



# Eat Right. Feel Good.

A Nutrition Guide on Diet  
and Kidney Disease.

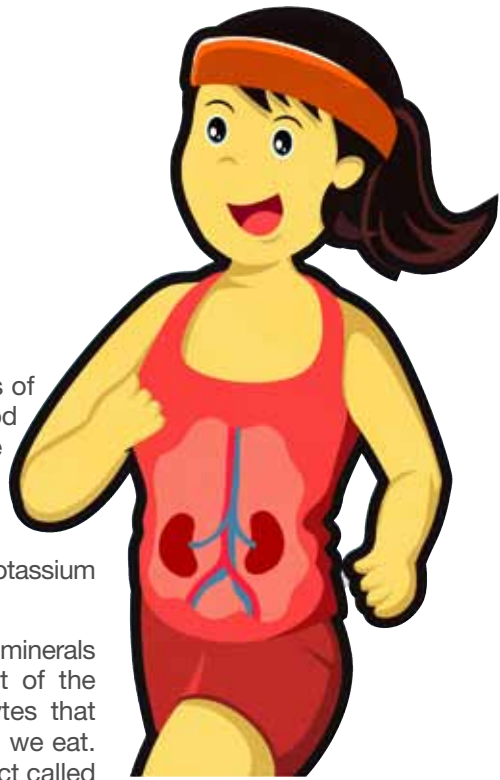


# Understanding Kidney Disease

## What Do The Kidneys Do?

Our kidneys perform the important tasks of filtering waste products out of the blood and forming urine to carry these waste products out of the body. As part of this process, the kidneys adjust the amount of water, minerals (such as calcium and phosphorus) and electrolytes (sodium, potassium and chloride) in the blood.

Maintaining the body's balance of water, minerals and electrolytes is very complex. Most of the waste products, minerals and electrolytes that the kidneys remove come from the food we eat. When protein is ingested, a waste product called urea is formed. Urea and other waste products are combined with water in the kidneys to form urine.



## What Is Kidney Disease?

Kidney disease occurs when the kidneys do not filter enough waste products from the blood. When this happens, waste products and electrolytes build up in the blood and act like poison.

Kidney disease (also called renal disease) can be either acute or chronic. Common causes of kidney disease are as follows:

### **Acute kidney disease**

- Massive blood loss
- Serious burn
- Ingestion of poison
- Major trauma such as a car accident

### **Chronic kidney disease**

- Diabetes
- High blood pressure
- Hereditary kidney disease
- Drug side effects
- Blockage by stones in the kidneys
- Certain cancers
- Prostate problems

People can lose more than half their normal kidney function before they start to notice the symptoms of kidney disease. Some of these symptoms are nausea, vomiting, tiredness and loss of appetite.

# why



## Why Is Diet Important In Kidney Disease?

The kidneys' work can be made easier by limiting the intake of foods that produce a lot of urea and other waste products. Likewise, maintaining water balance is easier if less water and certain electrolytes are taken in.

In patients with kidney disease, an unsuitable diet will cause severe complications and increase the need for treatment and medication. For example:

- Patients on dialysis require additional protein to make up for losses during the treatment. Inadequate protein intake can cause malnutrition, resulting in loss of muscle mass. Patients feel weaker over time and this impacts their daily activities and quality of life.
- On the other hand, if a patient with kidney impairment eats a diet higher in protein than recommended, it will increase the accumulation of urea and other waste products in the blood, hence increasing the frequency and duration of dialysis.
- Consuming too much water may cause oedema, a condition in which fluid accumulates in tissues.
- Overconsumption of foods high in potassium can raise blood level of potassium and cause hyperkalemia, a condition that may cause nausea and an irregular heart beat.

Therefore, every individual with kidney disease needs to follow a personalised diet prescription tailored to meet his / her condition.

# What Is A Good Diet For People With Chronic Kidney Disease?

With the right diet, you can prevent or delay health problems from chronic kidney disease. If you have chronic kidney disease, you should work closely with your doctor and dietitian to find the right diet for you. This diet will be yours and yours alone, and it may change if kidney function changes or treatment changes.

For patients with chronic kidney disease, the diet plan may be built on some or all of the following factors.



## Calorie Intake

People with kidney disease may not eat enough food because they may need to change the types of foods they eat. Or, the symptoms caused by the buildup of urea may result in a loss of appetite. But if the body does not get enough calories over time, it will break down muscle for energy and weight loss will occur. Margarine, oil, honey, syrups, jam, jellies and hard candies may need to be added to the diet to provide calories.

*If diabetes is present, a dietitian may increase the amount of healthy fats and recommend the appropriate amount of carbohydrates in the diet, so that the diet provides enough calories and still follows the diabetic dietary guidelines.*

# Protein Intake



Foods that contain protein produce urea and other waste products when they are digested and absorbed. These waste products are the biggest problem for the kidneys. Excessive intake of protein contributes to the buildup of such waste products. While some protein is allowed in the diet, it should be of high-quality such as that found in eggs, fish and chicken. High-quality protein provides the essential amino acids that are needed to build, maintain and repair body tissues.

# Potassium Intake



Potassium is found in fruits, vegetables, milk, nuts, meat, chocolate and many other food items. Because potassium affects the ability of muscles to contract, too much or too little potassium can harm the heart, which is a type of muscle. The amount of potassium found in many fruits and vegetables (e.g. potatoes) is usually not a problem in the early stages of kidney disease. However, if the condition worsens, potassium intake may have to be limited.

# Phosphorous Intake



Phosphorus is a mineral found in cheese, milk, meat and many other foods. In kidney disease, the body cannot keep a balance between calcium (needed for healthy bones) and phosphorus. The result is that there is too little calcium and too much phosphorus in the blood. Doctors may prescribe a phosphate binder, a medicine that helps control the phosphorus level in the blood.

## Sodium Intake

Kidney disease is often associated with high blood pressure. Sodium, one cause of high blood pressure, is found in many foods – especially salty ones – and is a major component of table salt. Too much sodium makes people thirsty and drinking too much fluid can cause fluid retention and increase blood pressure. High blood pressure can harm the heart or even cause a stroke. Select fresh foods as much as possible. When cooking, avoid adding salt and sauces. Foods can be seasoned with spices and herbs instead of salt. It is also good to read food labels to select foods that are lower in sodium.

## Calcium Intake

People with kidney disease need to be sure they are getting enough calcium to prevent bone disease without drinking too much milk or eating too many dairy products. Milk and other dairy products are rich in calcium, but they also contain a lot of potassium and phosphorus. Doctors may prescribe a calcium supplement to ensure getting enough calcium.

## Iron Intake

Foods that provide the most iron, such as red meats, are also high in protein. As protein intake is controlled, an iron supplement is often prescribed.

## Vitamin B<sub>6</sub> and Folic Acid Intake

Doctors often prescribe a multivitamin supplement with the right balance of vitamins and sometimes prescribe a special vitamin D treatment. People with kidney disease must be careful with vitamin supplements because some contain too much vitamin C and vitamin A. If a vitamin supplement is not prescribed, people with kidney disease should ask their doctor or dietitian for recommendation before taking one.

# eat right

## Nutrition And Treatment

Nutrition is an important part of your dialysis treatment plan. Making an effort to eat enough of the right kinds of food is essential. Otherwise, you can easily become malnourished, lose weight and feel overly tired.

Eating a diet that is suitable for chronic kidney disease presents many challenges. For example, when trying to achieve just the right amount of protein each day, the amount of milk consumed may be far too low and the calcium goal may not be met. On the other hand, if adequate milk is a regular part of the diet, the calcium goal may be met but phosphorus and potassium intakes may peak.

Trying to mix and match foods to meet nutrient intake is rather complicated and hard to achieve. So, many people with chronic kidney disease become malnourished over time. Nutrition supplements designed for chronic kidney patients with the right amount of calcium, phosphorus and potassium may be very helpful as they conveniently deliver all the right nutrients in the appropriate amounts each day.

Working hard to maintain yourself nutritionally makes you an active member of your medical team. **You are in control.**

*Nepro<sup>®</sup> is a specialized nutritional supplement for people on dialysis. It is energy dense to provide 475 kcal per can. Include Nepro<sup>®</sup> to support your calorie and nutrient intake especially while on dialysis. Speak to your doctor or dietitian for more information.*



# Easy Recipes To Try With Nepro<sup>®</sup>

## Hearty Rice Porridge

### Ingredients

Nepro <sup>®</sup>	1 can (237 ml)
Cooked white rice	1 cup
Water	2 cups
Sugar	2 tablespoons
Apple (peeled, cored, sliced)	2 whole
Sunflower seeds	1 tablespoon

### Method

1. Mix together rice, water and sugar in a saucepan. Cook until soft.
2. Add sliced apples and cook until tender. Remove from fire and add Nepro<sup>®</sup>.
3. Stir well and serve hot. Garnish with sunflower seeds.

Servings: 4



### Approximate Nutritional Value Per Serving

Calories	241	kcal
Protein	6	g
Carbohydrate	41	g
Fat	6	g
Sodium	52	mg
Potassium	142	mg
Calcium	90	mg
Phosphorus	74	mg

## Mushroom Soup

### Ingredients

Nepro <sup>®</sup>	1 can (237 ml)
Homemade chicken stock	1 1/2 cups
Fresh mushrooms	300 g
Butter	1 tablespoon
Salt and black pepper	To taste

### Method

1. Bring stock to boil in a pot. Add mushrooms and butter. Cook for about 10 minutes then remove a few mushrooms for garnish.
2. Use a hand-held blender and blend all ingredients in the pot until smooth. Add Nepro<sup>®</sup> and stir well.
3. Portion into bowls, garnish with mushrooms and serve immediately.

Servings: 4



### Approximate Nutritional Value Per Serving

Calories	193	kcal
Protein	9	g
Carbohydrate	19	g
Fat	10	g
Sodium	205	mg
Potassium	396	mg
Calcium	86	mg
Phosphorus	130	mg



# Konnyaku Jelly

## Ingredients

Nepro®	2 cans (474 ml)
Konnyaku jelly powder	10 g
Water	1.9 cups (475 ml)
Sugar	250 g
Peaches	3 halves (180 g)

(canned, drained, chopped small)

Note: You can replace with other low potassium fruits like blueberries, strawberries, pears and mandarin oranges.

## Method

1. Combine konnyaku powder with sugar in a bowl. Combine water and Nepro® in a saucepan and bring to a gentle boil.
2. Lower heat, add konnyaku and sugar mixture slowly into the saucepan containing water and Nepro®, and stir well all the time.
3. Bring to boil, stirring to dissolve konnyaku jelly mixture. Continue to warm for 8 more minutes. Remove from fire. Transfer to a pouring jug.
4. Prepare jelly moulds. Place equal portions of fruit into the moulds. Pour over the prepared konnyaku jelly mixture. Set aside to cool and set for about 30 minutes. Chill in the refrigerator.
5. Remove jellies from moulds and serve cold.

**Servings:** Makes about 36 medium jelly pieces



## Approximate Nutritional Value Per Serving

Energy	55 kcal
Protein	1 g
Carbohydrate	10 g
Fat	1 g
Sodium	12 mg
Potassium	20 mg
Calcium	19 mg
Phosphorus	10 mg

# Strawberry Smoothie

## Ingredients

Nepro® (chilled)	1 can (237 ml)
Frozen strawberries	1/2 cup
Sugar substitute (e.g. Equal®)	2 tablespoons
Water	4 tablespoons

## Method

1. Combine the ingredients in the jar of a blender.
2. Blend on 'high' until smooth.
3. Serve immediately.

**Servings:** 2



## Approximate Nutritional Value Per Serving

Calories	274 kcal
Protein	9 g
Carbohydrate	35 g
Fat	12 g
Sodium	101 mg
Potassium	183 mg
Calcium	169 mg
Phosphorus	92 mg



# Personalised Health Chart

Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Key Measurements		Date of Examination		/ /	/ /
		Unit	Normal Range		
Weight		kg			
Blood Pressure (BP)		mmHg	120/80		
Pre-Meal Glucose Level	Diabetic	mmol/L	5.0~7.2		
	Non-diabetic	mmol/L	<6.1		
Haemoglobin	Male	g/dL	14~18		
	Female	g/dL	12~16		
Haemoglobin A1c (For diabetics only)		%	4~6		
Total Cholesterol		mmol/L	3.4~6.2		
HDL-Cholesterol		mmol/L	≥0.9		
LDL-Cholesterol		mmol/L	≥2.6		
Triglycerides		mmol/L	0.3~1.9		
Albumin		g/L	37~51		
Blood Urea		mmol/L	2.8~7.7		
Creatinine		μmol/L	40~85		
Sodium		mmol/L	135~145		
Potassium		mmol/L	3.3~4.9		
Chloride		mmol/L	96~108		
Bicarbonate		mmol/L	19~31		
Glucose		mmol/L	3.9~11.0		
Calcium		mmol/L	2.1~2.6		
Phosphate		mmol/L	0.8~1.4		



# NEPRO®

## No.1 Recommended Specialised Nutritional Supplement for People on Dialysis\*



- Energy dense and provides 475 kcal per can
- A source of high-quality protein to help maintain muscle and other body tissues
- Appropriate calcium and phosphorous balance to maintain bone health
- Potassium, sodium and phosphorous modified to meet the needs of patients on dialysis
- Lower in carbohydrates than Ensure®\*\* and appropriate for people with diabetes on dialysis
- Contains monounsaturated fatty acids (MUFA)
- Contains fructooligosaccharides (FOS) - a prebiotic that supports growth of beneficial bacterial in the gut and helps maintain a healthy digestive tract
- Can be used as a supplement or a sole source of nutrition

\* Source: IMS Pharmaceutical Audit 2Q 09 of Singapore hospitals, pharmacy & clinic channels

\*\* Ensure® is a complete and balanced nutritional supplement from Abbott Nutrition

### Are There Other Choices For People With Early Kidney Disease?

#### SUPLENA®: For Predialysis Patients.

Specialised liquid nutrition with less protein than Nepro® to meet the unique nutritional needs of predialysis patients or elderly with diminished renal function.



NEP030710

Abbott Nutrition  
**Careline** 

**6278-6220**  
[www.abbott.com.sg/family](http://www.abbott.com.sg/family)

Feel free to contact our nutrition advisors for enquiry or advice.