

Patient information

Diet for Chronic Kidney Disease (low potassium and low phosphate)

Therapies – Department of Nutrition and Dietetics

Name:

Date:

Dietitian:

Introduction

What is chronic kidney disease?

Chronic kidney disease 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.

Why is the diet important?

Waste products from certain foods build up in your blood. Eating the right foods and following the advice given in this diet sheet will help to limit the build-up of these waste products.

What are the main dietary principles?

- Try to avoid foods high in potassium
- Try to avoid foods high in phosphate.
- Take your phosphate binders correctly.
- Try to eat less salt.
- Limit foods high in potassium and/or phosphate additives.
- Eat regular, balanced meals.
- Try to keep to a healthy weight.

This diet sheet will explain how to meet these main principles

Potassium

What is Potassium?

Potassium is a mineral that everyone has in their blood. It is important to ensure healthy functioning of muscles, including your heart muscle. It appears naturally in many foods and drinks.

Why is the amount of potassium in my blood too high?

When your kidneys are not working properly they are unable to get rid of excess potassium out of your body via your urine.

Is a high level of potassium in my blood dangerous?

It can be. If the level rises too high it may cause dangerous changes to your heart.

What do I need to do to control my blood potassium level?

You need to follow a low potassium diet at all times in order to keep your blood potassium at a safe level.

Cooking tips

Potatoes and vegetables are high in potassium. The way you cook them affects their potassium content. When potatoes and vegetables are cooked in water, they lose a large amount of potassium.

It is important that they are always cooked as follows:

- Peel and cut them into small pieces before cooking.
- Boil them only once in a large amount of water. Throw the cooking water away. Do not use it for making gravy, sauces or soups.
- Microwave, pressure cookers, steamers or stir-frying should not be used for cooking potatoes and vegetables from raw but can be used to reheat food.
- Parboil potatoes for ten minutes before making chips or roasting.
- Only have potatoes at one meal a day. A portion is four – five new potatoes or equivalent size per meal. Rice and pasta are lower in potassium and can be used instead.
- Other starchy foods similar to potato can be used e.g. sweet potato and yam. The portion sizes are two medium sweet potatoes or one yam the size of a medium potato. Avoid potato products that have not been cooked as previously described e.g.
 - Instant mash and ready meals such as fisherman's pie or cottage pie
 - Chip shop chips
 - Oven chips / roast potatoes (shop bought)
 - Jacket potatoes
 - Potato croquettes / waffles
 - Potato crisps
 - Potato curry / soups / salad

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 medications that help lower your phosphate level. The most commonly used phosphate binders are:

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
Renacet (calcium acetate)	Immediately before a meal	Swallow tablets whole
Sevelamer tablets	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
Osvaren (calcium acetate and magnesium carbonate)	With meals	Swallow tablets whole
Velphro (sucroferric oxyhydroxide)	With meals	Chew tablets thoroughly

How do they work?

If taken at the right time as outlined in the table above 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 level lower.

Important points

- Remember to keep a supply of phosphate binders with you when eating away from home
- Always take your phosphate binders with any meals you have whilst on dialysis e.g. a sandwich
- Always take the exact dose you have 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.

Salt

It is still important to avoid too much salt as this can make you thirsty and can cause the body to hold on to extra fluid

- A little salt may be used in cooking but avoid extra salt at the table.
- Instead of adding salt to your food, you could try other flavourings like pepper, garlic, lemon, ginger, herbs and spices.
- Cut down on salty foods e.g. processed meats and fish, where possible choose fresh cuts.
- Watch salty snacks, such as crisps, salted nuts and salted crackers.
- Use sauces sparingly e.g. soy sauce, tomato sauce and brown sauce.
- Do not use salt substitutes e.g. lo salt, solo or saxa

Food Additives

Potassium Additives

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

What are potassium additives?

Potassium additives are chemicals that are added to a large number of processed foods during manufacturing. These foods include instant noodles and corn and maize savoury snacks. Potassium additives could increase your potassium intake.

How do I know which foods contain potassium 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; compare products, and wherever possible choose those without potassium additives.

Common potassium additives are:

- Potassium sorbate (E202)
- Potassium benzoate (E212)
- Potassium metabisulphite (E224)
- Potassium nitrite (E249)
- Potassium nitrate (E252)
- Potassium propionate (E283)
- Potassium alginate (E402)
- Potassium acetate (E261)
- Potassium lactate (E326)
- Potassium citrate (E332)
- Potassium tartrate (E336)
- Potassium phosphate (E340)
- Potassium gluconate (E577)
- Potassium malate (E351)
- Potassium adipate (E357)
- Potassium carbonate (E501)
- Potassium chloride (E508)
- Potassium hydroxide (E525)
- Potassium ferrocyanide (E538)

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

Foods allowed	Foods to avoid
<p>Cereals and breads Plain flour, bread, rice, pasta, noodles. Weetabix, cornflakes, rice krispies, sugar puffs, porridge, Frosties, Special K, shreddies Water biscuits, cream crackers, breadsticks Pancakes, pastry croissants, pitta bread, white/brown/wholemeal/granary bread, sago, tapioca, semolina, flours, naan (plain and garlic), chapatti. Rice, pasta, polenta, cous cous, egg noodles, rice noodles</p>	<p>Cereals and breads All bran, branflakes, sultana bran, readybrek, muesli and other cereals containing chocolate, cocoa, coconut, dried fruit, nuts and seeds. Oatcakes, crumpets. Instant noodle snacks, quinoa Limit the use of baking powder and self-raising flour. Rye flour and soya flour Keema and peshwari naan, pain au chocolat, pain aux raisins poppadoms, filled ravioli and tortellini, tinned spaghetti, quinoa</p>
<p>Dairy products 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</p>	<p>Dairy products Dried milk powder, evaporated milk, condensed milk, coconut milk, almond 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, fish and alternatives Beef, lamb, pork, chicken, turkey, venison, mutton, kangaroo, ostrich, duck, goose Cod, haddock, Pollock, sole, hake, plaice, river cobbler, mullet Quorn, tofu</p> <p>If you are vegetarian, you may be able to eat some nuts and pulses. Your dietitian will help you with this.</p>	<p>Meat, fish and alternatives Processed meats e.g. tinned or packet meats, offal, pâté. Venison, pheasant, rabbit, grouse, goat Sardines, anchovies, herrings, kippers, pilchards, whitebait, crab, prawns, scampi, trout, mussels, clams, monkfish, crayfish, sea bass, taramasalata, fish paste, fish roe. All types of nuts and seeds, hummus, baked beans, kidney beans, aduki beans, pinto beans and peanut butter</p>
<p>Sugars, preserves and confectionary Sugar, jam, honey, marmalade, lemon curd. Sweets e.g. boiled, jellies, fruit gums, barley sugar, mints, marshmallows, Turkish delight (without chocolate or nuts). Popcorn.</p>	<p>Sugars, preserves and confectionary Chocolate and chocolate spread. Fudge and marzipan. Sweets and chocolates containing nuts. Caramel, cacao Liquorice</p>

Foods allowed	Foods to avoid
<p>Cakes, biscuits and snacks Biscuits e.g. digestive, rich tea, jammie dodgers, shortbread, ginger biscuits. Cakes e.g. ice-buns, flapjacks, doughnuts, swiss roll, plain sponge, cream cakes, jam tarts, fruit crumble/pie, meringue, pavlova, lemon meringue pie (home-made where possible) popcorn, prawn crackers Cream crackers</p> <p>Some corn and maize snacks are low in potassium; however, we suggest that you check the product ingredients list for “potassium” as it varies between brand and even flavour. See potassium additives section for more details</p>	<p>Cakes, biscuits and snacks Cakes and muffins containing nuts, chocolate or marzipan. Cake mixes. Cakes made with large amounts of baking powder e.g. scones, rock cakes. Egg custard, Scotch pancakes and waffles. Biscuits containing nuts, dried fruit or chocolate. Cereal bars containing nuts, dried fruit or chocolate. Bombay mix, seeds, nuts and twiglets. Malt bread, banana loaf, chocolate cake and biscuits, fruit cake, date and walnut loaf, coconut cake, Eccles cake, fruit scones, Chelsea buns, Bakewell tart, all potato crisps which also includes Quavers, French Fries and Pombeers, Twiglets. Lentil and chickpea based snacks. Corn and maize snacks that have “potassium” listed on the ingredients</p>
<p>Drinks One cup of coffee per day or Camp Coffee, all types of tea, milk as allowance, cordial and squash, light coloured fizzy drinks eg lemonade, fizzy orange. soda, tonic, mineral water. Mocktails – choose ones that are not fruit juice based, but soda or lemonade based.</p> <p>Alcohol- Remember some medicines do not mix with alcohol. Ask your doctor or pharmacist if you are not sure. Spirits, sherry, white wine, sparkling wine e.g. Champagne, Cava, Lambrusco, Prosecco. Cocktails using soda or lemonade as a base.</p>	<p>Drinks Malted milk drinks e.g. Ovaltine, Bournvita, cocoa powder, Horlicks, drinking chocolate. Milkshake. Complan and Build up (unless on this for medical reasons), Bovril Fresh fruit juice, Hi juice cordial. Dark fizzy drinks e.g. Coca Cola, Pepsi, Dr Pepper, Dandelion & Burdock. Alcohol – Red wine, beer, lager, cider, port, stout, ale and bitter. Cocktails using fruit juice as a base.</p>
<p>Fruit, vegetables and potatoes All types are suitable unless otherwise stated on the avoid list</p>	<p>Fruit, vegetables and potatoes Frozen/oven chips, potato waffles, beans and pulses. Banana, melon (honeydew, cantaloupe and galia), dried fruit, blackcurrants, Sharon fruit, papaya, plantain, avocado</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.</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. Oven chips, potato waffles.</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.

Fruits and vegetables have differing potassium contents. The following tables detail the portion sizes, which provide the same amount of potassium for each fruit and vegetable.

To help you control your intake, you should aim for a maximum of portions per day. The dietitian will help you to control this by giving you allowances:

..... fruit portions as detailed.

.....vegetable or salad portions as detailed.

Smoothies are an easy way of eating fruit but can be high in potassium. Use the portion sizes as a guide and do not exceed your allowances of fruit and vegetables as listed above. Yoghurts, water or cordials are low potassium liquids that can be used to thin the smoothie instead of fresh fruit juice.

Potatoes are not included in these portion sizes; you can eat one serving of potatoes per day (see cooking tips section).

Fruit Portions – all fruit can be raw unless otherwise stated. Tinned fruit should be drained of juice.

apples	1 medium	mango	½ small
apples	3 tbsp stewed	nectarine	½ fresh
apricot	1 medium	orange	1 small
blackberries	20 fruits	passion fruit	5 fruits
blueberries	1 cup	peaches	1 medium
clementines, tangerines, mandarins, satsumas	2 medium	peaches	3 tbsp
cherries	20 fruits	pears	1 small
damsons	4 stewed	pears	3 halves tinned
figs	1 ½ fruits	pineapple	1 slice fresh
fruit pie filling	2 small individual pies or equivalent from large pie	pineapple	5 rings tinned
fruit cocktail	4 tbsp	plums	2 small
gooseberries	2 tbsp, raw	pomegranate	75g or ½ a fruit
gooseberries	3 tbsp stewed	prunes	12 fruits tinned
grapefruit	½ fresh	raspberries	20 fruits
grapefruit	6 tbsp tinned	rhubarb	2 tbsp stewed
grapes	15 fruits	rhubarb	4 tbsp tinned
guava	1 small	strawberries	8 fruits
kiwi	1 small	strawberries	5 tbsp tinned
lychees	14 fruits	watermelon	1 small slice
mandarins	5 tbsp tinned		

1 tbsp = approximately 40g

Vegetable portions – boiled unless otherwise stated

asparagus	3 spears (60g)	marrow	4 tbsp (140g)
aubergine	6 slices/ 1/3 fried (90g)	mange tout	3 tbsp (95g)
beetroot	8 slices pickled (80g)	mixed veg	3 tbsp (130g)
beansprouts	10 tbsp stirfried	mushrooms	8 small raw (40g)
broad beans	1½ tbsp (80g)	olives	15 fruits (170g)
broccoli	2 florets (75g)	onions	1 small (raw)
brussel sprouts	4	okra	6 fingers (35g)
butternut squash	1½ tbsp (baked) (55g)	pak choi	50g – stir fried or steamed
cabbage (green)	2 tbsp (85g)	parsnips	1 tbsp (45g)
cabbage (red)	3 tbsp (120g)	peppers	½ pepper (raw or cooked)
carrots	3 tbsp (95g)	peas (garden)	2 tbsp (70g)
carrots	1 small raw	peas (mushy)	3 tbsp / ⅓ of a tin (90g)
cauliflower	7 florets (75g)	peas(petit pois)	4 tbsp (120g)
celery	2 sticks (70g)	pumpkin	4 tbsp (185g)
courgette	2 tbsp (75g)	rocket	50g - fresh
cress	No restriction	radish	8 (65g)
cucumber	16 thin slices/ 2 inch piece (100g)	runner beans	3 tbsp (135g)
curly kale	3 tbsp (100g)	spinach (mature)	2 tbsp (70g)
corn on the cob	1 small	Sweetcorn	3 tbsp (90g)
Corn (babycorn)	8 babycorn (90g)	spring onion	6 stems (60g)
coleslaw	2 tbsp (100g)	swede	5 tbsp (180g)
fennel	1 tbsp raw (35g)	tomato	1 small or 4 cherry
green beans	1 tbsp (50g)	tomato	1 tbsp puree or 2 tbsp tinned
leeks	1 stem/ 3 tbsp (105g)	turnip	2 tbsp (80g)
Iceberg lettuce	No restriction	watercress (raw)	2 tbsp (70g)

Salad Ideas

Each of these recipes can count as one portion from your fruit and vegetable allowance.

Mixed Salad – Lettuce leaves, half a tomato, or two cherry tomatoes, three slices of cucumber and one slice of beetroot or onion.

Coleslaw - Two tablespoons of raw shredded cabbage, two tablespoons of raw shredded carrot, one slice of onion and small amount of mayonnaise to mix.

Red Salad - Three slices of beetroot, one tablespoon of peas or sweetcorn, two tablespoons of grated carrot.

Green Salad – Lettuce leaves, three rings of green pepper, one spring onion and mix with French dressing.

Discussion points:

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

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.

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

Feedback

Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

Further Information

Renal Dietitians

Tel: 0151 706 3005

Text phone number: 18001 0151 706 3005

renaldietitians@liverpoolft.nhs.uk

Please include your dietitian's name in subject box of the email

Author: Renal Dietitians, Therapies Department

Review date: April 2023

All Trust approved information is available on request in alternative formats, including other languages, easy read, large print, audio, Braille, moon and electronically.

يمكن توفير جميع المعلومات المتعلقة بالمرضى الموافق عليهم من قبل انتمان المستشفى عند الطلب بصيغ أخرى، بما في ذلك لغات أخرى وبطرق تسهل قراءتها وبالحروف الطباعة الكبيرة وبالصوت وبطريقة برايل للمكفوفين وبطريقة مون والإلكترونية.

所有經信托基金批准的患者資訊均可以其它格式提供，包括其它語言、易讀閱讀軟件、大字體、音頻、盲文、穆恩體 (Moon) 盲文和電子格式，敬請索取。

در صورت تمایل می‌توانید کلیه اطلاعات تصویب شده توسط اتحادیه در رابطه با بیماران را به اشکال مختلف در دسترس داشته باشید، از جمله به زبانهای دیگر، به زبان ساده، چاپ درشت، صوت، خط مخصوص کوران، مون و بصورت روی خطی موجود است.

زانیاری پئومندیدار بهو نهخوشانهی له لایمن تراستهوه پاسمند کراون، نهگمر داوا بکرنیت له فورماتیکانی تردا بریتی له زمانهکانی تر، نیز ی رید (هاسان خویندنهوه)، چاپی گموره، شریتی دهنگ، هیللی موون و نلیکترونیککی همیه.

所有经信托基金批准的患者信息均可以其它格式提供，包括其它语言、易读阅读软件、大字体、音频、盲文、穆恩体 (Moon) 盲文和电子格式，敬请索取。

Dhammaan warbixinta bukaanleyda ee Ururka ee la oggol yahay waxaa marka la codsado lagu heli karaa nuskhadda kale, sida luqadda kale, akhris fudud, far waaweyn, dhegeysi, farta braille ee dadka indhaha la', Moon iyo nidaam eletaroonig ah.