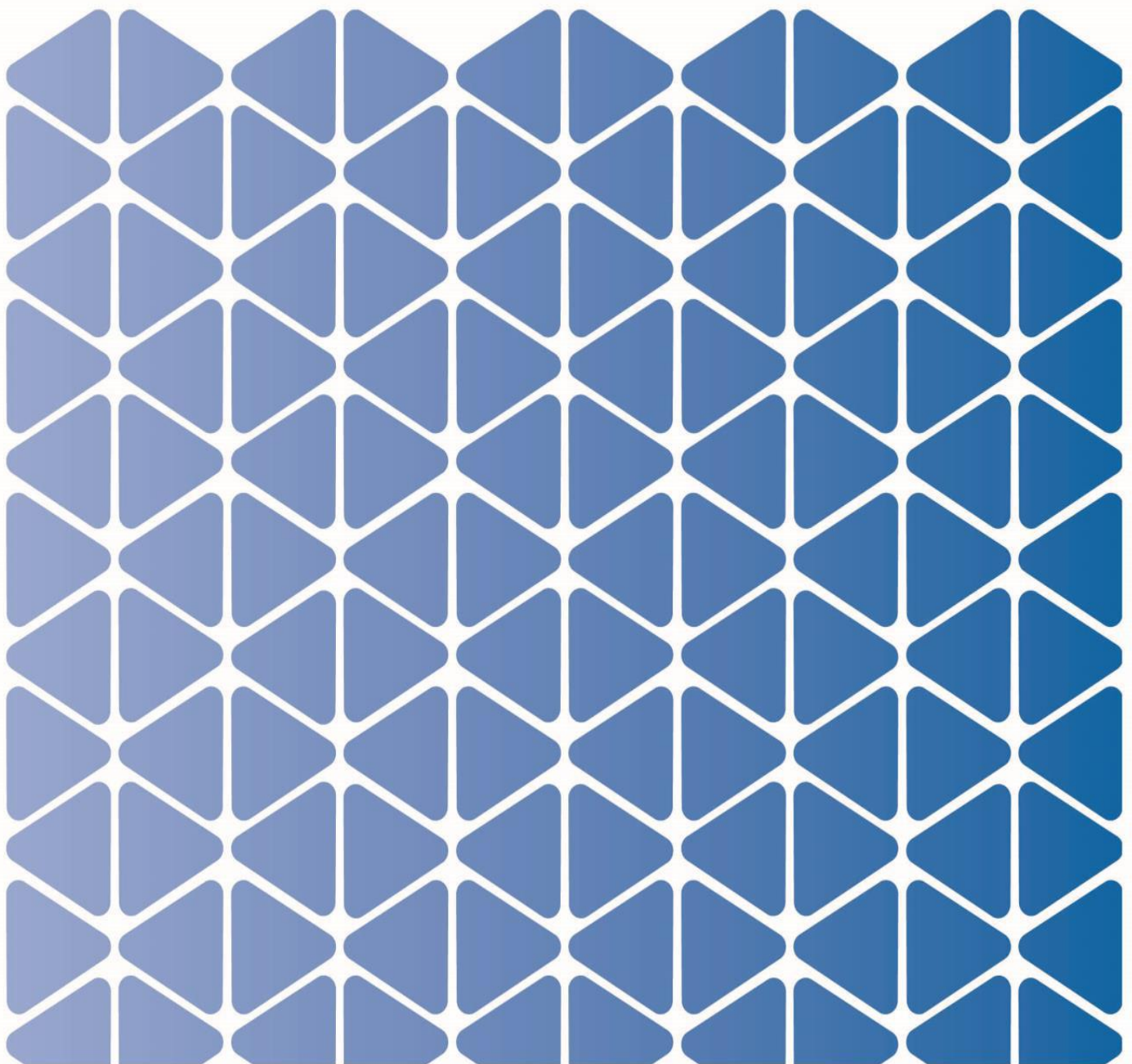


PATIENT INFORMATION**LOW PHOSPHATE DIET FOR
CHRONIC KIDNEY DISEASE**

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What is phosphate?

Phosphate is a mineral found in a range of different foods. It helps maintain healthy bones.

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

Healthy kidneys usually filter and get rid of excess phosphate from the blood. Phosphate can build up in your blood if your kidneys are not working properly.

The recommended range for your blood phosphate is: _____ mmol/L

Your recent blood phosphate was _____ mmol/L on ____/____/____

Why does it matter if my phosphate level is too high?

High blood phosphate levels may initially cause:

- Red eyes and itchy skin.

Prolonged high phosphate levels can lead to:

- Weaker bones and aching joints.
- Hardened blood vessels, increasing your risk of heart disease.

What could I do to control my blood phosphate levels?

- The first step is to follow a low phosphate diet.
- If your phosphate remains high you may then be prescribed a tablet called a phosphate binder to help lower your blood phosphate levels.

Your diet and phosphate binders may change, depending on your appetite and any other medications and treatment for your kidneys.

How to achieve a low phosphate diet

The dietary advice in this booklet has been developed by registered dietitians. Using this guide can help you to choose the foods that you enjoy whilst helping to keep your blood phosphate levels controlled.

A balanced diet consists of having a variety of foods from different food groups as shown in the following pages.

Within each food group, this guide shows which foods are low, medium or high in phosphate. Try to choose mainly from those foods that are low in phosphate. Foods that are medium in phosphate content can be eaten in moderation, but try to limit high phosphate foods to occasional use only.

Your dietitian will give you individualized advice on any changes which will be of benefit to you.

Please remember that any other diets you may be following still apply when you are on a low phosphate diet and your dietitian will support and guide you in order to achieve this. Keeping to a low salt diet is also important in a healthy diet, especially for people with kidney disease.

Processed foods and food additives

Processed foods often have phosphate and salt added to them.

Have a look at the labels on processed foods and try to limit those that contain the words phosphate or phosphoric acid including pyrophosphate, polyphosphate and sodium phosphate. Look out in particular for ham, breaded chicken, cake mixes, instant sauces and dark carbonated drinks as they often contain these. This type of phosphate is easily absorbed from your food, into your body, as they are artificial.

Most of the salt that we eat is from processed foods. This is another good reason to try and reduce the amount of processed foods eaten. Try to choose fresh, unprocessed food as much as possible,

Dairy foods

Dairy foods are a major source of protein, vitamins and minerals. However, they are higher in phosphate than meat and fish.

Each day choose items from the list below that add to a total of 3 points, in order to have enough protein but not too much phosphate.

One point	Two points
100ml (½ cup) cow's milk (full cream, semi skimmed, skimmed, pasteurized, sterilized or UHT milk) 100ml soya milk (fortified) 200ml rice / oat / soya milk (unfortified) 60g (2oz) of the following: cottage cheese, ricotta 30g (1oz) of the following: brie, feta, mozzarella, stilton 1 pot (100g) fromage frais 1 pot (125g) soya yoghurt 2 scoops (120g) ice cream 1 pot (90g) creme caramel 3tsp (10g) dried milk powder 8 heaped tsp / 4 servings (26g) non-dairy creamer	200ml (1/3pt) cow's milk or soya milk (fortified) 30g (1oz) of the following hard cheeses: cheddar, edam, wensleydale, red leicester 15g (½oz) parmesan cheese 150ml (¼ pint) custard 200g (½ tin) milk pudding 1 pot (150g) yoghurt Note: 30g (1oz) cheese is the size of a small matchbox
Three points	
300ml (½ pint) cow's milk or soya milk (fortified)	

Low phosphate dairy foods (No dairy points per average portion)
Cream cheese Crème fraîche Cream and soured cream

High phosphate dairy foods (At least 3 dairy points per average portion)	
Cheese spread Processed cheese Condensed milk Evaporated Milk Milk based sauces Cheese sauce Coconut milk/ cream Instant pastas and sauces	Readymade meals such as: Macaroni cheese Lasagne Quiche Pizza

Please note, the above lists are not exhaustive. If your food choice is not in the table then please speak to the dietitian to discuss.

Tips:

- If you need to use extra milk in a day, try two measures of double cream to one measure of water as a substitute.
- Unfortified rice milk, soya milk and oat milk are lower in phosphate than cow's milk. However, check the label as fortified varieties often add phosphate.
- When using hard cheese, grate cheese to make it go further. Use mature cheese, as a small amount still adds plenty of flavour or use a small amount of parmesan cheese in cooked dishes.
- Bedtime drinks: make using ½ milk to ½ water with 1-2 tsp of malted milk or drinking chocolate powder as this halves the phosphate content and provides 1 dairy point.

Meat, fish and protein alternatives

These foods are good sources of protein, which is important for building and maintaining muscle and for fighting infection. However, protein food also contain phosphate, although the amount of phosphate they contain varies. Use the following tables to make suitable choices. Check that your serving sizes are similar to the ones described below each table.

Meat and meat products

Low phosphate	Medium phosphate	High phosphate
Bacon	Kidneys	Ham
Beef	Sausages	Liver
Beef burger	Sausage roll	Offal
Chicken		Paté
Corned beef		
Duck		
Gammon		
Lamb		
Pork		
Rabbit		
Salami		
Turkey		
Pork pie		
Meat pie		
Veal		
Venison		

Average serving size:

Light meal:

- 1 - 2 slices cold meat: 30-60g (1-2oz).

Main meal: cooked weight 90-120g (3-4oz)

- 3 slices roast meat / 1 average sized chop / 1 chicken breast or meat (size of the palm of your hand).

Fish, seafood and shellfish

Low phosphate	Medium phosphate	High phosphate
Crab sticks	Anchovies	Carp
Salted fish	Catfish	Clams
Scallops	Cockles	Crab (fresh)
Tinned crab	Cod	Crayfish
Tuna fresh*	Fish fingers	Fish Paste
Tuna tinned	Haddock	Fish Roe
Tinned salmon*	Herring*	Monkfish
Winkles	Kippers*	Mussels
	Lemon sole	Oysters
	Mackerel*	Pilchards*
	Plaice	Sardines*
	Prawns	Scampi
	Salmon*	Sea bass
	Shrimps	Taramasalata
	Squid	Whitebait
	Skate	
	Trout*	

* Oily fish is good for your heart

Average serving size:

Light meal: tinned tuna/ salmon/ mackerel 30-60g (1-2oz)

Main meal: 1 fillet of fish (size of the palm of your hand)

Tips:

- Meat and fish are major sources of protein, vitamins and minerals and most have less phosphate than most of the dairy foods, so are excellent food choices.
- Fish bones contain a lot of phosphate, so limit bony fish and remove edible bones before eating.
- Cured, smoked and tinned meats and fish are high in salt. Choose tinned fish in spring water, not brine.

Non-meat sources of protein

Low phosphate	Medium phosphate	High phosphate
Egg white	Black eyed beans Chickpeas Dried soya mince Egg (see allowance) Lentils Mung beans Peanut butter Tofu	Aduki beans Baked beans Hummus Nuts - all types Red kidney beans Pinto beans Seeds - all types Soya beans Quorn

Average serving size:

1- 2 eggs

3 tablespoons of cooked beans/ pulses: 90g (30z)

Tips:

- Aim to have no more than 4 eggs/ week. Egg whites can be eaten freely, as the phosphate is found in the egg yolk
- A portion of beans such as chickpeas or lentils can replace a portion of meat or fish as they are good sources of protein without containing too much phosphate.
- If you are vegetarian, continue having beans and lentils as usual.
- Though nuts are high in phosphate, they are also high in protein. If you wish to include these in your diet, please discuss with the dietitian.

Bread, rice, potatoes, pasta & other starchy foods

Starchy foods provide energy, some vitamins and may contain fibre. Fibre helps to keep your bowels regular. Include something from this group at each meal. Starchy foods are often low in phosphate but phosphate may be added in the manufacturing process (see page 5 for further information).

Bread, flour and alternatives

Low phosphate	Medium phosphate	High phosphate
Corn flour Cream crackers Croissant English muffins Pitta bread Water biscuits White bread Plain flour	Bagel Chapatti Granary bread Oat cakes Rice cakes Rye bread Rye crispbread Wheat crispbread Wholemeal bread Wholemeal flour	Baking powder Crumpets Naan Rye flour Self-raising flour Soya flour

Rice, potatoes, pasta and grains

Low phosphate	Medium phosphate	High phosphate
Cassava (boiled) Potatoes (boiled, baked, mashed, roast) Rice noodles Sweet potato (boiled) White rice Yam (boiled)	Couscous Pearl barley Instant mashed potatoes Noodles (plain or egg) Potato croquettes Yorkshire pudding Thick cut chips White pasta	Brown rice Dumplings Macaroni cheese Frozen / oven chips Thin cut chips Potato waffles Pot noodle Quinoa Wholemeal pasta

Breakfast cereals

Low phosphate	Medium phosphate	High phosphate
Cornflakes Rice Krispies Special K Sugar Puffs	Fruit & Fibre Grapenuts Porridge oats Puffed wheat Shredded Wheat Shreddies Weetabix	All-Bran Branflakes Muesli Readybreak

Tips

- Use a small amount of milk with breakfast cereals.
- Plain flour contains very little phosphate. Baking powder and self-raising flour contain more. Use these in moderation.

Fibre

Very little of the phosphate found in high fibre foods is absorbed by the body. Hence most of these foods can be eaten as part of a healthy diet.

Examples of high fibre foods

- Wholemeal bread
- Wholegrain cereals e.g. Weetabix, Shredded Wheat
- Oats
- Lentils
- Beans
- Nuts
- Fruit and vegetables

Fruit and vegetables

Fruit and vegetables are naturally low in phosphate but also contain some potassium, so please check with your dietitian if you are currently on a low potassium diet.

Fruit and vegetables are an important source of vitamins, minerals and fibre and help to keep your bowel healthy. It is recommended to have five 80g portions per day. Try to have a variety of fruit and vegetables.

An 80g (3oz) portion of fruit is about a handful of small fruit(strawberries, raspberries, grapes etc.) **or** a portion of fruit about the size of a small apple, peach or tangerine

An 80g portion of vegetables is about 3 heaped tablespoons or a small bowl of salad.

80g portions are quite small. If you have a large apple for instance, it may weigh about 160g (6oz) so this is 2 portions of fruit.

If you enjoy eating plenty of fruits and vegetables the above guidelines will help you to continue to enjoy variety in your diet and meet your "5 a day".

As fruit and vegetables (except beans and pulses) are low in phosphate, they don't need limiting, apart from those listed below:

- Star fruit may cause dangerous side effects for those with kidney problems; it is therefore recommended that you avoid this.
- You may be advised not to have grapefruit if you are taking certain medications.

Foods high in fat and/or sugar

These foods can affect your weight and heart, and some are high in phosphate. Many baked goods contain some phosphate; the main sources being baking powder, self-raising flour, eggs and milk.

Aim to use these foods sparingly, unless you have a poor appetite or have lost weight recently. Ask to speak to the Dietitian for further advice on these foods.

Fats and oils

Most fats/oils are low in phosphate. Those marked ♥ are better for your heart.

Monounsaturated fats ♥	Olive oil, rapeseed oil, olive oil based spreads
Polyunsaturated fats ♥	Sunflower, soya, corn oils and margarines made from these oils
Saturated fats	Butter, cream, lard and visible fat on meat, coconut oil, palm oil, ghee

Savoury Snacks

Low phosphate	Medium phosphate	High phosphate
Breadsticks Corn snacks (Wotsits, Skips) Cream crackers Crisps (potato, taro) Popcorn Prawn crackers	Pretzels Tortilla chips	Bombay mix Nuts Seeds Twiglets

Sugar and confectionary

Low phosphate	Medium phosphate	High phosphate
Sugar Jam, marmalade Honey, lemon curd Sweet, jellies Fruit gums, mints Marshmallows Turkish delight	Kitkat, Bounty Mars bars, Twix Snickers Cream egg Toffees Liquorice allsorts	Plain, white or milk chocolate. Sweet containing nuts. Fudge

Biscuits and cakes

Low phosphate	Medium phosphate	High phosphate
Cream cakes Doughnuts Jaffa cakes Jam tarts Shortcake Cream/ jam biscuits Ginger biscuits Rich tea/ Nice Digestive biscuits	Battenburg Blueberry muffins Chocolate biscuits Danish pastry Flapjack (plain) Fruit cake Oat based biscuits Sponge cake Swiss roll Tea cakes	Cake mixes Cereal bars Coconut cake Chocolate cake Chocolate muffins Oatcakes Rock cakes Scones Scotch pancakes Waffles

Puddings

Low phosphate	Medium phosphate	High phosphate
Fruit crumble/ pie Fresh fruit salad Tinned fruit Meringue/ pavlova Jelly Sorbet Lemon meringue pie Treacle tart	Trifle Mousse Cheesecake Ice cream * Fromage frais * Creme caramel * * Refer to dairy section	Bread & butter pudding Pancakes Sponge pudding Yoghurt * Custard* Rice pudding* * Refer to dairy section

Tips

- Extra snacks between meals and puddings may be useful for those with a poor appetite who are only managing small meals.
- Puddings are often served with custard or ice cream.
- Cream or Crème fraîche are lower phosphate alternatives.

Drinks

Most drinks are fairly low in phosphate. However there are some drinks that are much higher.

Some dark fizzy drinks contain significant amounts of phosphate (phosphoric acid) that are easily absorbed by the body. Keep these to a minimum and choose light coloured fizzy drinks instead.

If you need to watch your fluid intake, ensure that you count all these drinks as part of your daily fluid allowance.

Speak to your Dietitian if you are taking supplement drinks such as Complan or Build Up.

Alcohol

Please discuss with your Doctor or Renal Consultant.
The NHS guidance recommends that men and women drink no more than 14 units of alcohol per week, with some alcohol free days.

Low phosphate	Medium phosphate	High phosphate
Coffee (little milk) Fruit Juice Light coloured fizzy drinks eg lemonade, Fanta, Tizer Red Bull Oxo Squash/ Cordial Tea Water (incl. flavoured/ tonic)		Bovril Dark fizzy drinks such as Coca Cola/ Pepsi/ Dr Pepper Malted milk drinks such as *Horlicks, Ovaltine * Hot chocolate* Milky Coffee Milkshake Supplement drinks eg Build up, Complan, Nurishment
Cider Sherry Spirits Wine	Ale Bitter	Lager Stout

Miscellaneous

Spices, garlic, herbs, pepper and condiments such as mustard, tomato ketchup, brown sauce, salad cream, mayonnaise and vinegar are low in phosphate.

Most soups are low in phosphate and protein but high in salt; discuss with the dietitian if you wish to have soup often.

Sauces such as white sauce and cheese sauce contain a lot of phosphate.

Bovril and marmite are high in both phosphate and salt and are best used sparingly.

Phosphate binders

Why might I need phosphate binders?

In addition to a low phosphate diet, phosphate binders may be prescribed (see next page). Binders combine with some of the phosphate in your food, allowing it to pass out of your body with your stool.

It is essential for phosphate binders to be taken with meals and snacks that contain phosphate, as prescribed.

You may find that the dose and type of your binders may change depending on your blood levels of calcium and phosphate.

Remember to take your binders with you if you are eating out.

It is important to be aware that phosphate binders can impact the absorption of other medications, examples include levothyroxine, iron supplements and antibiotics. To ensure that the phosphate binders do not interact with your other medication it is advisable to discuss this with your doctor or pharmacist.

Types of Phosphate Binders

Name of the binder	When to take	How to take
Calcichew (calcium carbonate) 	Just before meals, during or just after each meal.	Chew
Renacet (calcium acetate)	With meals	Swallow Whole.
Renvela Powder (Sevelamer Carbonate)	With meals	Dissolve in 60ml water Use within 30 minutes
Renagel (sevelamer hydrochloride) 	With meals	Swallow whole
Renvela (sevelamer carbonate) 	With meals	Swallow Whole
Fosrenol (lanthanum carbonate) 	During or just after meals.	Chew (also available as powder)
Velporo (sucroferric oxyhydroxide) 	With meals	Chewed or crushed. (Not swallowed whole).

Where is the phosphate in my diet?

Meal

Estimated phosphate (mg)

Total phosphate in my diet :

To reduce phosphate I need to:

Binder distribution

Meal _____ take _____ binders

Snack _____ take _____ binders

Meal _____ take _____ binders

Snack _____ take _____ binders

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Produced by:

The Nutrition & Dietetic Department
Worcestershire Acute Hospitals NHS Trust

If your symptoms or condition worsens, or if you are concerned about anything, please call your GP, 111, or 999.

Patient Experience

We know that being admitted to hospital can be a difficult and unsettling time for you and your loved ones. If you have any questions or concerns, please do speak with a member of staff on the ward or in the relevant department who will do their best to answer your questions and reassure you.

Feedback

Feedback is really important and useful to us – it can tell us where we are working well and where improvements can be made. There are lots of ways you can share your experience with us including completing our Friends and Family Test – cards are available and can be posted on all wards, departments and clinics at our hospitals. We value your comments and feedback and thank you for taking the time to share this with us.

Patient Advice and Liaison Service (PALS)

If you have any concerns or questions about your care, we advise you to talk with the nurse in charge or the department manager in the first instance as they are best placed to answer any questions or resolve concerns quickly. If the relevant member of staff is unable to help resolve your concern, you can contact the PALS Team. We offer informal help, advice or support about any aspect of hospital services & experiences.

Our PALS team will liaise with the various departments in our hospitals on your behalf, if you feel unable to do so, to resolve your problems and where appropriate refer to outside help.

If you are still unhappy you can contact the Complaints Department, who can investigate your concerns. You can make a complaint orally, electronically or in writing and we can advise and guide you through the complaints procedure.

How to contact PALS:

Telephone Patient Services: 0300 123 1732 or via email at: wah-tr.PET@nhs.net

Opening times:

The PALS telephone lines are open Monday to Thursday from 8.30am to 4.30pm and Friday: 8.30am to 4.00pm. Please be aware that a voicemail service is in use at busy times, but messages will be returned as quickly as possible.

If you are unable to understand this leaflet, please communicate with a member of staff.