

Patient information

Peritoneal Dialysis Diet

Therapies – Department of Nutrition and Dietetics

Name:

Date:

Dietitian:

Introduction

What is kidney failure?

Kidney failure is a condition in which your kidneys cannot perform their normal functions. This causes a build-up of fluid and waste products in the body and can lead to uncontrolled blood pressure and anaemia. Peritoneal dialysis is one of the treatment options for people with kidney failure.

What is peritoneal dialysis?

Peritoneal dialysis involves having dialysis fluid drained in to your abdomen. The thin layer of skin which surrounds your organs (known as the peritoneum) acts like a filter and allows waste products to be removed from your blood. It can not work as effectively as a human kidney and therefore you will also need to follow a diet.

Why is the diet important?

Eating the right foods and following the advice given in this diet sheet will help to limit the build-up of waste products. Dietary and fluid restrictions are individual to each person and depend on your remaining kidney function, eating patterns and blood results. Your dietitian will advise on individual dietary needs.

What are the main dietary principles?

- Eat regular, balanced meals and ensure that your protein intake is adequate
- Try to eat less salt
- Keep within your fluid allowance
- Try to avoid foods high in phosphate
- Take your phosphate binders correctly
- Try to eat enough fibre
- Try to keep to a healthy weight

This diet sheet will explain how to meet these main principles.

Protein

Protein is an essential part of a healthy, well balanced diet. It is used for growth and helps with the repair of all body tissues. When on peritoneal dialysis small amounts of protein are lost in the dialysis fluid so your requirements are slightly increased. It is therefore essential that you have an adequate intake.

It is recommended that you include at least two portions of protein in your diet each day. Examples of portion sizes are 3-4oz i.e. one chicken breast, two lamb chops, one fish fillet, two slices of roast meat.

Foods Rich in Protein

- Meat – Beef, pork, lamb, chicken, turkey (fresh or frozen).
- Fish – White fish (e.g. cod, haddock), tuna (fresh or tinned in water).
- Milk/Eggs/Cheese - (These foods are also high in phosphate and will need to be limited; see dietary allowances section).
- Vegetarian Products - Quorn, textured vegetable protein (TVP).

Please Note: You should still try to avoid processed meats and smoked/tinned fish in brine to limit salt intake.

Salt

Too much salt in your diet can cause an increase in thirst, high blood pressure and a build-up of fluid in your body.

Tips for reducing salt intake:

- Do not add salt (e.g. table salt, rock salt and sea salt) to your food at the table. You may use a pinch in cooking. Flavour foods with herbs, spices, garlic and lemon instead (see later section for more ideas).
- Use fewer processed/convenience foods e.g. dehydrated meals, ready meals and packet mixes
- Limit processed and smoked meat or fish. Choose fresh / frozen or roast cuts where possible.
- Limit salty snacks such as crisps, salted nuts and salted crackers.
- Bottled sauces (e.g. soy sauce, tomato sauce, brown sauce) and high salt flavour enhancers (e.g. stock cubes, gravy granules) can be used sparingly.
- Limit foods tinned in brine (salt water). Look for foods tinned in spring water or oil instead.
- Choose fresh or frozen vegetables, or those tinned in water
- Try not to have more than 4 oz (100 grams) of cheese per week.
- Avoid salt substitutes such as Lo Salt, Selora, Biosalt, Pansalt and Ruthmol. These are high in potassium and therefore, may not be suitable.

Food labelling for salt

Look at the Nutritional Information

Regularly checking the nutrition information on food labels can help you to choose lower salt options. Salt often appears as sodium on food labels (6g of salt is equivalent to 2.5g of sodium).

Check the label to see how much salt/sodium is in the food per 100g of product.

Nutrition		
Typical values (as consumed)	per 100g	per serving size
Energy	541kj/128kcal	2011kj/476kcal
Protein	4.9g	18.2g
Carbohydrates	20.8g	77.4g
of which sugars	1.5g	5.6g
Fat	2.8g	10.4g
of which saturates	2.3g	8.6g
Fibre	2.1g	7.8g
Sodium	0.1g	0.5g
Salt equivalent	0.3g	1.3g

Look at per 100g product

Look at the amount of salt or sodium

Then compare it against this table which outlines what is 'a little,' 'a moderate' amount or 'a lot' of salt/sodium per 100g of product.

	Little (eat freely)	Moderate (eat occasionally)	A Lot (try to avoid)
Sodium (per 100g)	0.1	0.3	0.6
Salt (per 100g)	0.25	0.75	1.5

If the label says that the product contains a 'trace' amount of sodium or salt, it means it has minimal amounts and is therefore suitable to have.

Fluid

Your kidneys control the amount of fluid in your body. When your kidneys don't work fully, you are unable to get rid of the fluid you drink as effectively as before.

Too much fluid in your body can lead to:

- Uncontrolled blood pressure
- Swollen legs and feet (oedema)
- Breathlessness due to fluid on the lungs (pulmonary oedema)
- Extra strain on your heart

Exceeding your fluid allowance is likely to worsen dialysis-related symptoms and you may then need stronger dialysis bags to remove this excess fluid.

What is my fluid allowance?

Your allowance per day is **750mls plus the volume of urine you pass in 24 hours**. For example if you pass 400mls of urine in 24 hours, the amount you can drink is 750mls plus 400mls which is a total of 1150mls per day.

The amount you can drink is dependent on the volume of urine you pass and may change if your urine output decreases.

What is included in my fluid allowance?

All drinks throughout the day (tea, squash, milk, fizzy pop, nutritional supplement drinks), including the water that you use to take your tablets.

Fluids that are included in foods should be counted also (milk on cereal, gravy, soup).

Are there any tips to help me stick to my allowance?

- Spread your allowance throughout the day
- To help quench your thirst without having a drink, suck ice cubes, boiled sweets, slice of lemon or use chewing gum
- Let family and friends know that you can only drink a certain amount so they are not tempted to offer you lots of drinks
- Use smaller glasses and cups for your drinks
- Drink only when you are thirsty and not to be sociable
- Sip drinks rather than gulp
- Brush your teeth regularly and use an alcohol free mouthwash to freshen your mouth
- Try not to have a drink when you are eating, save your drink for between your meals
- You can track your fluid intake using fitness apps on your smartphone or tablet
- Artificial saliva or gels can help if you have a dry mouth- products are available from your GP on prescription if required.

Handy measures

Average cup	200mls
Average mug	300mls
Hospital tumbler	200mls
Plastic cup (vending machine type)	150mls
Pint	600mls
½ pint	300mls
One ice cube	20mls
Can of fizzy drink	330mls
One tablespoon	15mls
One dessertspoon	10mls
One teaspoon	5mls
Milk on cereal	100mls
Average soup portion (½ a tin)	200mls

To help you at home we suggest that you measure the volume of the mugs and cups that you regularly use.

My mug at home	
My glass at home	
My cup at home	

To help you monitor how much fluid you are allowed to drink throughout the day, fill a jug with water to the volume of your allowance. Every time you have a drink, pour the same amount out of the jug. The remaining fluid in the jug will indicate how much you have left to drink.

Phosphate

What is phosphate?

Phosphate is a mineral that is found in the food we eat. The body needs phosphate in a balanced amount to keep bones strong and healthy.

Why is my blood phosphate too high?

When the kidneys are not working properly, the body holds too much phosphate in the blood.

Why does this matter?

A high level of phosphate in the blood causes removal of calcium from bones. This can cause brittle bones and blockages in the arteries, which may lead to heart disease.

Symptoms of a high phosphate may include itchy skin and eyes, aching muscles and bone pain.

What can I do to control my levels?

You will need to follow a low phosphate diet and take medications called phosphate binders.

Phosphate Binders

What are phosphate binders?

These are tablets that help lower your phosphate levels. The most commonly used phosphate binders are listed in the table on the next page.

How do they work?

If taken at the right time as outlined in the table they bind with the phosphate in food when it is in your stomach. This prevents the phosphate from entering your blood stream, so keeping your blood phosphate levels lower.

Tablet	When to Take	How to Take
Calcichew (calcium carbonate)	Immediately before a meal	Chew tablets thoroughly
Phosex (calcium acetate)	Immediately before a meal	Swallow tablets whole
Renagel (sevelamer hydrochloride)	Immediately before or during a meal	Swallow tablets whole
Renvela - tablets (sevelamer carbonate)	Immediately before or during a meal	Swallow tablets whole
Renvela – powder (sevelamer carbonate)	Immediately before or during a meal	Dissolve in 60 mls of water
Fosrenol - tablets (lanthanum carbonate)	During or immediately after a meal	Chew tablets thoroughly
Fosrenol – powder (lanthanum carbonate)	During or immediately after a meal	Mix with soft food
Renacet (calcium acetate)	During or immediately after a meal	Swallow tablets whole
Osvaren (calcium acetate and magnesium carbonate)	With meals	Swallow tablets whole
Velphro (sucroferric oxyhydroxide)	With meals	Chew tablets thoroughly

Important points

- Remember to keep a supply of phosphate binders with you when eating away from home.
- Always take the exact dose you have been prescribed.
- Phosphate binders should not be taken without food.
- If you are on iron tablets or thyroxine take these two hours apart from your phosphate binders.
- If you are having difficulty taking your binders, please contact your doctor, dietitian, pharmacist or nurse to discuss a suitable alternative.

Phosphate Additives

When following a low phosphate diet it is important to be aware of hidden sources of phosphate in your food, such as phosphate additives.

What are phosphate additives?

Phosphate additives are chemicals that are added to a large number of processed foods during manufacturing. These foods include processed meat e.g. ham, bacon and sausages, reformed chicken, processed cheeses, dark fizzy drinks e.g. cola, instant puddings, cake mixes and instant sauces.

Phosphate additives greatly increase your phosphate intake. This is because they are more easily absorbed by your body compared to phosphate which occurs naturally in food.

How do I know which foods contain phosphate additives?

It is important to look at the food label of processed foods. The ingredients list on the packaging will name the additives either by name or by their E Number. Try to limit food that contains the words phosphate or phosphoric acid including pyrophosphate, polyphosphate and sodium phosphate in the ingredients list. The amount of phosphate additives varies depending on the brand

How can I reduce my intake of phosphate additives?

- Read the food labels to compare products, and wherever possible choose those without phosphate additives.
- Look for 'PHOS' in the ingredient list e.g. phosphoric acid.
- Try to avoid processed food and choose fresh, unprocessed foods which are lower in phosphate.

Common phosphate additives are:

- E338 Phosphoric acid
- E339 Sodium phosphates
- E340 Potassium phosphates
- E341 Calcium phosphates
- E343 Magnesium phosphates
- E450 Diphosphates
- E451 Triphosphates
- E452 Polyphosphates
- E541 Sodium aluminium phosphates

Potassium

You may have previously been advised to restrict your potassium intake before you started peritoneal dialysis. It is not always necessary to continue with this restriction once established on peritoneal dialysis. We aim to keep your blood potassium levels between 3.5-5.3mmol/l. Your dietitian and PD team will monitor your blood levels and dietary advice will be provided if required.

Fibre

Why is fibre important in my diet?

Increasing your dietary fibre intake may help to keep your bowels regular and prevent constipation.

Why is constipation a problem?

If you are constipated the dialysis fluid may not be drained fully resulting in a poor clearance of waste products.

How can I increase my fibre intake?

The following foods are rich in fibre and should be included regularly in your diet:

- Wholemeal, granary or high fibre white bread.
- High fibre breakfast cereals (e.g. Weetabix, Shreddies, Shredded wheat).
- Wholemeal pasta.
- Brown rice.
- Wholegrain biscuits & crackers (e.g. Digestives, Hobnobs, Ryvita).
- Fruit (fresh, frozen, tinned or stewed) and vegetables (fresh or frozen).

Weight

Will the dialysis affect my weight?

Some of your peritoneal dialysis solutions will contain glucose, a type of sugar. This may increase your blood sugar level if you have diabetes. The glucose also provides extra calories which can contribute to unwanted weight gain.

To prevent weight gain, helpful hints to reduce sugar and fat intake are listed below:

- Try artificial sweetener instead of sugar (e.g. Canderel, Hermesetes, Sweetex).
- Choose low calorie/ no added sugar/ sugar-free drinks instead of ordinary varieties.
- Try reduced sugar jams and marmalades.
- Choose low sugar / sugar-free varieties of puddings (e.g. sugar-free jelly, homemade puddings using sweeteners).
- Use low fat dairy products (e.g. skimmed or semi-skimmed milk)
- Use butter or margarine sparingly. Try low fat spreads as an alternative.
- Choose lean cuts of meat and trim off any visible fat before cooking.
- Grill, steam, poach, bake, boil or microwave instead of frying or roasting with fat.
- Avoid high fat foods such as cakes, pastry, cream, mayonnaise, chips and crisps.

What if I have a poor appetite or I am underweight?

The above advice should not be followed if you have a poor appetite or are losing weight. Please contact your dietitian, doctor or nurse for further advice if you are concerned.

Foods allowed	Foods to avoid
<p>Cereals/Bread Porridge oats, Weetabix, Shredded Wheat, Shreddies, Cornflakes, Special K, Rice Krispies, Ricicles, Frosties, Raisin Spilt. Pastry, croissants, pikelets, pitta bread, White/brown/wholemeal/granary bread, sago, tapioca, semolina, plain flour, naan (plain and garlic), chapatti. Rice, pasta, egg noodles, rice noodles, polenta, cous-cous</p>	<p>Cereals/Bread All Bran, Branflakes, Muesli, Ready Brek, Sultana Bran, Mini Bix and all cereals with chocolate, cocoa, nuts or seeds. Biscuits containing nuts and chocolate, keema and peshwari naan, pan au chocolat, poppadums, filled ravioli and tortellini, tinned spaghetti. Oatcakes, crumpets, instant noodle snacks. Limit the use of baking powder and self-raising flour. Rye flour and soya flour Quinoa</p>
<p>Dairy Double cream, whipping cream, clotted cream, soured cream Butter, margarine. Cream cheese e.g. Philadelphia, supermarket own brand Cottage cheese. Milk substitutes e.g. coffee compliment, coffee mate, and coffee whitener. Crème Fraiche Unfortified soya, rice and oat milk- check the label as these may have phosphate added to them Soya yogurts Eggs/cheese/milk – see allowances section.</p>	<p>Dairy Dried milk powder, evaporated milk, condensed milk, coconut milk, Single cream. Imitation cream e.g. Elmlea, Tip Top, Dream Topping. Processed cheese e.g. Primula, Dairylea, cheese slices. Instant whip. Yoghurt drinks Instant custard mix</p>
<p>Meat and fish Lamb, beef, pork, chicken, turkey, duck, goose, - fresh or frozen Cod, haddock, plaice, sole, tuna. No more than one portion per week of the following oily fish: mackerel, salmon</p>	<p>Meat and fish Venison, pheasant, rabbit, grouse, goat Processed meat products e.g. bacon, sausages, pies. Tinned meats e.g. tongue, corned beef, luncheon meat. Ready meals containing beans or pulses. Sardines, anchovies, herrings, kippers, pilchards, whitebait, crab, prawns, scampi, mussels, clams, crayfish, monkfish, sea bass. Smoked fish and tinned fish. Pate, fish paste or fish roe, taramasalata.</p>
<p>Nuts, pulses and meat substitutes Quorn. If you are vegetarian, you may be able to eat some nuts and pulses. Your dietitian will help you with this.</p>	<p>Nuts, pulses and meat alternatives Beans e.g. baked beans, red kidney beans, black-eyed beans, butter beans, aduki beans, pinto beans, lentils, pulses, nuts and seeds, peanut butter, creamed coconut, hummus, tahini Soya beans, tofu.</p>

Foods allowed	Foods to avoid
<p>Sugars, preserves and confectionary Jam, honey, syrup, marmalade, lemon curd. Sugar, sweets e.g. boiled sweets, mints, marshmallows, chewing gum, Turkish Delight, fruit pastilles, jellies, wine gums, Frutella, Chewits, Starburst. Cough sweets e.g. Tunes, Locketts, Soothers. Popcorn (not toffee or salted). Artificial sweeteners.</p>	<p>Sugars, preserves, confectionary Chocolate, toffee, liquorice, fudge, marzipan and chocolate spread. Sweets and chocolate containing nuts.</p>
<p>Cakes, biscuits and snacks Most are suitable providing they do not contain chocolate, cocoa or nuts. Plain/jam sponge, Madeira, cherry cake, cream horn, doughnut, apple slice, Fruit cake, banana loaf, Danish pastry, lemon meringue pie, Chelsea buns, meringue, plain biscuit, shortbread, non-salted popcorn, bread sticks, rice cakes, melba toast, water biscuits.</p>	<p>Cakes, biscuits and snacks Malt bread, chocolate cake and biscuits, date and walnut loaf, coconut cake, Eccles cake, cakes made with large amounts of baking powder e.g. scones and rock cakes, cereal bars or biscuits containing nuts and chocolate, egg custard, Bakewell tart, Scotch pancakes, waffles All potato crisps which also includes Quavers, French Fries and Pombears. Twiglets, Bombay mix, seeds, nuts, oatcakes, corn and wheat based snacks e.g. Skips, Monster Munch, Wotsits, Wheat Crunchies, Pretzels</p>
<p>Drinks Coffee, all types of tea, milk - see allowance, cordial and squash, light coloured fizzy drinks e.g. lemonade, water e.g. tap, soda, tonic, mineral and flavoured. Fresh fruit juice</p>	<p>Drinks Cocoa, malted drinks e.g. Horlicks, Ovaltine and Bournvita, drinking chocolate, Complan and Build-Up (unless on these for medical reasons), Dark fizzy drinks e.g. coca Cola, Pepsi, Dr Pepper, Dandelion and Burdock.</p>
<p>Alcohol All alcohol is allowed in moderation. However, some medications do not mix with alcohol therefore check with your doctor or pharmacist first. Government guidelines of 14 units per week for men and women spread evenly over the week.</p>	<p>Alcohol All alcohol is allowed in moderation. However, some medications do not mix with alcohol therefore check with your doctor or pharmacist first.</p>
<p>Miscellaneous Garlic, herbs, spices, vinegar, tartare sauce, horseradish, mustard, mayonnaise, salad cream – use sparingly Tomato ketchup, brown sauce, BBQ sauce – should be used sparingly e.g. 1 teaspoon. An Oxo cube can be used in meals instead of salt. Homemade soups</p>	<p>Miscellaneous Salt e.g. table, garlic, sea or rock salt. Salt substitutes e.g. Losalt, Selora. Bovril, marmite. Instant noodles. Tinned and packet soups. Gravy mixes and granules – use sparingly.</p>
<p>Fruit and Vegetables All suitable except vegetables tinned in brine.</p>	<p>Fruit and Vegetables All suitable except vegetables tinned in brine.</p>

Allowances

The following foods contain high amounts of phosphate and therefore should only be eaten in the suggested quantities:

..... pint of milk per day.

..... eggs per week.

..... oz/grams hard cheese per week.

One portion of offal per month e.g. liver, kidney, sweetbreads, heart.

..... items from the following list per week:

- One small pot of yoghurt/fromage frais.
- One small bowl of custard.
- One small bowl of rice pudding.
- Two scoops of plain ice cream.

Please Note:

People with kidney problems should avoid Star Fruit. This has been known to cause neurological problems when eaten by people with a reduced kidney function.

If you have diabetes some of the foods mentioned in this diet sheet may not be suitable due to the high sugar content. Please discuss with your Dietitian.

Discussion points:

This space may be used to help with meal suggestions or document the dietary changes you have discussed with the dietitian during your appointment.

Additional support and resources

To support you making your dietary changes, additional dietary information is available. Please ask your dietitian if you would like any of these.

- Eating out with CKD
- Dietary myths
- “K” word cookbook
- Build yourself up
- Festive foods

PatientView – www.patientview.org

PatientView shows your latest test results, letters and medicines, plus info about diagnosis and treatment. Set up alerts, monitor symptoms and download your records. You can view PatientView from anywhere you want and share your information with anyone you want. You can ask any Renal Healthcare Professional in clinic or on the dialysis unit to help you sign up for this service.

CaMKIN – www.kinet.site

CaMKIN (Cheshire and Merseyside Kidney Information Network) is an online community run by renal patients for renal patients, their families and carers. It provides information, blogs, recipes and opportunities for social events, with the main aims of reducing isolation and increasing support to you as a person with kidney disease. A closed Facebook group is also available, search CaMKIN.

National Kidney Federation - www.kidney.org.uk

Think Kidneys – www.thinkkidneys.nhs.uk

Kidney Care – www.kidneycareuk.org

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Further Information

Renal Dietitians

Tel: 0151 706 3005

Text phone number: 18001 0151 706 3005

renaldietitians@liverpoolft.nhs.uk

Please include your dietitians name in subject box of email

Author: Renal Dietitians, Therapies Department

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