Your Name:

Date:

Class Location:

Name(s) of Certified Kidney Smart Educator(s):

Kidney Smart Educator Phone and Email:
# The Kidney Smart℠ Class Participant Workbook

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Take Control
Welcome to Kidney Smart

You’ve taken an important step with your willingness to learn about chronic kidney disease (CKD). You’re not alone. A team of experienced healthcare professionals is here to help you and your care partner better understand how to Take Control, Make A Plan, and Stay Your Course.

Ask Your Doctor: If You’re Newly Diagnosed with CKD

This workbook raises many discussion points to talk about with your doctor.

If you are newly diagnosed with CKD or unsure whether you have CKD, here is a list of questions you can use to begin a dialogue with your physician about your kidney health. Even if you’ve already read about some of this information on your own, it’s a good idea to discuss your health directly with your physician.

Questions to ask your doctor:
• What is chronic kidney disease (CKD)?
• What blood test did I take that said I have kidney disease?
• What is GFR?
• What is the cause of my kidney disease?
• What stage of kidney disease am I in?
• What is dialysis?
• Do I need to start dialysis, or will I need to in the future?
• Do I need to change my diet?
• Can a dietitian help me with my food selections?
• What foods should I avoid?
• What foods can I eat?
• Do I need to change any of my current medications?
• Do I need to take more medicine to stay healthy?
• Do I have high blood pressure?
• What can I do to control my high blood pressure to help keep my kidneys healthy?
• Do I have diabetes?
• Do I have Type 1 or Type 2 diabetes?
• What can I do to control my diabetes to keep my kidneys healthy?
• How often should I visit a kidney doctor (nephrologist) and my other physicians?
• How often should I get my blood tested?

What You’ll Learn

The system you’ll learn about here is called Take Control – Make a Plan – Stay Your Course. Being an active partner in your healthcare and sharing concerns with your doctor, your family, clergy, and your friends will help you to take control of your CKD for a better today and future.

Take Control - Understanding CKD and your other health conditions.

Make a Plan - Working with your healthcare team, family, clergy, and employer to create a kidney-friendly life, including diet, exercise, and healthy habits.

Stay Your Course - Creating good support and using tools at home, at work, and with your healthcare team to help you stick with your plan.

Take control by learning as much as you are comfortable with, one step at a time. Ask questions of your healthcare team, and don’t hesitate to ask again, if you find yourself puzzled or worried about information or instructions you’ve been given. Taking the time to learn about your chronic kidney disease and taking an active role in your healthcare will help prepare you for living with CKD. Making a good plan has several parts. It includes following a kidney-friendly diet, quitting smoking, getting regular exercise, and following your doctor’s recommendations about medications and other therapies.

Staying your course involves creating a support structure around you and sticking to your plan.
Understanding Your Kidneys
Understanding your kidneys is the first step to taking control of your health when you have chronic kidney disease (CKD).

The kidneys’ main functions are to:
• Clean and filter your blood
• Remove extra fluid and make urine
• Balance chemicals and fluids
• Produce hormones that help control blood pressure, make red blood cells, and ensure bone health

In addition to their filtration function, the kidneys produce hormones – chemicals that act as the body’s messengers. These hormones help control blood pressure, control red blood cell production, and keep your bones strong.

Two healthy kidneys are more than enough to filter waste from your blood and make urine.

Inside Your Kidneys: Taking a Closer Look
Inside each kidney, about one million tiny units called nephrons rid the body of excess and unwanted substances. Each nephron has two parts, the glomerulus and the tubules.
Inside the glomerulus large amounts of fluid, dissolved substances such as minerals, and waste products are filtered from the blood and form a fluid called filtrate. From the glomerulus, this filtrate flows into the tubules.
Inside the tubules, most of the water is re-absorbed into the blood, in addition to the required amounts of minerals and other substances your body needs. At the same time, excess substances and fluid flow into the tubules and are eliminated as urine.

Facts about Kidney Disease
If your kidneys are sick, they may have trouble:
• Removing waste from your body
• Removing extra fluid from your body
• Keeping minerals and chemicals in balance
• Making hormones properly
More than 20 million people over the age of 20 in the U.S. have kidney disease and many more are at risk. Ask your doctor to explain the reasons for your diagnosis.

**Common causes of CKD include:**
- Diabetes
- High blood pressure

For nearly two-thirds of people living with CKD, their kidney disease is caused by diabetes and high blood pressure.

**Kidney Disease Symptoms**
Over time, with loss of kidney function you may start to
Feel:
- Tired (fatigue)
- Dizzy or nauseous
- Tingling in your toes and fingers
- Itchiness
- Swelling or too much fluid in your body

Have:
- A change in the amount of urine you produce
- Problems falling or staying asleep
- Changes in appetite or a metallic taste in your mouth
The Two Most Common Causes of CKD
Since diabetes and high blood pressure are the two most common causes of CKD, it’s important to understand the link between diabetes and CKD, as well as the link between high blood pressure and CKD.

<table>
<thead>
<tr>
<th>Diabetes and CKD</th>
<th>High Blood Pressure and CKD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q. What is diabetes?</strong></td>
<td><strong>Q. What is high blood pressure?</strong></td>
</tr>
<tr>
<td><strong>A.</strong> Diabetes is a serious disease in which the body produces too little of the hormone insulin, or does not properly use insulin, leaving too much sugar in the blood. Too much sugar damages the inner wall of the renal arteries, especially the capillaries, which are also part of the kidney's filtering units. There are two types of diabetes. If your pancreas does not produce any insulin at all, you have Type 1 Diabetes. In Type 2 Diabetes, you either don't produce enough insulin, or you are resistant to the insulin your body is producing. Type 2 is the most common.</td>
<td></td>
</tr>
<tr>
<td><strong>A.</strong> Blood travels away from the heart to all parts of the body through blood vessels, called arteries. Blood pressure measures the force of blood against the walls of the arteries as the heart pumps. The blood pressure measurement has two numbers: a top one (systolic) and a bottom one (diastolic). The systolic number is the pressure when the heart contracts pumps blood out. The diastolic number is the pressure when the heart relaxes before the next beat. When blood pressure is high and left untreated, it can damage the blood vessels that carry blood throughout the body. High blood pressure is also called hypertension.</td>
<td></td>
</tr>
<tr>
<td><strong>Q. How does diabetes impact kidney disease?</strong></td>
<td><strong>Q. What is the effect of high blood pressure on kidney disease?</strong></td>
</tr>
<tr>
<td><strong>A.</strong> High blood sugar levels damage the filtering units of the kidney. After many years, the tiny blood vessels start to leak protein and the kidneys begin to lose their ability to filter waste products, which then begin to build up in your blood. The primary damage is to glomerular capillaries. The hyperperfusion from hyperglycemia is a more secondary cause.</td>
<td></td>
</tr>
<tr>
<td><strong>A.</strong> High blood pressure makes your heart work harder, and can damage blood vessels throughout the body, making the vessels narrow, stiff, and clogged. When the tiny blood vessels in the kidneys are damaged, their ability to remove wastes, fluids, and electrolytes are decreased. Extra fluid in your body increases the amount of fluid in your blood vessels, making your blood pressure go up. High blood pressure is a vicious cycle because it damages your kidneys and then the damage causes your blood pressure to rise further as kidney disease worsens.</td>
<td></td>
</tr>
</tbody>
</table>
**Diabetes and CKD**

Q. Can controlling diabetes help prevent kidney disease?
A. Yes. Controlling diabetes can delay or prevent kidney disease. Monitor your blood sugars daily and share your readings with your physician and healthcare team.

**Type 1:**
- Take insulin as prescribed
- Follow a diet and exercise plan

**Type 2:**
- Follow a diet plan, exercise, and maintain a healthy weight
- Take medication for cholesterol, blood pressure, blood sugar level, as prescribed

Q. I have diabetes. Does this mean I will eventually develop kidney disease?
A. Although diabetes is the leading cause for chronic kidney disease, being diabetic does not mean you will develop CKD. Early diagnosis of diabetes and beginning the proper treatment program early on will help your kidneys continue to work effectively. If you have had diabetes for a while, following your treatment program is essential. Your doctor will monitor your health and adjust your treatment as needed.

**High Blood Pressure and CKD**

Q. Can controlling high blood pressure delay kidney disease?
A. Yes. To delay kidney disease resulting from high blood pressure:
- Take all medications as prescribed
- Lose weight and exercise regularly
- Reduce salt in your diet
- Monitor your blood sugars daily and share your readings with your physician and healthcare team.
Some groups of people are more prone to developing CKD. If you are African American, Asian American, Hispanic American, a Pacific Islander, or a Native American, you may be at a higher risk. Finally, people aged 65 years or older are also at a higher risk for developing CKD.

CKD is sometimes caused by:
- Glomerulonephritis, also known as glomerular nephritis, is a renal disease (usually of both kidneys) characterized by inflammation of the glomeruli, or small blood vessels in the kidneys
- Autoimmune Disorders- such as lupus (SLE), Goodpasteur’s Disease and other vasculitic disorders, Rheumatoid arthritis (RA), Antiphospholipid Syndrome (APS)
- Malformations of the urinary tract during a baby’s development
- Kidney blockages, such as pelvic tumors (bladder CA, cervical CA)
- Frequent urinary infections

Damaged kidneys may not properly produce important hormones, such as:
- Renin: Controls blood pressure; high blood pressure can cause kidney damage, and kidney damage can cause high blood pressure
- Erythropoietin: Controls red blood cell production; too little causes anemia
- Calcitriol: controls calcium absorption from food; too little calcium absorbed causes calcium to be pulled from the bones, leading to osteoporosis
Knowing your chronic kidney disease (CKD) stage will help you make treatment decisions and plan for the future.

Doctors divide chronic kidney disease into 5 stages. In Stage 1, the earliest stage, your kidneys have slight damage, with normal or decreased filtration. Your kidneys’ ability to clear waste and remaining fluids in your body are at an acceptable level. Stage 5 corresponds to kidney failure, a stage at which dialysis or a kidney transplant is required to live.

Your doctor will tell you your CKD stage based on your level of kidney function, determined by the lab test, Glomerular Filtration Rate (GFR).

**Stages of CKD (Chronic Kidney Disease)**

<table>
<thead>
<tr>
<th>CKD Stage</th>
<th>Definition</th>
<th>What It Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>With normal/high GFR; greater than 90</td>
<td>Slight kidney damage</td>
</tr>
<tr>
<td>Stage 2</td>
<td>GFR = 60 to 89</td>
<td>Mild decrease in kidney function</td>
</tr>
<tr>
<td>Stage 3</td>
<td>GFR = 30 to 59</td>
<td>Moderate decrease in kidney function</td>
</tr>
<tr>
<td>Stage 4</td>
<td>GFR = 15 to 29</td>
<td>Severe decrease in kidney function</td>
</tr>
<tr>
<td>Stage 5</td>
<td>GFR less than 15</td>
<td>Kidney failure</td>
</tr>
</tbody>
</table>

**Early Stage Kidney Disease**
With chronic kidney disease, the buildup of waste products, minerals, fluid and other chemicals in your blood happens slowly. You may not feel the first symptoms, but the signs show up in tests your doctor orders. Common problems are high blood pressure, anemia, hardening of the arteries, called atherosclerosis, and weakening bones.
It is important to find a doctor who specializes in kidney disease, called a nephrologist, and to partner closely with your doctor and other members of your healthcare team as early as possible. The right treatment includes following your doctor’s instructions about diet, exercise, and medications. This customized treatment plan will keep your kidneys functioning and may hold off further damage and symptoms.

First and foremost, stay engaged with life. If you are working, keep at it. Your job provides income, often provides other benefits, such as health insurance, and is usually a good social outlet and source of support.

Before starting any exercise program, talk to your healthcare team to set goals that are gradually increased over time. Exercise not only improves your physical health, but it has also been shown to reduce stress, reduce or maintain body weight, improve mood, and control blood pressure.

Glomerular Filtration Rate - GFR

GFR is the rate at which kidneys eliminate waste from the blood.

Calculating your GFR requires measuring the amount of creatinine, a waste product of muscle activity, in your blood. A higher than normal level of creatinine in the blood means that kidney function is slowing down.

Age, sex and race are factors which help us adjust GFR to your body size.
Early Stage CKD: What You Can Do

In early Stages 1 and 2, a healthy lifestyle may help slow or prevent further damage to the kidneys.

A healthy lifestyle includes:
- A healthy diet and exercise
- A healthy weight
- Quitting smoking
- Taking medicines as directed
- Managing stress
- Avoiding kidney enemies
- Seeing your doctor regularly

In Stages 1 and 2, the kidneys are not functioning at 100% of the normal rate, but they are still doing a good job of cleaning waste out of the blood. Stages 1 and 2 are defined as slight damage and mild decrease in kidney function. A healthy lifestyle, in particular a kidney-friendly diet, can slow down further damage to the kidneys and even stop the progression of the disease. It is important to avoid some common medications and herbal supplements that may harm your kidneys.

A kidney-friendly diet includes grains, fresh fruit, and vegetables, and limiting the amount of fat and sodium in your diet. At the same time, eat the recommended daily amount of protein and get the recommended daily amounts of safe vitamins and minerals. Finally, it is also important to follow your healthcare team’s advice as to the proper amount of daily fluid. It is important that you not become dehydrated by drinking too few fluids.

If you are in Stage 3 CKD, your regular doctor should refer you to a nephrologist, a doctor who specializes in kidney disease. You will likely visit your kidney doctor about every 3 to 6 months, to monitor how well your kidneys are functioning, and to check related conditions, such as high blood pressure and diabetes. If you have hypertension, you should monitor your blood pressure at home, between doctor visits.
If you have diabetes, you should monitor your glucose between visits. If either your blood pressure or blood sugar levels are unstable or are poorly controlled, you should call your doctor. Do not wait until your next appointment. Your medications might need adjustment. It may also be good to see a cardiologist, a doctor who specializes in heart diseases, to evaluate whether your heart has been affected by your CKD.

At Stage 3 symptoms of CKD may begin to appear. Some signs of Stage 3 include:

• Lab tests that show accumulation of waste products in the blood
• Increasing high blood pressure, low red blood cell count, early bone disease
• Symptoms such as swelling of hands, feet, and around the eyes, shortness of breath, trouble concentrating, poor appetite or nausea and vomiting

Late Stage Kidney Disease
In the early stages you probably did not feel differently, and may only have been diagnosed with CKD because lab tests revealed concerning results. In the later stages, Stages 4 and 5, you will likely experience some symptoms. The buildup of waste, minerals, and other chemicals in your blood, is called uremia and may happen slowly. Your lab tests will also show continuing signs of declining kidney function.

In later stages of CKD it is important to see your nephrologist regularly. Your doctor will begin talking with you about treatment options, including transplant and dialysis, once you are in the later stages of CKD.

Stage 4 is the beginning of late stage CKD. Your kidneys are no longer able to remove fluids or extra waste products, causing toxins and fluids to build up. Stage 4 means that the time has come for you to thoughtfully plan and make decisions for treatment, which may need to start as soon as the next weeks or months.
With guidance from your healthcare team and the counsel of your family, you have a great deal to say and do about what your future holds. It would be completely understandable for you to be feeling overwhelmed, and maybe frightened, and even sad, or angry that your CKD has reached a point where you will need treatment—choices that will be with you for the rest of your life.

In Stages 4 and 5, your body is even less effective at regulating blood pressure, making red blood cells, and keeping your bones healthy. For some people who have reached Stage 4, and in all cases of Stage 5 CKD, the kidneys are no longer able to function well enough on their own, and a treatment plan that includes dialysis or transplant becomes necessary.

Stage 5 CKD, also called end stage renal disease (ESRD), is fatal if untreated. With proper treatment, you will be able to live a longer and healthier life. Treatment options include kidney transplant and dialysis. Kidney transplant involves a surgery to receive a healthy kidney from someone else. Dialysis is a method of cleaning your blood that does not use the kidneys, and can be done either through peritoneal dialysis or hemodialysis.

It usually takes time to go from one stage of CKD to the next. Lifestyle choices and close attention to your diet can help slow down the disease. At the same time, less careful attention to these choices, as well as illnesses such as the flu, can sometimes speed up the progression to the next stage.

Pay close attention to your symptoms and let your doctor know immediately if you have any signs that could suggest a later stage of CKD:

- Nausea, vomiting, and loss of appetite
- Headaches, sleepiness, inability to concentrate
- Itching, tingling in hands and feet,
- Swelling around eyes, or hands and ankles
- Muscle cramps
- Little or no urine output
- Changes in skin color
At Stage 5, diet remains a big part of treatment. A dietitian will develop a meal plan based on the treatment you choose, your lab results and food preferences.

**What stage of CKD are you in?**

________________________________________________________________________

________________________________________________________________________

**Do you know your GFR? What is it?**

________________________________________________________________________

________________________________________________________________________

**Questions to ask my healthcare team:**

- ______________________________________________________________________
- ______________________________________________________________________
- ______________________________________________________________________

**You’re a Person, Not a Patient**

- Keep your dreams alive
- Keep your job
- Stay active
- Keep your sense of humor
- Have fun
**Stay Active, Keep Your Job**

Try to keep your job, even if your kidneys get worse. Laws like the Family and Medical Leave Act (FMLA) and the Americans with Disability Act protect your rights to keep working. You may be able to ask for short-term leave, a new schedule, or other small changes that would allow you to keep working.

Read the daily paper, keep a journal, send letters to friends, listen to music, visit an art museum or do any other activity that requires thinking. Staying involved in the world around you keeps your mind active. Keep working, seek out employment or go back to school. Even if it’s part time, this can be an activity you look forward to each week. Volunteer at an organization you find interesting. Consider volunteering to help children, the elderly or animals.

Take time for yourself and connect with people who provide you with positive feedback and support. Revisit things that have been uplifting to you in the past. Whether it’s rereading a favorite book, cooking a delicious dinner or calling a beloved friend you haven’t spoken to in awhile, treat yourself to something you enjoy; something that lifts your spirits.

Keep doing things that you enjoy like walking, dancing, exercising, gardening, or other hobbies that keep you active and involved in life. Before starting any exercise program make sure that you talk to your healthcare provider. Start slowly and build up more each day. You will be surprised at what you can do.

Go out with friends, volunteer, or travel. And finally, don’t forget your everyday enjoyments. Whether this means going to the movies, attending concerts, reading a book or taking photos, and yes, sexual intimacy, be sure to live your treasured life. You’re a person, not a patient.
Expect to have feelings and reactions about your diagnosis of CKD
• Your feelings are normal and healthy
• They may range across anger, guilt, fear, disbelief, denial, or depression – and back again
• Feelings change from time to time
• Communicate with family, friends, and healthcare team

You may experience some or all of these feelings. These feelings include anger that kidney disease has happened to you, or being discouraged that your body is somehow giving out much too soon. Most often these feeling are temporary. Talk over any symptoms with your healthcare team.

Depression has been called the common cold of mental health. That’s because it’s much more prevalent than people think. Anyone can suffer from depression—not just those with chronic kidney disease or who are on dialysis. Just because someone has kidney disease, or end stage renal failure, doesn’t mean they will experience depression.

The worst result of depression is that it robs a person of their happiness over a period of weeks, months or even years. More than feeling a little sad or out-of-sorts for a day or two, depression is an illness that should be treated by a professional in the same way you would treat diabetes or high blood pressure. Having depression in no way implies that a person has flaws in their character.

People with chronic kidney disease and their caregivers often suffer from depression due to the difficulty of adjusting to and coping with all the life changes that accompany both chronic kidney disease and end stage renal disease. If you are a patient or caregiver experiencing depression or are having difficulty adjusting, there is hope. Treatment and relief can come in many forms.

Learn how to recognize the signs of depression. It can mimic the symptoms of many other illnesses. Only a qualified professional can make a diagnosis based on the description of your symptoms.
Have you experienced any of the following?
- Constant sadness, especially when circumstances would lead most people to be happy
- More difficulty than usual with making decisions
- Easily upset and/or more irritable than usual
- Being tired all the time
- Sleeping more or less than usual
- Waking up early in the morning, if this had not been your normal routine
- Not wanting to eat or wanting to eat more than usual
- Constant thoughts of death (Seek professional help immediately.)

Remember — your mental health affects your physical health and help is available to both people with kidney disease and their caregivers. People and places you can turn to for help include:
- A healthcare professional
- Your caregiver
- Your spouse or significant other
- Your religious leader or pastor
- A trusted friend or family member
- The suicide hot line
- Emergency response by calling 9-1-1

Why is it important for you to keep your job and stay employed?
Make a Plan
If you or a loved one has recently been diagnosed with chronic kidney disease, learning about CKD and the steps you can take to slow the progression of the disease is one of the most important steps you can take.

First and foremost: Keep working, enjoy activities, and stay healthy.

**Know the Members of Your Kidney Healthcare Team**

You and your family are not alone in facing CKD. There are a number of medical professionals who are part of your kidney healthcare team.

Not every one of these healthcare team members may be available in all areas. If you'd like to learn more about these resources, ask your doctor for suggestions in your community.

**Nephrologist (Kidney Doctor)**

A nephrologist is a medical doctor (MD), or a doctor of osteopathic medicine (DO), who specializes in kidneys. Your nephrologist will determine the stage of your kidney disease, plan your treatment based on national treatment guidelines, and refer you to any specialists you may need to see, such as a dietitian, nephrology nurse, or other physicians, such as a cardiologist.

If needed in the future, your nephrologist will help you decide about renal replacement treatment options; whether dialysis or kidney transplant surgery is the best option for you; and will refer you to the appropriate facility and specialists.
Primary Care Provider
A family practitioner, an internal medicine doctor, a nurse practitioner, or a physician’s assistant can serve as your primary care provider.

Nurse Practitioner
You may also see a nurse practitioner, or NP, during your regular visits to your nephrologist’s office. A nurse practitioner will work closely with your nephrologist to make sure you receive quality care. If you have a question, but aren’t sure whom to ask, start with your NP. You can also ask your NP about your lab results, symptoms, medications, and any other topics regarding your care.

Physician Assistant
A physician assistant (PA) is a healthcare professional who is trained and licensed to practice medicine under the supervision of a physician. They conduct physical exams, diagnose and treat illnesses, order and interpret tests, counsel on preventive healthcare, assist in surgery, give medical orders and write prescriptions. PAs work in nephrology (kidney doctor) practices, or internal medicine, family medicine, or general medicine practices. Some states and medical associations may require that PAs pass certification exams.

Nephrology Nurse
A nephrology nurse is a registered nurse (RN) who specializes in working with people who have kidney disease. Nephrology nurses can answer any questions you may have about your health, why you are feeling a certain way, and understanding a doctor’s orders.

A nephrology nurse may also be certified and have the title CNN (a Certified Nephrology Nurse), CDN (Certified Dialysis Nurse), CHN (Certified Hemodialysis Nurse), or CPDN (Certified Peritoneal Dialysis Nurse).
Social Worker
A licensed social worker (LSW) can be an important resource for you and your family as you adjust to everyday life with kidney disease. A renal or dialysis social worker can provide support in all areas of your life including your feelings, your concerns about money, job-related questions, health insurance questions, and lifestyle adjustments as you cope with kidney disease and dialysis or kidney transplant treatment.

Registered Dietitian
A registered dietitian (RD) is an expert on nutrition and the dietary needs of people with CKD. A dietitian can help you plan your meals based on your nutritional needs and what you like to eat. If you start dialysis, a dietitian can educate you on what to eat based on your regular lab results. You can ask your dietitian about anything related to your diet, nutrition, vitamin supplements, medications, medical conditions, and fluid balance.

A registered dietitian may also be certified and have the title of CRN (Certified Renal Nutrition). Some states also require a dietitian to be licensed.

Pharmacist
A registered pharmacist fills your prescriptions, and in some cases, can mail them directly to your home or dialysis center every month. You should tell your pharmacist about any new prescription medicines, over-the-counter (OTC) medicines, home remedies, natural or herbal medications, or vitamins you are taking. Some of these can cause you to have unwanted side effects when taken with your prescribed medications. Your pharmacist can answer any questions about drugs, changes to your dosage, and side effects of your medications.

DaVita Rx may not be available in all areas. To find out, call 1-888-DaVitaRx (1-888-328-4827) or email contact@davitarx.com for more information.
Patient Care Technician
If in the future, you need dialysis, you may choose to receive your treatment in a dialysis center. Patient care technicians (PCTs) work under the supervision of the licensed nurse and prepare and monitor your dialysis treatment when you are having a dialysis treatment in a dialysis center. PCTs are professionals who must pass a certification exam required by the Centers for Medicare and Medicaid (CMS). Some states may also require certification.

Case Manager
If you have other diseases or conditions that exist alongside your CKD, you may be assigned a case manager. Your case manager coordinates your care, makes sure that all of your doctors are able to communicate with one another, and ensures all of your diseases are being treated. If your insurance does not cover the service of a case manager, you may ask a family member or close friend to fill this role.

Discharge Planner
If you have been hospitalized, you will meet with a discharge planner or coordinator before you leave the hospital. The discharge planner makes sure that all of the details are in place for the care that you will need once you leave the hospital. This plan alerts your healthcare team and other healthcare providers as to whether you will be going home or to another facility, such as a rehabilitation center or nursing home.

It also should include information on what activities you might need help with; information on your medications and diet; what extra equipment might be needed, such as a wheelchair, commode, or oxygen; who will handle meal preparation, transportation and chores; and possibly referral to home care services.
Work With Your Healthcare Team

One of the most important parts of staying your course is to work closely with your kidney doctor, your dietitian and other members of your healthcare team. They will provide you with important information on how to care for yourself with CKD. But it is important for you to take an active part in the process. Make sure you see yourself as part of that team. Follow the team’s advice, but don’t be afraid to ask questions so you know why your plan is designed as it is. Discuss the care options so you know they’ll work for you.

• Follow advice, and work with your team on decisions about care
• Jot down questions for your doctor in your health diary
• Schedule regular doctor visits
• Review your lab results with the doctor and dietitian to see how your diet is working
• Revisit your dietary requirements and restrictions as time goes on

Keep a Health Diary

A health diary is a great way to keep track of important information about your medical history, your kidneys, and your general health. A health diary is the place to write down all of the medications you take, results of your lab tests, treatments for your other health conditions, your weight, your diet, and doctor visits that are scheduled. A Health Diary is available for your use in the Resources section of this guide.

Who are the members of your healthcare team?

____________________________________________________________________

Do you have a primary care provider? Who is it?

____________________________________________________________________

Do you have a nephrologist? Who is it?

____________________________________________________________________
Here are some questions you can ask your doctor about keeping your kidneys healthy through diet:

Are there any dietary changes that I can make to help improve my overall health?

Do I have any food or fluid limitations?

Would I benefit from taking a multivitamin or Vitamin D?

Which of my lab values are out of range?

Do I need any medication to help keep my lab values within a target range?
Kidney Enemies

- Smoking - Nicotine causes vasoconstriction of the blood vessels, which leads to decreased blood flow to the kidneys. If you smoke, get help to stop. Contact the tobacco Quitline in your state.
- High protein diets - Your body breaks down protein into waste products filtered by the kidneys.
- Foods high in cholesterol, saturated fat - The buildup of fatty plaque can affect blood flow in blood vessels.
- X-rays with contrast injections - If you ever require an X-ray or imaging test for which a dye will be injected or you are asked to swallow a contrast fluid, tell the doctor and staff ahead of time that you have CKD so steps can be taken to protect your kidneys.
- Some prescription medicines, including antibiotics (check with your doctor or pharmacist) - **Always let any healthcare provider, including your doctors, your dentist, or a provider at a walk-in clinic, know that you have CKD. This may change the medicines they can safely prescribe for you.**
- Over-the-counter medications
  - Pain medications called Non-steroidal Anti-inflammatory Drugs (NSAIDs), such as ibuprofen (brand names Advil® or Motrin®)
  - Fleet or phosphor-soda enemas because of high phosphorus content
  - Laxatives and antacids containing magnesium and aluminum such as Milk of Magnesia and Mylanta®
  - Decongestants containing pseudoephedrine, such as Sudafed®, especially if you have high blood pressure
  - Sodium bicarbonate products such as Alka Seltzer®, because of high salt content
  - Herbal supplements that contain Artemisia, Absinthium (wormwood plant), Periwinkle, Autumn Crocus, Sassafras, Chufong Tuokuwan (Black Pearl), Tung Shueh, Horse Chestnut, Vandelia Cordifolia, Alfalfa, Buckthorn, Ginger Nettle, Vervain, Aloe, Capsicum, Ginseng, Noni juice, Bayberry, Cascara, Horsetail, Panax, Blue Cohosh, Coltsfoot, Licorice, Rhubarb, Broom, Dandelion, Mate, Senna. A more complete list can be found at: www.kidney.org/atoz/content/herbalsupp.cfm
Early-Stage Diet

A CKD non-dialysis diet is for people diagnosed with an early stage of chronic kidney disease (CKD). There are 5 stages of CKD—stages 1 through 4—before dialysis is needed, and stage 5 is when dialysis or a transplant is required. Over time, CKD damages the kidneys’ ability to filter waste and excess fluid from the body. Your kidneys will become less effective at doing their jobs, and you will become ill. The CKD non-dialysis diet is designed to help the kidneys keep as much of their remaining function for as long as possible. This diet also helps reduce the buildup of excess fluid and waste products. Your doctor and renal dietitian will focus on a few key elements that are known to affect your kidney function, when they develop your specific diet plan. Factors such as your lab results, body size, symptoms, CKD stage, age, activity, and other health conditions will play into the specific diet plan prescribed for you.

This nutritious eating plan will feature a prescribed amount of high-quality protein. High-quality protein foods include meat, fish, poultry, eggs, dairy products, and nuts. Nutritious carbohydrates, such as those found in grains, fruits, and vegetables are encouraged. Healthy fats such as canola and olive oil may be increased for added calories.

It is usually recommended that you follow a diet low in sugar, sodium, cholesterol, and saturated fats, especially if you have cardiovascular disease, diabetes or high blood pressure. Studies have shown that keeping glucose levels normal and blood pressure under control helps delay the development and slow the progression of kidney disease. Getting your cholesterol into normal ranges also prevents heart disease, another concern for people with CKD.
An early stage diet is designed with your overall health in mind. The good news is that you can still eat many of your favorite foods and they will typically provide you with the right balance of vitamins and minerals. If you do need a special vitamin your nephrologist or dietitian will let you know. If there is a nutrient you need to avoid, slight changes to a recipe will help you meet your goals. Later in this section you’ll find food lists that will help you in your every day planning for a kidney-friendly diet.

Fluids
In the early stages of chronic kidney disease, you will likely be encouraged to drink your normal amount of fluid. It is important that you do not become dehydrated. If you notice swelling, this may be a sign that you are retaining fluid. Fluid retention may come from eating high sodium foods or it may be a sign of decreased kidney function. Your doctor and renal dietitian will monitor your condition and recommend adjustments to your diet and medications as needed. In the middle stages of chronic kidney disease your diet will likely limit protein and perhaps foods high in phosphorus, potassium or other nutrients. Starting a new diet can be difficult and confusing, but making kidney-friendly changes now will help you stay healthy and maintain your quality of life.

Sodium
A kidney-friendly diet also focuses on electrolytes. Electrolytes are minerals and salts that conduct electrical signals and help control the fluid balance of the body. They are also important in muscle contraction, and many other body functions. Sodium is one of the electrolytes.

Most people think of table salt when they hear the word sodium, but your salt shaker is just one source of sodium. For people with chronic kidney disease, limiting sodium intake is important in helping to control blood pressure, which helps to slow further kidney damage.
Uncontrolled high blood pressure may also cancel out the benefits of a restricted protein diet. Eating low sodium foods helps you feel better by preventing swelling in your body, which results in shortness of breath and heart failure. Taking blood pressure medication as prescribed, and sometimes diuretics, or water pills prescribed by your doctor, may also help.

Reading food labels and keeping a food journal will help you track your daily sodium intake. You can cut back on sodium by eating fresh or frozen vegetables and less processed foods. Substituting herbs and spices to flavor your foods, and limiting fast foods and other high-sodium restaurant foods will also help to reduce your daily sodium intake. Your doctor or dietitian will let you know your sodium limit.

Make a Plan: Diet
A kidney-friendly diet is an important way for you to take charge of chronic kidney disease.

Over time, diet plays an important role in the treatment of your kidney disease. In the early stages of CKD, dietary changes may affect how well you feel. In the later stages, a kidney-friendly diet is one in which certain nutrients are controlled in order to limit the build-up of excess minerals and wastes produced by your body.

Eating a balanced and nutritional diet is one of the many ways you can take an active part in your healthcare.

CKD and Diet
- Your diet may help delay the progress of the disease.
- A kidney-friendly diet is based on your level of kidney function, your body size, and other medical conditions.
- Before making changes to your diet, talk with your doctor or dietitian.

Now that you are armed with information about CKD, you can make a plan to manage your kidney disease—to live longer and feel better.
If you need to change your eating habits, your nephrologist may give you a diet prescription and introduce you to a renal dietitian, a registered dietitian who specializes in kidney disease. The diet prescription will be individualized to your specific needs so that you are only adding or avoiding the foods necessary to control your kidney disease.

Your diet may also have instructions about fluid restriction, to prevent excess fluid from building up in your body. The dietitian will work with you to develop a meal plan that ensures good nutrition and includes the foods you like.

**Diet in CKD Stages 3 and 4**

At stages 3 and 4 of CKD, your protein intake may be limited. The amount depends on your body size and kidney function. You may be instructed to limit high-phosphorus foods or processed foods that contain phosphate additives. A low-sodium diet is also recommended to help with blood pressure control. Although you may be instructed to eat more carbohydrates and fats to meet your calorie needs, those with little nutritive value (such as candy, soda, animal fats, and processed foods) should only be a small part of your diet. If you have other health conditions such as diabetes, high cholesterol, or high blood pressure, you may be advised to restrict the amount of sugar, saturated fat, and salt that you eat.

The goal of the CKD non-dialysis diet is to preserve existing kidney function and delay the later stages of CKD, particularly stage 5, which is also called end stage renal disease (ESRD). This is the stage when dialysis or a kidney transplant becomes necessary in order to live. Controlling blood pressure and blood sugar may help your kidneys last longer.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>GFR</th>
<th>Protein</th>
<th>Calories</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Phosphorus</th>
<th>Calcium</th>
<th>Vitamins/Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney damage with normal or increasing GFR</td>
<td>≥ 90</td>
<td>*DRI for normal adults. Individualized based on your needs. 50% of the protein should be from *HBV sources</td>
<td>Calorie needs are the same as normal healthy individuals and are based on physical activity and nutrition status. The goal is to achieve or maintain your desired weight.</td>
<td>Varies from 1-4 gm/day Depends on your other medical conditions</td>
<td>No restriction unless blood levels are high.</td>
<td>No restriction unless blood level is &gt;4.6.</td>
<td>See Dietitian for recommendations</td>
<td>Goal should be to maintain your blood calcium level in the normal range.</td>
</tr>
<tr>
<td>2</td>
<td>Kidney damage with mildly decreasing GFR</td>
<td>60-89</td>
<td>*DRI for normal adults. Individualized based on your needs. 50% of the protein should be from *HBV sources</td>
<td>Calorie needs are the same as normal healthy individuals and are based on physical activity and nutrition status. The goal is to achieve or maintain your desired weight.</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>*DRI</td>
</tr>
<tr>
<td>3</td>
<td>Moderate decreasing GFR</td>
<td>30-59</td>
<td>*DRI for normal adults. Individualized based on your needs. 50% of the protein should be from *HBV sources</td>
<td>Calorie needs are the same as normal healthy individuals and are based on physical activity and nutrition status. The goal is to achieve or maintain your desired weight.</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>800-1000 mg/day restriction.</td>
<td>See Dietitian for recommendations</td>
<td>Supplementation should not exceed *DRI. Vitamin D, Zinc and Iron will be individualized based on your needs.</td>
</tr>
<tr>
<td>4</td>
<td>Severely decreasing GFR</td>
<td>15-29</td>
<td>Decrease protein intake slightly. Individualized based on your needs. 50% of the protein should be from *HBV sources</td>
<td>Calorie requirements increase as protein intake declines to help maintain weight and nutritional status.</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>Same as Stage 3</td>
<td>Same as Stage 1</td>
<td>Do not exceed 2000 mg/day. Same as Stage 3</td>
</tr>
<tr>
<td>5</td>
<td>Kidney failure &lt;15 Not on dialysis</td>
<td>&lt;15</td>
<td>Same as stage 4. Protein recommendations are individualized based on your needs.</td>
<td>Calories consumed from carbohydrates and fats may need to be increased as protein intake declines to help maintain weight and nutritional status.</td>
<td>Same as Stage 1</td>
<td>Same as Stage 1</td>
<td>Same as Stage 3</td>
<td>Same as Stage 4</td>
<td>Same as Stage 3</td>
</tr>
</tbody>
</table>

Abbreviations: DRI=Dietary Reference Intake; GFR=Glomerular Filtration Rate; HBV=High Biological Value. Source: A Clinical Guide to Nutrition Care in Kidney Disease. Edited by Laura Byham-Gray, PhD, CNSD, and Karen Wiesen, MS, RD
At the grocery store, keep in mind that what goes into the cart will eventually affect how you feel. Grocery shopping can be tough because there are temptations at every turn. If you have chronic kidney disease, what you eat is not only the fuel that keeps your body going, it is part of your prescription for staying as healthy as possible.

Prepare by:
- Review and use your meal plan.
- Use your dietitian-approved grocery list to create one to two weeks’ worth of menus.
- Make your shopping list from the menus, and stick to it at the store.
- Eat before you shop.

Be sure to follow the specific dietary prescription your renal dietitian prescribes for you.
Here are some general tips you can use at the grocery store by food category.

Look for:

Fruits and Juices
- High fiber: berries, apples with skin, and pears
- Unsweetened frozen fruits
- Apple, cranberry, grape, and raspberry juice; peach or pear nectar

Vegetables
- High fiber: broccoli, cabbage, carrots, corn, green peas, and okra
- Plain frozen vegetables without sauces

Red Meat
- Lean, well-trimmed cuts of beef, lamb, and pork: flank steak, round steak or roasts, sirloin, tenderloin, loin, chops, 85% to 95% lean ground beef

Poultry
- All types of poultry, including chicken, turkey, and game hens
- Fresh ground chicken or turkey to use as a low-fat substitute for ground beef

Fish
- Fish without breading, stuffing or other added ingredients, to help you control your fat, salt, and phosphorus intake
- Water-packed canned fish with no or limited added salt
- Salmon, mackerel, sea trout, bluefish, and herring, which contain heart-healthy omega-3 fatty acids

Dairy Products and Eggs
- Cream cheese, sour cream, and cottage cheese
- Unfortified rice milk
- Soy milk—check with your dietitian for specific brands that are lower in phosphorous and potassium
- Non-dairy creamers—check with your dietitian for specific brands
- Limit to ½ cup dairy per day, especially if your blood phosphorous levels are high.
Butter and Margarine
- Soft tub margarines or spreads made with liquid unsaturated oils like corn, safflower, sunflower, or canola
- Liquid oil as the first ingredient on the label
- Butter substitutes for seasoning vegetables and popcorn

Bread
- Low-fat breads, rolls, muffins, bread sticks, bagels, and English muffins (less than 2 grams of fat per serving)
- White or Italian bread, which is lower in phosphorus than whole-grain varieties

Cereal
- Corn and rice cereals, which are lower in phosphorus than whole wheat or bran cereals
- Cream of wheat, farina, or grits
- Oatmeal, but limited to 2 servings per week

Frozen Desserts
- Frozen fruit or juice bars with no added sugar
- Pre-portioned items like popsicles to help control fluid intake
- Sorbets or fruit ices that have no fat or cholesterol

Frozen Dinners
- Full meals with less than 600 mg of sodium and more than 18 grams of protein in a serving
- Dinners that do not contain cheese, cheese sauce, cream sauce, potatoes, or tomato or marinara sauce

Canned Soup and Vegetables
- Reduced-sodium canned soups and vegetables without added potassium chloride
- Low-fat, low-sodium broth (without added potassium chloride) to use for soups, sauces, and gravies

Cookies and Crackers
- Melba toast, low-sodium white crackers, unsalted oyster crackers, graham crackers, unsalted pretzels
- Vanilla wafers, vanilla sandwich cookies, shortbread, ginger snaps, animal crackers
Make a Plan: Exercise
Keep to your current exercise program, or start one now. Talk to your healthcare team, and set goals to gradually increase your routine until you eventually achieve 30 minutes of moderate exercise a day. Exercise not only improves your physical health, it has also been shown to reduce stress and improve your mood. Exercise with a buddy – research shows that having a partner, whether a friend or family member, makes it much more likely that you’ll keep at it.

Other Lifestyle Choices
Another way to take control of kidney disease is to know what can harm your kidneys and take steps to avoid these dangers.

Avoid kidney enemies:
- Quit smoking
- Reduce unhealthy stress
- Drink in moderation
- Don’t use illegal drugs

Now that you know what to avoid, here are some steps you can take to live healthy:
- Get enough physical activity; make it fun
- Maintain a healthy weight
- Take vitamins and minerals if recommended
- Take prescription medications as instructed
- Schedule regular doctor visits and annual examinations
- Empower yourself with knowledge
Common Lab Tests and Results
Understanding your kidney lab results is key to making the right choices and planning for the future.

Be a partner in your own health:
- Obtain copies of lab work
- Speak to your doctor about your results
- Ask questions
- Keep a health diary

Microalbuminuria
Your doctor may ask that you provide a urine specimen, to check for microalbuminuria, which shows if protein is leaking into the urine—an early sign of kidney damage. When kidney disease is caught early, it may be stopped or slowed down.

HgBA1C-A
Screening test for diabetes that measures the concentration of blood sugars over time.

Hemoglobin and Hematocrit
Hemoglobin and hematocrit indicate your level of red blood cells. Hemoglobin helps transport oxygen throughout your body. This oxygen provides energy to your body’s cells. If your body has low amounts of red blood cells, your body’s cells aren’t getting enough energy to do their jobs. This can lead to anemia, which causes you to feel tired and have no energy. Left untreated, anemia can damage your heart.
Phosphorus
Phosphorus is a mineral found naturally in many of the foods you eat. But the food industry also adds it as a preservative to extend the shelf life of foods. There are high quantities of phosphorus in organ meats, whole grain breads, processed foods, cola beverages, cheese, dried beans, liver, peanut butter, dairy products and chocolate.

Healthy kidneys remove excess phosphorus from the body. When kidneys are failing and are no longer able to remove excess phosphorus, it can build up in the blood and lead to bone and heart disease. People with chronic kidney disease may be prescribed a special medicine called a phosphorus binder to take with food. A binder helps absorb the phosphorus while it is still in the stomach, so it won’t reach the blood. Taking your binders as prescribed is vital to your bone and heart health. Your doctor or dietitian will let you know if you need to control phosphorus intake and if you need phosphorus binders.

Potassium
Potassium, another electrolyte, is a mineral that controls nerve and muscle function. One very important muscle – the heart – beats at a normal rhythm because of potassium. Potassium levels that are too high or too low can be dangerous.

Potassium is in the foods you eat. Healthy kidneys remove excess potassium in the urine to help maintain normal levels in the blood. Some people with CKD cannot remove potassium, so they may need to limit high potassium foods in their diets. Your doctor or dietitian will let you know if you should control potassium in your diet.

If your kidney disease was diagnosed at an early stage, you may not notice changes from the minor dietary modifications that have been prescribed. This is because the earliest stages of kidney disease may have no apparent symptoms. You may not have even felt ill when you were first diagnosed. If you did have symptoms like swelling, you will probably notice that the diet helps to improve how you feel.
BUN and Creatinine
BUN, or blood urea nitrogen, is a waste product left over from the protein you eat, which is normally removed through the kidneys. High levels of urea mean your kidneys are not getting rid of waste, which then remains in your body. This is a sign that your kidney function is slowing down. Creatinine is another waste product from the regular work your muscles do. Creatinine is used to calculate your estimated glomerular filtration rate, or GFR. Healthy kidneys remove both BUN and creatinine. When your lab tests show higher levels of these values, it is a sign that your kidney function is slowing down.

Albumin
Albumin is the most common protein found in the blood and shows whether you are well nourished. Albumin is needed to maintain growth, fight infections, repair tissues, and helps with fluid removal.

Calcium, Phosphorus, and Parathyroid Hormone (PTH)
The measure of calcium, phosphorus, and PTH levels helps show whether your bones are healthy.

Cholesterol and triglycerides are lipids
A form of fat that is naturally found throughout the body. Cholesterol is a waxy, fat-like substance that’s found in all cells of the body. Your body needs some cholesterol to make hormones, vitamin D, and substances that help you digest foods. Triglyceride levels often are higher in people with kidney disease. You may need to lower your triglyceride and cholesterol levels to avoid the build-up of plaque in your blood vessels, and reduce your risk of heart disease. Your doctor may have you take medicine to lower your triglyceride and cholesterol levels.
What types of food are high in phosphorus?

______________________________

______________________________

What types of food are high in potassium?

______________________________

______________________________

What changes will you make in your diet to keep your kidneys healthy?

______________________________

______________________________

What changes will you make in your lifestyle (exercise, activities) to help keep your kidneys healthy?

______________________________

______________________________

Questions to ask my healthcare team:

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________

• _______________________________________________________________________
Common Medications for Early CKD
Here is a list of medications that might typically be prescribed for someone with early stage kidney disease. Not every patient takes medicines, and some take only a few. Your doctor will talk with you about the medications that are right for you.

- Blood pressure medicine—antihypertensive
- Calcium supplements
- Cholesterol medicine—statin
- Iron
- Phosphorous binders
- Vitamin D supplements
- Water pills—diuretics that help maintain the right fluid balance
- Prescription multivitamin
- Anemia medicine—erythropoiesis-stimulating agent (ESA), a hormone replacement that helps stimulate the production of red blood cells

The best time to learn about and prepare for future treatment is before your disease progresses to kidney failure.
Slowing or avoiding decline in your kidney function is the main aim of early treatment. In addition to avoiding complete loss of function, keeping your kidneys as healthy as possible for as long as possible is also key to reducing your risk of developing cardiovascular disease, the diseases of your heart and blood vessels that can lead to heart attack or stroke.

It is also important to understand how the choices and decisions you are making now can affect later treatment choices that may be necessary, such as dialysis or kidney transplant.

In the early stages of CKD, your doctor will talk with you about keeping blood pressure, blood sugar, and your cholesterol and triglycerides at target levels. If you have high blood pressure, it is important to take medicine to lower your blood pressure to 130 over 80 millimeters of mercury or lower. Medicines called angiotensin converting enzymes (ACE) inhibitors and angiotensin-two receptor blockers (ARBs) are helpful. These medicines lower high blood pressure. Even if you have normal blood pressure, they may be prescribed to help reduce abnormal amounts of protein in your urine. These treatments are aimed at preventing your kidneys from getting worse, and to reduce your risk of heart attack and stroke. If you have diabetes, your doctor will tell you what to do to keep your blood sugar level normal. You may need to change your diet or take medicine.

Late Stage Treatment
When you reach Stage 4 or Stage 5 of CKD, there is much you can do to prepare for transplant or dialysis. Your doctor and healthcare team will introduce you to the various kinds of dialysis, and the preparation and training you may need in order to be ready.

You may need to make further changes to your diet and fluid intake, and some different medications may be called for. Your team will encourage you to keep your blood sugar and blood pressure within your target ranges.

Late-stage treatment choices include:
- Kidney transplant
- Peritoneal dialysis
- Hemodialysis
- Palliative Care or Conservative Treatment
By empowering yourself through knowledge, and making plans ahead of time, you will start treatment from a position of strength, and will likely see immediate benefits, whichever option you choose.

It is important to the overall success of your treatment to include your spouse, family member, or loved one in the decision-making process. Whether it’s finding a kidney donor, helping you decide which type of dialysis is right for you, accompanying you to medical appointments, or making it easier for you to stick to your prescribed diet, your partner is a critical member of your healthcare team. To be an effective team, keep lines of communication open. Each of you will need to know how the other feels, both physically and emotionally. This emotional awareness is important in keeping your relationship healthy.

Late Stage CKD: What You Can Do

Do what you can to maintain your health as you prepare for treatment:
- Learn what may help and harm your health
- Control blood sugar, blood pressure, and cholesterol
- Understand dietary changes: the dialysis diet
- Make a treatment choice
- Talk with your doctor about Conservative Treatment and Palliative Care
- Have your dialysis access placed early
- Schedule dialysis training (home therapy)
- See your doctor regularly, and ask questions

Avoid these kidney enemies:
- Smoking
- Unhealthy stress
- Excess alcohol
- Non-steroidal anti-inflammatory drugs
- Illegal drugs
Kidney Transplant
A kidney transplant is a surgical treatment where a healthy donor kidney is placed into your body. Donor kidneys come from a deceased donor, or from a living donor.

Kidneys from deceased donors come from people who have made known their wish to donate their organs at the time of their death. These donors are anonymous.

Living donors donate one of their own kidneys and are usually, but not always, close relatives or friends of the recipient. A living donor will have many tests to make sure they can live with one remaining kidney. You and your potential donor will also both be evaluated to see if your blood types and immune systems are matched closely enough. This is called compatibility.

If you have a willing donor among your friends or family who is compatible, surgery is planned according to everyone’s convenience. If you have a living donor, but it turns out the donor is not a good match with you, you may still be able to arrange a transplant by a paired donation or exchange. A paired exchange consists of two or more donor/recipient pairs who are not compatible with each other. So if you and your willing donor don’t match, and another CKD patient and their willing donor don’t match, you may be able to use each other’s donor for the transplant.

Recent studies have found that the odds of good results are somewhat better with a “preemptive” transplant – a transplant that is done before dialysis is needed. Preemptive transplant requires a willing living kidney donor. As of 2008, about 34% of kidney transplants came from living donors.

If you do not have a living donor, you can choose to be placed on one or more waiting lists for a kidney from a deceased donor. You can start this process in Stage 4.

The earlier you get on the waiting list, the less time you will need to remain on dialysis.

Not everyone is eligible for kidney transplant. If you are interested, find out which transplant centers your insurance covers and where success rates are highest.
Then ask your doctor to refer you to the centers you’d prefer and plan some visits.

There are guidelines to tell if you are a candidate for kidney transplant. The guidelines are set by the United Network for Organ Sharing (UNOS), the Organ Procurement Transplant Network (OPTN), and each transplant center.

**Kidney transplant candidates must:**
- Have irreversible kidney failure
- Be medically and psychologically stable
- Be in overall good health
- Be immediately reachable by phone
- Take prescribed medicines
- Keep appointments
- Report symptoms
- Transplant programs may have other criteria
- Transplant center will conduct full medical and dental evaluation

After the surgery, you will be hospitalized for several days and closely monitored for complications like infection, excessive bleeding and organ rejection.

Some newly transplanted kidneys begin working right away. Others may start working after a couple of days. If your new kidney isn’t working right away you’ll receive dialysis until it does. You will remain hospitalized until your doctors are satisfied the new kidney is functioning and you are healthy enough to go home.

Initially your transplant doctor and nephrologists will require many follow-up visits and tests for a couple of months after the transplant. They want to make sure your new kidney is healthy. Your doctors will also look for signs of possible complications.

Having a new kidney doesn’t mean you can eat or treat your body the same way you did before your diagnosis of chronic kidney disease. It is even more critical you maintain healthy habits so your new kidney will function properly and give you years of use.

Part of the transplant aftercare is taking required medications. Your doctor will prescribe immunosuppressants, or anti-rejection drugs, which you will need to take for as long as you have your new kidney.
Any pre-existing health conditions you had before the transplant will need to be managed as well, especially conditions that contributed to your initial kidney damage, like diabetes or high blood pressure. And, you will remain under the care of your nephrologist for routine visits.

**Palliative Care, or Conservative Treatment**

Palliative Care or Conservative Treatment is a third option for late-stage kidney disease. After talking openly, and over time, with your family, your doctor, trusted friends and spiritual leaders, you may decide that you prefer not to use dialysis or transplantation to stay alive. This is a decision that should be considered carefully, with advice from those closest to you. If you are unsure how to talk to your family or loved ones you can ask a member of your healthcare team for help, and to join you when you have this discussion.

If you decide against transplant or dialysis, your doctor and healthcare team can do a great deal to care for you and keep you comfortable in the final passage to death. This kind of care is called palliative care, and is meant to help relieve physical symptoms and attend to your feelings, your spiritual needs, and those of your family.

- A plan of care respects your preferences
- Treatment is available to keep you physically comfortable
- Treatment is available to attend to your feelings and spiritual needs

Support is geared toward you and your loved ones.
Dialysis
When your kidneys fail and can no longer keep you healthy, one of your treatment options is dialysis. Dialysis is a process that removes excess fluid and filters waste from the blood when your kidneys fail and can no longer keep you healthy. Dialysis treatments must be done on a regular basis to take the place of normal kidney function.

There are two types of dialysis:
• Peritoneal dialysis (PD) uses a natural filter inside the body to remove waste products.
• Hemodialysis uses an artificial filter outside the body to clean the blood.

Peritoneal Dialysis
PD is a needle-free form of dialysis that can be performed at home, at work, or on vacation, on your own schedule, and usually does not require the assistance of a partner. It is the most popular form of home dialysis.

If you choose to have PD, an outpatient surgery is performed to place a catheter, a short flexible tube, into the peritoneal cavity, through a small incision in your belly. The catheter has three parts: one part is placed into the cavity, the next part leads through the skin and the final part extends outside of the body. After the catheter is placed, it takes from two to six weeks for the site to heal. When the catheter is ready for use, you will attend training classes during which you learn how to safely perform your own treatments.

When you are trained and have the go-ahead, you are ready to start one of the two forms of at-home peritoneal dialysis.
In continuous ambulatory peritoneal dialysis, or CAPD, the catheter is attached to a bag of dialysate. The dialysate containing the extra fluid and waste is drained and replaced with fresh dialysate. The exchange has three phases: Drain, Fill, and Dwell. During the dwell phase, wastes and fluid are removed from the blood. Usually the drain and fill phase of the exchange will take about 30 minutes, and is performed 4 times daily.

The patient will disconnect from the equipment after an exchange and is free to do what they want while the fluid dwells. Because this treatment is working around the clock, it allows for continuous removal of wastes and fluids similar to what the kidneys do. Remember your kidneys are not filtering part time, but 24 hours a day and 7 days a week.

Automated Peritoneal Dialysis, or APD, which is also called continuous cycling peritoneal dialysis, or CCPD, uses a machine to perform the exchange at night while the patient sleeps, for about 10 hours. A daytime exchange can also be performed, if needed. The lines that connect you to the cycler are long enough to allow you to get up, sit in a chair, watch TV or even go to the restroom, depending on your room layout. Many patients choose this treatment due to the flexibility of performing treatments while they sleep, which allows them more freedom to schedule their days as they wish.

Your healthcare team will help you understand the advantages and requirements of each treatment option so that you can make a decision based on your lifestyle and healthcare needs.
**Hemodialysis**

Hemodialysis is a process whereby blood is removed from the body and passes through a man-made filter, called a dialyzer. The dialyzer is the key to hemodialysis. The dialyzer is called the artificial kidney because it filters the blood — a job the kidneys used to do. Dialysate, also called dialysis fluid, pulls wastes and fluid from the blood into the dialysate. The dialysis solution is then flushed down the drain along with the wastes.

Treatment sessions at a dialysis center occur several times a week. Day treatments last 3 to 4 hours.

**Home Hemodialysis (HHD)**

Hemodialysis can also be done at home. Home hemodialysis offers a more flexible schedule, but does require the assistance of a care partner. Training will often take 4-5 hours per day, 5 days a week, for 3-6 weeks. If a care partner does not have a significant role in performing the dialysis, their training may be shorter. During the training, you will be taught how to set up the machine, monitor your treatments, order supplies and safely place your own needles.
The benefits of dialyzing 5 to 6 times a week include improved blood pressure control: some patients are able to reduce the amount of blood pressure medications they take or discontinue them altogether; and fewer limitations on your diet, since waste products are eliminated more frequently. More frequent treatments also lead to less fatigue and nausea, because shorter treatments cause less stress to the body.

**In-center Hemodialysis**
In-center treatments are usually scheduled three times each week. In-center treatments have the benefit of being administered by trained professionals and you will be in the company of other dialysis patients, but they offer a less flexible treatment schedule.

**Nocturnal Hemodialysis**
Nocturnal hemodialysis may be available. With this treatment, you dialyze in the dialysis facility at night. If you are interested, you should check with the specific facility. Treatments are 3 times a week and 6 or more hours each night. Some patients may experience an improved quality of life.

Dialyzing at night allows patients to continue to work and keep a normal daily schedule. For many people it is the bridge to home hemodialysis.

**Hemodialysis (HD)-Self Care**
You and/or your care partner may participate in your self care. You may become extensively involved in your dialysis treatment. You can choose how you would like to participate. This may include weighing yourself prior to treatment, taking vital signs, and/or setting up and taking down your machine before and after dialysis. Healthcare professionals train you so you can learn at your own pace.
Vascular Access
Before beginning hemodialysis treatment, a person needs an access to their bloodstream, called a “vascular access.” The access allows the patient's blood to travel to and from the dialysis machine so that toxins, waste and extra fluid can be removed from the body.

There are three types of vascular access:
1. The Arterio Venous Fistula (AVF)
2. The Arterio Venous Graft (AVG)
3. The central venous catheter or internal port devices (LifeSite®)

Each access is created surgically. There are a limited number of places on the body where an access can be placed—the arms, legs, neck or chest.

The fistula and graft are considered to be permanent accesses because they are created under the skin with a plan to use them for many years. When patients find out they are in the advanced stages of chronic kidney disease and will be starting dialysis in the near future, their nephrologist will advise them to get a fistula or graft. CVCs are temporary accesses, and will need to be replaced with a more permanent access.
Late Stage CKD and Diet
In Stage 5, dietary changes depend on your treatment:
- Transplant: May need to limit calories
- Peritoneal Dialysis
  - Increase protein
  - Limit sodium and phosphorus
  - Liberal potassium and fluids compared to the hemodialysis diet
- Hemodialysis
  - Increase protein
  - Limit sodium, fluids, phosphorus and potassium
- Palliative care or conservative treatment
  - Limit potassium and fluids

Treatment Option: Diet Recommendation Comparison Chart

<table>
<thead>
<tr>
<th></th>
<th>In-Center Hemodialysis</th>
<th>Peritoneal Dialysis</th>
<th>Home Hemodialysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protein</strong></td>
<td>&gt;1.2 gms/kg SBW This is a high protein diet. Protein recommendations are established to prevent malnutrition and are individualized based on your needs. &gt;50% should be from HBV protein sources.</td>
<td>1.2-1.3 gms/kg SBW This is a high protein diet. Protein requirements are greater than hemodialysis due to higher protein losses during treatments. &gt;50% should be from HBV protein sources.</td>
<td>Same as Hemodialysis</td>
</tr>
<tr>
<td><strong>Calories</strong></td>
<td>Calorie recommendations will be individualized to maintain a reasonable body weight and are based on your age, activity level and suggested body weight.</td>
<td>Calorie requirements are generally lower than hemodialysis since the dialysate used for your treatments provides additional calories. Your diet will be individualized to achieve/maintain a reasonable body weight and is based on your age, activity level, and amount of glucose absorbed from your dialysate.</td>
<td>Same as Hemodialysis</td>
</tr>
</tbody>
</table>
### Treatment Option: Diet Recommendation Comparison Chart

<table>
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<th>Home Hemodialysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calcium</strong></td>
<td>Adjusted to maintain appropriate blood calcium levels.</td>
<td>Same as Hemodialysis</td>
<td>Same as Hemodialysis</td>
</tr>
<tr>
<td><strong>Phosphorus</strong></td>
<td>Dietary phosphorus is limited to 800-1000mg per day. In addition to a low phosphorus diet, a phosphate binder may be used to maintain your blood phosphorous level within a desired range.</td>
<td>Same as Hemodialysis</td>
<td>Same as Hemodialysis</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>2000-3000 mg/day. Your potassium restriction may vary based on your blood potassium level, volume of urine output, constipation issues, or even diabetes.</td>
<td>3000-4000mg/day. Typically potassium is unrestricted. However, recommendations are adjusted based on your blood potassium levels.</td>
<td>Typically potassium is less restricted than for hemodialysis. Recommendations are individualized based on your blood potassium levels.</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>2000-3000 mg/day. Individualized based on your needs.</td>
<td>2000-4000 mg/day. Individualized based on your needs.</td>
<td>2000-4000 mg/day. Individualized based on your needs.</td>
</tr>
<tr>
<td><strong>Fluid</strong></td>
<td>750-1000 ml/day plus urine output. Individualized based on volume of urine output and signs of edema.</td>
<td>Fluids are not as restricted due to daily dialysis. Individualized based on urine output and signs of edema.</td>
<td>Fluids are not as restricted due to more frequent dialysis. Individualized based on urine output and signs of edema.</td>
</tr>
</tbody>
</table>
Did you know?

- 1.4 million people worldwide are on dialysis, and this number increases by 8% each year (World Health Organization).
- 112 countries do not have the resources to provide dialysis or kidney transplants – directly resulting in the death of over 1 million people each year (Kidney International).
- The number one cause of death for those with access to dialysis in developing countries is lacking the funds to continue treatments (ISN).

Beginning Dialysis

Dialysis will now be a central part of your routine, but it doesn’t need to exclude the rest of your normal activities. You can integrate it into everyday life, including exercise, work and travel. Your doctor and dietitian will prescribe a diet suitable to your individual needs and type of dialysis you have chosen.

An important part of sticking with this plan is having the support of your family and friends. Help your close community understand how unwavering adherence to your dialysis routine is crucial to your life and well-being. If you choose to do hemodialysis treatments at home, make dialysis dates. Invite friends or family to keep you company for quiet activities like a regular card game, or movie afternoon. Your treatment does not need to be done in isolation, as long as you and your close circle are comfortable with the routine.
If you needed dialysis, what type of access would you choose and why?

If you needed dialysis, what type of treatment would you choose and why?

Questions to ask my healthcare team:

- 
- 
- 
-
Make a Plan: Insurance and Benefits

The cost of treatment is a huge concern for many patients and their families. With CKD, your healthcare needs will likely change over time, so your insurance needs may also change. Insurance is important to making CKD care affordable. Changes to your insurance can affect the coverage for treatment that you need. It is important to understand your insurance plan and options before making any health insurance changes or leaving your job.

Medical insurance pays for some, if not all, of your treatments, labs and medications.

There are three main sources of insurance:
- Medicare, which is a federal program
- Medicaid, which is a state program
- Private insurance. Private employer health insurance often provides more complete benefits than state or federal programs. Premiums are generally more affordable since it is usually a group plan. Some employers even cover part of the cost for the insurance premiums.

Understanding your benefits package is important.

What to consider when reviewing your insurance:
- Type of insurance
- Name of policyholder
- Source of coverage—active employment, retirement policy, COBRA or government insurance such as Medicare or Medicaid.
- Other healthcare needs in addition to CKD
- Copayment responsibilities

Contact the human resources department at your job to learn more about your insurance policy, using these questions as a guide. Another great source of information about insurance is your social worker. Taking care of all of these matters are the best steps you can take to make a good, and lasting plan.
Here are some questions to ask about your insurance coverage:

Do you have a deductible that you are responsible for paying once per year before your insurance company pays any portion of your bill?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

What are the co-insurance and out-of-pocket costs that you are responsible for paying directly before your plan pays at 100%?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Are your healthcare provider and doctors considered in-network or out-of-network?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Do you have out-of-network benefits? What is your level of prescription drug coverage?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Stay Your Course
Stay Your Course
Having CKD means your future has changed. It takes time to accept that, and even to grieve. But keep moving toward your life goals. Your kidneys may or may not get worse, but you're making lasting plans, and you'll need to stay your course for it to be successful. One of the best ways to stay your course is to live your normal life. This means everything, from the everyday to the special.

When you are successful at staying your course, you maximize your opportunity to slow the progress of CKD, and stay as healthy as possible. Your kidney-friendly diet, lifestyle choices and medical treatment will soon become a regular routine.

But there are also important benefits in how it will make you feel. As you and your family and friends become more familiar with the routine, you'll begin to accept your medical treatment and new diet as part of normal life. You'll feel less anxious because you'll have a better understanding of CKD. And you and your family will feel more in control.

Plan for Transitions
Another important aspect to Stay Your Course is to plan for your transition to another stage of CKD:
- Be aware of the signs and symptoms of the next stage
- Understand the treatments and lifestyle shifts of the next stage
- Stay on top of your financial resources
Late Stage CKD: Ask For Help

Don’t be afraid to ask for support for you and your family and care partners. It is hard to ask, but try. Staying connected is important at this complicated time of life.

There are many support groups available to people living with kidney disease. Family, friends, and co-workers are a valuable source of support as you make life adjustments like starting a new diet or quitting smoking. Share what you’re learning. If loved ones want additional information encourage them to sign up for newsletters and classes about chronic kidney disease.

The social worker and other members of your healthcare team are an excellent resource for support. Maintain open communication so that you can get help if you need it.

Your family, friends, and co-workers care about you and want to make sure you take control, make a plan, and stay the course.
For Care Partners

When a person has chronic kidney disease, or CKD, successful treatment often means calling on one or more people to provide help and support to cope with the everyday and longer term tasks and stresses of living with a chronic disease. Care partners can be spouses, partners, neighbors, close friends, or professionals trained to provide medical care.

With some kinds of treatment, such as home hemodialysis, in addition to providing day-to-day emotional and household support, a care partner must be committed to assisting with the actual mechanics of treatments, and be prepared to help solve any problems that come up during home dialysis treatments.

The idea of being a care partner for someone on dialysis can be scary. But no one starts home treatment without a thorough training course, and clinics have 24-hour phone back-up. You are never alone.

Notice that this is about being a care partner, NOT a caregiver. There’s a reason for this. Studies show that home treatment works best when the person on dialysis contributes as much as they are able to their own care.
As a care partner caring for yourself is as important as caring for the person with CKD.

Proper self-care includes:
- Healthy sleep habits
- Regular exercise
- Taking care of your own health needs
- Regular breaks from caregiving
- Getting support and help from family, friends, and the community
- Joining a caregiver/care partner support group

Effective Communication
Clear communication within a care partner relationship, and with the healthcare team plays an important role in the quality of care you provide, and how you feel about being a care partner.

Communicating effectively with your family member or friend with CKD, as well as the entire care team, including the nephrologist, nurse, dietitian, and social worker will help to assess immediate healthcare needs, define any problems or concerns, put a plan in place to correct these problems, minimize stress, and maximize the success of treatment and everyone’s quality of life.

Communication is both verbal and non-verbal. Try effective techniques such as looking directly at the person who is speaking, watching their body language, listening to what has been said, repeating it back, and confirming that everyone understands the plan, to ensure clear communication.

Clear communication is an important key to maximize quality of care.

To communicate effectively takes:
- Listening
- Repeating the information
- Confirming that everyone understands the plan
Defining and Balancing Tasks
Planning well and feeling in control starts with identifying and balancing tasks.

- Think through the needs of everyone in the household
- Organize and prioritize tasks
- Share responsibilities
- Monitor progress and adjust routines as needed

When you break down the tasks of caring into the “who, what, when,” they become less overwhelming. Start by thinking about which treatment tasks can be accomplished by the person with CKD, and which tasks need to be assigned to you or another care partner. Keep in mind that everyone in the family system needs to be cared for, not just the person with CKD.

It may help to organize treatment and household tasks by day or month. Use a day minder, a wall calendar or white board, or your computer. Just be sure that it is a system that you’re comfortable with.

Develop a Circle of Care
It will be important to learn how to reach out to others in your family and wider social network for help. A good first step in creating a reliable safety net is to think about, and map out Circles of Care. The folks in your Circles of Care range from the ones you can call on to share everyday tasks, such as driving to medical appointments and running errands, to those that may be available to help with home treatment or emergencies.

Use the worksheet to identify the people in your Circle of Care.

Questions to ask yourself are:
- Who are they?
- What do they do?
- Where do they live?
- Why are they important?
- How can they be called upon to help?
Talk to each of the people you identify about the needs at hand, and what they are willing and able to help with. Make sure that the contact information for all of these helpers is updated and accessible.

You and those in your Circles of Care will share the tasks, but also the great satisfaction that comes with caring well for someone close to each of you.

**Support for Post-Transplant**

If your family member or friend has a kidney transplant, the daily activities of dialysis are no longer part of the routine. But the transplant recipient will be recovering from this major surgery and will need to follow a careful medicine regimen to prevent rejection of the new kidney.

As a care partner, you can provide the emotional and practical support that will ease recovery and help the recipient develop and maintain healthy habits to increase the odds that the new kidney will last a long time.

Upon returning home from the hospital after transplant surgery, the recipient will need the kind of care typical of anyone post-surgery. They will feel weak and unsteady for a few days, and may need to nap. They will be instructed not to lift anything weighing more than five pounds for about eight weeks. While you should help out by doing the heavy lifting, you should also encourage them to follow the recovery routine suggested by the medical team, which may include walking, and increasing activity by a bit every day.

Once the recipient is on the road to recovery, your support will still be of great benefit. Reminders about taking medications when necessary and supporting efforts to eat right and exercise help to ensure success.
Support for Home Peritoneal Dialysis
Peritoneal dialysis (PD) doesn’t usually require a care partner, but it can be a big help.

You can decide how to share tasks with your loved one, including:
- Organizing and ordering supplies
- Setting up the machine
- Keeping treatment logs
- Taking vital signs
- Caring for catheter access
- Connecting catheter

Although peritoneal dialysis does not require a care partner, it’s always helpful to have a trusted person to share the training, if possible. Training includes instruction on preventing contamination with bacteria when performing exchanges (called aseptic technique), how to care for the catheter exit site on a daily basis, and how to spot signs of infection.

Support for Home Hemodialysis
Most home hemodialysis programs require the person receiving treatment to have a care partner who is willing to help during each treatment. Treatments typically take from three to three and a half hours, including setup and cleaning up after treatment. While it’s good for the person being treated to manage many, if not most aspects of treatment, you’ll be assisting in some way, every day. You may help with inserting the needles and checking blood pressure while treatment is underway. Of course, if a problem or an emergency arose, you would be the person to call for help. You may also provide other help, like setting up the dialysis equipment, keeping track of and ordering dialysis supplies, cooking, attending check-ups, running errands, and picking up medications. One of the most important ways you’ll contribute is by offering your love and support.

If you become a home hemodialysis care partner, you’ll make a significant contribution to your loved one’s quality of life. Your presence means they can dialyze in the comfort of home.
Stress Reduction
Learning to reduce your own level of stress will help you and the person you are caring for.

Stress reduction techniques include:
• Meditation
• Deep breathing
• Self-guided imagery

Care Partner Resources
• National Family Caregivers Association
  www.nfcacares.org/
• Today’s Caregiver
  www.caregiver.com/
• Medicare Resources for Caregivers
  www.medicare.gov/caregivers/
• Well Spouse Association
  www.wellspouse.org

In addition, home dialysis makes it possible to dialyze more frequently or for longer periods of time, which is associated with many medical and lifestyle benefits. Home hemodialysis requires a committed care partner.

Tasks may include, among others:
• Inserting needles
• Giving medications
• Checking blood pressure
• Calling for help
• Offering love and support

Hemodialysis care partners go through the same training as their partners with CKD. During training at a dialysis center, the nurse and other training staff members provide instruction on how to perform safe, effective treatment.
Depending on your loved one’s needs and the equipment used, learning the required skills takes an average of three to six weeks.

During home hemodialysis training, care partners should pay close attention, take notes, and ask questions if something isn’t clear. At the beginning of training, you will observe the at-home training nurse and learn the process. As you learn what to do, you will gradually take on more responsibility. Eventually, you and your loved one will do the dialysis treatments completely on your own, while the training nurse observes.

It’s normal for you to be a little nervous at first, especially if you have never been around medical equipment. However, the new generation of hemodialysis machines is easy to set up, clean and disinfect. And the home hemodialysis training is comprehensive. After a few at-home dialysis treatments, you and your loved one should find a comfortable routine that works well for both of you.

Who is in your Circle of Care?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

If needed, who will be your Care Partner?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Questions to ask my healthcare team:
• ______________________________________________________________________
• ______________________________________________________________________
• ______________________________________________________________________
Medications
Getting Smart about Medications

As your kidney function decreases, it is important to be smart about your medications. The liver and kidneys remove almost all medications and other waste products from the body. First, the liver dissolves these medications and waste products in water. Then the kidneys filter these waste products from the blood, dissolving them into urine. If the kidneys are not working well, less waste is removed, including medications, which may rise above safe levels over time and become toxic to the body or create unwanted side effects. For example, a person with kidney problems taking too much of a pain killer may be at risk for falls.

People with decreasing kidney function must take these three steps to ensure medication safety:

1. Confirm that the medication is safe and is the right dose for you by reviewing all of your medications with your doctor or pharmacist. Remember that safety is always first. Do not take medications and other substances that may damage the kidneys or decrease their function without direction from your doctor.

2. Ensure that you take medications in the right way.
   Since your kidneys may not be removing enough of the medication make sure you follow your doctor’s directions closely. Inform all your doctors that you have kidney disease to make sure the right medication is being prescribed. Knowing that you are taking the right medication in the right manner will improve your use of these therapies.

3. Keep track of all your medications.
   Work with you care partner to create a plan of when to take all your medications that fits into your daily activities. Most pharmacies sell medication organizer boxes to help organize all your medications according to the day of the week and the time of day at which you need to take each medication. Keep your medication organizers by your kitchen table where you will be reminded of your medications each day. Ask your pharmacist for tips to improve your medication use plan. This prevents skipping medications and improves your health. The simplest way to keep track of your medications is to make a medication list. Ask your doctor, nurse or pharmacist to help you create this medication list. This way, everyone who takes care of your health will know what medications you take. Be sure to include all medications, even those you buy without a prescription, herbal products, alternative medications, vitamins, and any over-the-counter (OTC) medications.
The table below outlines common medications and concerns as a person progress through the stages of CKD.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>GFR</th>
<th>Common concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney damage with normal or increasing GFR</td>
<td>&lt;=90</td>
<td>Regular screening for CKD is very important for people with risk for developing CKD, such as diabetes, high blood pressure, smoking, urinary tract infections, and urinary stones. Avoid prolonged use of large doses of Ibuprofen, Indometacin, and naproxen, some antibiotics such as aminoglycosides, amphotericin B, and tenofovir, or herbal preparation such as Bluberry Spice, Aloe, Autumn Crocus, Buckthorn, Cascara, Guang Fan Ji, Horse Chestnut, Juniper berries, Licorice Root, Periwinkle, Rhubarb, Sassafras and Wormwood plant.</td>
</tr>
<tr>
<td>2</td>
<td>Kidney damage with mildly decreasing GFR</td>
<td>60-89</td>
<td>Some medication called ACE-inhibitors (ACEi) and Angiotensin Receptor Blockers (ARB) have been shown to slow the onset of kidney disease. Avoid dehydration and the use of iodinated contrast dyes, products containing heavy metals such as Aluminum, Lead and Cadmium and over the counter products like sodium phosphate enemas.</td>
</tr>
<tr>
<td>3</td>
<td>Moderate decreasing GFR</td>
<td>30-59</td>
<td>Ask your doctor if your cholesterol levels are fine and if not you may need a class of drug called Statins. If you have diabetes, make sure that your blood sugar is well controlled and that you are taking your diabetes medications correctly. Always keep a ready supply of sugar, such as a glucose tube or candy available in case your blood sugar drops too low.</td>
</tr>
</tbody>
</table>
Stage | Description | GFR | Common concern
--- | --- | --- | ---
4 | Severely decreasing GFR | 15-29 | By this stage you may be taking 3-4 different blood pressure drugs. Good blood pressure control also delays the onset of kidney disease. Other drugs commonly taken are phosphate binders, and an iron supplement.

5 | Kidney failure | <15 or on dialysis | By this time you may be taking Insulin and an oral anti-diabetic drug, several blood pressure medications, phosphate binders, injectable vitamin D, iron supplement and an anemia drug such as erythropoietin. Your total number of medication may be 12-18 drugs. It is very useful to keep an up to date list of all your medications.

Some Common drugs dispensed to patients with CKD/ESRD.

<table>
<thead>
<tr>
<th>Medication Use</th>
<th>Commonly Dispensed Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-coagulant</td>
<td>ASPIRIN, PLAVIX (clopidogrel)</td>
</tr>
<tr>
<td>Blood pressure medication</td>
<td>CATAPRESS (clonidine), COZAAR (losartan), DIOVAN (valsartan), IMDUR (isosorbide mononitrate), LONITEN (minoxidil), NORMODYNE (labetalol), NORVASC (amlodipine), PROCARDIA (nifedipine), TENORMIN (atenolol), TOPROL (metoprolol), ZESTRIL/PRINIVIL (lisinopril)</td>
</tr>
<tr>
<td>Cholesterol medication</td>
<td>LIPITOR (atorvastatin), ZOCAR (simvastatin)</td>
</tr>
<tr>
<td>Diabetic neuropathy medication</td>
<td>NEURONTIN (gabapentin)</td>
</tr>
<tr>
<td>Diuretic</td>
<td>LASIX (furosemide)</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>Gastric stimulant</td>
<td>REGLAN (metoclopramide)</td>
</tr>
<tr>
<td>Gout medication</td>
<td>ZYLOPRIM (allopurinol)</td>
</tr>
<tr>
<td>High calcium drug</td>
<td>SENSIPAR (cinacalcet)</td>
</tr>
<tr>
<td>Multivitamin supplement</td>
<td>DEXFOL</td>
</tr>
<tr>
<td>Narcotic pain medication</td>
<td>VICODIN (hydrocodone/acetaminophen)</td>
</tr>
<tr>
<td>Oral anti-diabetic</td>
<td>GLUCOTROL (glipizide)</td>
</tr>
<tr>
<td>Phosphate binder</td>
<td>FOSRENOL (lanthanum carbonate)</td>
</tr>
<tr>
<td></td>
<td>PHOSLO (Calcium salt)</td>
</tr>
<tr>
<td></td>
<td>RENAGEL (sevelamer)</td>
</tr>
<tr>
<td>Renal multivitamin supplement</td>
<td>NEPHRO-VITE (metoclopramide)</td>
</tr>
<tr>
<td>Renal vitamin supplement</td>
<td>RENAL SOFTGEL (metoclopramide)</td>
</tr>
<tr>
<td>Stomach acid suppressant</td>
<td>NEXIUM (esomeprazole)</td>
</tr>
<tr>
<td></td>
<td>PREVACID (lansoprazole)</td>
</tr>
<tr>
<td></td>
<td>PRILOSEC OTC (omeprazole)</td>
</tr>
<tr>
<td></td>
<td>PROTONIX (pantoprazole)</td>
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<tr>
<td></td>
<td>ZANTAC (ranitidine)</td>
</tr>
<tr>
<td>Stool softener</td>
<td>COLACE (docusate)</td>
</tr>
<tr>
<td>Supplement</td>
<td>FOLIC ACID</td>
</tr>
</tbody>
</table>

Some Over-the-Counter medication that should be avoided in patients with CKD/ESRD.

<table>
<thead>
<tr>
<th>OTC Medication</th>
<th>Medication use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prolonged use of large doses of Non Steroidal Anti-inflammatory Drugs (NSAIDs) such as Ibuprofen (Advil, Motrin), aspirin and naproxen (Aleve)</td>
<td>Pain</td>
</tr>
<tr>
<td>Prolonged use of large doses of acetaminophen (Tylenol)</td>
<td>Pain</td>
</tr>
<tr>
<td>Herbal preparation such as Blueberry Spice, Aloe, Autumn Crocus, Buckthorn, Cascara, Guang Fan Ji, Horse Chestnut, Juniper berries, Licorice Root, Periwinkle, Rhubarb, Sassafras and Wormwood plant.</td>
<td>Various uses not FDA approved</td>
</tr>
</tbody>
</table>
Here are some items you can track in your health diary:

- Personal information summary: records basic information about yourself
- Healthcare contact information: organizes all of your healthcare providers, including pharmacy
- Medical history: identifies what conditions you have
- Medication list: keeps track of all the prescription and over-the-counter medication and supplements (vitamins, etc.) you take
- Blood pressure and diabetes targets: will help you keep track of those conditions and your target levels
- Annual tests and vaccinations: can be used as reminders for preventative screenings
- Notes section: write down questions for your doctor and enter the answers

Do you know the cause of your chronic kidney disease?

________________________________________________________________________

________________________________________________________________________

Do you have high blood pressure? What is your blood pressure average?

________________________________________________________________________

________________________________________________________________________

Are you a diabetic? What is your A1C level?

________________________________________________________________________

________________________________________________________________________

Questions to ask my healthcare team:

- _______________________________________________________________________
- _______________________________________________________________________
- _______________________________________________________________________
Health Diary

Personal Information Summary

Name: ________________________________
Home Address: ________________________________
City: ________________________________
State: __________________ Zip Code: ____________
Home Phone: ________________________________
Mobile Phone: ________________________________
Other Phone: ________________________________
Email: ________________________________

Basic Information

Date of Birth: ________________________________
Gender:  ○ Male  ○ Female
Blood Type: ________________________________
Employer / Where You Work: ________________________________
Marital Status: ________________________________
Health Diary

Allergies: ____________________________________________
Food Allergies: ____________________________________________
Medication Allergies: ____________________________________________
Other Allergies: ____________________________________________

Health Insurance Information

Health Plan Name: ____________________________________________
Phone Number: ____________________________________________
Member ID: ____________________________________________
Case Manager: ____________________________________________
Phone Number: ____________________________________________
Other Health Plan Name: ____________________________________________
Phone Number: ____________________________________________
Member ID: ____________________________________________
Case Manager: ____________________________________________
Phone Number: ____________________________________________
Medicare Number: ____________________________________________

○ Part A ○ Part B ○ Part D

Dentist: ____________________________________________
Dental Plan Name: ____________________________________________
Dental Plan ID: ____________________________________________
Vision Plan Name: ____________________________________________
Vision Plan ID: ____________________________________________
Health Diary

Emergency Contact Numbers

IN CASE OF EMERGENCY, DIAL 911

Emergency Contacts

Name: ____________________________________________
Phone Number: __________________________________
Email Address: ___________________________________
Relationship: ______________________________________

Name: __________________________________________
Phone Number: __________________________________
Email Address: ___________________________________
Relationship: ______________________________________

Healthcare Providers

Primary Care Provider: ______________________________
Phone: __________________________________________
Address: _________________________________________

Nurse Practitioner: _________________________________
Phone: __________________________________________

Physician Assistant: _________________________________
Phone: __________________________________________
Health Diary

Healthcare Providers

Nephrologist (Kidney Doctor): ____________________________
Phone: ____________________________
Address: ____________________________

Endocrinologist: ____________________________
Phone: ____________________________
Address: ____________________________

Vascular Surgeon: ____________________________
Phone: ____________________________
Address: ____________________________

Podiatrist: ____________________________
Phone: ____________________________
Address: ____________________________

Other Specialist: ____________________________
Phone: ____________________________
Address: ____________________________

Other Specialist: ____________________________
Phone: ____________________________
Address: ____________________________

Dentist: ____________________________
Phone: ____________________________
Health Diary

Eye Doctor: _______________________________________
Phone: _______________________________________

Diabetes Educator: _______________________________________
Phone: _______________________________________

Dietitian: _______________________________________
Phone: _______________________________________

Pharmacy: _______________________________________
Phone: _______________________________________
Address: _______________________________________

Preferred Hospital: _______________________________________
Phone: _______________________________________
Address: _______________________________________
Other: _______________________________________
Phone: _______________________________________

Medical History

<table>
<thead>
<tr>
<th>Conditions I Have:</th>
<th>Active (Check circle)</th>
<th>I Take Medicine For This (Check Circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atrial Fibrillation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autoimmune Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>TYPE 1 or TYPE 2</td>
<td></td>
</tr>
</tbody>
</table>
# Health Diary

## Medical History

<table>
<thead>
<tr>
<th>Conditions I Have:</th>
<th>Active (Check Circle)</th>
<th>I Take Medicine For This (Check Circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing Impaired</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Cholesterol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Heart Attack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seizure or Epilepsy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty Seeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty Hearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organ Transplant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type: __________________________  Date: _________________________

Other Conditions:

- __________________________  ○  ○
- __________________________  ○  ○
- __________________________  ○  ○
- __________________________  ○  ○
## Medical History

### Health Aids I Use (Check Circle):

<table>
<thead>
<tr>
<th>Item</th>
<th>Checkbox</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
<td></td>
<td>Hearing Aid</td>
</tr>
<tr>
<td>Eye Glasses</td>
<td></td>
<td>Cane/Walker</td>
</tr>
<tr>
<td>Ocular Lens Implants</td>
<td></td>
<td>Pacemaker</td>
</tr>
<tr>
<td>Wheelchair</td>
<td></td>
<td>Automatic Implanted Cardiac Defibrillator (AICD)</td>
</tr>
<tr>
<td>Prothesis</td>
<td></td>
<td>Dialysis Access</td>
</tr>
<tr>
<td>Other: Describe</td>
<td></td>
<td>Type: Date:</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>Other:</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>Other:</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>Other:</td>
</tr>
</tbody>
</table>

**Describe:** ____________________

**Dialysis Access**

**Type:** ________ Date: ________

**Other:** ____________________

**Other:** ____________________

**Other:** ____________________

**Other:** ____________________

**Other:** ____________________
<table>
<thead>
<tr>
<th>Blood Chemistry</th>
<th>What does it mean?</th>
<th>Goal ranges for CKD (non dialysis)</th>
<th>My Lab Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glomerular Filtration Rate GFR</td>
<td>Measures the ability of your kidneys to filter waste. Determines stage of kidney disease.</td>
<td>Stage 1: &gt;90&lt;br&gt;Stage 2: 60-89&lt;br&gt;Stage 3: 30-59&lt;br&gt;Stage 4: 15-29&lt;br&gt;Stage 5: &lt;15</td>
<td>Date</td>
</tr>
<tr>
<td>Creatinine Cr</td>
<td>Waste product from muscle turnover. Level increases as kidney function decreases.</td>
<td>1.3-15 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Blood Urea Nitrogen BUN</td>
<td>Waste product from protein. Level increases as kidney function decreases.</td>
<td>10-80 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Potassium K+</td>
<td>Helps regulate muscle function. Too much or too little can affect how your heart beats.</td>
<td>3.5-5.0 mEq/L</td>
<td></td>
</tr>
<tr>
<td>Calcium Ca</td>
<td>Helps keep your bones strong and healthy. Level may be affected by diet, medications and kidney function.</td>
<td>8.4-10.2 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Phosphorus PO4</td>
<td>Used in bone formation. Level may be affected by diet, medications and kidney function. As kidney function decreases, phosphorus may build up in your blood and weaken the bones or harm your heart.</td>
<td>Stages 3-5 (non-dialysis): 2.7-4.6 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Parathyroid Hormone PTH</td>
<td>Regulates blood calcium levels. As kidney function decreases, blood calcium levels may decrease. PTH may become elevated as it tries to raise your blood calcium level back to normal. Over time, calcium and phosphorous are both pulled from your bones causing them to become brittle.</td>
<td>Consult with physician for optimal level and treatment plan.</td>
<td></td>
</tr>
<tr>
<td>Albumin Alb</td>
<td>Measures nutrition and protein status. Ask your doctor or dietitian about how much protein you should eat.</td>
<td>Greater than 4.0 g/dL</td>
<td></td>
</tr>
<tr>
<td>Hemoglobin Hb</td>
<td>Hemoglobin is the portion of your red blood cell which carries oxygen throughout your body. Levels will be affected by protein, hormone production and iron stores. Low levels will make you tired and short of breath.</td>
<td>Consult with physician for optimal level and treatment plan.</td>
<td></td>
</tr>
<tr>
<td>Glucose Glu</td>
<td>Blood sugar. Keeping your blood sugar in control will help prevent further kidney damage.</td>
<td>Less than 200 mg/dL (non-fasting)</td>
<td></td>
</tr>
<tr>
<td>Hemoglobin Hb A1C</td>
<td>If you have diabetes, Hb A1C is a snapshot of your blood sugar control over approximately three months. Keeping your blood sugars in control is an important step in slowing down and preventing further kidney damage.</td>
<td>Individualized by Physician</td>
<td></td>
</tr>
<tr>
<td>Blood Pressure BP</td>
<td>Keeping your blood pressure in control may help to slow down further kidney damage.</td>
<td>Less than 130/80</td>
<td></td>
</tr>
</tbody>
</table>

Normal ranges for blood chemistries may vary based on laboratory companies. Consult with your physician for individual recommendations. All results should be interpreted by your physician or healthcare team before any changes are made in your diet or medications. ****Source: A Clinical Guide to Nutrition Care in Kidney Disease, Edited by Laura Byham-Gray, PhD, RD, CNSD and Karen Wiesen, MS, RD; Pocket Guide to Nutrition Assessment of the Patient with Chronic Kidney Disease, 4th edition, National Kidney Foundation, 2009; Kidney Disease: Improving Global Outcomes (KDIGO) CKD–MBD Work Group. KDIGO clinical practice guideline for the diagnosis, evaluation, prevention, and treatment of chronic kidney disease – mineral and bone disorder (CKD–MBD). Kidney International 2009; 76 (Suppl. 113): S1–S130.
Online Resources

Here are some websites you can use for additional information about kidney disease:

- **American Diabetes Association**, for information on diabetes and kidney disease - www.diabetes.org
- **American Heart Association**, for information on high-blood pressure and kidney disease - www.heart.org
- **American Society of Nephrology** - www.asn-online.org
- **American Society of Pediatric Nephrology** - www.aspneph.com/
- **Baxter Home Dialysis** - livenow.info
- **Centers for Disease Control and Prevention**, information on diabetes and kidney disease - www.cdc.gov/diabetes/projects/kidney
- **DaVita, Inc.** - www.davita.com Toll free: 1-888-MYKIDNEY (1-888-695-4363)
- **DaVita Rx**, a full-service pharmacy specializing in kidney care - www.DaVitaRx.com Toll-free: 1-888-328-4827
- **DaVita VillageHealth**, integrated care management for patients with kidney disease - www.villagehealth.com Toll-free: 1-800-767-0063
- **DialysisFinder** - www.dialysisfinder.com Toll-free: 1-800-889-6019
- **Kidney Trust**, a non-profit foundation which advocates for kidney patients and their families - kidneytrust.org/
- **National Kidney Foundation** - www.kidney.org
Online Resources

- National Suicide Prevention Lifeline, for suicidal crisis or emotional distress. www.suicidepreventionlifeline.org Toll-free: 1-800-273-TALK (1-800-273-8255)

- North American Quitline Consortium, - Free quit smoking support, including quit coaching, educational materials, and referrals to local resources. - map.naquitline.org/ Toll-free: 1-800-QUIT-NOW (1-800-784-8669)

- NxStage® Medical Inc. - www.nxstage.com/

- Organ Procurement and Transplantation Network - optn.transplant.hrsa.gov/

- United Network for Organ Sharing (UNOS) - www.unos.org