping with the transplant surgery and post-transplant experience.
Renal transplant dietitian: The dietitian will provide a nutritional assessment and education during your evaluation.

Transplant financial coordinator: The transplant financial coordinator will discuss your financial situation and counsel you regarding the available resources that may help you pay for your transplant, follow-up care and your transplant medicines. The financial coordinator is also available by phone to answer your questions.

Transplant surgeon: The transplant surgeon will also ask you about your medical history and discuss the kidney transplant operation. The transplant surgeon’s main concern is your blood vessels. He will make sure there are no problems with your circulation.

Transplant nephrologist: The transplant nephrologist reads the other team members’ notes and recommendations and will also do a physical exam. The transplant nephrologist is the doctor who will call you to the hospital for a deceased-donor kidney transplant when one becomes available. It is vital that you share with him everything about your health history, recent medical problems, hospitalizations and test results.

Transplant pharmacist: The transplant pharmacist will participate in your transplant care by reviewing and evaluating your medications and pertinent laboratory data during your hospital stay for your kidney transplant. The transplant pharmacist will also participate in providing medication education for you and your family members and to prepare you for going home (discharge).

Transplant assistant: The transplant assistant schedules your evaluation appointment with the transplant team. The day of your evaluation appointment, the transplant assistant makes copies of your insurance cards, accumulates medical records you have brought with you or that have been sent, and coordinates your appointments with the individual members of the transplant team. The transplant assistant is available to help you schedule the tests that will be part of your kidney transplant work-up.

The kidney transplant work-up

Your kidney transplant work-up will be specific just for you. It will take into account your medical history and age. You are responsible for completing your pre-kidney transplant work up. Your transplant coordinator and the transplant assistant will be available to help you arrange the tests. Your required tests need to be completed and approved by the transplant team before your name is added to the National and Michigan Kidney Waiting List. Your pre-kidney transplant work-up may include the following:

Chest X-ray: A chest X-ray allows us to look at your lungs. Please provide a report of your chest X-ray if you have had one done within one year of the evaluation.

EKG: The electrocardiogram tells us about your heart rhythms. Please provide a report of your EKG if you have had one done within one year of the evaluation.

Abdominal ultrasound: This ultrasound lets us look at your liver, spleen, kidneys and gallbladder. If you have gallstones, you may need to have your gallbladder removed before being placed on the kidney waiting list.

Dental consult: Visit your dentist to have your teeth and gums evaluated for active infections. If you have dentures, you should also have a dental consult. Your dentist will need to write a dental clearance letter based on the evaluation.

TB skin test: A tuberculin skin test is required every two years while you are on the waiting list. This test can be done in our transplant office or at your primary care physician’s office.

Pneumonia vaccine: A pneumonia vaccine is required. This vaccination requires one booster after five years. It can be done in our transplant office or at your primary care physician’s office.

Blood work: Blood work identifies immunity and exposure to viruses that might be significant to your kidney transplant. Blood work will be done during your first evaluation visit to the transplant office and just before your name is added to the
Michigan Kidney Waiting List. Blood work also includes the blood test for tissue typing. This identifies your genetic make-up to help match a donor kidney to you.

**Tissue typing:** Tissue typing is a blood test that uses DNA based technology to identify genetic similarities (antigens) between the donor and the recipient. Tissue typing reveals how many antigens you and the person receiving your kidney (recipient) have in common. Antigens are molecules on cell surfaces that are important for transplant success.

The ideal match is an identical twin. Since not many of us have identical twins, the next best match is a living-related, six-antigen match. You received half of your chromosomes (genetic material) from each parent. Because of the way we inherit genes from our parents, it is possible for one sibling to match all six antigens (also referred to as HLA identical or a perfect match) with another sibling. It is also possible that among siblings, there might either be a three-antigen match (haplotype) or a zero-antigen match (complete mismatch). Parents and natural children will always match three antigens (haplotype).

**Crossmatch:** A crossmatch provides information about the risk of immediate, severe rejection if the kidney is transplanted. The recipient’s blood is mixed with lymphocytes (white cells) from the donor’s blood.

**Colonoscopy:** All patients over age 50 need to have a colonoscopy. This test looks into your intestines and is done to check for cancer. The need for future tests will follow the American Cancer Society guidelines.

**Females:**

**Pap and pelvic exam:** Women must have a pap and pelvic exam. Women who have had a hysterectomy must also have a pelvic exam.

**Mammogram:** Women over the age of 40 must have a mammogram. Follow-up mammograms will be done according to the American Cancer Society and/or your physicians’ guidelines.

**Males:**

**PSA (Prostate Specific Antigen):** Men should have this blood test as part of their annual screening for cancer. African American or patients with a family history of prostate cancer should have a PSA starting at age 40, otherwise starting at age 50.

**Some patients will need more testing such as:**

**Cardiac stress test:** This test evaluates your heart’s performance. It gives information about blood flow to your heart muscle and how your fitness level rates with others of your age and gender. This test may include equipment such as a stationary bicycle, a treadmill or an arm ergometer (an ‘arms-only’ bicycle). Another method is to challenge your heart with a medicine such as Persantine or Dobutamine if you cannot exercise using the equipment.

**Cardiac clearance:** Cardiac clearance is needed for some patients. After all the cardiac tests are completed, you will see the transplant cardiologist or your own cardiologist. The cardiologist will review test results, take your health history, and determine if anything else needs to be done. Cardiac clearance status means your heart is considered strong enough to go through elective surgery.

**2-Dimensional echocardiogram:** This is an ultrasound of your heart that looks at the heart structure (valves and chambers) and heart movement. This is a non-invasive procedure.

**Carotid doppler:** This ultrasound looks at the carotid arteries, which are on each side of your neck. It shows if there is any problem with the blood flow through these arteries. This is a non-invasive procedure.

**Lower extremity doppler studies:** This is an ultrasound of the arteries (and sometimes the veins) in your legs. It will tell us if there is any problem with the blood flow through these arteries (and veins). This is a non-invasive procedure.

If any of your testing is abnormal, you may be asked to have further testing or follow-up with another physician.
Being on the “list”

The “list” is the generic term we use for the National and Michigan Kidney Transplant Waiting List. Michigan has one “list” for everyone in need of a deceased donor organ transplant, whether it is a kidney, heart, liver, pancreas or lung(s). When you have successfully completed your transplant work-up, you will be placed on the kidney “list” under your blood type.

How long you are on the “list” depends on the number of donor organs available for transplants and how well you match a donor kidney. As people receive transplants and are removed from the “list,” you move up the “list.” Depending on your blood type, the wait for a kidney can take five or more years. However, if a “perfect match” kidney becomes available for you at any time, no matter where you are on the “list,” you will be called in for that kidney.

What is an HLA antibody test?

It is possible to have pre-formed antibodies circulating in your system that might make you more sensitive to a kidney transplant. These antibodies come from pregnancies, blood transfusions or earlier transplants. It is essential that you have blood drawn each month to be sent to our laboratory to be checked for HLA antibodies for transplant. The lab sends part of the sample to Gift of Life Michigan (GOLM). GOLM is the organization that obtains and distributes the deceased donor kidneys. When a donor kidney becomes available, your blood is tested to see if it matches the kidney. The blood that you or your dialysis unit will send each month must be less than 42 days old to be used for testing for all donor kidneys offered.

How is the decision made about who gets an organ or tissue transplant?

The United Network for Organ Sharing (UNOS) is the federal agency responsible for maintaining the national computer list. The national list has all the names of everyone waiting for an organ transplant in the United States. There are more than 90,000 people on the national kidney waiting list. UNOS is also responsible for setting the guidelines that transplant centers and procurement agencies currently follow.

When you are listed for a kidney transplant at Beaumont, your name is placed on the Michigan Kidney waiting list and the National Kidney list with UNOS. Our local procurement agency, Gift of Life Michigan (GOLM) is in Ann Arbor.

When a kidney becomes available anywhere in the country, the donor kidney information, including the blood type, is put in the UNOS national computer. The computer then decides who will get the kidney transplant. Other factors are taken into account, such as waiting time, how well the kidney matches you genetically and sensitivities to certain kidneys.

If no one on the national list is eligible for a perfectly matched kidney, the information is turned over to GOLM. They look on the Michigan list to find the appropriate recipient within the designated blood type. When that individual is identified, he or she is called by their transplant office to come to their hospital to receive the kidney transplant. In your case, that will be Beaumont, Royal Oak.

Do I have to be seen routinely by the transplant office to remain on the “list”?

While you are on the “list,” you will be required to see us once or twice each year for a clinic visit. These visits serve as a mini reassessment of the evaluation process. At your appointment, you will meet with one of the transplant nephrologists, a transplant coordinator and the financial coordinator. Some of the initial evaluation tests may need to be updated. Sometimes the tests are updated more often, depending on your medical condition. These updates are necessary to remain active on the Michigan Kidney Transplant Waiting List. These visits also give you the chance to ask questions and review other information that is important to know.
Please bring these items to your appointment:
1. a current list of your medicines and doses
2. current health insurance cards 
   (including Medicare and Medicaid)
3. changes in address/telephone numbers
4. vacation schedule including location, 
   dates and telephone numbers 
5. information about hospital stays, blood transfusions 
   or test results since your last visit

What is “hold status”?
If a medical problem makes it unsafe to receive a kidney 
transplant, your name is placed “on hold.” Hold status does 
not mean you are taken off the list or lose your place in line 
on the list. Sometimes a patient chooses to be on hold for 
a personal situation or circumstance.

Even during your hold status, you keep collecting “points” 
on the list. Your name continues to move up with the others. 
You are still on the list, but on a hold status.

I’m interested in a living kidney transplant. 
I have family members or friends who would 
like to donate a kidney to me. What should I do?
When your work-up is completed, your name will be put 
on the deceased donor kidney waiting list. We can start looking 
at possible living related or living non-related donors any time 
during the evaluation phase or after you are listed.

Potential donors must be in excellent physical health. They 
must not be morbidly obese, have diabetes, high blood pressure 
or other complicated medical issues. If your donor has a question 
about his or her suitability, please have him or her call the 
transplant coordinator before completing the questionnaire.

Please have possible donors call our office for information. 
Possible donors will receive a booklet about the donor evaluation 
process. They will fill out a donor questionnaire and consent 
form. This gives us a brief assessment of their health status. 
If the donor meets the criteria set by our transplant team, 
we start with blood typing and tissue typing (genetic testing). 
The donor’s evaluation is very similar to yours. It includes tests 
to confirm the donor’s health and kidney condition. After the 
tests, a date for your living-related or living non-related kidney 
transplant surgery can be scheduled.

To respect the potential donor’s privacy, we cannot give the 
potential recipient any information about the donor’s health history, 
results of their testing or progress in the evaluation process.

What happens when I get called 
for a deceased donor kidney transplant?
The transplant nephrologist or transplant nurse coordinator 
will use the list of phone numbers you provided to notify you 
when a kidney is available. This is why we need to be updated 
on changes in your phone number or address and why we also 
need information about where you will be during vacations.

The call that a kidney is available could happen at any time 
of the day or night. When you receive this call, you will be 
instructed to go to the nephrology unit in the main hospital 
or the outpatient transplant clinic. A family member or friend 
must drive you to the hospital. A family member will be asked 
to go to the admitting office with your insurance information.

Please make sure you bring your current medicines, health 
insurance cards and any relevant information about any recent 
hospital visits. Do not eat or drink anything after you get the 
call from the doctor or the nurse.

If you are asked to go to the outpatient transplant clinic first, 
you will see one of the transplant coordinators (pre-transplant 
nurses) and the doctor. Pre-admission blood work will be drawn 
and admission orders will be written by the doctor. You will then 
be directed to the hospital to go directly to the nephrology unit.
When you arrive on the nephrology unit, the nurse will show you to your room and start getting you ready for your kidney transplant. Your family can stay with you until you go to surgery except for times the doctor or nurse may ask your family to step out for a moment. During the operation, your family can wait in the surgical waiting room.

**Surgical procedure**

When you are scheduled for a live donor kidney transplant or called into the hospital for deceased donor kidney transplant, your records will be reviewed by health care professionals involved in your care including the transplant surgeon, transplant nephrologist and anesthesia team. If you are free from infection and other serous medical conditions, you will be taken to the operation room to have IV’s placed before proceeding to surgery.

Once in the operating room, you will be administered general anesthesia, including a breathing tube in your trachea. The kidney transplant operation takes approximately four hours but can vary depending on individual complexities.

The incision is located in the lower abdomen. The donor kidney artery and vein are connected to the recipient’s artery and vein which carry blood to and from the leg. The donor ureter is connected to the recipient bladder.

When you awaken, you will have monitoring devices around you. In addition, you will have a drain from your side, a catheter in your bladder and an internal stent leading from your new kidney into your bladder. You will be closely monitored in the intensive care unit for about 24 hours after surgery. When ready, you will be moved to a regular hospital room on the transplant/nephrology unit. Your catheter, drain and IV lines will be removed when they are no longer necessary. The internal stent is removed about two weeks after your surgery by a procedure in the urology clinic. We anticipate that you will stay in the hospital approximately four to five days.

**Is there a risk with kidney transplant surgery?**

The risk of surgery is much less now than even 10 years ago. A person who is healthy, except for kidney disease, has a 1 to 3 percent chance of a serious medical complication in the first two to three weeks after a kidney transplant. Possible complications include infection, heart attack, blood clots, stroke or even a combination of events that can be fatal.

There is some risk right after a transplant. Despite our best efforts to reduce this risk (for example, by carefully checking for other illnesses during the evaluation), complications still can occur. If you have many medical problems this increases the risk for complications. The doctors and surgeons will explain your risks for surgery during the transplant evaluation. When you make your decision about having a kidney transplant, you must think about the possible benefits as well as the risks of surgery.

**When will my new kidney start making urine?**

Your new kidney will probably make urine right away. Living-related and living non-related kidney transplants usually make a great deal of urine immediately. Deceased-donor kidney transplants may sometimes be a little slower, but they usually start making urine within a few days.

**How will I learn to take care of my new kidney?**

The post-transplant nurse coordinators and nurses on the transplant nephrology unit will teach you about your medicines, diet, activity, signs and symptoms of rejection and infection, and other information you need to know before you go home. You will also be given a Kidney Transplant Handbook with this information in it.

You are responsible for working with the transplant nephrology unit nurses, post-transplant nurse coordinators and the transplant doctors to learn about your medical care. Actively taking part in your recovery and caring for your new kidney transplant is essential.
Potential medical and psychosocial risks of kidney transplantation

Peri-operative surgical risk factors to recipient

Prior to transplant, you will have been evaluated for medical conditions that could increase the risk of surgery or chronic immunosuppression. Even if you passed the preliminary screening, complications may still occur.

General complications of surgery include, but are not limited to, the risks of general anesthesia and invasive monitoring, cardiopulmonary complications, bleeding and infection. Any of these complications have the potential to become complex and life threatening. Inability to reverse the complication can lead to death.

Cardiopulmonary complications include heart attack, congestive heart failure, stroke, blood clot and pulmonary embolism. Pre-operative testing, peri-operative monitoring and prophylaxis therapies are instituted to decrease your chances of complications.

Bleeding can occur in the operating room or after the operation. Surgical patients are frequently monitored for signs or symptoms of bleeding. If bleeding is severe, it may require treatment by blood transfusion or re-operation. Bleeding around the area of your new kidney may put extra pressure on your kidney, compromising its function. Patients with bleeding or clotting abnormalities, or those who take anti-coagulation therapy such as Coumadin or anti-platelet agents such as aspirin or Plavix, are at higher risk for bleeding. Patients who decline to accept blood products for religious or personal reasons should discuss their wishes with the transplant team during their initial examination.

Infection can occur during or after your hospitalization in the surgical wound or deeper around the new kidney. You will receive antibiotics before and after surgery to reduce your chance of infection. Infection in your surgical wound needs to be treated with antibiotics. If the infection continues below the skin, the staples may need to be removed from the incision early and the wound packed with gauze. If the infection is severe, you may need to be taken back to the operating room to clean or re-close the area.

Potential risks: your new kidney

Arterial or venous thrombosis: Blood is brought to and from your new kidney through its renal artery and vein from the artery and vein carrying blood to and from your leg. If blood in these vessels clots, it usually cannot be reversed and results in loss of the kidney. The chance of this happening is increased in patients with blood that clots quickly (hypercoaguable) or in a donor kidney with multiple vessels. You may undergo ultrasound examination during your hospital stay to confirm good blood flow to and from your kidney.

Ureter: The ureter is the structure that carries urine from your new kidney to your bladder. It will be connected to your bladder during your kidney transplant operation. This connection has the potential to leak. Or, over time, this connection may scar and cause narrowing. Most of these complications can be corrected non-operatively, but infrequently, require re-operation.

In addition, a small plastic stent will be placed from your new kidney into your bladder. This internal stent is removed two to six weeks after surgery by a procedure in the urology clinic.

Delayed Graft Function: Your new kidney will have been removed from the donor, flushed, and placed in a cold solution. Some injury occurs from this process. It is more pronounced in deceased-donor kidneys than in live-donor kidneys, but either case can lead to “delayed graft function.” Delayed graft function is diagnosed when the kidney is receiving good blood supply through its artery and vein, but is not making urine or cleaning toxins from your blood.

Most delayed graft function resolves over a course of days to weeks. You may need to stay on dialysis while this resolves. Rarely, delayed graft function may not resolve and the kidney is lost.
Lymphocele: In some patients, fluid (lymph) can collect around the kidney. If this puts pressure on your new kidney, a second procedure may need to be performed to relieve this pressure.

Wound complications: Obese patients are at increased risk for wound complications including infection and hernia. We encourage patients to continue to exercise while waiting for kidney transplantation. This keeps your heart healthy and keeps your weight down, reducing the risk of wound complications. Any infection occurring in the transplant wound leads to increased risk of hernia developing in the wound.

Pain in the surgical wound is an expected consequence of surgery. Everyone has their own threshold for pain and pain medications. Our team of physicians and nurses will work with you to maintain a tolerable level of comfort after your surgery. It is important to maintain enough pain control so you are able to participate in early ambulation and deep breathing.

Post surgical infections can occur in many forms including thrush, urinary tract infection, pneumonia or blood infection. These are dealt with in a swift manner as transplant patients have a compromised immune system. You will be asked to participate in early ambulation and breathing exercises, and you will be on antibiotics after the operation to help prevent these infections.

Hospital stay
When you come to the hospital for your transplant, you will be asked to refrain from eating in order to administer anesthesia. After surgery, your diet will be restarted with liquids and replaced with normal foods as your stomach tolerates it. Some patients do not tolerate food early after surgery, but improve with time.

The transplant process is a physically and emotionally stressful time for the recipient. You are pulled from your normal surroundings while in the hospital, and subjected to anesthetic, sedation, pain and immunosuppressant medications all of which can cause confusion. In some patients, this can lead to delirium or depression. Psychiatrists and social workers are part of the transplant team, and can help the recipient cope with the emotional stress of transplant.

Organ donor risk factors
When waiting for transplant, your transplant center may accept or reject an organ on your behalf. Organ donor risk factors that could affect the success of the transplant include donor age, medical and social history, and condition of the organs. Although all donors are screened for malignancy and infectious diseases, there is a small possibility that these diseases may not be recognized in the donor and then transferred to the recipient.

Transplant medicines
Immunosuppression
Your body’s normal response to a foreign body (like a kidney transplant) is rejection. As long as the transplanted kidney is in your body, there is a possibility of rejection. Anti-rejection medicines (or immunosuppressants) decrease the risk of rejection. The combinations and doses of the medicines may change over time. Right after your kidney transplant, you may be taking high doses of medicines. When the kidney is more stable, the medicines are reduced gradually to maintenance levels.

Kidney transplant patients are required to take immunosuppression medications for the life of their transplant. These medications have short-term and long-term side effects. They require compliance with dosing schedules and frequent blood draws to check if the drug is at an appropriate level. They may have side effects such as stomach upset, nausea, diarrhea, weight gain, osteoporosis, diabetes, high blood pressure and decreased blood count. Immunosuppression places patients at higher risk for more serious or rare infections. Patients on long-term immunosuppression are also at higher risk for certain cancers and are encouraged to participate in age-appropriate cancer screening.
These medicines are critical to avoid rejection. Even minor changes in the way you take them can be harmful for you and your kidney. You will be given directions about what, when, and how much of each medicine you take.

**What kind of medicine will I be taking?**

While you are in the hospital you will take a combination of anti-rejection medicines. In the operating room during the transplant and sometimes after the transplant, you will be given a powerful medication to prevent rejection as an infusion through the vein (IV). One of three medications will be used based on your individual risk for rejection: either Simulect (basiliximab), Thymoglobulin (anti-thymocyte globulin), or Campath (alemuzumab). You will also be on two or three additional medications to prevent rejection of the kidney. You will receive Cellcept (mycophenolate mofetil), with the first dose given prior to going to the operating room. Cellcept is taken orally twice a day. You will also receive one of the following: Prograf (tacrolimus), Neoral (cyclosporine), or Rapamune (sirolimus). Your doctor will decide which medicines you need. Prograf and Neoral are taken orally twice a day. Rapamune is taken orally once a day.

The dose of Prograf, Neoral, and Rapamune depends on the level of the medicine in your blood. These blood levels are very important, so do not take your dose of Prograf, Neoral, or Prograf before you come to the clinic for lab work. Bring your dose with you to take after your blood has been drawn.

Corticosteroids are also given to prevent rejection. Solu-medrol (Methylprednisolone) is given through the vein (IV) in the operating room and then daily for three days after the transplant. On the fourth day after the transplant, Deltasone (prednisone), a pill form, will be given to most patients. Your doctor will determine if you need this medication. It is given once a day and by the end of one month, you will be taking 10 mg of prednisone once a day if everything is going well. Prior to leaving the hospital after the transplant, you will get a calendar to keep track of your prednisone dose.

It is very important to take all medicines exactly as directed. Sudden changes in dosages may lead to serious complications. You need to pay attention to your medicines and any changes that are made. This is vital to the success of your kidney transplant.

**Continue to follow these rules after your kidney transplant:**

1. Keep a record of all the medicines you take (including the dose and how frequent you take it).
2. Take all your medicines exactly as directed.
3. Report any side effects to your transplant nurse, doctor or pharmacist.
4. Do not take any over-the-counter medicines without talking with your doctor first.
5. Some medicines can interact with your immunosuppressants, and could harm your transplanted kidney. If a doctor other than your nephrologist prescribes a medicine, check with your transplant nephrologist or the transplant nurses to make sure that it is okay to take.
6. Call your pharmacist for refills at least one week before you are due to run out of your medicine. Also make sure you will have enough medicine if you will be away from home.

**Immunosuppressant medicines**

The following is a list of anti-rejection (immunosuppressant) medicines that you may be taking. Based on your case, you may be on a combination of two or three different immunosuppressant medicines.

**Transplant medicines**

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>tacrolimus</td>
<td>Prograf</td>
</tr>
<tr>
<td>cyclosporine</td>
<td>Neoral or Gengraf</td>
</tr>
<tr>
<td>sirolimus</td>
<td>Rapamune</td>
</tr>
<tr>
<td>mycophenolate mofetil</td>
<td>CellCept</td>
</tr>
<tr>
<td>mycophenolate sodium</td>
<td>Myfortic</td>
</tr>
<tr>
<td>prednisone</td>
<td>Deltasone</td>
</tr>
</tbody>
</table>
Do not change the dose or stop taking any medicine unless you have talked to your nephrologist. All immunosuppressants lower your resistance to infection. They also have the potential to make you more prone to cancer. You will be closely monitored after transplant. The goal is to give you just enough medicine to prevent rejection so these side effects can be avoided.

**Prograf (tacrolimus):** Prograf is usually given as a pill form twice a day. This medicine inhibits certain types of white blood cells (lymphocytes) that are involved in rejection. Side effects may include increased blood sugar, hand tremors, increased potassium levels, decreased magnesium levels, and increased blood pressure. In high doses, it can also be harmful to your kidneys. Blood levels of this medicine will be monitored to try to avoid this effect.

**Neoral (cyclosporine):** A certain type of blood cell is part of the rejection process. This medicine reduces the number of these cells your body produces. It can also be used to help prevent rejection or to treat rejection. Cyclosporine is usually given as a pill or liquid form twice a day but can also be given through an IV (into a vein). It is given as an alternative to Prograf (tacrolimus) for the prevention of rejection. Side effects may include increased blood pressure, increased potassium levels, decreased magnesium levels, hand tremors, increased cholesterol, increased gum growth and increased hair growth. In high doses, it can also be harmful to your kidneys. Blood levels of this medicine will be monitored to try to avoid this effect.

**Rapamune (sirolimus):** Rapamune is given as a pill or liquid once a day. This medicine inhibits certain types of white blood cells (lymphocytes) that are involved in rejection. It is given as either an alternative to, or in addition to cyclosporine or tacrolimus. Side effects may include increased cholesterol and triglycerides, decreased blood counts, mouth sores, fluid retention and leg swelling. Blood levels of this medicine will be monitored to avoid side effects.

**Deltasone (prednisone):** Prednisone can be given intravenously (IV) or in pill form. It reduces inflammation and antibody production. By reducing antibodies, prednisone helps prevent rejection or control rejection if it has already started. Side effects may include upset stomach, stomach ulcers, acne, mood swings, increased appetite, weight gain, fluid retention, increased blood pressure, cataracts, muscle wasting, brittle bones and high blood sugar. Many of these side effects will disappear as your prednisone dose is lowered.

**Cellcept (mycophenolate mofetil) or Myfortic (mycophenolate sodium):** Cellcept or Myfortic is usually given as a pill form twice a day. This medicine limits certain types of white blood cells (lymphocytes). Lymphocytes take part in the rejection process. Cellcept or Myfortic is used to prevent and treat acute and chronic rejection. Side effects may include stomach upset, diarrhea, decreased blood counts, and lowered resistance to infection.

**Other medicines**

Right after your transplant, you will take four more medicines. Bactrim SS, Valcyte or Zovirax, and Mycelex are used to help protect your body from infection. Protonix is used to prevent stomach upset and ulcers.

**Bactrim SS (sulfamethoxazole & trimethoprim, SMX/TMP):** Bactrim SS is an antibiotic. It helps prevent upper respiratory infections and urinary tract infections. Let your doctor know if you are allergic to sulfa medicines. Take this medicine with a full glass of water. Side effects may include stomach upset and sensitivity to sunlight. Wear protective clothing and sunscreen with an SPF of 30 or greater when outdoors. You will be on this medicine for six to twelve months after your transplant.

**Valcyte (valganciclovir) or Zovirax (acyclovir):** These are anti-viral medications. They help prevent infection caused by herpes viruses including cytomegalovirus (CMV), genital herpes, and cold sores. Side effects may include nausea, vomiting,
diarrhea, headache, or decreased blood counts. You will be on this medicine for three to six months after your transplant.

**Mycelex (clotrimazole):** This medicine helps prevent fungal infections of the mouth. This mouth infection, called thrush, is identified by a white coating on the tongue and inner cheeks. Mycelex should be dissolved slowly in the mouth. Do not eat or drink anything for 30 minutes after the medicine dissolves. Do not chew or swallow the medicine whole. Side effects are not common but could include nausea, vomiting, diarrhea, or abdominal pain. You will be on this medicine for one to three months after your transplant.

**Protonix (pantoprazole):** This medicine helps prevent stomach and duodenal ulcers. It reduces the amount of acid in your stomach. Side effects are not common but could include headache, constipation, diarrhea, and abdominal pain.

### Additional information

**Insurability**

Future health problems related to transplantation may not be covered by your insurance or may affect your ability to obtain health insurance, disability or life insurance. Please check with your current insurance carriers including health, short/long term disability, and life to help clarify these issues.

**Right to refuse transplant**

Even if you decided to pursue transplant, you retain the right to refuse transplant any time prior to surgery.

**National and transplant specific outcomes**

Beaumont and national volume and outcome data is compiled and available at [srtr.org](http://srtr.org). This data includes comparisons of patient and kidney survival as well as other data.

### Definitions of terms

**Acute rejection:** Acute rejection can happen at any time after a kidney transplant. During an acute rejection episode, the serum (blood) creatinine rises. This can usually be treated by taking higher dose or different type of immunosuppressive medicine until the creatinine returns to a baseline.

**Antibody:** Product of the immune system that helps the body fight infections and foreign substances.

**Antigen:** The “marker” that stimulates the body to produce antibodies.

**Anti-rejection medicine:** These drugs are taken every day through the life of the transplanted kidney. They are also known as immunosuppressive medicine. They help prevent the immune system from rejecting the new kidney.

**Autologous blood:** Your own blood donated for yourself before surgery.

**Bladder:** The part of the urinary tract that receives urine from the kidneys and stores it until you urinate.

**Blood typing:** A blood test that indicates blood group. You can be O, A, B, or AB. The recipient’s blood type needs to be compatible with the donor’s blood type to receive the kidney transplant.

**BUN:** BUN stands for Blood Urea Nitrogen, a waste product from the kidney. Your BUN value is an indication of waste products being created by the body.

**Chronic rejection:** Chronic rejection is a process that may happen after a kidney transplant, it can develop over months or even years, during this process, the creatinine slowly rises. There is no known treatment for chronic rejection.

**Chronic Kidney Disease (CKD):** Occurs when the overall function of the kidneys declines to less than 10 percent of normal. When this happens, treatment, such as dialysis or a transplant, is needed to replace lost kidney function and support life.
**Chronic renal failure:** Permanent damage to both kidneys that cannot be reversed, it is treated by dialysis or a transplant.

**Creatinine:** A product of muscle metabolism. Creatinine level serves as a very good indicator of kidney function.

**Crossmatching:** A test to find out if the blood of the kidney donor and the recipient are compatible (see also blood typing).

**Deceased donor:** A person who has donated organs after dying from a severe brain injury or cardiac death. The deceased or family has generously offered organs and/or tissues to be transplanted.

**Dialysis:** A process that cleans and balances the chemicals in the blood when a person’s kidneys have failed. Dialysis may refer to hemodialysis or peritoneal dialysis.

**Diastolic:** The bottom blood pressure number. Diastolic is when the heart relaxes and refills with blood.

**Donor nephrectomy:** Removal of a kidney for donation from a living person.

**Glucose:** A type of sugar found in the blood.

**Graft:** Your “new” kidney.

**Hypertension:** Another word for high blood pressure.

**Immunosuppressive medicines:** Medications taken every day the transplanted kidney is functioning. They help prevent the recipient’s immune system from fighting against and rejecting the new kidney. Also known as anti-rejection medicine.

**Intravenous (IV):** A small catheter placed into a vein; refers to the fluids and medicines that are injected into a vein through a needle or catheter.

**Kidneys:** Two bean-shaped organs located beside the spine, just above the waist. They remove waste and balance fluids in the body by producing urine.

**Living non-related kidney:** Includes kidneys donated from someone who is living, but not blood related, such as the spouse, or friend.

**Living-related kidney:** Donated by a blood relative such as a mother, father, sister, brother, son, daughter, cousin, aunt or uncle.

**Nephrectomy:** Surgically removing one or both kidneys.

**Nephron:** A section of the kidney made up of millions of tiny blood filtering tubes.

**Rejection:** The process by which the body responds to a “foreign object,” such as a new kidney. Rejection can be acute or chronic (see definitions: Acute Rejection and Chronic Rejection).

**Renal:** Having to do with the kidneys or referring to them.

**Systolic:** The top blood pressure number. It measures the force of the heart muscle as blood is pumped out of the heart chambers (contractions).

**Tissue typing:** A blood test that evaluates if there is a tissue match between organ donor and recipient antigens, it is done before a transplant (also see cross matching and blood typing).

**Transplant:** Transferring organs or tissues from a donor to a recipient.

**Ureters:** The tube that carries urine from each kidney to the bladder.

**Urethra:** The tube from the bladder that allows urine to flow out of the body.

**Urinary tract:** The system made up of the kidneys, ureters, bladder and urethra. It produces, moves, stores and eliminates urine.
Resources

American Association of Kidney Patients
14440 Bruce B. Downs Blvd.
Tampa, FL 33602
800-749-2257
aakp.org

American Kidney Fund
11921 Rockville Pike, Suite 300
Rockville, MD 20852
800-638-8299, then press #0
www.kidneyfund.org

National Kidney Foundation
30 East 33rd Street
New York, NY 10016
212-889-2210 or 800-622-9010
Fax: 212-689-9261
www.kidney.org

National Kidney Foundation of Michigan, Inc.
1169 Oak Valley Drive
Ann Arbor, MI 48108
734-222-9800 or 800-482-1455
Fax: 734-222-9801
www.nkfm.org

The National Foundation for Transplants
5350 Poplar Ave., Suite 430
Memphis, Tennessee 38119
901-684-1697 or 800-489-3863
Fax: 901-684-1128
www.transplants.org

United Network For Organ Sharing (UNOS)
700 North 4th Street
Richmond, VA 23219
888-894-6361 or 800-292-9548
www.unos.org

Provides support services for those who plan to undergo a transplant or who have already had a transplant. Supports a computerized registry of all potential organ recipients, according to tissue type and medical need.
Kidney Transplant Recipient Candidate Signature Sheet

Our transplant center feels the “Your Kidney Transplant: What You Need to Know” is important written information to assist your decision making and to learn about the kidney transplant process, in addition to short and long term considerations. Please also note that it is a federal crime for any person to knowingly acquire, obtain, or otherwise transfer any human organ for valuable consideration (i.e., anything of value such as cash, property, vacations). Your signature below confirms that you have received and read the recipient education booklet along with the materials listed below, and have had the opportunity to have any questions or concerns answered regarding being a Kidney Transplant Recipient Candidate. Our center will keep this form on file in your medical record.

Materials:
- Transplant Team Profile Sheets
- Your Kidney Transplant: What You Need to Know
- SRTR Data comparing Beaumont Transplant Center to the Nation
- Pneumococcal Vaccine: What You Need to Know
- What You Should Know About HIV
- UNOS What Every Patient Needs to Know
- UNOS Facts and Figures
- OPTN/UNOS: Your Resource for Organ Transplant Information
- Patient Rights and Responsibilities
- Notice of Privacy Practices
- Memorandum for Dental Evaluation
- Pre-transplant Seminar Schedule
- Transplant Connection Support Group flyer
- Questions and Answers for Transplant Candidates About Multiple Listing and Waiting Time Transfer
- Questions and Answers for Transplant Candidates About Kidney Allocation
- Financial Handbook
- Beaumont Weight Loss Center information
- What Does Two Years Mean To You

I consent to proceeding with testing as a potential Kidney Transplant Recipient Candidate. I have received the booklet “Your Kidney Transplant: What You Need to Know” along with the materials listed below and I will call 248-551-1033 if I have any questions regarding being a Kidney Transplant Recipient Candidate.

Signature of Kidney Transplant Recipient Candidate
Date
Time

Printed Name of Kidney Transplant Recipient Candidate
Date
Time

Signature of Transplant Center Staff Member Providing Booklet
Date Received
Time