

## Nutrition after a kidney transplant

What you eat is very important in maintaining a healthy lifestyle following a kidney transplant. Your Dietitian-Nutritionist is available to discuss your new healthy eating plan with you. Just ask your Doctor, Nurse or Nutrition Assistant to refer you.

This nutrition information sheet outlines:

- 1) Nutritional concerns immediately following a kidney transplant (first 6 weeks)
- 2) Long-term nutritional challenges (approximately after 6 weeks)

### 1) Nutritional concerns in the short term

In the first few weeks following your transplant you may need to continue some of your previous dietary restrictions. Your appetite and taste however should improve.

#### Medications

You may sometimes experience some or none of the following potential side-effects from the anti-rejection medications, such as diarrhoea, constipation, nausea, vomiting, high sugar (glucose) levels or high potassium levels (e.g cyclosporin). . These side-effects may affect your food intake. Possible side-effects to the medications are listed under the medications. Note: You may experience some or none of these side-effects.

##### *Mycophenolate mofetil* (Cellcept)

- Can cause diarrhoea, constipation, nausea & vomiting
- Small frequent snacks may be better tolerated.

##### *Tacrolimus* (Prograf, FK-506)

- May cause increased blood sugar (glucose) levels
- Nausea & diarrhoea can also occur

##### *Cyclosporin* (Neoral/S&immun)

- May cause potassium (K+) retention & increase blood K+ levels. If so, avoid eating large amounts of foods high in K+ eg. fruit, dried fruit, fruit juice, vegetable juices, cocoa, chocolate.
- Cyclosporin can also contribute to increased blood fat levels eg. cholesterol & triglycerides, & increased blood pressure. These will be discussed in the following sections.

##### *Azathioprine* (Imuran/Thioprine)

- In some people this may cause nausea & vomiting. Small frequent snacks may be better tolerated.

It is recommended that this medication be taken with food

## **Snack ideas to help with nausea**

Nausea (feeling sick), is a common side effect of some anti-rejection medications. Nausea & vomiting can prevent you from eating properly. If these continue, talk with your doctor or nurse about anti-nausea medication.

Some ideas that may help with nausea:

- Avoid missing meals. An empty stomach can make nausea worse. Eat small amounts, often & eat slowly.
- Try 6 - 8 smaller meals each day instead of three larger ones.
- Try 'cold' foods, as these have milder tastes & smell. For example: sandwiches, salads, puddings such as creamed rice & blancmange, yoghurts, tinned fruit or jelly.
- Snack on dry biscuits, toast & crackers.
- Avoid spicy or fatty foods.
- Eat when you feel well.

## **Protein**

During the first 6 weeks after your transplant, your protein intake is important to help promote wound healing and prevent muscle loss associated with high dose immunosuppressants. If your kidney is functioning sub-optimally you may need to restrict protein and should discuss this with your dietitian.

## **Blood glucose levels**

You may experience high glucose (sugar) levels as a consequence of the immunosuppressant therapy. Glucose is produced from digestion of carbohydrate foods.

To help control blood glucose levels:

1. Have regularly spaced meals, do not skip meals
2. Eat carbohydrate foods that are high in fibre and preferably low glycaemic index (G.I)
3. Avoid eating large quantities of carbohydrate rich foods such as soft drink, juice biscuits, cakes and lollies

In the first few weeks after your kidney transplant the level of minerals in your blood may be different. Your doctor will know this by your blood tests. You may need extra magnesium, & more or less of potassium & phosphate.

**Magnesium** is found in green leafy vegetables, nuts & seeds & whole grains. Good sources of magnesium include:

- Green vegetables like spinach, broccoli, green Chinese vegetables, leeks, zucchini, peas, cabbage, asparagus
- Wholemeal or wholegrain breads/cereals; wheat/oat bran
- Starch beans & legumes; nuts & seeds; soymilk
- Seafood & fish (especially fresh water).
- Vegemite & yeast extracts

**Phosphate** is found high in protein rich foods such as meats, dairy, nuts & seeds. Good sources of phosphate include:

- Cheese, yoghurt, milk, soymilk, custard, ice-cream
- Wholemeal & wholegrain breads/cereals
- Wheat & oat bran; wholemeal pasta & flour
- Starchy beans & legumes
- Nuts & seeds
- Lean meats, chicken, eggs & fish

**Meal/snack ideas high in Magnesium & Phosphate**

- Muesli (with nuts, seeds, wheat germ) with milk or yoghurt
- Wholegrain toast with peanut paste
- Baked beans on wholemeal toast
- Cottage pie – lean mince with diced vegetables & tomato paste, topped with potato mashed with milk & cheese
- Tinned salmon on rice cakes/crackers with cheese
- Ham & cheese sandwich on wholegrain bread
- Glass of Milo made on milk
- Handful of raw or roasted nuts/seeds

**Potassium** is found in fruit & vegetables & dairy foods. Good sources of potassium include:

- Dried fruits, fruit cake, fruit bars, fruit loaf
- Fruit or vegetable juices or nectars
- Potato crisps, potato chips
- Tomato based pastes, sauces & purees
- Chocolate, baked beans

**Fluids**

Your fluid requirements after a kidney transplant are increased to assist the kidney in filtering wastes and clearing out toxins. Your transplant nurse will let you know how much you should drink each day. No more fluid restrictions!



## Safe foods and food hygiene

The drugs used to prevent rejection also suppress your immune system. You are more at risk of picking up a food-borne infection in the first 4 weeks after your transplant and may still be at risk for a time after. Key ways to decrease this risk are cooking foods well, using good food hygiene and avoiding high-risk foods.

### Avoid high risk foods such as:

- Raw & undercooked seafood & meats
- Cold cooked chicken (bought whole, portions, sliced or diced)
- Cold deli meats (cooked or uncooked, packaged or unpackaged)
- Foods containing raw eggs
- Raw and smoked 'ready to eat' seafood & 'ready-to-eat' peeled prawns
- Pre-prepared or pre-packaged fruit or vegetable salads
- Pate, liverwurst & meat spreads
- Soft & semi-soft cheeses
- Soft-serve ice-creams
- Unpasteurised dairy products such as cheeses & yoghurts made from raw milk

### Safe food handling

- Always wash hands well with soap & water & dry thoroughly before eating & before & after handling foods.
- Wash all kitchen utensils & food preparation surfaces with hot water & soap. Dry thoroughly, especially after contact with raw poultry, meat, & seafood
- Remove outside leaves of leafy vegetables & rinse leaves individually
- Do not eat foods from damaged or faulty containers

### Food storage

Separate raw & cooked foods while purchasing, storing & preparing foods

- Store raw meats below other foods in the refrigerator
- Refrigerate or freeze perishable foods as soon as possible
- Cover stored foods
- Do not wait for cooked foods to cool - refrigerate/freeze after the steam has gone
- Defrost foods in the refrigerator or microwave – not at room temperature.
- Do not refreeze uncooked foods that have already been defrosted
- Leftover foods should be consumed within 48 hours unless frozen
- Store eggs in the refrigerator

### Cooking & reheating foods

- Eat cold foods cold & hot foods hot.
- Reheat food until steaming hot throughout (above 60 degrees Celsius)

### Eating out

- Ask for food to be freshly prepared
- Don't purchase foods when foods or ingredients have been sitting for an unknown time

***If in doubt, throw it out!***

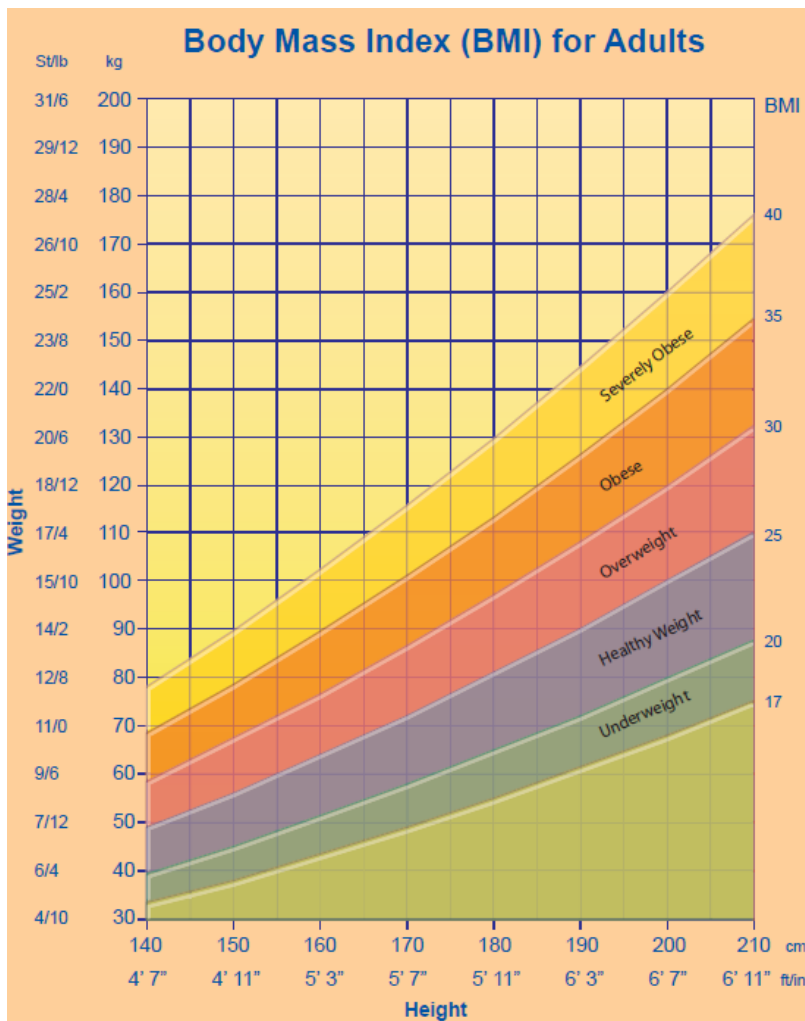
## In the long term

### Healthy lifestyle

It is very important that you have a healthy lifestyle to help ensure your kidney function is stable and to improve control or reduce your risk of developing diabetes, obesity & heart disease. It is very important that you enjoy a nutritious diet & regular exercise.

**If you are overweight/ obese, losing 5-10% of your body weight will substantially reduce your risk of illness and improve your management of existing conditions.**

This healthy weight-for-height chart provides a guide to help you establish what weight range is acceptable for you. Find your weight down the side and your height along the bottom. If your weight is above the healthy weight range, then you may well be overweight. Your dietitian can help you determine a reasonable goal weight, taking your personal and family history into account. **Your ideal weight range is:** \_\_\_\_\_



## **Getting Started**

Shaping up to improve your health and well-being should not be about going on a 'diet' but making a commitment to:

- Making positive and permanent changes to your lifestyle and way of eating
- Being more active
- Feeling good about yourself and trying to enjoy life

## **Eat a balanced diet**

Enjoy a wide variety of foods from each of the 5 food groups: bread and cereals, fruit, vegetables, dairy and meat or meat alternatives. Healthy eating is about choosing foods that will give you all the nutrients you need for good health while limiting the kinds of foods that will increase your blood cholesterol, weight & risk of chronic disease. See healthy eating plan for adults on page 9.

## **Protein**

You will not need to eat as much protein as initially after your transplant. The amount of protein you require is similar to that recommended for the general population. If you experience chronic rejection, a dietary protein restriction may be helpful. Your dietitian can advise you on how much you will require.

## **Carbohydrates**

Carbohydrate is found in foods such as breads and cereals, rice, pasta, fruits and fruit juice, starchy vegetables such as potato, milk, yoghurt, soft drink, cordial, cakes and biscuits.

These foods are converted to glucose (sugar) which enters the bloodstream. If you have diabetes it is especially important to try and maintain good blood glucose levels.

To assist this try to have regular meals which include small amounts of carbohydrate, don't skip meals and avoid eating lots of concentrated sources of carbohydrate such as soft drink, cordial, cakes or biscuits. At meal times choose nutritious carbohydrates such as wholegrain breads and cereals, fruit and low fat milk and yoghurts.

Low glycaemic index (G.I) carbohydrates are also useful to help stabilise blood glucose levels and can assist in weight control, these include wholegrain bread, sweet potato and oats.

## **Reducing salt**

Reducing the salt in your diet can help in reducing high blood pressure and maintaining a good fluid balance. There is usually enough salt in natural foods to meet our daily needs.

Avoid adding salt to your food & eating foods that are high in salt.  
Choose reduced salt products.

## Calcium

Bone mineral density loss can be a significant problem for some post transplantation. It is very important to include calcium rich foods in your diet, to help keep bones strong. Dairy products are the richest source of calcium; low fat varieties have just as much calcium as full fat products. Other sources include fortified soy products, fish with bones (for e.g. salmon or sardines), vegetables (for e.g. broccoli) and almonds.

## Weight gain

Weight gain can be an issue for some people post transplant, due to an increase in appetite caused by medications such as prednisone and an improved sense of wellbeing. To avoid gaining too much weight after transplant, it's important that you limit foods high in **sugar** and **fats**. These include:

- Soft drinks, cordials, fruit juice, sugar
- Sweets, chocolate, biscuits, cakes, pastries
- Sugar, honey, jam
- Butter, margarine, oils
- Pies, Pastries, deep fried foods, fatty meats, such as salami, sausage
- Full cream dairy products such as milk, cheese

***Try low calorie or low fat options instead!***

## Blood cholesterol & Triglycerides

Cholesterol is a type of fat found in everyone's blood. Your body makes the amount of cholesterol you need. Cholesterol can also be obtained from food. Immunosuppressants can also contribute to high cholesterol levels. If you have high levels of cholesterol in your blood this can lead to heart disease.

<b>Good fats (Polyunsaturated &amp; Monounsaturated Fats)</b>	<b>Bad fats (Saturated Fats – increase blood cholesterol and triglycerides)</b>
<ul style="list-style-type: none"> <li>▪ Most vegetable oils eg. safflower oil, sunflower oil, olive oil, canola oil, etc</li> <li>▪ Skim/ trim milk</li> <li>▪ avocados, olives</li> <li>▪ nuts: cashews, macadamia</li> </ul>	<ul style="list-style-type: none"> <li>▪ butter, ghee, dripping, lard, copha</li> <li>▪ fat on meats &amp; chicken</li> <li>▪ solid vegetable cooking fat</li> <li>▪ full cream milk, cream</li> <li>▪ palm and coconut oil</li> </ul>

## Healthy Eating Hints

Cooking methods	<ul style="list-style-type: none"> <li>• Roasting – Place meat on a rack in the roasting pan so the fat drips away during cooking.</li> <li>• Brown meats in non-stick pans or use cooking sprays.</li> <li>• Braise or Stew: To get rid of the fat that remains in the cooking liquid, refrigerate overnight &amp; remove the hardened fat.</li> <li>• Steam or microwave vegetables instead of sautéing.</li> </ul>
Fat	<ul style="list-style-type: none"> <li>• brush on oil, don't pour</li> <li>• use less than the recipe says</li> <li>• Remove chicken skin &amp; fat from meat</li> </ul>
Sugar	<ul style="list-style-type: none"> <li>• use half the recipe amount</li> <li>• try artificial sweeteners</li> </ul>
Reduce or omit ingredients	<ul style="list-style-type: none"> <li>• less meat (only 90g per person)</li> <li>• less cheese</li> </ul>
Substitute lower energy alternatives	<ul style="list-style-type: none"> <li>• natural yogurt for cream</li> <li>• evaporated skim milk plus coconut essence for coconut milk or cream</li> <li>• Vegetables for meat</li> <li>• aim for 1/2 of your plate to be vegetables</li> </ul>

## Alcohol

If you drink alcohol, limit your intake. Safe limits for Healthy Australian Adults are up to 1 standard drink for women and up to 2 standard drinks for men per day, with 2 alcohol free days per week. Be aware alcohol contributes a lot of extra calories and can contribute to weight gain. If you have had recent surgery or have been diagnosed with a new medical condition check your alcohol limits with your Doctor.



## Healthy Eating Plan for Adults

The following eating plan provides an idea of the proportions of food which should come from the different food groups and is a guide only. How much you need to eat depends on your body size, gender, activity level and whether you need to lose weight or not.

Food group & recommended serves/ day	Serve sizes	Nutrients provided
<b>Bread, Cereals, Rice, Pasta, Noodles</b>  <b>6-8 serves/ day</b>	1 serve = - 1 slice of bread - ½ medium bread roll - ½ cup cooked rice or pasta - ½ cup porridge - 2/3 cup (20 g) cereal flakes - ¼ cup untoasted muesli	These foods are good sources of energy, carbohydrate, protein, fibre, B group vitamins, folate & iron. Wholemeal or wholegrain varieties have more fibre, vitamins & minerals.
<b>Vegetables</b>  <b>5 serves/ day</b>	1 serve = - ½ cup (75 g) cooked vegetables - ½ cup cooked dried beans, peas or lentils - 1 cup salad - 1 small potato	These foods are good sources of vitamins, minerals, dietary fibre & carbohydrate. In particular, Vitamin A, C & folate. The dried beans, peas & lentils are an excellent source of protein & iron.
<b>Fruit</b>  <b>2-3 serves/ day</b>	1 serve = - 1 medium piece (150 g) of fruit (apple, banana, orange, pear) - 2 small pieces (150 g) of fruit (apricot, kiwifruit, plums) - 1 cup (150 g) diced pieces - 1½ tablespoons sultanas - 125 mL fruit juice	These are a good source of Vitamin C & folate, carbohydrate & fibre, especially in the edible skins. Juices have a much lower fibre content & together with the dried fruit can contribute to tooth decay if eaten in large quantities.
<b>Milk, yoghurt, cheese</b>  <b>2-3 serves/ day</b>	1 serve = - 1 cup (250 mL) milk - ½ cup evaporated milk - 2 slices (40 g) cheese - 1 carton (200 g) yoghurt - 1 cup (250 mL) custard	Choosing the <b>low fat</b> varieties will provide less energy. These are good sources of calcium, protein, riboflavin & vitamin B12. Full fat varieties contain saturated fat, which is not good.
<b>Meat, fish, poultry, eggs, nuts, legumes</b>  <b>1- 2 serves/ day</b>	1 serve = - 65-100g cooked lean meat, chicken (eg - ½ c lean mince, 2 small chops, 2 sl. roast meat) - ½ cup cooked dried beans, lentils & peas - 80-120 g cooked fish fillet - 2 small eggs - cup peanuts, almonds - ¼ cup sunflower /sesame seeds	These are good sources of protein, iron, niacin & vitamin B12. Red meats are a particularly good source of iron & zinc. Trimming all meats or visible fat will reduce the energy content.

**Take-away foods**

<b>Style</b>	<b>Preferred Choice</b>	<b>Not So Good</b>
<b>Asian</b>	<ul style="list-style-type: none"> <li>• vegetable based dishes (chow mien/chop suey) with seafood or chicken</li> <li>• stir-fry eg. Mongolian lamb</li> <li>• steamed rice</li> <li>• clear Asian noodle soup</li> <li>• sushi</li> </ul>	<ul style="list-style-type: none"> <li>▪ fried or battered items</li> <li>• crispy duck</li> <li>• fried noodles</li> <li>• fried rice</li> <li>• Thai curries made with coconut milk</li> <li>• coconut rice</li> </ul>
<b>Indian</b>	<ul style="list-style-type: none"> <li>• dry curries (vindaloo or madras)</li> <li>• tandoori lamb or chicken</li> <li>• plain steamed rice</li> <li>• roti bread</li> <li>• vegetable/lentil dahl</li> </ul>	<ul style="list-style-type: none"> <li>• cream based curries</li> <li>• deep fried bahji</li> <li>• satay sauce</li> <li>• pappadums</li> </ul>
<b>Burgers &amp; Rolls</b>	<ul style="list-style-type: none"> <li>▪ small grilled steak or chicken</li> <li>▪ burger with salad</li> <li>▪ bagels</li> <li>▪ meat kebabs with lots of salad</li> <li>▪ ham/chicken/tuna &amp; salad</li> </ul>	<ul style="list-style-type: none"> <li>▪ burger with the works, such as cheese, egg, bacon etc</li> <li>• falafel kebabs</li> <li>• cheese &amp; salami/luncheon</li> <li>▪ meat roll with gravy &amp; margarine</li> </ul>
<b>Pizza / Italian</b>	<ul style="list-style-type: none"> <li>• thin &amp; crispy base</li> <li>• chicken, vegetables, &amp; seafood topping. Served with salad</li> <li>• pasta with tomato based sauce (e.g. napolitano, bolognese)</li> <li>• minestrone</li> </ul>	<ul style="list-style-type: none"> <li>▪ thick base, cheese crust</li> <li>• meat, salami, bacon, ham, anchovies, olive toppings</li> <li>• lasagne (meat &amp; vegetarian)</li> <li>• risotto/ pasta in cream based sauces(e.g. carbonara)</li> </ul>
<b>Chicken</b>	<ul style="list-style-type: none"> <li>• BBQ or rotisserie chicken without the skin</li> <li>• salad, corn cobs or vegetables</li> </ul>	<ul style="list-style-type: none"> <li>• fried chicken, chicken with the skin on</li> <li>• served with chips</li> </ul>
<b>Fish</b>	<ul style="list-style-type: none"> <li>▪ grilled fish</li> <li>• served with salad or vegies</li> </ul>	<ul style="list-style-type: none"> <li>▪ fried battered or crumbed fish</li> <li>• chips</li> </ul>
<b>Salads</b>	<ul style="list-style-type: none"> <li>▪ salad with oil- free dressing</li> <li>• served with lean meat</li> <li>• baked potato with baked beans</li> </ul>	<ul style="list-style-type: none"> <li>▪ salad with creamy dressing e.g. caesar</li> <li>• baked potato with sour cream or butter or meat.</li> </ul>
<b>Bakery</b>	<ul style="list-style-type: none"> <li>▪ all bread eg pita, Turkish</li> <li>• fruit/ raisin bread or buns</li> <li>• crumpets or English muffins</li> </ul>	<ul style="list-style-type: none"> <li>▪ garlic/ cheese bread</li> <li>• sausage rolls, pies, pizza</li> <li>• donuts/slices, muffins &amp; croissants</li> </ul>
<b>Sweets</b>	<ul style="list-style-type: none"> <li>▪ low fat yoghurt, fruit &amp; fruit salad</li> <li>• gelati, low fat ice cream, vitari in a cup</li> </ul>	<ul style="list-style-type: none"> <li>• ice cream</li> <li>• ice cream in chip dipped or sugar cone</li> </ul>
<b>Drinks</b>	<ul style="list-style-type: none"> <li>▪ water, diet soft drink</li> <li>• skim milk milkshake without cream or ice cream</li> <li>• skinny cappuccino</li> </ul>	<ul style="list-style-type: none"> <li>▪ soft drink, large fruit juice</li> <li>• milkshake or thickshake with cream &amp; icecream</li> <li>• cappuccino</li> </ul>

**For good health, you also need to include physical activity in your day. A good guide is the National Physical Activity Guidelines.**

1. Think of movement as an opportunity, not an inconvenience
2. Be active every day in as many ways as you can
3. Put together at least 30 minutes of moderate- intensity physical activity on most, preferably all, days
4. If you can, also enjoy some regular, vigorous exercise for extra health & fitness

### **How physically active do I need to be?**

- To reduce the risk of diabetes, cardiovascular disease & some cancers, research suggests:
  - At least 30 minutes
  - Moderate intensity
  - Most, & preferably all days of the week

### **Examples of incidental activity**

#### *At Work*

- Walking up stairs instead of taking the lift or escalators
- Cycle or walk to work instead of driving

- Get off the train or bus a couple of stops early or park further away & walk
- Organise a weekly exercise session at work & encourage everyone to be involved

#### *At Home*

- Do some gardening or mow the lawn
- Do the housework instead of hiring help
- Go for a short walk before breakfast, after dinner, or both!
- Be active while watching television (eg. exercise bike or treadmill)

#### *Leisure time*

- Walk at golf instead of using a buggy
- Walk along the beach
- Throw a football at the park