



أمانة للرعاية الصحية
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Nutrition in Chronic Kidney Disease



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This booklet has been written and developed by dietitians to give you accurate and practical advice for your diet when living with **chronic kidney disease (CKD)**. Your kidneys are the filtration system in your body, filtering waste, fluid and excess electrolytes from your blood, which is then excreted in the urine. Chronic kidney disease means there is permanent damage to your kidneys, and they are no longer able to efficiently filter the blood. This means you need to make changes to your diet to reduce the risk of buildup of these waste products in the blood.

CKD can be classified in stage 1-5, with 5 being the most severe. If your kidney disease is not well controlled, you may need hemodialysis, a treatment which filters the waste products from blood through a dialysis machine.

With CKD, there is not one specific diet to follow, but is often individualized depending on your current stage of kidney disease, current blood results and other comorbidities. This booklet aims to give you the information you need to make informed choices regarding your diet. You can receive further dietary advice from your dietitian as well as your nephrologist/physician.

NUTRITION IN NON-DIALYSIS PATIENTS

It is important to make healthy food choices when you have CKD.

Good nutrition helps:

- To maintain a healthy weight
- Avoid muscle-mass loss
- Provide energy to do your daily tasks
- Prevent infection
- Slow down the progression of your kidney disease

A well-balanced diet gives you the right amounts of protein, calories, vitamins, and minerals each day. Eating a healthy diet, staying physically active, and taking all your medicines as prescribed are all important parts to keeping you healthy and feeling well.

Depending on your stage of CKD, you may need to control the amount of:

- Protein
- Sodium
- Potassium
- Phosphorus

If your kidney disease gets worse, you may need to limit other nutrients as well as fluid in your diet. Your nephrologist/physician and your dietitian can give you specialized, individualized advice if this happens.

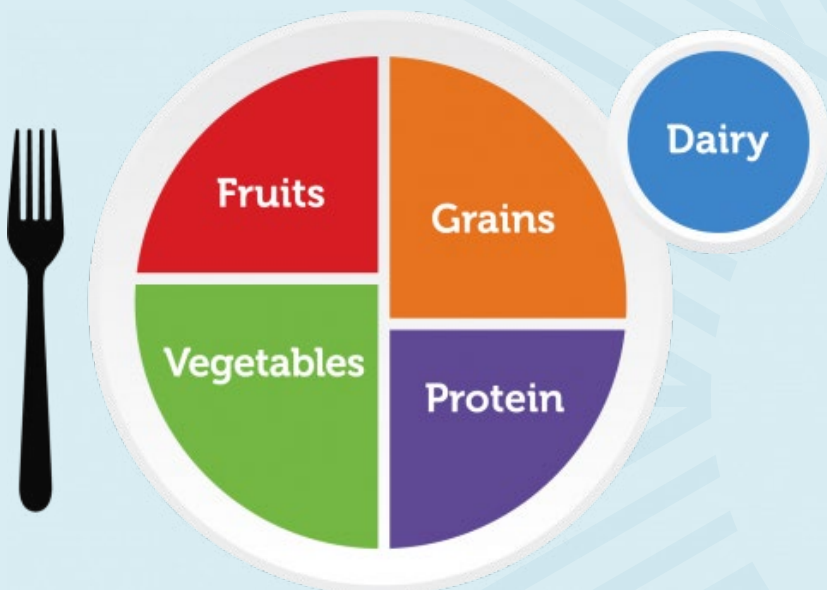
Most people get enough vitamins and minerals to stay healthy by eating a variety of foods each day, but those with CKD may need to limit these foods. If so, you may need to take special vitamins or minerals but only if a dietitian or physician tells you to. Some may be harmful to people with kidney disease.

You should check with your physician before taking any medications you can buy without a prescription. Some over-the-counter medications may be harmful to people with kidney disease. You should also avoid taking herbal supplements.

The below diagram represents a typical day of healthy eating with examples from each food group, suitable for a person with CKD.

My Plate for Healthy Eating with Chronic Kidney Disease

Low sodium • Low potassium • Low phosphorus



Fruits ■

1 serving = ½ cup / 1 fruit

Apple, strawberries, blueberries, cherries, cranberries, grapes, ½ grapefruit, lemon, lime, mandarin oranges, canned, peaches, pineapple (2 rings), plum, tangerine



Vegetables ■

1 serving = ½ cup cooked

Green beans, cabbage, corn, cucumber, lettuce, onions, green peas, zucchini, radishes



Grains

½ cup white rice or pasta, 1 cup puffed rice cereal, 1 small dinner roll, 1 English muffin, 1 slice of white or sourdough bread, 1 small flour tortilla, ½ cup grits or farina



Protein

1 serving = ~3 oz

Low salt turkey or low salt ham lunch meat, lean beef, chicken, fish & low salt tuna, turkey, tofu, egg substitute or 1 egg & egg white



Dairy

½ cup milk (fluid) or yogurt, 1 tbsp cream cheese, ½ cup ice cream (fluid), **limit these foods: phosphorus**



Non-dairy substitutes

½ cup liquid creamer (fluid), ½ cup whipped topping, non-dairy frozen dessert (fluid)



Fats

1 serving = 1 tsp to 1 tbsp

Oil, butter, mayo, dressing



Snack items

6 unsalted crackers, 2 shortbread cookies, ½ cup unsalted pretzels, 10 vanilla wafers, 2 graham crackers



Protein for non-dialysis patients

Protein is essential for the growth and repair of cells and helps to build and maintain muscle. It also helps in healing wounds and fighting against infection. Protein in the diet comes from animal sources, such as red meat, fish and eggs, and plant sources, such as beans and lentils.

With CKD your body may not be able to remove all the waste from the protein in your diet which can build up in your blood causing nausea, loss of appetite and weakness. It is therefore recommended if you are not on hemodialysis, you restrict the total amount of protein you eat. This can reduce the rate of decline in kidney function and delay the need for hemodialysis and even kidney transplantation.

The exact amount of protein you require depends on your body size, severity of kidney disease and current nutritional status. However, severe protein restriction should be avoided due to the risk of malnutrition. You still require some protein in your diet for your body to function.



NUTRITION IN HEMODIALYSIS PATIENTS

If your kidney disease progresses, you may require hemodialysis, a treatment to manually filter the waste from your blood through a machine. This will be discussed with you thoroughly by your nephrologist.

Protein for hemodialysis patients

People on hemodialysis require more protein in their diets to replace the protein that may be lost during the treatment. **As a general rule, you should aim for at least 1g protein per kg of body weight.** You should eat a high protein food at every meal. Your Dietitian can advise more specifically on your individual protein requirements.

Examples of protein you could include in your diet:

FOOD ITEM	EACH OF THESE PORTIONS PROVIDE 7G PROTEIN
Meat or Chicken (cooked weight)	30g (1oz), small chicken breast
Fish (cooked weight)	30g (1oz), 1 fishcake or 2 fish fingers
Hard Cheese	30g (1oz), matchbox size piece
Cottage Cheese	60g (2oz), 2 tablespoons
Egg	1
Milk (Dairy or Soya)	200ml (1 cup)
Yogurt (Dairy or Soya)	1 tub / 1 cup
Peas, Beans, or Lentils (cooked weight)	90g (3oz)
Dried or Raw Beans or Lentils	30g (1oz), 1 heaped tablespoon
Quorn (Equivalent to 1 Quorn Steak)	60g (2oz)
Soya Beans (Cooked)	60g (2oz), 2 tablespoons
Tofu (Cooked Weight)	90g (3oz), about 1/3 of a standard pack of firm tofu
Fried Tofu	30g (1oz)

Some of these foods such as milk, yogurt, peas and lentils contain high protein, however they may need to be limited due to the high level of potassium and phosphorus. See section on electrolytes for further information.

Nutrition for kidney transplant patients

After your kidney transplant, you may be able to eat foods that were limited before the transplant. A well-balanced diet is important to keep your new kidney healthy.

- **Fluid** – Ensure you drink plenty of fluid. You no longer need to limit fluid (unless otherwise specified by your Physician). Dehydration can be harmful to your new kidney.
- **Protein** - In the first 2 months after transplant, you need more protein to heal from surgery and fight infection.

If you have diabetes, it is important to follow a suitable diabetic diet post transplant. Your Dietitian can assist you with this.

Food safety

After your kidney transplant, you will need to take medicines called immunosuppressive or anti-rejection medicines. These medicines help lower the chances of your new kidney being rejected by your body. However taking these medicines increases your risk of becoming ill, from germs such as bacteria. Some bacterial infections can be picked up from food. You can help lower your chances of infection from food by:

- Handling foods safely, like washing your hands often, especially after touching raw chicken or eggs.
- Being careful when eating out. Ensure the restaurant has a high food safety review.
- Avoid raw and undercooked meats, seafood, and eggs. Avoid unpasteurized dairy products.

A well-balanced diet can help you stay healthy after transplant and can improve your long-term health.

Electrolytes

People with CKD should be mindful of particular electrolytes, including sodium, potassium and phosphorus. These nutrients are typically filtered by the kidneys and may build up in excess furthering kidney damage if not well controlled. Therefore, it is important for people with CKD to consume diets that are low in these electrolytes.

Sodium:

The amount of sodium you should consume per day is typically set depending on your stage of kidney disease. It is generally recommended to limit your intake to <2300 mg per day (approx. 1 teaspoon) however this may be limited further by your nephrologist/physician to 1000-1300 mg per day (less than half a teaspoon). See below for some swaps you can make to reduce your sodium intake.

LOW SODIUM	MEDIUM TO HIGH SODIUM
Grilled/baked chicken or turkey with skin removed	Smoked/cured meats such as hot dogs and deli meat
Fresh fish	Canned fish such as tuna or sardines
Cream Low sodium or reduced sodium cheese	Most cheeses
Salt-free chips, nuts, pretzels	Salty chips, nuts, pretzels, popcorn, crackers
Plain rice, noodles, pasta	Quick-cooking rice, noodles, pasta
Homemade low sodium soups	Canned or instant soups
Fresh or frozen vegetables	Canned vegetables
Spices, herbs and flavorings such as garlic powder, onion powder, vinegar, and chili powder	Condiments and seasonings such as soy sauce, fish sauce, bouillon cubes, ketchup, and Cajun seasonings, olives, pickles

Practical tips to reduce sodium in food:

- Cook food without adding salt.
- Avoid foods with high sodium content (as listed above).
- Do not serve salt and salty seasonings at the table.
- Carefully read labels of packaging and processed foods. Look not only for salt but also for other sodium containing compounds. Carefully check the labels and choose 'sodium-free' or 'low-sodium' food products.
- Avoid the use of salt substitutes as they contain high amounts of potassium. This can raise the potassium levels in the blood, which also needs to be monitored.
- High sodium vegetables needs to be boiled well and discard the excessive water which help to reduce the sodium content.
- Add spices and condiments such as garlic, onion, lemon juice, bay leaf, cinnamon, cloves, nutmeg, black pepper, or cumin to enhance the taste of low salt diet.
- Avoid Junk foods, carbonated drinks and choose foods that are low sodium while eating out.



Potassium:

Healthy adults need at least 3400 mg of potassium daily, but those with kidney disease should limit it to under 2000 mg. Since potassium is found in many fruits and vegetables, be careful with portion sizes to avoid excess, even with low-potassium foods.


LOW POTASSIUM	MEDIUM TO HIGH POTASSIUM
Apples, apricots, blackberries, blueberries, cherries, grapes, grapefruit, mandarin oranges, peaches, pears, pineapple, plums, raspberries, strawberries, tangerines, watermelon	Apricots, avocado, banana, dates, dried fruits, melons, kiwis, mangos, nectarines, oranges, papaya, pomegranates, prunes, raisins
Asparagus, beans, cabbage, cauliflower, celery, corn, cucumber, eggplant, kale, lettuce, onions, parsley, green peas, peppers, radish, rhubarb, watercress, yellow squash, zucchini	Artichoke, beans, butternut squash, beets, broccoli, brussels sprouts, carrots, lentils, legumes, white mushrooms, okra, parsnip, potatoes, pumpkin, seaweed, spinach, tomatoes
White bread and bread products	Bran and brown bread products
White rice or pasta	Brown pasta or rice
Wheat or corn based snacks	Potato crisps, nuts, seeds
Coffee, tea, apple juice	Milk, laban, orange juice

Practical tips to reduce potassium in vegetables:

- Peel and cut vegetables into small pieces.
- Wash vegetables with lukewarm water and put them in a large pot.
- Subsequently boil the vegetables with extra water. Discard the water – do not use in sauce.
- Cook the boiled vegetables as desired.

Special tips for leaching potassium from potatoes:

- Dicing, slicing or grating potatoes into smaller pieces is important. Maximizing the surface of the potatoes exposed to water by this method helps increase potassium loss from the potatoes.
- The temperature of the water used to either soak or boil the potatoes makes the difference.
- Using large amounts of water to soak or boil potatoes is helpful.



15 P
Phosphorus

Phosphorous:

Phosphorus is a mineral that typically helps build strong bones. However, patients with renal disease have difficulty removing excess phosphorous in the blood and as such need to limit their phosphorous intake.

LOW SODIUM	MEDIUM TO HIGH POTASSIUM
Un-enriched rice milk	Milk, yogurt, soy milk, creamers, enriched rice milk
Brie or swiss cheese	Cheese spreads, processed cheeses
Cream cheese	Hard cheeses, ricotta, cottage cheese,
Sorbet	Ice cream, frozen yogurt
Soups made with low-phosphorous foods such as broth or water-based soups	Soups made with high-phosphorous foods such as milk, dried peas, beans, lentils
White breads, crackers, cereals, rice, and pasta	Whole grain breads, crackers, cereals, rice, and pasta
White dinner rolls, breads, bagels, English muffins	Quick breads, biscuits, cornbread, muffins, pancakes, waffles
Green peas, green beans	Lentils, dried peas (such as black-eyed peas), dried beans (such as garbanzo, black, lima, kidney, navy, pinto)
Beef, lamb, poultry, seafood	Processed meats (such as hot dogs, deli meat), organ meats (such as liver, kidneys)
Popcorn, pretzels	Nuts, seeds
Jam, jelly, honey	Peanut butter, nut butters
Jelly sweets, hard candy, fruit snacks	Chocolate, chocolate drinks
Water, lemon-lime soda, ginger ale	Cola sodas



fl.oz. ml. pts.

fl.oz.	ml.	pts.
35	—	—
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—	—	—
30	900	—
—	—	—
—	800	1 ¹ / ₂
—	—	—
25	700	1 ¹ / ₄
—	—	—
20	600	1
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—	400	³ / ₄
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10	300	¹ / ₂
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5	200	—
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Fluids Restriction:

Research states that most people with kidney disease, who are in the early stages of the condition do not need to restrict their fluid intake and typically, fluid restriction is not implemented in people who are not receiving hemodialysis. There is also no evidence that increasing water intake can stop renal failure from progressing, even though it can help improve kidney function.

The amount of water that is advised for patients with CKD varies depending on their illness stage and the course of treatment. Your nephrologist/physician can advise you on the amount of fluid you can consume.

Limiting fluid intake during hemodialysis therapy may be recommended to reduce the risk of low blood pressure (hypotension), cramping, and can reduce the strain on the heart. If a person receives a kidney transplant it is usually necessary to increase their fluid intake, particularly when transitioning from a diet restricted in fluids.

Practical tips to stick to a fluid restriction:

- Your nephrologist/physician can help you find the right balance of fluids. Ensure you speak to them if you are sweating with heat or exercise, or experiencing illness with fever, vomiting or diarrhoea.
- Eat less salt – the more salt you eat the thirstier you will become.
- Do not carry a large bottle of water around with you as you may drink without thinking. Instead aim for small drinks throughout the day.
- Try sucking hard candies such as mints, when a craving hits to reduce thirst.
- Try swallowing medication with food rather than with a drink.

Remember, it is not just drinks which need to be considered when you are trying to reduce the amount of fluid you take in. Milk on cereal, jelly, yoghurts, gravy, soup and ice cream all have a high water content and need to be included.

Physical activity in CKD

Physical activity is important for everyone, especially when you have chronic kidney disease. Improving your activity levels can lead to reduced risk in the development of complications of diabetes, stroke and some cancers such as colon cancer. It is recommended both non-dialysis and hemodialysis patients accumulate 150 minutes of moderate intensity exercise a week. However it is important to understand that a small amount of physical activity is better than none.

If you are new to exercise, short bursts of activity throughout the day can help to increase a sedentary lifestyle, such as walking for 10 mins, or taking the stairs instead of the elevator. It is advised that you start a combination of both aerobic and muscle strengthening exercises, this can improve your overall bone strength.

The benefits of increasing your activity include:

- Improvement of your blood pressure
- Improvement of cardiovascular health
- Improvement in lipid profiles
- Improvement in muscle strength
- Improvement in mental well-being
- Can help to reduce hospitalisations

For those on hemodialysis, an increase in physical activity can improve dialysis efficiency. If you are unsure where to start, ensure you speak with your physician first, who may even refer you to a specialist.

Summary

It is important to remember your diet can have a direct effect on your chronic kidney disease. Whether you are a non-dialysis patient or receiving hemodialysis, it is important to know what you should and shouldn't eat, to remain as healthy as possible. Be aware of your sodium, potassium and phosphorus intake in your daily diet.

If you require further guidance and advice, speak with your dietitian or your nephrologist/physician.

