St. John Transplant Center
Kidney Transplantation Education
ST. JOHN TRANSPLANT CENTER
KIDNEY TRANSPLANTATION EDUCATION
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CHRONIC KIDNEY DISEASE

Kidney Function
Most healthy people have two kidneys. Healthy kidneys are fist-sized and are located in the back on either side of the spine. They remove extra water from the body and filter the blood to remove some waste products. The kidneys also help control blood pressure and minerals in our system, and assist the production of red blood cells.

Chronic Kidney Disease
When a person’s kidney function begins to fail, they have a condition called chronic kidney disease (CKD). (other older terms for this include: renal failure, end-stage renal disease (ESRD) or kidney failure.

When someone develops CKD, waste products and extra fluid can build up in the body. People usually feel fatigued, tired and may get puffy feet, ankles and face (edema). Food does not taste the same and the appetite is sometimes poor. Although everyone is different, the buildup of waste products creatinine and a form of nitrogen (BUN) measured in the blood often tell your doctor the degree of CKD. Your doctor may decide to start medicines to combat the effects of CKD depending on the test results.

People who have CKD may not feel ill until the disease is very far along. If you have CKD it is important to have regular medical checkups and blood tests. Diabetes and high blood pressure are the most common causes for CKD, but many more rare diseases can cause the kidneys to slow down. About one in nine people has some type of kidney disease, although far fewer end up needing dialysis or a transplant.

Although many different illnesses can cause CKD, patients usually progress to the point where they need the help of dialysis treatments to feel better and even stay alive. Dialysis replaces the function of the diseased kidneys and allows people to function without working kidneys. Dialysis does not exactly match normal kidney function.

Kidney Transplantation
A kidney transplant can provide a replacement for kidney function that is more natural, freeing patients from dialysis treatments. The kidney transplant operation places a single new (third) kidney in the abdomen, leaving the original kidneys alone (unless they have been previously removed for other reasons). This transplanted kidney does the work of the two failing ones. The advantages of transplantation come with a very important string attached: every person who gets a transplant must take medicine every day in order to keep the transplant working normally. The more patients understand about their medicines, the easier it is to stay healthy.

Transplant patients regularly need adjustments in their medicines and always need to undergo blood tests to monitor kidney function. The transplant operation does not “cure” people of kidney disease because they still must take medicine and see the doctor regularly.

Kidney transplants are not for all patients with CKD. A kidney transplant is considered an “elective” operation. Some patients have conditions that make a transplant impossible or unsafe to perform. For these people, dialysis is the better option.

Some patients have a working kidney transplant that loses function over time. The expected survival for a transplanted kidney from a living donor is 11 to 13 years and from a deceased donor is nine to 10 years. A person can undergo evaluation for a second transplant if and when their original transplant fails.
PATHS TO TRANSPLANTATION

Benefits of a Kidney Transplant
There are important advantages of kidney transplantation over dialysis. The lifestyle of a transplant recipient is improved because time is not spent in a dialysis unit. A transplanted kidney corrects minerals more naturally, resulting in fewer dietary restrictions, no fluid restrictions and more energy, activity and independence. Perhaps the most important long-term benefit is a drop in the risk of hardening of the arteries and heart attack.

There are responsibilities, however. In addition to always taking the prescribed medicines, you need to be careful about side effects these medicines may have. Transplantation will not cure all the medical problems you have, but it can significantly benefit lifestyle.

Living Donor Transplantation
If there is a donor, or several possible donors, blood tests are done with the blood of the recipient and donors. This is called lymphocyte crossmatching and can be done on multiple potential donors at a time, although typically we test healthiest candidates first. In this blood test, the donor’s blood cells are tested against the recipient’s to determine if the recipient has any previously formed sensitivity to that donor.

When there is a reaction between the cells, and the kidney would be rapidly rejected without aggressive desensitization, this is called a “positive crossmatch,” and in most cases another donor must be found.

No reaction between the cells is a “negative crossmatch,” meaning a transplant can safely take place. Once that negative crossmatch has been done, one donor is selected for medical evaluation. If this person is found to be a suitable donor from a medical, surgical and psychosocial standpoint, the operation is scheduled and a date is set for the transplant. This is preceded by a final preoperative evaluation the day before surgery. (for more on living donation see Living Donation section)

Deceased Donor Transplantation
When no living donor is available, a recipient is placed on the deceased donor list. Once activated, we need to be able to reach you at any time of the day or night. It is very important for you to notify St. John of any changes to your contact information. A recipient must be ready at any time to come to St. John when a kidney becomes available.

Because there are so few deceased donor kidneys, we first try very hard to see if there may be someone in the recipient’s life who wishes to donate. For a deceased donor transplant, special preliminary tests are done (HLA typing) to help find the right donor when the time comes. When a kidney becomes available, a final crossmatch must be done quickly a few hours before the transplant starts. This crossmatch must be negative for the surgery to take place. Usually, people waiting for a deceased donor transplant send tubes of blood to the lab every month, or every few months, so that this testing can be started quickly when a kidney is available.

If patients need to wait for an available kidney for over 12 months, we will schedule a repeat annual evaluation with the St. John transplant center to keep your information up to date.

Complications
We do many kidney transplants each year at St. John, and most patients do very well. A kidney transplant involves an incision and isolation of the important vessels, usually on one lower side of
the abdomen. There are three connections: the artery, the vein and the urine tube (ureter) that connects the kidney internally to the bladder so the patient can urinate normally. After surgery, we are concerned about these three important connections and we often do scans to make sure nothing leaks.

At first, there are a variety of six to twelve new medications transplant patients need to take. Some are to protect against infections, others to block a rejection of the new kidney and others for protection against new problems. All these medications can have side effects or can interact with each other. Good communication between you and your caregivers is crucial in determining how a particular individual tolerates these medicines. After the first few months, the number of medications is quickly reduced and the regimen becomes much easier to follow, but at first it requires a lot of work and attention.

Rejection is the process of your body building up a natural response against anything it sees as “foreign”. We take multiple steps to avoid this predictable response.

Transplant patients take anti-rejection medications that keep your body from recognizing some invading micro-organisms as foreign and suppressing the body’s natural immune response that could leaving the patient more susceptible to infection. We use medications to keep this to a minimum and we are extra careful with our patients to listen to new symptoms and treat infections quickly.

In addition to surgical problems, medication problems, rejection and infections, underlying illnesses can get worse with the stress of surgery. Often, the patients who come to us for transplantation may have once had a severe medical problem like a heart attack or stroke but still wish to go ahead with a kidney transplant. These patients are at increased risk from surgery and are screened and tested carefully.

Patients who have been on dialysis for many years are also at higher risk during the time of surgery. Death is very rare, but it can happen. Every transplant program is closely supervised and the federal government publishes results of every transplant center in the United States on the Internet.
HOW ARE ORGANS MADE AVAILABLE?

United Network for Organ Sharing
The Transplant Center at St. John, like all transplant centers in the United States, is part of a national linked organ-sharing network. This network is called United Network for Organ Sharing (UNOS). UNOS is a non-profit organization that has a regulated system to assure equal access for all patients needing a transplant. All transplant patients at St. John are registered with UNOS. UNOS maintains a centralized computer network linking agencies and transplant centers across the country. This network is available 24 hours a day. UNOS provides a toll-free patient service line to help transplant candidates, recipients and family members understand organ allocation practices and transplantation data. The toll-free patient service line number is (888) 894-6361.

Life Share Organ Procurement Organization (OPO)
LifeShare Transplant Donor Services of Oklahoma, Inc., is a private, not-for-profit 501(c)3 organization certified and designated by the U.S. Department of Health and Human Services as the organization dedicated to recovering organs for transplantation in all 77 counties of the state of Oklahoma. www.lifeshareoklahoma.org

GOVERNING BODIES

OPTN
The U.S. Congress established the Organ Procurement and Transplantation Network (OPTN) when it enacted the National Organ Transplant Act (NOTA) of 1984. The act called for a unified transplant network to be operated by a private, non-profit organization under federal contract.

Following further study and recommendations from a task force commissioned through NOTA, the U.S. Department of Health and Human Services (HHS) solicited proposals in 1986 for the operation of the OPTN.

The United Network for Organ Sharing (UNOS) was awarded the initial OPTN contract on September 30, 1986, and has continued to administer the OPTN since that time.

Effective March 16, 2000, HHS implemented a Final Rule establishing a regulatory framework for the structure and operations of the OPTN.

The U.S. Organ Procurement and Transplantation Network (OPTN) helps ensure the success and efficiency of the U.S. organ transplant system. OPTN responsibilities include:

• facilitating the organ matching and placement process through the use of the computer system and a fully staffed Organ Center operating 24 hours a day
• developing consensus based policies and procedures for organ recovery, distribution (allocation), and transportation
• collecting and managing scientific data about organ donation and transplantation
• providing data to the government, the public, students, researchers, and the Scientific Registry of Transplant Recipients, for use in the ongoing quest for improvement in the field of solid organ allocation and transplantation
• developing (1999) and maintaining a secure Web-based computer system, which maintains the nation’s organ transplant waiting list and recipient/donor organ characteristics
• providing professional and public education about donation and transplantation, the activities of the OPTN and the critical need for donation

Under federal law, all U.S. transplant centers and organ procurement organizations must be
members of the Organ Procurement and Transplantation Network (OPTN) to receive any funds through Medicare. Other members of the OPTN include independent histocompatibility laboratories involved in organ transplantation; relevant medical, scientific, and professional organizations; relevant voluntary health and patient advocacy organizations; and members of the general public with a particular interest in donation and/or transplantation.

The United Network for Organ Sharing (UNOS), based in Richmond, Virginia, administers the OPTN under contract with the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS). The OPTN contract is overseen by the HRSA OPTN Project Officer, Robert Walsh.

**CMS** (Centers for Medicare & Medicaid Services)

**NOTES**
STARTING THE TRANSPLANT PROCESS

Transplant Referral
The transplant process starts by talking to your nephrologist or dialysis center nurse for consultation about having a kidney transplant. The doctor will refer you directly to the St. John Transplant Center in Tulsa. We will ensure that your health insurance coverage allows us to serve as your transplant center. The next step is a call from a nurse transplant coordinator. The purpose of this call is both to ask and answer many questions about the transplant process and clarify any initial problems.

Pre-Transplant Evaluation (PTE)
As the evaluation continues, certain conditions or health problems may need to be corrected before the surgery can occur. Sometimes there are health problems you may have that make it too risky to have a transplant, so we try to determine these factors early. Kidney transplantation has many benefits, but it also has risks, so it is important not to cut corners in your evaluation. If transplantation is a safe and realistic option, we move on to the next step - evaluation day.

Transplant donors and recipients come to St. John and are evaluated by members of the transplant team. On the day of your initial evaluation there will be a private financial discussion with a financial coordinator. All transplant candidates meet with our social worker and as well as receive an education session with the transplant nurse coordinator.

Tests
Most of the tests performed during your evaluation period are familiar and routine: blood tests, an electrocardiogram (ECG), a chest x-ray and an ultrasound of the abdomen. We ask that you be sure to be up-to-date on cancer screening tests like colonoscopy, mammogram and pap-test (for women).

Recipient Advanced Screening
Routine screening may point out a need for further medical evaluation. Patients with known illnesses, such as a heart disease, will need updated testing. Heart problems are common in people with kidney failure. Often we need a cardiologist (heart specialist) to make an evaluation and assist us in the hospital. Even with the best testing, doctors, patients and families all need to be ready to cope with the possibility of an unexpected problem.

Consent for Evaluation Form
In your packet of information, you will find the Consent for Evaluation form. This form needs to be carefully reviewed and signed at the evaluation appointment. The transplant nurse coordinator will review the form and answer any questions. The form must be signed by both the potential transplant recipient and the transplant coordinator.

Conclusion of Screening Tests: Patient Selection Committee (PSC) and Activation
Before we move to the final pre-transplant lab tests, all of your information is assembled and the transplant team meets to discuss your results. You will be informed about the outcome of the team’s review soon after we meet. There are three possible outcomes from the evaluation process:

1. Accepted for transplant (listed active or inactive depending on pending test results or clearances)
2. Deferred acceptance for additional testing
3. Declined as a candidate

Next Steps
When you are accepted for transplant your financial coordinator will re-check your health insurance and request authorization when required. There are two options for a recipient to receive a transplant – living donor or deceased donor transplantation.
WAITING FOR YOUR TRANSPLANT

“Status 1” vs. “Status 7”
Once you are listed, you will either be listed as “status 1” and “activated” right away or you may be listed as “status 7” and be considered “inactive.” During the time you are inactive, you will continue to accrue waiting time, but cannot receive a transplant. There are various reasons that you might be listed as inactive, examples of reasons include: a pending test, dental clearance, immunizations, psychological evaluation, heart issues, cancer screening, etc. When you are “active” on the list it means that you are actively waiting for a transplant and when you have accrued the right amount of waiting time and a kidney is found to be a good match for you, you can be transplanted. If you have a living donor and you are active, you will be waiting on the living donor screening process to finish and then you will be able to have your surgery scheduled.

Before the Call
While waiting on the “active list,” you are required to send in a blood sample every month. A blood sample kit will be sent through the mail from HLA to either your dialysis center or your address. If you are on dialysis they will draw the samples, if not, you will take the kit to RML (Regional Medical Lab) or your local lab and have the samples drawn. After receiving the kit, the blood samples should be returned to HLA according to the instructions.

These blood samples are used to monitor the immune system for previously formed sensitivities. You may develop antibodies as a result of prior exposure to other human tissues (i.e. blood transfusions, pregnancies and previous organ transplants). Also, illnesses, surgeries and vaccinations may trigger immunity. If antibody levels (PRA) are high, waiting time for a transplant will likely be longer compared to someone whose antibody level is lower.

The Call for Transplantation
When a deceased donor kidney becomes available, this means that there is a patient in a hospital somewhere with an unsurvivable injury, It is the wish of this person and their family to offer organs to help others live healthier lives. Donors may provide as many as seven organs and other tissues that help others.

The transplant coordinator needs to be able to reach you 24 hours a day when an organ is available. The transplant office should have telephone numbers of family and friends who will know where to reach you at any time. Quick answers are needed when a kidney is available. If you are planning to be out of town or out of your cell phone’s range, leave a number with the transplant office of where you can be contacted. Cell phones should be checked regularly to make sure they are functioning properly.

Length of Waiting Time
The length of time a person waits for a transplant cannot be determined and is influenced by many factors. These factors include:

- how many donors become available
- number of patients on the waiting list
- the blood type of the recipient
- sensitization
- other health issues that might arise while waiting on the list that would require patient to be inactive on the waitlist
- matching
These factors have no influence on how long people wait for a kidney:

- race
- age
- gender
- financial/social status
- medical condition
- religion
- sexual orientation
- political or celebrity status

It can take anywhere from a several weeks to more than 10 years to receive a transplant. On average, waiting times are one to five years.

**Donor Availability**
Approximately 100,602 people wait for kidney transplants at any given time in the United States. There are 5,000-6,000 deceased donors annually. Therefore, the need for organs exceeds the available number of donors. This shortage of organs can significantly increase the average waiting time for all potential recipients.

**Blood Type**
Blood type can affect waiting time. On the internet, you can check the average waiting time for a kidney transplant if you know your blood type.

**HLA Tissue Match**
Some HLA/genetic markers are more rare than others. If a recipient has common HLA markers, they have a better chance that a donor somewhere in the country is an identical match.

**PRA/Antibody Level**
Patients with high antibody levels wait longer than patients with low antibody levels. Antibody levels are expressed in percentages (0-100 percent) and roughly predict the chance the recipient will have a positive crossmatch. According to UNOS data, patients with peak panel reactivity PRAs of 20-79 percent waited much longer than those with PRAs below 20 percent. Those with peak PRAs of 80 percent and higher had the longest wait time.

Patients with higher PRA may be called more than once for a transplant until a successful crossmatch is achieved.
THE HOSPITAL STAY

Time in the hospital is usually shorter for recipients of living donor kidneys than for recipients of deceased donor kidneys. Most recipients stay in the hospital for four to six days. Living kidney donors usually have a shorter hospital stay of two to three days. All recipients spend the first 24 hours in our intensive care unit to allow for closer observation and are usually moved to a less acute unit for the remainder of their recovery depending on the patient’s status post-transplant he or she may be in the ICU for more than the first 24 hours.

Admission for Surgery

Deceased donor transplantation

When the call comes for those waiting for a deceased donor transplant, they need to travel to St. John Medical Center quickly and safely. Upon arrival to St. John, blood is drawn for the crossmatch, an intravenous infusion (IV) is started, a chest x-ray and ECG will be done and the admission process is started. Usually, the on-call nephrologist will see you in the hospital to make sure everything is set for the transplant surgery. The timing of the operation will be determined soon after you arrive at the hospital so friends and family can be informed.

Living donor transplantation

For scheduled surgeries from a living donor, check-in occurs with the Surgery Admissions department the morning of the procedure. A nurse will start an IV which will be followed by the initiation of anesthesia. Once under anesthesia, a breathing tube will be inserted to assist breathing while asleep. A urinary catheter will be placed in the bladder to allow it to empty and to monitor urine output during the procedure. The breathing tube will be removed at the end of anesthesia and the urinary catheter in a few days.

The Operating Room

Once under anesthesia, a breathing tube will be inserted to assist breathing while asleep. A urinary catheter will be placed into the bladder to allow the bladder to empty and to monitor urine output during the procedure. The breathing tube will be removed at the end of anesthesia and the urinary catheter in a few days. Kidney surgeries generally take three to four hours.

Following surgery, patients move to a holding area called the recovery room for two to four hours until the effects of anesthesia have worn off and vital signs are stable. Surgeons will speak to the donor and recipient family members in the surgery waiting area after the procedure. After initial recovery, donors and recipients are transferred to rooms in the hospital. Family members may visit in regular hospital rooms.

What to Expect After Surgery

Most of our patients — donors and recipients — are taken to the unit and may have supplemental oxygen from a small tube to help them breathe for the first few hours as they awake from surgery. Nurses encourage and assist in coughing and deep breathing to help decrease the risk of pneumonia. The surgical staff monitors the healing of the incision and supervises the success of the surgical procedure.

Some pain after surgery should be expected. Pain is usually strongest in the first two days and gradually subsides. Donors and recipients are still a bit sore at the time of discharge. Complete recovery from pain will take a number of weeks. Medications are provided to decrease pain. The nurses can give advice on how to manage the expected pain of healing from an operation.
Air powered stockings are fitted to your legs to provide gentle massage for blood circulation. There is a bladder catheter that drains the urine from the bladder and allows us to monitor the new kidney’s function. A small soft drain tube may be placed during surgery. Kidney recipients are usually able to sip liquids and begin to eat on the second day after surgery, although this can vary from person to person.

**What to Expect After Hospital Discharge**

1. Generally, you will need to stay in the Tulsa area at least two to three weeks following discharge from the hospital. It may be longer if there are complications or your doctors decide that it is in your best interest to stay close to the Transplant Center.

2. The transplant program requires that you have someone assist you following transplant. The post-transplant period is very complex. You will be given new medications with dosages changing on a frequent (sometimes daily) basis. You will need to be aware of signs and symptoms of rejection and to respond appropriately when they are observed. You may also experience mood swings related to the medications. You will need to identify a support person to:
   - Be at the hospital following the transplant to participate in the pharmacy education.
   - Be with you at home or a local hotel to help you monitor yourself for signs and symptoms of rejection and seek out medical attention if necessary.
   - Attend your follow-up medical appointments to make sure that all instructions are clearly understood and followed.
   - Assist with your daily needs such as being sure you have food, picking up medications and transporting you wherever you might need to go.
   - Provide emotional support during what can be a very challenging time. Not all kidney transplants work right away or there can be unforeseen medical complications. Someone to help you is essential for your recovery.

3. Remaining close to the hospital after discharge is especially important because the first clinic appointments may be spread out during the day, making commuting very tiring. After discharge from the hospital, some patients have found it easier to stay close to the hospital for a few days even if they have a place to stay around the Tulsa area.

4. The Transplant Center does have access (depending on availability) to a one bedroom duplex unit one block from the Transplant Center. This is made available to our out of town recipients and living donors by the Sisters of the Sorrowful Mother from St. John. There is no charge for this lodging. Please discuss any special needs you might have, such as wheelchair accessibility, with your social worker.

Another option for lodging assistance is the Hospitality House of Tulsa (www.tulsahospitalityhouse.org). Please contact the transplant social worker if you are interested in this option as there is limited availability and there is typically a waiting list.

There are several hotels in the area that offer reduced rates for hospital patients and their families. Please see the list of these hotels and their “St. John” rates in the back of this booklet.
5. **How much will a local stay cost?** On average, lodging at an extended stay hotel is close to $2,500-$5,000 for 30 days. Inquire about monthly rates. Food costs will depend on whether or not you and your support person are eating out every day or shopping and cooking. Food expenses can vary considerably. Parking costs can be additional. All of these out of pocket costs can be overwhelming. Ask your social worker about fund raising for these and other expenses related to transplant.

6. **If I have a living donor, who pays for the transportation, lodging, food and parking costs?** Since the donor may be using sick leave or losing income, generally it is assumed that at the time of the evaluation and the surgery, as the recipient you are under no obligation, but might be willing to assist by offsetting expenses associated with the surgeries, such as transportation, lodging, food and parking. This is an important discussion to have with your donor. These expenses can be, but are not generally covered by any other means, such as your health insurance. The medical costs of the evaluation and surgery are covered.

7. **If your income is below 300 percent of the Federal Poverty Guidelines, or if you have extenuating circumstances, you may qualify for assistance to cover these expenses for your donor through the National Living Donor Assistance Center (NLDAC) www.livingdonorassistance.org. Please discuss this with your social worker.**

**For the Transplant Recipient**

Each day brings better kidney function and steady recovery from the operation. While in the hospital, you learn about your new medications. Pharmacists will visit you to clarify your medication list in bedside teaching sessions. Family members are encouraged to learn along with you. The tubes are removed one by one. Our goal is for patients to leave the hospital with as few extra tubes as possible and eating a normal diet. The bladder catheter is usually removed before discharge from the hospital. Often, you will still have your neck IV line for several doses of medication outside the hospital before it is removed.

You should be aware of a tube called a “ureteral stent.” It is not used in every case, and it is invisible from the outside. It helps the transplanted kidney recover from surgery. If present, the stent should be removed within six weeks after surgery by a short non-operative procedure in the transplant surgeon’s office. If left in place, the stent may cause kidney stones or infections. Before you leave the hospital, we will make sure you know you have a ureteral stent and that you schedule an appointment to have it removed. It never hurts to ask your nurses and doctors if you have a stent that needs to be removed.

You are supplied with a special medication box to help with organizing and dispensing your new prescriptions, as well as detailed pages of instructions and guidelines to follow. These instructions and guidelines are to be discussed with the transplant nephrologist, pharmacist, and/or coordinator on each office visit after leaving the hospital so always bring them to your doctor appointments.

**Follow-Up for the Recipient and Donor After Leaving the Hospital**

You will have an appointment with the surgeon within seven to ten days following discharge. After surgery, you will need more frequent visits with a nephrologist to monitor the function of the transplanted kidney.

During all appointments, the incision will be assessed for healing. Guidelines for returning to usual activities will also be discussed at this visit. Kidney donors are advised to have an annual physical exam.
NOTES
TRANSLANT MEDICATIONS

Transplantation is a treatment option, but not a cure. You will have the primary responsibility of consistent lifelong management of your medications. These medications are needed to decrease the potential for rejection, infection and other complications that could impact your health and the life of the transplant.

Your transplant nephrologist will prescribe numerous medications. These medications will be started during your stay in the hospital. A transplant pharmacist will provide instructions on how to take the medications, along with tools that will assist you in assuming this responsibility. During the weeks after your transplant, adjustments will be made to your medications.

Managing your medications plays a very important role in protecting your new healthy kidney! Kidney transplantation is far more than the operation itself. It is important for you to learn about your care so that you will have the best possible outcome with your healthy kidney. You are the most important member of the transplant team and active participation in your care will lead to successful recovery.

You should have a good understanding of your medical care and be actively involved in clinic appointments and communicating with members of the team.

Immunosuppressants, or anti-rejection medications, “hide” your new transplanted organ from your body’s immune system to protect it from being attacked and destroyed. You will take immunosuppressants for the lifetime of your transplanted organ. Possible Side Effects of these drugs might include: High Blood Pressure, New Onset Diabetes*, or upset stomach.

* These medications may cause or worsen diabetes. It is possible that you will have to take additional medications to control your blood sugar.

Taking immunosuppressive medications will make you more susceptible to infections. You are also at a slightly increased risk of developing certain cancers.

In order to prevent infections you need to take Anti-Infective drugs for the duration of anywhere from 1 month to 1 year post-transplant. Possible side effects of these drugs might include: Upset stomach or throwing up, Anemia, High Blood Pressure, Upset Stomach, or Diarrhea.

Financial Concerns Related to Medications

Part of managing your medications is having the financial resources to pay for them. Your prescriptions will be covered by some combination of Medicare part B, Employer Group Health, private insurance, State Medicaid or Indian Health Services. You must use a transplant pharmacy that is able to coordinate benefits among these sources.

Should your financial coverage change, there may be resources and assistance available. Both financial coordinators and social workers from either your dialysis unit or transplant team can be helpful in guiding you.
LIVING DONATION

Types of living donation

Friend or Relative

When a friend or relative is interested in becoming a living donor for a patient they must complete the online referral form (www.livingdonor.sjmc.org/donor) fill out the living donor application. Once it is determined that the living donor may be a suitable candidate to move forward, the living donor coordinator will contact the donor to schedule initial testing and living donor PTE.

Altruistic

There are some cases where a person chooses to be a living donor without having any personal connection to the patient, these donors are known as altruistic donors. Although uncommon, these living donors are heroes to the families whose lives they are able to touch through this gift. Matching altruistic living donors with recipients is done much like the process of matching a deceased donor kidney to a recipient.

Kidney Paired Donation (KPD)

Kidney Paired Donation, also known as “kidney swap” or “kidney paired exchange,” can happen on two levels: 1) within our own program and 2) nationally. KPD is when there is a mismatch between a living donor and his or her recipient (for example: a father donor, blood type A and son, recipient blood type B) and a mismatch between 1 or more other donors and recipients (for example: a mother, donor blood type B, and daughter, recipient blood type A). KPD happens when the father is able to donate to the daughter and then mother to the son. (see the diagram below). KPD is a great option for people who might have several incompatible donors and are not having luck finding a match.

Living Donor Champion

As a recipient, it can be overwhelming to think about how to ask a friend or loved one to donate. Another option to consider when being evaluated for transplant is a living donor champion. A living donor champion is a friend or family member that, for whatever reason, is unable to donate his or her kidney to the recipient but still wants to do something to help. Living donor champions can create Facebook pages, write letters, speak at events or churches on behalf of a recipient and ask for donors to come forward. There have been several success stories with living donor champions. Please talk with the living donor coordinator more about this option.
Eligibility
Parents, children, husbands, wives, friends, co-workers—even total strangers—can be living-donor candidates. Living donor candidates should be:

- in good physical and mental health.
- free from high blood pressure, diabetes, cancer, HIV, hepatitis, or organ-specific diseases.
- at least 21 years old.

These medical/physical criteria are very important for organ donation, but there are others. They play a critical role in finding good candidates for transplant. A good donor should also:

- be willing to donate: No one should feel that they MUST donate.
- be well informed: A good donor candidate has a solid grasp of the risks, benefits, and potential outcomes, both good and bad, for both the donor and recipient.
- have good support: Significant others should support your decision.
- have no alcohol or substance abuse problems.
- have psychiatric diagnoses well controlled over an extended period of time.

The transplant program must perform a series of tests to assess the medical and psychosocial health of potential living kidney donors. It may perform additional tests it believes are needed to assess the potential donor’s health and well-being. While there are not currently a required set of tests for potential living donors of other organs, the transplant program will perform many of the same tests as for living kidney donors as well as others appropriate for the organ to be donated.

Transplant programs also require written informed consent that informs the prospective living donor of all aspects of and potential outcomes from living donation. For living kidney donation, the program is required to address certain specific issues in its informed consent procedure.

Tests
The living donor must first undergo a blood test to determine blood type compatibility with the recipient.

### Blood Type Compatibility Chart

<table>
<thead>
<tr>
<th>Recipient’s Blood Type</th>
<th>Donor’s Blood Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>A</td>
<td>A or O</td>
</tr>
<tr>
<td>B</td>
<td>B or O</td>
</tr>
<tr>
<td>AB</td>
<td>A, B, AB or O</td>
</tr>
</tbody>
</table>

If the donor and recipient have compatible blood types, the next step for the donor is a medical history review and a complete physical examination. In the examination, doctors may commonly perform the following tests:

**Tissue Typing:** the donor’s blood is drawn for tissue typing of the white blood cells. This test checks the tissue match between six codes on the donor and recipient cells. While still required as part of the transplant process, tissue typing is rarely a consideration for living organ donation.

**Crossmatching:** a blood test is done before the transplant to see if the potential recipient will react to the donor organ. If the crossmatch is “positive,” then the donor and patient are incompatible because antibodies will immediately react against the donor’s cells and consequently cause immediate loss of the transplant. If the crossmatch is “negative,” then
the transplant may proceed. Crossmatching is routinely performed for kidney and pancreas transplants.

**Antibody Screen:** an antibody is a protein substance made by the body’s immune system in response to an antigen (a foreign substance; for example, a transplanted organ, blood transfusion, virus, or pregnancy). Because the antibodies attack the transplanted organ, the antibody screen tests for panel reactive antibody (PRA). The white blood cells of the donor and the serum of the recipient are mixed to see if there are antibodies in the recipient that react with the antigens of the donor.

**Urine Tests:** In the case of a kidney donation, urine samples are collected for 24 hours to assess the donor’s kidney function.

**X-Rays:** A chest X-Ray and an electrocardiogram (EKG) are performed to screen the donor for heart and lung disease.

**Arteriogram:** This set of tests involves injecting a liquid that is visible under X-Ray into the blood vessels to view the kidneys.

**Psychiatric and/or psychological evaluation:** The donor and the recipient may undergo a psychiatric and/or psychological evaluation.

**Gynecological examination:** For all female donors, a complete gynecological examination is required. A mammogram is also required for all female donors. In general, the transplant nurse coordinator, in conjunction with your physician, can arrange testing.

**Final blood test:** Usually completed within 10 days of surgery, the last blood test is another crossmatch. It is the final comparison of the donor’s blood cells and recipient’s blood serum to make sure that the recipient has not created any antibodies that would attack the donated organ.

While these tests are commonly done, an individual transplant program may require other tests it finds necessary to help ensure the health and suitability of a potential donor.

**Risks**

Living donation is major surgery. All complications of major surgery apply. These include:

- pain
- infection at the incision site
- incisional hernia
- pneumonia
- blood clots
- hemorrhaging
- potential need for blood transfusions
- side effects associated with allergic reactions to the anesthesia
- death

The best source of information about risks and expected donor outcomes is your transplant team. In addition, it’s important to take an active role in learning more about these potential surgical risks and long term complications:
Long-Term Organ Specific Donor Complications

**Kidney**
- Hypertension
- Kidney failure
- Proteinuria

**Lung**
- Intra-operative ventricular fibrillation arrest
- Postoperative pulmonary artery thrombosis
- Bronchopleural fistula
- Pleural effusion
- Empyema
- Bronchial stricture

**Liver**
- Bile leakage
- Hyperbilirubinemia
- Small bowel obstruction
- Biliary stricture
- Portal vein thrombosis
- Pulmonary embolish
- Intra abdominal bleeding

**Pancreas**
- Splenectomy
- Pancreatitis
- Diabetes

**Intestine**
- Short bowl syndrome
- Small bowel obstruction
- Dysvitaminosis

**Psychological Concerns**
You may also have negative psychological symptoms right after donation or later. You and/or your recipient may face surgical complications. The transplanted organ may not work right away. There is also the chance it will not work at all. Donors may feel sad, anxious, angry, or resentful after surgery. Donation may change the relationship you have with the recipient.

Living donors must be made aware of the physical and psychological risks involved before they consent to donate an organ. You should discuss your feelings, questions and concerns with a transplant professional and/or social worker.

**About the Surgery**
A nephrectomy is the surgical removal of a kidney. This removal can be done by one of two ways:
- Laparoscopic Nephrectomy
- Open Nephrectomy
Laparoscopic Donor Nephrectomy
Laparoscopic nephrectomy is a minimally invasive surgical procedure for obtaining a kidney from a living donor that can make the process easier.

In this procedure, the surgeon makes two or three small incisions close to the belly button. The kidney is removed through the central incision. Through one of the other openings, a special camera called a laparoscope is used to produce an inside view of the abdominal cavity. Surgeons use the laparoscope, which transmits a real-life picture of the internal organs to a video monitor, to guide them through the surgical procedure.

In comparison to the standard operation, it results in a smaller incision, reduces recuperation time and usually shortens hospital stays. Many donors are discharged from the hospital after two days and return to normal activity within four weeks.

Not all donors can undergo laparoscopic nephrectomy. You may not qualify for the procedure if:

- You have had multiple previous abdominal surgeries
- You are significantly overweight
- There is abnormal anatomy of the kidney

Your doctor will complete an evaluation to determine if laparoscopic donor nephrectomy is a possibility.

Open Nephrectomy
Open nephrectomy has been the standard for the last 35 years and involves a five to seven inch incision on the side of the chest and upper abdomen. A surgical instrument called a retractor is usually needed to spread the ribs to gain access to the donor’s kidney. Sometimes it’s necessary to remove part of a rib for better exposure.

The operation typically lasts three hours, and the recovery in the hospital averages four to five days. Donors can usually return to normal activity within four to twelve weeks.

Recovery
Donors usually stay in the hospital for two to four days after surgery. Although recovery time varies, most donors can resume normal activity one month after surgery and can return to work within six weeks. It is important to talk to your doctor about what to expect.

Every transplant hospital is required to report data on the health and status of living donors at certain time frames up to two years after donation. The information learned about donor outcomes can help future potential living donors make informed decisions. Ask the staff at the transplant program about their follow-up procedures, including office visits and laboratory tests.

Although studies have shown that kidney donation does not affect the completion of a safe pregnancy and childbirth, it is typically recommended to wait to become pregnant at least six months after surgery.

Be sure to talk with your physician or gynecologist about your interest in donation and the effect it could have on future pregnancies.

Ethics
If inducement, coercion or financial compensation for the kidney itself are suspected we cannot move forward with that living donor as these practices are illegal. Consult OPTN website policy 12 for more information on living donation policies and procedures. optn.transplant.hrsa.gov/PoliciesandBylaws2/policies/pdfs/policy_172.pdf
PATIENT RESOURCES

Insurance plans accepted
Plans always accepted: Medicare & supplements, Soonercare

Private plans and Outside Oklahoma Medicaid: Our Transplant Center accepts a variety of private insurance plans based on what each policy dictates. As we contract with several different physicians, however, there might be some insurance plans that are not accepted by all of our contracted physicians, if this is the case, we will be sure to let you know.

*As a courtesy, our financial coordinator will meet with you at your initial evaluation and explain your benefits; however, it is your responsibility to know what your benefits are and to notify us of changes in coverage.

Helpful Websites
www.kidneyfund.org
www.kidney.org
www.giveforward.com/cause/raise-money-for-transplant
www.helphopelive.org/

Fundraising options
Transplant can be an overwhelming thing, particularly financially. Many patients look to fundraising as an option to help them with medical bills after insurance pays, post-transplant prescriptions, and/or other out of pocket costs such as food, lodging, transportation, etc. You have many options when fundraising. You do not have to fundraise through a company, you can do as much fundraising through other channels as you would like, however, some patients find that fundraising companies can provide the organization and resources that they will need at a lower cost to the patient. Please ask the social worker or financial coordinator for more information or visit the websites listed above.

Support groups/mentor program
A support and education group is available, please contact the social worker for more information on how to get involved. Our Mentor Program consists of patients who have previously been through the transplant process and would like to be a resource for the patients currently going through the process. For more information please contact the transplant social worker.

Hotels/RV parks/housing/guest rooms
Hotels: See page 46 for list of hotels and rates.

St. John Duplex: We have access to a one bedroom unit owned by the Sisters of the Sorrowful Mother. This lodging is free of cost and is based on availability. The unit has one bedroom and one sleeper sofa, a kitchen and full bathroom. This unit is made available only to out of town patients and living donors post-transplant, unless otherwise discussed with transplant social worker or transplant coordinator. Please inquire about the house with the transplant social worker.
RV parks:

1. **Cherry Hill Manufactured Home Community**
   4808 S. Elwood Avenue, Tulsa, Oklahoma 74107
   Tel: 918-446-9342 • Fax: 918-446-1772 • Email: cherryhill@towermgmt.com
   [www.cherryhillmhc.com/rv.html](http://www.cherryhillmhc.com/rv.html)

2. **Tulsa Warrior Rv Park-Aka Tulsa Warrior Campgrounds**
   5131 South Union Ave Tulsa, Oklahoma 74107
   Tel: 918-446-3199 Email: tulsawarriorrv@gmail.com
   [www.tulsawarriorrv.com](http://www.tulsawarriorrv.com)

3. **Mingo RV Park**
   801 North Mingo Rd, Tulsa, OK 74116
   Tel: 918-832-8824 • Email: mingorv@sbcglobal.net
   [www.mingorvpark.com](http://www.mingorvpark.com)

4. **Estes Park**
   1710 South 79th East Avenue Tulsa, OK
   Tel: 918-627-3150
   [www.estesrvpark.com](http://www.estesrvpark.com)

5. **Riverview RV park**
   11450 West Hwy 51 Sand Springs, OK 74063
   Tel: 918-948-6959 Email emile.tucker@yahoo.com
   [www.riverviewrvok.clickforward.com/contact-riverview-rv-park-sand-springs-ok.htm](http://www.riverviewrvok.clickforward.com/contact-riverview-rv-park-sand-springs-ok.htm)

**Guest Rooms:** for guest rooms in the hospital please call Admissions at 918-744-2688 to set up a guest room in the hospital. There can be limited availability.

**Local restaurants/grocery stores/pharmacy**

*Restaurants in the area:*

**Utica Square**

<table>
<thead>
<tr>
<th>Restaurant</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flemings</td>
<td>918-712-7500</td>
</tr>
<tr>
<td>Olive Garden</td>
<td>918-743-8993</td>
</tr>
<tr>
<td>Peppers Grill</td>
<td>918-749-2163</td>
</tr>
<tr>
<td>P.F. Chang’s</td>
<td>918-747-6555</td>
</tr>
<tr>
<td>Starbucks</td>
<td>918-744-8195</td>
</tr>
<tr>
<td>Polo Grill</td>
<td>918-744-4280</td>
</tr>
<tr>
<td>Queenie’s</td>
<td>918-749-3481</td>
</tr>
<tr>
<td>Wild Fork</td>
<td>918-742-0712</td>
</tr>
<tr>
<td>Stonehorse Café &amp; Market</td>
<td>918-712-7470</td>
</tr>
</tbody>
</table>

**Cherry Street (15th St between Peoria and Utica)**

<table>
<thead>
<tr>
<th>Restaurant</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilkenny’s Irish Pub</td>
<td>918-582-8282</td>
</tr>
<tr>
<td>Q’Doba</td>
<td>918-585-2229</td>
</tr>
<tr>
<td>My Fit Foods</td>
<td>918-592-1620</td>
</tr>
<tr>
<td>Panera Bread Co.</td>
<td>918-583-5454</td>
</tr>
</tbody>
</table>
Lucky’s 918-592-5825
Smoke 918-949-4440
Andolini’s Pizzeria 918-728-6111
Palace Cafe 918-582-4321
Chimi’s Mexican Cafe 918-587-4411
Doe’s Steakhouse 918-585-3637
Tucci’s 918-582-3456
Mary’s Italian Kitchen 918-585-2495
Genghis Grill 918-574-2695
Full Moon Café 918-583-6666
Subway 918-382-7827
Hideaway Pizza 918-582-4777
Chipotle 918-582-9005

Other popular areas close by with retail and restaurants are: Brookside, Downtown Tulsa, and the Riverparks.

Grocery stores in the area:

1. Petty’s Fine Foods
   1910 Utica Square, Tulsa, OK 74114
   (918) 747-8616
2. Reasor’s Grocery Store
   2429 E. 15th St Tulsa, OK 74104
   918-748-8332
3. WalMart Neighborhood Market
   3139 S Harvard Ave, Tulsa, OK
   (918) 744-4414
4. Whole Foods Market
   1401 E 41st St, Tulsa, OK
   (918) 712-7555
5. Walgreens Pharmacy
   1440 S Lewis Ave, Tulsa, OK
   (918) 747-6429
6. CVS Pharmacy
   2110 S Harvard Ave, Tulsa, OK
   (918) 749-5438
NUTRITION

Why Diet Matters

You need to have a “kidney-friendly” meal plan when you have CKD. Watching what you eat and drink will help you stay healthier. This is only general information. Nutrition needs vary from person to person depending on body size, activity, the stage of kidney disease and other health concerns. Talk to your coordinator or dialysis nurse to speak with a renal dietitian, someone who specializes in the kidney-friendly diet, to find a meal plan that meets your needs.

Why is an eating plan important?

Maintaining a healthy weight and following a balanced meal plan that is low in salt can help you control your blood pressure. If you have diabetes, your meal plan is also important in controlling your blood sugar. Controlling high blood pressure and diabetes may also help slow down kidney disease.

A kidney-friendly diet may also help. It limits certain minerals in the foods you eat. This helps keep waste from building up in your blood and may help prevent other health problems.

Healthy diet basics

All healthy meal plans, including the kidney-friendly diet, need to take into account some of the same things, like:

• Calories
• Protein
• Carbohydrates
• Fat
• Nutrition Facts
• Portion Control

Calories

Your body gets energy from the calories you eat and drink. Calories come from the protein, carbohydrates and fat in your diet. How many calories you need depends on your age, sex, body size and activity level.

You may also need to adjust how many calories you eat based on your weight goals. Some people will need to limit the calories they eat. Others may need to have more calories. Your doctor or dietitian can help you figure out how many calories you should have each day. Work with your dietitian to make a meal plan that helps you get the right amount of calories, and keep in close contact for support and follow-up.

Protein

Protein is one of the building blocks of your body. Your body needs protein to grow, heal and stay healthy. Having too little protein can cause your skin, hair and nails to weaken. But having too much protein can also be a problem. To stay healthy and help you feel your best, you may need to adjust how much protein you eat.

The amount of protein you should have depends on your body size, activity level and health concerns. Some doctors recommend that people with kidney disease limit protein or change their source of protein. This is because a diet very high in protein can make the kidneys work harder and may cause more damage. Ask your doctor or dietitian how much protein you should have and what the best sources of protein are for you.
Use the table below to learn which foods are low or high in protein. Keep in mind that just because a food is low in protein, it is not healthy to eat unlimited amounts.

<table>
<thead>
<tr>
<th>Lower-protein foods</th>
<th>Higher-protein foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread</td>
<td>Meat</td>
</tr>
<tr>
<td>Fruits</td>
<td>Poultry</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Fish</td>
</tr>
<tr>
<td>Pasta and rice</td>
<td>Eggs</td>
</tr>
</tbody>
</table>

**Carbohydrates**
Carbohydrates ("carbs") are the easiest kind of energy for your body to use. Healthy sources of carbohydrates include fruits and vegetables. Unhealthy sources of carbohydrates include sugar, honey, hard candies, soft drinks and other sugary drinks.

Some carbohydrates are high in potassium and phosphorus, which you may need to limit depending on your stage of kidney disease. We'll talk about this in more detail a little later. You may also need to watch your carbohydrates carefully if you have diabetes. Your dietitian can help you learn more about the carbohydrates in your meal plan and how they affect your blood sugar.

**Fat**
You need some fat in your meal plan to stay healthy. Fat gives you energy and helps you use some of the vitamins in your food. But too much fat can lead to weight gain and heart disease. Try to limit fat in your meal plan, and choose healthier fats when you can.

Healthier fat or “good” fat is called unsaturated fat. Examples of unsaturated fat include:

- Olive oil
- Vegetable oils

Unsaturated fat can help reduce cholesterol. If you need to gain weight, try to eat more unsaturated fat. If you need to lose weight, limit the unsaturated fat in your meal plan. As always, moderation is the key. Too much “good” fat can also cause problems.

Saturated fat, also known as “bad” fat, can raise your cholesterol level and put you at risk for heart disease. Examples of saturated fats include:

- Butter
- Lard
- Shortening
- Meats

Limit these in your meal plan. Choose healthier, unsaturated fat instead. Trimming the fat from meat and removing the skin from chicken or turkey can also help limit saturated fat.

**Sodium**
Sodium (salt) is a mineral found in almost all foods. Too much sodium can make you thirsty, which can lead to swelling and raise your blood pressure. This can damage your kidneys more and make your heart work harder.

One of the best things that you can do to stay healthy is to limit how much sodium you eat. To limit sodium in your meal plan:
• Do not add salt to your food when cooking or eating. Try cooking with fresh herbs, lemon juice or other salt-free spices.
• Choose fresh or frozen vegetables instead of canned vegetables. If you do use canned vegetables, drain and rinse them to remove extra salt before cooking or eating them.
• Avoid processed meats like ham, bacon, sausage and lunch meats.
• Munch on fresh fruits and vegetables rather than crackers or other salty snacks.
• Avoid canned soups and frozen dinners that are high in sodium.
• Avoid pickled foods, like olives and pickled.
• Limit high-sodium condiments like soy sauce, BBQ sauce and ketchup.

Important! Be careful with salt substitutes and “reduced sodium” foods. Many salt substitutes are high in potassium. Too much potassium can be dangerous for someone with kidney disease. Work with your dietitian to find low-sodium foods that are also low in potassium.

Nutrition Facts
Use the Nutrition Facts section on food labels to learn more about what is in the foods you eat. The Nutrition Facts will tell you how much protein, carbohydrates, fat and sodium are in each serving of a food. This can help you pick foods that are high in the nutrients you need and low in the nutrients you should limit.

Portions
Choosing healthy foods is a great start, but eating too much of even healthy foods can be a problem. The other part of a healthy diet is portion control, or watching how much you eat.

To help control your portions:
• Eat slowly, and stop eating when you are not hungry any more. It takes about 20 minutes for your stomach to tell your brain that you are full. If you eat too quickly, you may eat more than you need.
• Check the Nutrition Facts on a food to learn the true serving size. Many packages have more than one serving. For example, a 20-ounce bottle of soda is really two-and-a-half servings.
• Avoid eating while doing something else, like watching TV or driving. When you are distracted you may not realize how much you have eaten.
• Do not eat directly from the package the food came in. Instead, take out one serving of food, and put the bag or box away.

Good portion control is an important part of any meal plan. It is even more important in a kidney-friendly meal plan, because you may need to limit how much of certain things you eat and drink. Keep reading to learn more!

How is a kidney-friendly diet different?
When your kidneys are not working as well as they should, waste and fluid build up in your body. Over time, the waste and extra fluid can cause heart, bone and other health problems. A kidney-
friendly meal plan limits how much of certain minerals and fluid you eat and drink. This can help keep the waste and fluid from building up and causing problems.

How strict your meal plan should be depends on your stage of kidney disease. In the early stages of kidney disease, you may have little or no limits on what you eat and drink. As your kidney disease gets worse, your doctor may recommend that you limit:

- Potassium
- Phosphorus
- Fluids

**Potassium**
Potassium is a mineral found in almost all foods. Your body needs some potassium to make your muscles work, but too much potassium can be dangerous. When your kidneys are not working well, your potassium level may be too high or too low. Having too much or too little potassium can cause muscle cramps, irregular heartbeat and muscle weakness.

Many people with kidney disease will need to limit potassium. Ask your doctor or dietitian if you need to limit potassium.

Use the table below to learn which foods are low or high in potassium. Your dietitian can also help you work in small amounts of your favorite foods that are high in potassium.

<table>
<thead>
<tr>
<th>Eat this ... (lower-potassium foods)</th>
<th>Rather than ... (higher-potassium foods)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples, cranberries, grapes, pineapples and strawberries</td>
<td>Avocados, bananas, melons, oranges, prunes and raisins</td>
</tr>
<tr>
<td>Cauliflower, onions, peppers, radishes, summer and zucchini squash, lettuce</td>
<td>Artichokes, kale, plantains, spinach, potatoes and tomatoes</td>
</tr>
<tr>
<td>Pita, tortillas and white breads</td>
<td>Bran products and granola</td>
</tr>
<tr>
<td>Beef and chicken, white rice</td>
<td>Beans (baked, black, pinto, etc.), brown or wild rice</td>
</tr>
</tbody>
</table>

**Phosphorus**
Phosphorus is a mineral found in many foods. It works with calcium and vitamin D to keep bones healthy. Healthy kidneys keep the right balance of phosphorus in your body. When your kidneys are not working well, phosphorus can build up in your blood. Too much phosphorus in your blood can lead to weak bones that break easily.

Many people with kidney disease need to limit phosphorus. Ask your dietitian if you need to limit phosphorus.

Depending on your stage of kidney disease, your doctor may also prescribe a medicine called a phosphate binder. This helps to keep phosphorus from building up in your blood. A phosphate binder can be helpful, but you will still need to watch how much phosphorus you eat. Ask your doctor if a phosphate binder is right for you.

<table>
<thead>
<tr>
<th>Eat this ... (lower-phosphorous foods)</th>
<th>Rather than ... (higher-phosphorous foods)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian, French or sourdough bread</td>
<td>Whole-grain bread</td>
</tr>
<tr>
<td>Corn or rice cereals and cream of wheat</td>
<td>Bran cereals and oatmeal</td>
</tr>
<tr>
<td>Unsalted popcorn</td>
<td>Nuts and sunflower seeds</td>
</tr>
<tr>
<td>Some light-colored sodas and lemonade</td>
<td>Dark-colored colas</td>
</tr>
</tbody>
</table>
Fluids
You need water to live, but when you have kidney disease, you may not need as much. This is because damaged kidneys do not get rid of extra fluid as well as they should. Too much fluid in your body can be dangerous. It can cause high blood pressure, swelling and heart failure. Extra fluid can also build up around your lungs and make it hard to breathe.

Depending on your stage of kidney disease and your treatment, your doctor may tell you to limit fluid. If your doctor tells you this, you will need to cut back on how much you drink. You may also need to cut back on some foods that contain a lot of water. Soups or foods that melt, like ice, ice cream and gelatin, have a lot of water. Many fruits and vegetables are high in water, too.

Ask your doctor or dietitian if you need to limit fluids.

If you do need to limit fluids, measure your fluids and drink from small cups to help you keep track of how much you’ve had to drink. Limit sodium to help cut down on thirst. At times, you may still feel thirsty. To help quench your thirst, you might try to:

- Chew gum
- Rinse your mouth
- Suck on a piece of ice, mints or hard candy (Remember to pick sugar-free candy if you have diabetes.)

Other meal plan concerns:

Vitamins
A kidney-friendly meal plan may make it hard to get all of the vitamins and minerals you need. To help you get the right balance of vitamins and minerals, your dietitian may suggest a special supplement made for people with kidney disease.

Your doctor or dietitian might also suggest a special kind of vitamin D, folic acid or iron pill, to help avoid some common side effects of kidney disease, like bone disease and anemia.

Regular multi-vitamins may not be healthy for you if you have kidney disease. They may have too much of some vitamins and not enough of others. Talk to your doctor or dietitian to find vitamins that are right for you.

Important! Tell your doctor and dietitian about any vitamins, supplements or over-the-counter medicines you are taking. Some may be harmless, but others can damage your kidneys more or cause other health problems.

What if I have diabetes?
Diabetes is the leading cause of kidney failure. Diabetes can also damage other parts of your body, like your eyes and heart. If you have diabetes, you will need to watch your blood sugar and diet to stay healthy. Work with your dietitian to make a kidney-friendly meal plan that helps you keep your blood sugar in control and prevent other health problems.

A diabetes educator can also help you learn how to control your blood sugar. Ask your doctor to refer you to a diabetes educator in your area. You can also get a list of diabetes educators from the American Association of Diabetes Educators at www.diabeteseducator.org or 1.800.338.3633. Medicare and many insurance companies may help pay for sessions with a diabetes educator.
St. John Diabetes Center
The St. John Diabetes Center offers outpatient education programs to help patients live healthy lives and integrate diabetes management into their lifestyles.

Classes/Education
Registered nurses and dietitians lead our diabetes self-management series. Each series consists of two classes and an appointment with a nurse and dietician.

Participants will learn to achieve and maintain appropriate blood sugar levels, monitor blood glucose and prevent complications. Facilitators also discuss coping with chronic conditions and managing stress.

Classes are covered by most insurance companies. Please contact your insurance provider to validate coverage. A physician referral is required.

Classes are also available in Spanish.

Additional Services
The St. John Diabetes Center offers individual appointments with a nurse and dietician to create meal plans and discuss medication adjustments for individuals with Type 1, Type 2 and gestational diabetes.

To register for Diabetes Self-Management classes, please call 918-744-2444.

NOTES
RECIPIES

Great websites for recipes:
www.kidney.org/patients
www.Davita.com/recipes

Granola Bars
Serves 26; 1 bar per serving

Ingredients:
• ¾ cup peanut butter, reduced sodium
• ¼ cup honey
• ½ cup packed brown sugar
• ½ cup corn syrup
• 5 tablespoons butter
• 2 teaspoons vanilla extract
• 3 ¼ cups rolled oats
• ¾ cup pretzels, unsalted
• ¼ cup semisweet chocolate chips
• 10 caramel candies

Directions:
1. Preheat oven to 350 degrees F.
2. In a large bowl stir together the peanut butter, honey, butter, brown sugar, corn syrup and vanilla until smooth.
3. Add all the other ingredients: oats, pretzels, chocolate chips, and caramels. Stir well.
4. Press the mixture into 13 x 9 inch greased pan.
5. Bake for 20–25 minutes.
6. Let cool on wire rack before cutting into bars.
7. Cut into 1 x 4 ½ inch bars. This recipe should yield 26 bars.

Analysis:
Calories 201, protein 4.4 g, total fat 7.7 g, carbohydrates 31 g, sodium 71 mg, potassium 127 mg, phosphorus 84 mg.

Breakfast Sticky Buns
16 servings; 2 Slices Per Serving

Ingredients:
• 1 package active dry yeast
• ¼ cup warm water
• ¾ cup rice milk, heated to a simmer
• 2 tablespoons sugar
• 2 tablespoons canola oil
• 3 to 3 ½ cups all-purpose flour
• ¼ cup unsalted butter
• 1 package (4-serving size) butterscotch Jell-o instant pudding
1 tablespoon ground cinnamon
Directions:
Dissolve yeast in warm water. Mix warm rice milk, sugar, and oil and cool to lukewarm. Add 1 1/2 cups flour, yeast mixture and stir together. Add enough of the remaining flour to make a soft dough. Turn out on a lightly floured surface and knead about 8 minutes or until dough becomes smooth across the top when it is shaped like a ball. Place the dough in a lightly oiled bowl, cover with plastic wrap, place in a warm area of your kitchen, and let rise for 15 minutes. Punch down, knead out all of the air bubbles, and shape dough into 16 balls. Melt butter add butterscotch pudding and cinnamon together. Dip each piece of dough into the mixture and place into a pre sprayed, oiled, non-stick bunt pan. Cover and refrigerate overnight. In the morning bake at 350 F for 40 minutes or until the dough is browned on top. Let cool for 10 minutes and flip out of bunt pan onto a plate and serve.

Analysis:
Calories 194; Total fat 8.2 g; Saturated fat 4 g; Monounsaturated fat 2.6 g; Polyunsaturated fat 0.8 g; Cholesterol 16 mg
Calcium 21.7 mg; Sodium 103 mg; Phosphorus 63.6 mg; Potassium 40 mg; Total carbohydrates 27.5 g; Dietary fiber 0.9 g; Sugar 6.9 g; Protein 2.8 g

Scrambled Egg Muffins
Makes 12 muffins

Ingredients:
• 8 eggs
• 1/3 cup rice milk
• 1 tablespoon chopped chives
• 1/3 cup chopped green peppers
• 3/4 teaspoon Dijon mustard
• 1/4 teaspoon ground sage
• 4 Vegetarian sausage patties, browned, cooled and diced
• Vegetable Oil Spray

Directions:
Pre-heat oven to 350 F, Whip together, eggs, rice milk, chives, green peppers, Dijon mustard, ground sage and diced sausage patties. Spray non-stick muffin cups with vegetable oil; pour egg mixture into each muffin cup (less than 1/3 cup). Place in the middle of pre-heated oven and bake for 15 to 20 minutes. Bake until firm. Remove from oven, let cool for a few minutes before serving. Heat resistant spatulas work very well to help remove egg muffins from the tin.

Analysis:
84 Calories, total fat 4 g, saturated fat 1 g, monounsaturated fat 2 g, polyunsaturated fat 1 g, cholesterol 120 mg, calcium 33 g, sodium 150 mg, phosphorus 69 mg, potassium 52 mg, total carbohydrates 5 g, dietary fiber 1 g, sugar 2 g, protein 7 g
Chicken Noodle Soup
Serves 9, serving size 3/4 cup

Ingredients:
• 1 Tablespoon butter or margarine
• ½ onion, diced
• 2 stalks celery, diced
• ½ cup carrots, sliced
• 3 cups low sodium chicken broth
• 1 cup water
• 8 ounces chicken breast, cooked and shredded
• 10 ounces egg noodles
• ½ teaspoon basil
• ½ teaspoon oregano
• ¼ teaspoon pepper
• ½ teaspoon garlic powder

Directions:
1. Melt butter in a large pot.
2. Add onion, celery, and carrots.
3. Cook until onions are translucent.
4. Add water, chicken broth, chicken, and noodles.
5. Bring to a boil.
6. Reduce to simmer.
7. Add herbs. Simmer for 20 minutes.
8. Enjoy!

Analysis:
Calories 56, protein 6.3 g, total fat 2.1 g, carbohydrates 6 g, sodium 42 mg, potassium 156 mg, phosphorus 53 mg

Bow-Tie Pasta Salad
Serves 8

Ingredients:
• 1/3 cup per serving
• Ingredients:
• 2 cups cooked bow-tie pasta
• 1/4 cup chopped celery
• 2 tablespoons chopped green pepper
• 2 tablespoons shredded carrot
• 2 tablespoons minced onion
• 1/8 teaspoon pepper
• 2/3 cup mayonnaise
• 1/2 teaspoon sugar
• 1 tablespoon lemon juice
Directions:
1. Mix pasta, celery, green pepper, carrot and onion in a bowl.
2. In separate small bowl, blend pepper, mayonnaise, sugar and lemon juice until smooth.
3. Pour over pasta and vegetables.
4. Mix until well coated.
5. Chill before serving.

Analysis:
Calories 189, Carbohydrates 12 g, Protein 2 g, Fat 15 g, Sodium 111 mg, Potassium 61 mg, Phosphorus 31 mg.

Apple Cranberry Walnut Salad
Serves 30; Serving size ½ cup

Ingredients:
• 2 cups Red Seedless Grapes, each grape sliced in half
• 1 1/3 cups Walnut Halves, chopped into small pea size pieces
• 1 1/4 cups Pomegranate Infused Ocean Spray Dried Cranberries, 1- 6 ounce package
• 4 stalks Celery, chopped into quarter inch pieces
• 7 medium sized Gala Apples skin on, 2 lbs 14 oz. before coring, approximately 2 lbs 9 oz. after coring
• 1- 8 fluid ounce bottle of Maple Grove Farms of Vermont Fat Free Cranberry Balsamic Dressing

Directions:
1. Rinse cluster of red grapes and separate from the stem. Use paring knife and slice each grape in half. Place sliced grapes in extra large mixing bowl.
2. Measure walnut halves into measuring cup. Can use a nut chopper to chop nuts into pea size pieces or put walnuts in a plastic sandwich baggie, seal and use the bottom of the 1 cup measure to gently press on the walnuts to break the walnuts into pea size like pieces. Add chopped nuts to the extra large mixing bowl with the slice red grapes.
3. Add one 6 ounce bag of dried pomegranate infused cranberries to the grape and walnut mixture.
4. Rinse, clean and chop celery in quarter inch pieces, add to the grape, walnut, and dried cranberry mixture.
5. Rinse the seven Gala apples, slice in half vertically and core the apples. Make 5 apple wedges and then slice the wedges into bite size, quarter in pieces. Add chopped apple pieces to the rest of the mixture.
6. Pour the 8 fluid ounce bottle of cranberry dressing over the entire mixture. Stir the ingredients making sure that the dressing is incorporated and covers all of the ingredients. Chill and serve.

Analysis:
Calories 53 kcal, protein 1.04 g, carbohydrates 12.6 g, fat 3.4 g, cholesterol 0g, sodium 54 mg, potassium 71 mg, phosphorus 25.88 mg, fiber 1.69 g
**Chicken Casserole Alfredo**

Makes 12 Servings

**Ingredients:**

- 8 oz Spinach Noodles
- ½ cup Chopped Green Peppers
- 8 oz Cream Cheese
- 2 Cups Chicken Breasts, roasted and chopped
- 2 Tbs Basil
- 1 cup Mushrooms sliced
- ¼ cup Parmesan Cheese Grated
- 1 Clove Garlic
- 1 ½ Cup diced celery
- 1 Cup Low Sodium Chicken Broth
- ¼ Cup Plain Bread Crumbs
- A few squirts of butter-flavored cooking spray

**Directions:**

Cook noodles as label directs; drain. Mix cheeses, chicken broth, and garlic until fairly smooth. Gently stir in noodles, celery, green pepper, chicken and chopped mushrooms. Pour into spray-oiled baking dish (9 x 13 inches). Lightly spray-oil the top. Cover and bake in a 350 degree oven for 35 minutes.

**Analysis (per serving):**

Calories: 300.8 ; Protein: 19.5 g ; Carbohydrate: 25 g ; Cholesterol: 90.1 mg ; Fat, Total: 13.6 g ; Saturated Fat: 7.4 g ; Monounsaturated Fat: 3.9 g ; Polyunsaturated Fat: 1.1 g ; Dietary Fiber, Total: 2.8 g ; Sugar, Total: 1.1 g ; Sodium: 259.5 mg ; Potassium: 380.2 mg ; Calcium: 91.5 mg ; Phosphorus: 213.2 mg

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**Baked Salmon with Roasted Asparagus on Cracked Wheat Bun**

Serves 4; 3 oz. Per Serving

**Ingredients:**

- 16 oz. fresh salmon fillet
- 1 tablespoon lemon juice
- 1 tablespoon Butter Buds®
- 12 oz. fresh asparagus spears (woody stems removed), washed
- 1 tablespoon olive oil
- 4 cracked wheat or whole grain hamburger buns, toasted

**Directions:**

Preheat oven to 400°F. Place asparagus spears on a cookie sheet and spray with olive oil. Roast in the oven for 10 minutes or until tender and slightly brown. Remove from the oven and allow to cool.

Spray baking dish with olive oil. Place salmon filets in baking dish and drizzle lemon juice over the top of each filet. Bake 15 to 20 minutes until the salmon is flakey to the touch. Serve salmon on a toasted hamburger bun, sprinkle with Butter Buds, roasted asparagus and Habanero Hollandaise Sauce.
Habanero Hollandaise Sauce

Ingredients:

- 6 oz tofu–silken, extra firm, drained and crumbled
- ¼ cup vegetable stock
- ¼ cup fresh lemon juice
- ½ teaspoon sugar
- ¼ teaspoon turmeric
- ½ teaspoon diced habanero chili (out of the jar), more if you like it spicier

Directions:

Combine all ingredients in a food processor and process until smooth. Refrigerate overnight before serving.

Analysis:

Calories 475 ; Total fat 20 g ; Saturated fat 3 g ; Monounsaturated fat 10 g ; Polyunsaturated fat 5.5 g ; Omega-3 fat 2.6 g ; Cholesterol 62 mg ; Calcium 230 mg ; Sodium 495 mg ; Phosphorus 364 mg ; Potassium 810 mg ; Total carbohydrates 43 g ; Dietary fiber 5 g ; Sugar 8 g ; Protein 32 g

Chipotle Shrimp Tacos

Serves 4; 1 overstuffed taco per serving

Ingredients:

- Pineapple Salsa
  - 1 cup pineapple, chopped
  - 2 tbsp green onions, chopped
  - 1 tbsp red onion, chopped
  - 2 tbsp cilantro, chopped
  - 1 tbsp lime juice
- Shrimp Tacos
  - ¼ cup olive oil
  - 2 cloves garlic, chopped
  - 1 1/2 tbsp Southwest Chipotle Mrs. Dash
  - 1 1/2 pound shrimp (approximately 32 medium-sized shrimp), cooked, no tails, peeled, deveined, thawed (if frozen)
  - 4 corn tortillas, taco size
  - 2 cups cabbage, shredded

Directions:

In medium bowl, mix together olive oil, garlic and Southwest Chipotle Mrs. Dash. Toss shrimp into this mixture, coating shrimp well. Set aside to marinate while you put salsa together. Shrimp mixture can also be made ahead of time and marinated in refrigerator.

Mix pineapple salsa ingredients in a small bowl. Cover and set aside.

Heat skillet over medium heat. Add shrimp mixture to pan and cook approximately 4 minutes, turning shrimp once, until heated through. (Shrimp can also be grilled in a vegetable type grill basket). Assemble tacos by dividing shrimp mixture among the 4 tortillas. Top with 1/4 cup shredded cabbage. And finally top each taco with 1/4 of the salsa mixture. Each taco will be overstuffed.
Analysis:
267 calories; protein 12 g; carbohydrate 24 g; fat 15 g; sodium 157 mg; phosphorus 159 mg; potassium 300 mg

**BBQ Apple Chips**
Serves 4, ¼ apple per serving

**Ingredients:**
- 1 apple (Granny Smith, Golden Delicious, or Fuji)
- Parchment paper
- 1 tbsp. smoked paprika
- 2 tsps. ancho chili powder
- 2 tsps. cumin
- 1 tsp. salt-free onion powder
- 1 tsp. salt-free garlic powder
- 1 tsp. brown sugar
- 1 tsp. freshly cracked black pepper
- ½ tsp. mustard powder

**Directions:**
Preheat oven to 225 degrees F.

Core your apple and then, using a mandoline, cut it into 1/8-inch slices. Time-saver tip: If you don’t want to core the apple, you can pull out the seeds with your fingers after slicing. And if you don’t have a mandoline, you can make thin slices with your knife.

Next, cover two 9x11-inch baking sheets with parchment paper and set aside.

In a small bowl, mix the spice ingredients together. Place a few apple slices on a large plate and rub the spice mix on both sides. Set slices in a single layer on the parchment-lined baking sheet. Continue until all the apple slices are spiced and placed on the sheet.

Place the apples in the oven and bake for one hour. Flip the slices over and bake for another hour. Then, turn the oven off but leave the apples inside to cool -- this is when they get nice and crispy. Serve and enjoy immediately. Or keep in an airtight container for a few days.

Analysis:
Calories 41, Fat 0.8 g, Cholesterol 0.0 mg, Sodium 17.2 mg, Carbohydrate 8.7 g, Dietary Fiber 2.5 g, Sugar 4.9 g, Protein 1.0 g, Potassium 142.1 mg, Phosphorus 18.8 mg

**Cucumbers with Horseradish Dill Dip**
Serves 6; 2 oz Per Serving

**Ingredients:**
- 1 ½ teaspoons shallots, minced
- 1 ½ teaspoons dried dill
- 2 tablespoons fresh dill
- 8 oz tofu, extra firm, drained and crumbled
- 2 teaspoons horseradish, creamy style
- Pinch of dry mustard
• ¼ teaspoon turmeric
• ¼ teaspoon cayenne pepper
• ¼ cup rice milk
• 1 teaspoon Dijon mustard
• 2 teaspoons lemon juice
• 2 teaspoons Miran sweet rice wine
• ½ teaspoon onion powder
• 2 tablespoons white cider vinegar
• 2 English cucumbers
• Fresh dill sprigs for garnish (2 tablespoons)

**Directions:**
Mix all ingredients except the cucumbers in a food processor. Refrigerate overnight. Slice cucumbers, serve with dip spooned over the top, and garnish with fresh dill sprigs.

**Analysis:**
Calories 52; Total fat 1 g; Saturated fat 0.15 g; Monounsaturated fat 0.2 g; Polyunsaturated fat 0.5 g; Omega-3 fat 0 g; Cholesterol 0 mg; Calcium 37 mg; Sodium 71 mg; Phosphorus 68 mg; Potassium 241 mg; Total carbohydrates 8 g; Dietary fiber 0.7 g; Sugar 4 g; Protein 4 g

**Indian Coconut Curry Chicken with Chopped Apples**
Serves 6

**Ingredients:**
• 1 tbsp. olive oil
• 1 cup chopped onions
• 1 cup chopped red bell pepper
• 2 tsp. minced garlic
• 12 boneless, skinless chicken thighs (about 1 kg), cut thigh in half
• 1 ½ tbsp. grated ginger root
• 1 ½ tsp. each curry powder and chili powder
• ½ tsp. each ground turmeric and ground cinnamon
• 400 ml of coconut milk substitute*
• ¼ cup mango chutney
• 2 tsp. grated lemon zest
• 1 large Golden Delicious apple, peeled, cored, chopped
• 2 tbsp. minced fresh cilantro
• *Coconut Milk Substitute (to make 400 mL)

**Substitute option 1:** Combine 400 mL of Blue Diamond Vanilla Almond Milk with 5 tsp. of cornstarch in small saucepan. Stir constantly over high heat until mixture boils and thickens. Immediately pour into small bowl; stir in 1 tbsp. of imitation coconut extract.

**Substitute option 2:** Mix 5 tbsp. coconut cream (sweetened, canned) with 375 mL of hot water.

**Directions:**
1. Heat olive oil in a large, deep, non-stick skillet over medium-high heat. Add chicken pieces and cook until both sides are lightly browned. Remove chicken and keep warm.
2. Add onions, red pepper and garlic to same skillet. Cook and stir until vegetables been to soften, about 3 minutes.
3. Add gingerroot, curry powder, chili powder, turmeric and cinnamon. Cook and stir for one more minute.
4. Add coconut milk substitute, chutney, and lemon zest. Mix well.
5. Stir in chicken pieces and apples. Cover and simmer over low heat for 15 minutes.
6. Add cilantro. Simmer, uncovered for 5 more minutes.
7. Serve hot over a bed of basmati rice.

Analysis:
Calories 231, Fat 7.0 g, Cholesterol 94.1 mg, Sodium 190.3 mg, Carbohydrate 15.3 g, Dietary Fiber 1.8 g, Sugar 4.5 g, Protein 23.1 g, Potassium 474.4 mg, Phosphorus 225.5 mg

NOTES
EXERCISE

The benefits of exercise are not restricted to people who have full mobility. In fact, if injury, disability, illness, or weight problems have limited your mobility, it’s even more important to experience the mood-boosting effects of exercise. Exercise can ease depression, relieve stress and anxiety, enhance self-esteem, and improve your whole outlook on life. While there are many challenges that come with having mobility issues, by adopting a creative approach, you can overcome your physical limitations and find enjoyable ways to exercise.

Limited mobility doesn’t mean you can’t exercise

When you exercise, your body releases endorphins that energize your mood, relieve stress, boost your self-esteem, and trigger an overall sense of well-being. If you’re a regular exerciser currently sidelined with an injury, you’ve probably noticed how inactivity has caused your mood and energy levels to sink. This is understandable: exercise has such a powerful effect on mood it can treat mild to moderate depression as effectively as antidepressant medication. However, an injury doesn’t mean your mental and emotional health is doomed to decline. While some injuries respond best to total rest, most simply require you to reevaluate your exercise routine with help from your doctor or physical therapist.

If you have a disability, severe weight problem, chronic breathing condition, diabetes, arthritis, or other ongoing illness you may think that your health problems make it impossible for you to exercise effectively, if at all. Or perhaps you’ve become frail with age and are worried about falling or injuring yourself if you try to exercise. The truth is, regardless of your age, current physical condition, and whether you’ve exercised in the past or not, there are plenty of ways to overcome your mobility issues and reap the physical, mental, and emotional rewards of exercise.

What types of exercise are possible with limited mobility?

It’s important to remember that any type of exercise will offer health benefits. Mobility issues inevitably make some types of exercise easier than others, but no matter your physical situation, you should aim to incorporate three different types of exercise into your routines:

- **Cardiovascular exercises** that raise your heart rate and increase your endurance. These can include walking, running, cycling, dancing, tennis, swimming, water aerobics, or “aquajogging”. Many people with mobility issues find exercising in water especially beneficial as it supports the body and reduces the risk of muscle or joint discomfort. Even if you’re confined to a chair or wheelchair, it’s still possible to perform cardiovascular exercise.

- **Strength training exercises** involve using weights or other resistance to build muscle and bone mass, improve balance, and prevent falls. If you have limited mobility in your legs, your focus will be on upper body strength training. Similarly, if you have a shoulder injury, for example, your focus will be more on strength training your legs and abs.

- **Flexibility exercises** help enhance your range of motion, prevent injury, and reduce pain and stiffness. These may include stretching exercises and yoga. Even if you have limited mobility in your legs, for example, you may still benefit from stretches and flexibility exercises to prevent or delay further muscle atrophy.

Setting yourself up for exercise success

Talking to your doctor about exercise

Your doctor or physical therapist can help you find a suitable exercise routine. Ask:
• How much exercise can I do each day and each week?
• What type of exercise should I do?
• What exercises or activities should I avoid?
• Should I take medication at a certain time around my exercise routine?

To exercise successfully with limited mobility, illness, or weight problems, start by getting medical clearance. Talk to your doctor, physical therapist, or other health care provider about activities suitable for your medical condition or mobility issue.

Your doctor may even be able to recommend services aimed at helping people with limited mobility become more active, including specially designed exercise plans.

How to exercise with limited mobility tip 1: Starting an exercise routine

• **Start slow and gradually increase your activity level.** Start with an activity you enjoy, go at your own pace, and keep your goals manageable. Accomplishing even the smallest fitness goals will help you gain body confidence and keep you motivated.
• **Make exercise part of your daily life.** Plan to exercise at the same time every day and combine a variety of exercises to keep you from getting bored.
• **Stick with it.** It takes about a month for a new activity to become a habit. Write down your reasons for exercising and a list of goals and post them somewhere visible to keep you motivated. Focus on short-term goals, such as improving your mood and reducing stress, rather than goals such as weight loss, which can take longer to achieve. It’s easier to stay motivated if you enjoy what you’re doing, so find ways to make exercise fun. Listen to music or watch a TV show while you workout, or exercise with friends.
• **Expect ups and downs.** Don’t be discouraged if you skip a few days or even a few weeks. It happens. Just get started again and slowly build up to your old momentum.

How to exercise with limited mobility tip 2: Staying safe when exercising

• **Stop exercising if you experience pain,** discomfort, nausea, dizziness, lightheadedness, chest pain, irregular heartbeat, shortness of breath, or clammy hands. Listening to your body is the best way to avoid injury.
• **Avoid activity involving an injured body part.** If you have an upper body injury, exercise your lower body while the injury heals, and vice versa. When exercising after an injury has healed, start back slowly, using lighter weights and less resistance
• **Warm up, stretch, and cool down.** Warm up with a few minutes of light activity such as walking, arm swinging, and shoulder rolls, followed by some light stretching (avoid deep stretches when your muscles are cold). After your exercise routine, whether it’s cardiovascular, strength training, or flexibility exercise, cool down with a few more minutes of light activity and deeper stretching.
• **Drink plenty of water.** Your body performs best when it’s properly hydrated.
• **Wear appropriate clothing,** such as supportive footwear and comfortable clothing that won’t restrict your movement.

Overcoming mental and emotional barriers to exercise

As well as the physical challenges you face, you may also experience mental or emotional barriers to exercising. It’s common for people to feel self-conscious about their weight, disability, illness, or injury, and want to avoid working out in public places. Some older people find that they’re fearful about falling or otherwise injuring themselves.
• Don’t focus on your mobility or health issue. Instead of worrying about the activities you can’t enjoy, concentrate on finding activities that you can.
• The more physical challenges you face, the more creative you’ll need to be to find an exercise routine that works for you. If you used to enjoy jogging or cycling, for example, but injury, disability, or illness means they’re no longer options, be prepared to try new exercises. With some experimenting, it’s very possible that you’ll find something you enjoy just as much.
• Be proud when you make the effort to exercise, even if it’s not very successful at first. It will get easier the more you practice.

What’s Your Barrier to Exercise?

<table>
<thead>
<tr>
<th>Barrier to exercise</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m self-conscious about my weight, injury, or disability.</td>
<td>Exercise doesn’t have to mean working out in a crowded gym. You can try exercising early in the morning to avoid the crowds, or skip the gym altogether. If you can afford it, a personal trainer will come to your home or workout with you at a private studio. Walking, swimming, or exercising in a class with others who have similar physical limitations can make you feel less self-conscious. There are also plenty of inexpensive ways to exercise privately at home.</td>
</tr>
<tr>
<td>I’m scared of injury.</td>
<td>Choose low-risk activities, such as walking or chair-bound exercises, and warm-up and cool-down correctly to avoid muscle strains and other injuries.</td>
</tr>
<tr>
<td>I can’t motivate myself.</td>
<td>Explain your exercise goals to friends and family and ask them to support and encourage you. Better still, find a friend to exercise with. You can motivate each other and turn your workouts into a social event.</td>
</tr>
<tr>
<td>I’m not coordinated or athletic.</td>
<td>Choose exercise that requires little or no skill, such as walking, cycling on a stationary bike, or aquajogging (running in a swimming pool).</td>
</tr>
<tr>
<td>Exercise is boring.</td>
<td>But video games are fun. If traditional exercise is not for you, try playing activity-based video games, known as “exergames”. Games that simulate bowling, tennis, or boxing, for example, can all be played seated in a chair or wheelchair and are fun ways to burn calories and elevate your heart rate, either alone or playing along with friends.</td>
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How to exercise with an injury or disability

Since people with disabilities or long-term injuries have a tendency to live less-active lifestyles, it can be even more important for you to exercise on a regular basis.

According to the U.S. Department of Health and Human Services, adults with disabilities should aim for:

• At least 150 minutes a week of moderate-intensity, or 75 minutes a week of vigorous-intensity cardiovascular activity (or a combination of both), with each workout lasting for at least 10 minutes.
• Two or more sessions a week of moderate- or high-intensity strength-training activities involving all the major muscle groups.

If your disability or injury makes it impossible for you to meet these guidelines, aim to engage in regular physical activity according to your ability, and avoid inactivity whenever possible.
Workouts for upper body injury or disability

Depending on the location and nature of your injury or disability, you may still be able to walk, jog, use an elliptical machine, or even swim using flotation aids. If not, try using a stationary upright or recumbent bike for cardiovascular exercise.

When it comes to strength training, your injury or disability may limit your use of free weights and resistance bands, or may just mean you have to reduce the weight or level of resistance. Consult with your doctor or physical therapist for safe ways to work around the injury or disability, and make use of exercise machines in a gym or health club, especially those that focus on the lower body.

Isometric exercises

If you experience joint problems from arthritis or an injury, for example, a doctor or physical therapist may recommend isometric exercises to help maintain muscle strength or prevent further muscle deterioration. Isometric exercises require you to push against immovable objects or another body part without changing the muscle length or moving the joint.

Electro muscle stimulation

If you’ve experienced muscle loss from an injury, disability, or long period of immobility, electro muscle stimulation may be used to increase blood circulation and range of motion in a muscle. Muscles are gently contracted using electrical current transmitted via electrodes placed on the skin.

How to exercise in a chair or wheelchair

Chair-bound exercises are ideal for people with lower body injuries or disabilities, those with weight problems or diabetes, and frail seniors looking to reduce their risk of falling. Cardiovascular and flexibility chair exercises can help improve posture and reduce back pain, while any chair exercise can help alleviate body sores caused by sitting in the same position for long periods. They’re also a great way to squeeze in a workout while you’re watching TV.

• If possible, choose a chair that allows you to keep your knees at 90 degrees when seated. If you’re in a wheelchair, securely apply the brakes or otherwise immobilize the chair.
• Try to sit up tall while exercising and use your abs to maintain good posture.
• If you suffer from high blood pressure, check your blood pressure before exercising and avoid chair exercises that involve weights.
• Test your blood sugar before and after exercise if you take diabetes medication that can cause hypoglycemia (low blood sugar).

Cardiovascular exercise in a chair or wheelchair

Wheelchair sports

If you want to add competition to your workouts, several organizations offer adaptive exercise programs and competitions for sports such as basketball, track and field, volleyball, and weightlifting.

Chair aerobics, a series of seated repetitive movements, will raise your heart rate and help you burn calories, as will many strength training exercises when performed at a fast pace with a high number of repetitions. In fact any rapid, repetitive movements offer aerobic benefits and can also help to loosen up stiff joints.
• Wrap a lightweight resistance band under your chair (or bed or couch, even) and perform rapid resistance exercises, such as chest presses, for a count of one second up and two seconds down. Try several different exercises to start, with 20 to 30 reps per exercise, and gradually increase the number of exercises, reps, and total workout time as your endurance improves.

• Simple air-punching, with or without hand weights, is an easy cardio exercise from a seated position, and can be fun when playing along with a Nintendo Wii or Xbox 360 video game.

• Many swimming pools and health clubs offer pool-therapy programs with access for wheelchair users. If you have some leg function, try a water aerobics class.

• Some gyms offer wheelchair-training machines that make arm-bicycling and rowing possible. For a similar exercise at home, some portable pedal machines can be used with the hands when secured to a table in front of you.

Strength training exercise in a chair or wheelchair

Many traditional upper body exercises can be done from a seated position using dumbbells, resistant bands, or anything that is weighted and fits in your hand, like soup cans.

• Perform exercises such as shoulder presses, bicep curls, and triceps extensions using heavier weights and more resistance than for cardio exercises. Aim for two to three sets of 8 to 12 repetitions for each exercise, adding weight and more exercises as your strength improves.

• Resistance bands can be attached to furniture, a doorknob, or your chair. Use these for pull-downs, shoulder rotations, and arm and leg-extensions.

Flexibility exercise in a chair or wheelchair

Chair Yoga

Most yoga poses can be modified or adapted depending on your physical mobility, weight, age, medical condition, and any injury or disability. Chair yoga is ideal if you have a disability, injury, or a medical condition such arthritis, chronic obstructive pulmonary disease, osteoporosis, or multiple sclerosis.

If you’re in a wheelchair or have limited mobility in your legs, stretching throughout the day can help reduce pain and pressure on your muscles that often accompanies sitting for long periods.

Stretching while lying down or practicing yoga in a chair can also help increase flexibility and improve your range of motion.

To ensure yoga is practiced correctly, it’s best to learn by attending group classes, hiring a private teacher, or at least following video instructions.

Workouts for overweight people and those with diabetes

Exercise can play a vital role in reducing weight and managing type 2 diabetes. It can stabilize blood sugar levels, increase insulin sensitivity, lower blood pressure, and slow the progression of neuropathy. But it can be daunting to start an exercise routine if you’re severely overweight. Your size can make it harder to bend or move correctly and, even if you feel comfortable exercising in a gym, you may have difficulty finding suitable equipment. Some exercise machines and weight benches may be too small to use comfortably and securely. When choosing a gym, make sure it offers equipment that can support larger people.

Whatever your size, there are plenty of alternatives to gyms and health clubs. A good first step to exercising is to incorporate more activity into your everyday life. Gardening, walking to the store, washing the car, sweeping the patio, or pacing while talking on the phone are all easy ways to get
moving. Even small activities can add up over the course of a day, especially when you combine them with short periods of scheduled exercise as well.

**Cardiovascular workouts for overweight people**

- Weight-bearing activities such as walking, dancing, and climbing stairs use your own body weight as resistance. Start with just a few minutes a day and gradually increase your workout times. Make activities more enjoyable by walking with a dog, dancing with a friend, or climbing stairs to your favorite music.
- If you experience pain in your feet or joints when you stand, try nonweight-bearing activities. Water-based activities such as swimming, aquajogging, or water aerobics place less stress on your feet and joints. Look for special classes at your local health club, YMCA, or swim center where you can exercise with other larger people. Other nonweight-bearing activities include chair exercises (see above).
- A portable pedal exerciser is a simple device that you can use while sitting in any comfortable chair at home while you watch TV—or even under your desk at work.

**Strength training workouts for overweight people**

- Many larger people find using an exercise ball is more comfortable than a weight bench. Or you can perform simple strength training exercises in a chair.
- If you opt to invest in home exercise equipment, check the weight guidelines and if possible try the equipment out first to make sure it’s a comfortable fit.
- While strength training at home, it’s important to ensure you’re maintaining good posture and performing each exercise correctly. Schedule a session with a personal trainer or ask a knowledgeable friend or relative to check your form.

**Flexibility workouts for overweight people**

- Gentle yoga or tai chi are great ways to improve flexibility and posture, as well reduce stress and anxiety.
NOTES
IMPORTANT NUMBERS

Transplant Office ................................................................. 918-744-2925
*for emergencies coordinator on-call can be reached at this number 24/7

RML (Hospital) ................................................................. 918-744-2500

Hospital Security ............................................................... 918-744-2197

Hospital Patient Advocate .................................................. 918-744-3328

Transplant Social Worker ................................................... 918-744-3211

St. John Cardiovascular Imaging (CVI) ............................. 918-744-2828

Patient’s Room ................................................................. 918-403-0+(room #)
# TULSA AREA HOTEL RATES

**St. John Rates Updated March 2014**

In order to receive the discount, please request the St. John rate when making a reservation.

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Room Type</th>
<th>Rate</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aloft Tulsa Hotel</td>
<td>King or Double Queen Loft</td>
<td>$92.00 + tax</td>
<td>6716 S. 104th E. Avenue, Tulsa, OK 74133</td>
<td>918-949-9000</td>
</tr>
<tr>
<td>Ambassador Hotel</td>
<td>King or Two Queens</td>
<td>$149.00 + tax</td>
<td>1324 S. Main Street, Tulsa, OK 74119</td>
<td>918-587-8200</td>
</tr>
<tr>
<td>Best Western Trade Winds Central</td>
<td>Single or Double Bed</td>
<td>$49.99 + tax</td>
<td>3141 E. Skelly Drive, Tulsa, OK 74105</td>
<td>918-749-5561</td>
</tr>
<tr>
<td>Campbell Hotel and Event Center</td>
<td>Standard Queen/King</td>
<td>$99.00 + tax</td>
<td>2636 E. 11th Street, Tulsa, OK 74104</td>
<td>918-744-5500</td>
</tr>
<tr>
<td>Clarion Hotel</td>
<td>Standard Room</td>
<td>$59.99 + tax</td>
<td>2600 N. Aspen Avenue, Broken Arrow, OK 74012</td>
<td>918-258-7085</td>
</tr>
<tr>
<td>Clarion Inn Tulsa Int’l Airport</td>
<td>King or Queen</td>
<td>$59.00 + tax</td>
<td>2201 N. 77th E. Avenue, Broken Arrow, OK 74115</td>
<td>918-835-9911</td>
</tr>
<tr>
<td>Courtyard by Marriott Downtown Tulsa</td>
<td>King or Double Queen</td>
<td>$99.00 + tax</td>
<td>415 S. Bostom Avenue, Tulsa, OK 74103</td>
<td>918-508-7400</td>
</tr>
<tr>
<td>Courtyard by Marriott Tulsa Central</td>
<td>King or Double Queen</td>
<td>$94.00 + tax</td>
<td>3340 S. 79th E. Avenue, Tulsa, OK 74145</td>
<td>918-660-0646</td>
</tr>
<tr>
<td>Days Inn</td>
<td>King</td>
<td>$45.00 or Two Kings</td>
<td>8181 E. Skelly Drive, Tulsa, OK 74129</td>
<td>918-663-4541</td>
</tr>
<tr>
<td>Downtown Doubletree Hotel</td>
<td>Two Queen or One King</td>
<td>$97.00 + tax</td>
<td>616 W. 7th Street, Tulsa, OK 74127</td>
<td>918-587-8000</td>
</tr>
<tr>
<td>Embassy Suites—Tulsa</td>
<td>King or Double Full Suites</td>
<td>$105.00 + tax</td>
<td>3332 S. 79th E. Avenue, Tulsa, OK 74145</td>
<td>918-622-4000</td>
</tr>
<tr>
<td>Fairfield Inn &amp; Suites—Tulsa Central</td>
<td>King or Double Queen</td>
<td>$84.00 + tax</td>
<td>3214 S. 79th E. Avenue, Tulsa, OK 74145</td>
<td>918-663-0000</td>
</tr>
<tr>
<td>Fairfield Inn &amp; Suites—Tulsa Southeast</td>
<td>King</td>
<td>$74.00 + tax</td>
<td>9150 S. 102nd E. Avenue, Tulsa, OK 74133</td>
<td>918-994-4700</td>
</tr>
<tr>
<td>Hampton Inn Broken Arrow</td>
<td>2 Double or one King bed</td>
<td>$85.00 rate + tax</td>
<td>2300 W. Albany Street, Broken Arrow, OK 74012</td>
<td>918-251-6060</td>
</tr>
<tr>
<td>Hampton Inn and Suites—Tulsa Hills</td>
<td>Standard King or Standard Double Queen</td>
<td>$104.00 + tax</td>
<td>7004 S. Olympia Avenue, Tulsa, OK 74132</td>
<td>918-340-5000</td>
</tr>
<tr>
<td>Hampton Inn and Suites Tulsa Central</td>
<td>$104.00 Standard / $114.00 Studios</td>
<td></td>
<td>3418 S. 79th E. Avenue, Tulsa, OK 74145</td>
<td>918-779-4000</td>
</tr>
<tr>
<td>Hampton Inn and Suites—Woodland Hills</td>
<td>Spacious King</td>
<td>Starting at $89.00 + tax</td>
<td>7141 S 85th E. Avenue, Tulsa, OK 74133</td>
<td>918-294-3300</td>
</tr>
<tr>
<td>Hampton Inn and Suites—Owasso</td>
<td>Standard King or Standard Double Queen</td>
<td>$89.00 + tax</td>
<td>9009 N. 121st E. Avenue, Owasso, OK 74055</td>
<td>918-609-6700</td>
</tr>
<tr>
<td>Hard Rock Hotel and Casino</td>
<td>Standard Room</td>
<td>$99.00 + tax, Sun.-Thurs. $139.00 + tax, Fri. and Sat.</td>
<td>777 W. Cherokee Street, Catoosa, OK 74015</td>
<td>1-800-760-6700</td>
</tr>
<tr>
<td>Hilton Garden Inn Tulsa Airport</td>
<td>King or Double/Double</td>
<td>$119.00 + tax</td>
<td>7728 E. Virgin Court, Tulsa, OK 74115</td>
<td>918-838-1444</td>
</tr>
<tr>
<td>Holiday Inn Express and Suites</td>
<td>Traditional King</td>
<td>$79.00 + tax</td>
<td>2350 N. 121st E. Avenue, Broken Arrow, OK 74012</td>
<td>918-355-3200</td>
</tr>
<tr>
<td>Holiday Inn Tulsa City Center</td>
<td>King or Two Queens</td>
<td>$89.00 + tax</td>
<td>17 W. 7th Street, Tulsa, OK 74119</td>
<td>918-585-5898</td>
</tr>
</tbody>
</table>
Holiday Inn and Suites Tulsa South  
Double Queen—$79.00 + tax or King Suite—$89.00 + tax  
10020 E. 81st Street  
Tulsa, Ok 74133  
918-994-5000

The Hospitality House of Tulsa  
(Provides lodging for families caring for loved ones in a medical crisis)  
1135 S. Victor Avenue  
Tulsa, OK 74104  
918-794-0088  
Call for rates

Hyatt Place Tulsa—South/Medical District  
King Suite or Double Suite—$93.00 + tax  
7037 S. Zurich Avenue  
Tulsa, OK 74136  
(918) 491-4010

Hyatt Regency Tulsa  
King or Double—$95.00 + tax  
100 E. 2nd Street  
Tulsa, OK 74103  
918-582-9000

Inn at Expo Square  
Standard $42.00 — Suite $52.00  
4531 E. 21st Street  
Tulsa, OK 74114  
918-858-3775

LaQuinta Inn & Suites—Tulsa Central  
$77.00 + tax  
6030 E. Skelly Drive  
Tulsa, OK 74135  
918-665-2630

Mayo Hotel and Residences  
Deluxe and Luxury Rooms—$139.00 + tax  
Suite—$159.00 + tax  
115 W. 5th Street  
Tulsa, OK 74103  
918-582-6296

McBirney Mansion  
Standard—$189.00 + tax  
Luxury Room—$260.00 + tax  
1414 S. Galveston Avenue  
Tulsa, OK 74127  
918-585-3234

Ramada Tulsa  
King or Double Queen—$62.00 + tax  
8175 E. Skelly Drive  
Tulsa, OK 74129  
918-828-9128

Residence Inn  
Studio Suite or One Bedroom Suite—$89.00 + tax, Two Bedroom Suite—$109.00 + tax  
11025 E. 73rd Street South  
Tulsa, OK 74133  
918-250-4850

Renaissance Tulsa Hotel and Convention Center  
King or Double—$121.00 + tax  
6808 S. 107th E. Avenue  
Tulsa, OK 74133  
918-307-4026

Savoy Hotel  
Suites—Queen size beds—$99.00 + tax  
631 S. Peoria Avenue  
Tulsa, OK 74120  
918-347-2869

SpringHill Suites  
King or Double Queen—$79.00 + tax  
11015 E. 73rd Street South  
Tulsa, OK 74133  
918-254-1777

Staybridge Suites Hotel  
(Extended Stay)  
Studio Queen Suite—$99.00 + tax  
One Bedroom Suite—$129.00 + tax  
Two Bedroom Suite—$199.00 + tax  
(please call for extended stay reduced rates)  
11111 E. 73rd Street  
Tulsa, OK 74133  
918-461-2100

Towne Place Suites  
(Extended Stay Hotel)  
Studio King Suite—$69.00 + tax  
Two Queen Suite—$79.00 + tax  
One Bedroom Suite—$109.00 + tax  
Two Bedroom Suite—$129.00 + tax  
(please call for extended stay reduced rates)  
2251 N. Stone Wood Circle  
Broken Arrow, OK 74012  
918-355-9600

Tulsa Marriott Southern Hills  
Standard King or Two Doubles—$109.00 + tax  
1902 E. 71st Street  
Tulsa, OK 74146  
918-493-7000 or 1-866-530-3760

Tulsa Select Hotel  
One King or Two Doubles—$59.95 + tax  
5000 E. Skelly Drive  
Tulsa, OK 74135  
918-622-7000

Tulsa Square Hotel  
Double Full—$52.00, King—$62.00  
3209 S. 79th E. Avenue  
Tulsa, OK 74145  
918-663-1000

Wyndham Tulsa Hotel  
Standard King or Double Queen—$89.00 + tax  
10918 E. 41st Street  
Tulsa, OK 74146  
918-627-5000