

# How to have a low phosphate diet

## Managing your phosphate

This leaflet is for anyone who needs to control their phosphate level through their diet.

## What is Phosphate?

This is a mineral found in a range of different foods; it helps to build strong healthy bones and teeth with the help of calcium. Healthy kidneys usually filter out the excess phosphates from the blood and help to maintain the levels of phosphate within a healthy range.

## What phosphate levels should I be aiming for?

The ideal level of phosphate in the blood depends on whether or not you have started dialysis; these levels are decided by national guidelines and are based on what is best for your health.

Name	Symbol	Level
Phosphate (if you have dialysis)	PO4	Between 1.1 and 1.7mmol per litre
Phosphate (before starting dialysis)	PO4	Between 0.9 and 1.5mmol per litre

## Why is it important to avoid high phosphate levels?

High phosphate levels in the blood can initially cause red eyes and itching on your skin. Long term effects however include:

- Weaker bones and aching joints
- Hardened blood vessels which reduce the flow of blood causing an increased risk of skin problems and heart disease.

## So what can I do if my phosphate levels are high?

Dietary advice to follow a low phosphate diet is required. This should be provided by a renal dietitian who will also take into account other dietary requirements you may have such as those for diabetes, gastrointestinal conditions or allergies and intolerances.

**Step One:** Reduce your intake of phosphate additives

**Step Two:** Reduce your intake of high phosphate foods

**Step Three:** Take your phosphate binders (if you are prescribed them)

## Step One: Reduce your intake of phosphate additives

Phosphate additives are used in the manufacturing of foods. They may or may not be listed on ingredients lists. Phosphate from food additives and preservatives are very easily absorbed, more than 90% compared to 30-60% of phosphate found in dairy, meat, seeds, nuts, beans and pulses.

By checking the labels of processed foods you can see if they contain any phosphate based additives. Below is a list of phosphate additives and examples of foods which contain these.

Phosphate additive	Examples of foods
Diphosphates (E450)	Cakes, instant mashed potatoes and cheese
Triphosphates (E451)	Fish fingers, cheese spread
Polyphosphates (E452)	Dried foods and desserts, cheese spread
Monostarch phosphates (E1410)	Ice cream, pizza, battered fish, salad dressing
Phosphate additive	Examples of foods
Phosphoric acid (E338)	Beer, processed meats e.g. sausages, sweets, cakes, chocolates, carbonated drinks, jams, vegetable fats and oils
Calcium phosphate (E341)	Self-raising flour, cake and pancake mixes, powdered milk drinks (eg. hot chocolate), instant pasta/noodles, microwave rice and sauces
Ammonium phosphate (E442)	Baked goods, condiments, puddings, baking powder, frozen desserts, margarine, whipped toppings and yeast foods
Magnesium phosphate (E343)	Salt substitute, prepared mustard
Dicalcium phosphate (E627)	Cupcake mixes, pie tops, instant pasta and sauces, muesli bars, ice cream and instant soups
Sodium phosphate (E339)	Frozen seafood
Phosphated distarch phosphate (E1413)	Batter on frozen foods, custards, sauces, mayonnaise, salad dressing, pies and fillings, instant beverages, dried foods, drinking yoghurt, flavoured milk, whipped cream, coffee, pre cooked pasta and noodles, starch based puddings

## Step Two: Reduce your intake of high phosphate foods

Protein rich foods, such as meat, fish, pulses, nuts and especially dairy foods contain phosphate. However these foods are an important part of any diet since they are also rich sources of protein. A diet lacking in protein can cause protein malnutrition, which can make you more prone to illness and affect your body's ability to recover well.

### Very high phosphate foods – to limit or avoid

Food category	High phosphate foods (Limit these)	Lower phosphate alternatives
Cereals	All Bran, branflakes, museli, instant oats and Readybrek	Cornflakes, Weetabix, porridge
Puddings	Instant milk desserts and custards, evaporated and condensed milk, coconut milk, Yoghurt Ice cream – limit to 3 scoops per week	Fruit and cream Fromage frais (small 120g pot) Soya based puddings eg. Soya yoghurt

<b>Food category</b>	<b>High phosphate foods (Limit these)</b>	<b>Lower phosphate alternatives</b>
Meat	Offal and foods containing offal (liver, heart, brain and faggots) Game (goose, pheasant, venison) Pre-cooked packaged hams Highly processed meats (e.g. luncheon meat, pork pie)	Fresh chicken, turkey, beef, lamb, pork, homemade burgers / meatballs  Deli ham, fresh cooked ham
Fish	Shellfish, roe, crab, fish pastes, oysters, taramasalata  Oily fish with edible bones (sardines, pilchards whitebait, sprats etc.)  (Note: oily fish is good for your heart but limit to 2 portions per week)	Plain fresh fish; haddock, cod, plaice, salmon, trout. Homemade fishcakes. Tinned fish; salmon, tuna, mackerel, sardines (boneless and skinless)
Cheese	Processed cheese (e.g. cheese triangles, slices and spreads)	Hard cheese (limit to 4oz per week), Cream cheese, cottage cheese or ricotta.
Savoury snacks	Nuts and foods containing them (muesli, cereal bars, peanut butter, satay sauces, marzipan etc.) seeds, bombay mix, Twiglets	Bread sticks, wheat based crisps, crackers.
Sweet treats	Cake mixes, crumpets, rock cakes, oatcakes, scotch pancakes, and those products containing baking powder.  Chocolate, cocoa and foods containing them. e.g. chocolate cakes, cereal bars, muffins and biscuits, toffee and fudge	Homemade cakes (try to avoid recipes using both self-raising flour and baking powder), shortbread, plain biscuits, English muffins, croissant, bagels  Boiled sweets, fruit jellies
Condiments	Marmite and Bovril	Jam and honey
Drinks	Coca Cola / Pepsi / Dr Pepper, lager and stout, milkshakes, malted milk drinks e.g. Ovaltine, hot chocolate.	Lemonade, fizzy orange / apple (diet versions also), ginger beer, Iron Bru, sparkling water, tea, soda  Milk (limit to 300mls cows milk)
Other	Oven chips (some varieties), potato waffles, smash, potato cakes, some frozen potato products  Eggs – up to 6 per week  Hummus	Home-made chips, certain oven chips (check the ingredients list)

## Vegetarian Diets

If you are vegetarian, continue to have beans and lentils as your source of protein. A portion of beans such as chickpeas, mung beans, black-eyed beans, dried soya mince, tofu or lentils can replace a portion of meat or fish without containing too much phosphate.

## Milk

As an alternative to 300mls of cow's milk daily you could have any of the following that would provide the same amount of phosphate:

MILK	AMOUNTS
Soya Light, soya organic, rice organic	568 mls (1 pint)
Almond, Oatly (organic), coconut, cashew milk	426mls (¾ pint)
Goat's milk	284mls (¾ pint)
Soya milk (fortified)	284mls (½ pint)
Sheep's milk	142mls (¼ pint)
Evaporated milk and condensed milk	100mls
Coffeemate	80g
Coffee Compliment	36g
Dried milk powder	25g

- **REMEMBER: The option of a larger volume of milk may not be suitable if you follow a fluid restriction. Coffeemate, coconut milk and sweetened soya milks are higher in potassium and therefore should be avoided if you are following a low potassium diet. The lower potassium options are organic and unsweetened.**
- **Yoghurts / fromage frais / ice cream / milk puddings should be included in your milk allowance (e.g. 1 x 125g yoghurt = 125ml milk)**

## Cheese

As an *alternative* to 100g (4oz) of cheddar cheese per week you could choose any of the following, which would provide the same amount of phosphate:

CHEESE	AMOUNT	
	grams	ounces
Spreadable cheese, soft white, full fat i.e. Philadelphia, supermarket own brands	525	21
Cream cheese	510	20
Fromage frais, plain	410	16
Cottage cheese, ricotta	300	12
Camembert, goats milk soft cheese, full fat	210	8
Brie	200	8
White stilton	195	8
Feta, mozzarella, fresh	190	7
Blue stilton, Danish Blue, soya cheese	150	6
Roquefort, Wensleydale	130	5
Red Windsor, Double Gloucester Gouda, Edam, Leicester, Cheddar	110	4
Parmesan, fresh, Gruyere, Emmental	75	3
Processed cheese spreads and smoked cheese i.e. Dairylea, Primula etc.,	60	2

## Step Three: Take your phosphate binders (if you are prescribed them)

If your phosphate remains high or there are reasons why a low phosphate diet may not be suitable for you, then you may require a medication called a phosphate binder.

These will be prescribed by your renal doctor. They bind together (soak up) phosphate from your food to help prevent it going into your blood stream (reduce the levels of phosphate in your blood). For these tablets to work it is important to take them with the right foods and at the right time.

Phosphate binder	When to take	How to take
Renacet (calcium acetate 475mg or 950mg) 	with food	Swallow whole, larger tablet can be broken in half
Phosex (calcium acetate 1g) 	with food	Swallow whole
Calcichew (calcium carbonate 1.25g) 	before food	Suck or chew
OsvaRen (Calcium acetate 435mg and magnesium carbonate 235mg) 	with food	Swallow whole, can be broken in half
Fosrenal (Lanthanum 500mg, 750mg, 1g tablets or 1g sachet) 	immediately after food	Tablet: chew Sachet: mix contents with food (do not mix with water/liquid)
Sevelamer carbonate (800mg tablet or 2.4g sachet) 	with food	Tablet: swallow whole Powder: Disperse each sachet in 60ml water and drink
Sevelamer hydrochloride (Renagel 800mg) 	with food	Swallow whole
Sucrofenic oxyhydroxide (Velporo 500mg) 	with food	Chew

*Written information cannot replace personalised recommendations. For further advice please seek a dietetic referral from your consultant or GP.*

# Notes

The Trust cannot accept any responsibility for the accuracy of the information given if the leaflet is not used by RD&E staff undertaking procedures at the RD&E hospitals.

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