



# Managing phosphate intake: a guide for young people

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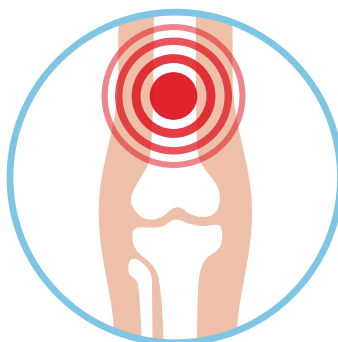
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## 1. Why do I need to reduce my phosphate intake?

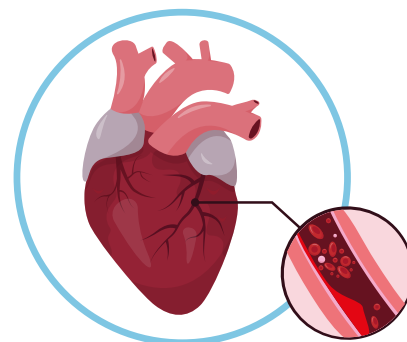
Phosphate is a mineral that is important for the development of strong bones and to produce energy for the body. Our kidneys control the level of phosphate in the body by getting rid of any excess in the urine. When your kidneys are not working properly, the phosphate levels in your blood may increase.

## What are the effects of high blood phosphate levels?



### Short term

Red sore eyes, itchy skin and bone pain



### Long term

Weak bones, poor growth and hardening of blood vessels, which can damage the heart

## 2. Which foods are high in phosphate?

There are two types of phosphate in our food and drinks:

- *Phosphate additives* which are added to some foods during their processing to help keep the food moist, improve its texture or color, or to extend its shelf life.
- Phosphate which occurs *naturally* in foods such as meat, milk and nuts.

Limiting dietary phosphate intake from food additives and reducing some naturally occurring sources can help prevent high blood phosphate levels and protect your bones and heart.



## Are all phosphates equal?

The amount of phosphate we absorb from our diet varies depending on the source.

The phosphate in additives can be completely absorbed by the body. This is a concern as this can quickly cause your blood phosphate to rise. Limiting processed foods is a priority.

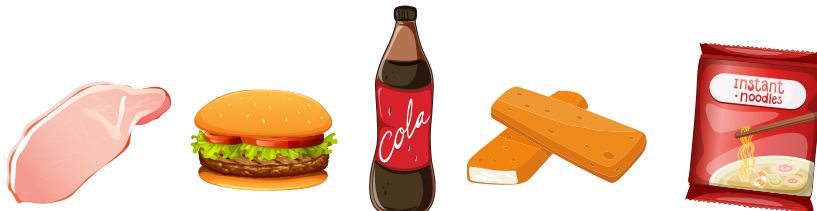
The phosphate that is found naturally in foods is less well absorbed (see table below). As these foods provide essential protein, vitamins and minerals, they are important for growth. However, it may be necessary to reduce certain natural sources such as milk, dairy products and eggs, as they often provide a significant amount of phosphate in your diet.

| Source                               | Examples of foods  | How much phosphate do we absorb into our body? |
|--------------------------------------|--|--|
| <b>Phosphate additives</b>           | Processed meat and chicken, frozen fish products, processed cheese, cake and pancake mixes, dark colored soft drinks (such as colas) | Up to <b>100%</b>                              |
| <b>Naturally occurring phosphate</b> | Milk and dairy products (e.g. cheese, yogurt, ice cream), eggs, meat, fish, nuts   | <b>40-60%</b>                                  |

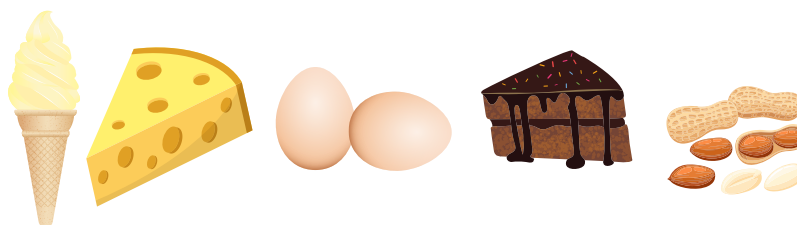
### 3. Stepwise guide to reducing phosphate intake

#### Step 1. Limit phosphate additives

Choose fresh foods rather than processed foods



#### Step 2. Reduce intake of some foods naturally high in phosphate



## Step 1.

## Limit phosphate additives

### Preparing more foods from fresh at home

Processed foods are the main source of phosphate additives in the diet. Cooking more foods at home using fresh ingredients is encouraged.

### What type of foods contain phosphate additives?

The following table details those foods which may contain phosphate additives; their presence may be brand related.

|                                   |  |
|-----------------------------------|--|
| <b>Fresh meat and poultry</b>     | Fresh, raw meat and poultry could contain enhancers which include phosphate additives (see page 6 for further details)   |
| <b>Processed meat and poultry</b> | Processed meat and poultry e.g. sausages, burgers, breaded products (such as chicken nuggets)  |
| <b>Fish</b>                       | Frozen processed and unprocessed fish and breaded fish products (such as fish fingers)   |
| <b>Bakery items</b>               | Cakes, biscuits, crumpets, flour tortilla wraps, naan bread  |
| <b>Dairy</b>                      | Dried milk products, milk desserts and yogurts, evaporated milk, cream, ice cream, sterilized and ultra-high temperature (UHT) milk, processed cheese (especially sliced or spreadable products) |
| <b>Potato products</b>            | Chilled, dried and frozen products, such as chips and waffles  |
| <b>Powdered food</b>              | Sauces, instant dessert mixes e.g. pancake mixes   |
| <b>Drinks</b>                     | Dark colored fizzy drinks. Chocolate or malt-based drinks  |

### How can I tell if phosphate additives are present?

Not all food labels will tell you if an item contains phosphate additives. Some are listed by name or as an E-number (see table on the next page).



## Phosphate additives

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

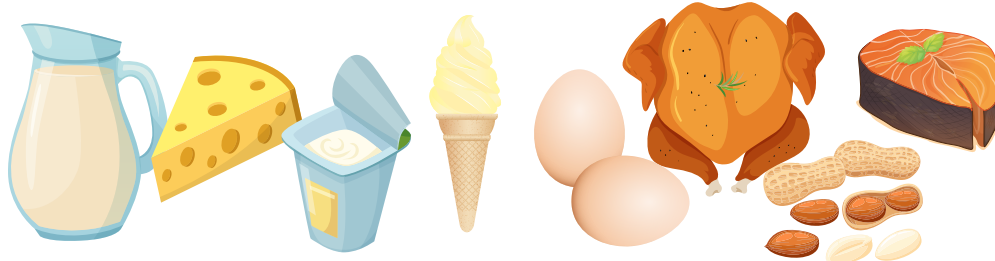
You could check ingredient lists for these, or look for 'phos' as part of an ingredient name. These foods should be limited, or suitable alternatives found. In general, ready to eat, processed and 'fast food' are more likely to contain phosphate additives compared to fresh foods.

**INGREDIENTS:** ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE [VITAMIN B1], RIBOFLAVIN [VITAMIN B2], FOLIC ACID), CORN SYRUP, POLYDEXTROSE, COCOA OIL (WITH TBHQ FOR STABILITY), MODIFIED CORN STARCH, HIGH FRUCTOSE CORN SYRUP, SALT, DRIED CREAM, CALCIUM CARBONATE, CORNSTARCH, LEAVENING PHOSPHORIC PHOSPHATES, SODIUM PHOSPHATES, MONOCALCIUM PHOSPHATE, DIPHOSPHATES, MONOCALCIUM PHOSPHATE, HYDROGENATED

### Step 2.

## Reduce intake of some foods naturally high in phosphate

You may need to lower your intake of natural phosphate sources. These include foods such as milk and milk products (e.g. cheese, yogurt, ice cream), eggs, meat, fish and nuts. See pages 10-11 for a guide to choosing foods which are lower in phosphate.



Your dietitian will help you with any changes you may need to make to your diet

You may find a dairy-based foods swap list useful. The table below lists foods containing similar quantities of phosphate. A daily allowance of these can be swapped for each other, making your diet more manageable and flexible.

**The following contain similar amounts of phosphate - your dietitian will advise you on how much you can include in your diet**

## Phosphate swapping list



1 pot (125g) or 3 tablespoons yogurt



2 small pots (2 x 50g) of fromage fraise



3 tablespoons or 1 pot (120g) custard or milk pudding



2 small scoops ice cream (100g) or 1 choc ice



1 small bar chocolate (50g) or 1 small packet of chocolate sweets



1 thin slice hard of cheese (20g) or 1 heaped tablespoon of grated cheese



1 slice of processed cheese or 1 cheese strip/string/triangle (check for phosphate additives) or 2 tablespoons of cottage cheese (40g)



1 small slice of pizza



1 small bottle of probiotic drink

## 4. Medications

Some medications contain phosphate. Your medical team will look at your current medications and will make adjustments if necessary.



## 5. Use of phosphate binders

Phosphate binders, often prescribed alongside dietary advice about phosphate intake, can help manage your blood phosphate level.

Here are some practical points to help you get the best out of taking phosphate binders.



It is important that you take your phosphate binder with meals and snacks and not between meals.

Remember to take your phosphate binder with all snacks which contain phosphate.

Some foods such as vegetables, fruit and cereal products (such as rice, bread, crisps, cakes and biscuits) may be low in phosphate, so if they are not eaten at the same time as a high phosphate food, you may not need to take a phosphate binder. However, check food labels for possible inclusion of phosphate additives.

If you are having nasogastric or gastrostomy feeds, you may be able to mix your phosphate binders into your feed.

Some phosphate binders may cause feed ingredients to settle out. In this case you need to mix them with some water and put them down your tube at the beginning and/or end of your feeding period.

You may just prefer to take your phosphate binders by mouth before and/or after your feeding period. Discuss this with your dietitian or doctor.

The dose of phosphate binder should be tailored to the amount of phosphate in your diet, including both food and drinks. Your doctor or dietitian will advise you about this.





## Notes

My dietitian is: .....

Telephone: .....

Email: .....

## 6. How to choose foods lower in phosphate

The following table provides suggestions of alternatives to food and drinks high in phosphate additives and high in naturally occurring phosphate.

**Step 1.**  
Limit phosphate additives

**Step 2.**  
Reduce intake of some foods naturally high in phosphate

|                   | High in phosphate additives   | High in natural phosphate  | Lower phosphate alternatives   |
|-------------------|---|--|--|
| Milks             | Ultra-High Temperature (UHT) milk products  | Cow's milk - also avoid evaporated, condensed and powdered milk<br><br>Non-dairy creamers<br><br>Fortified soya milk | Dilute cow's milk with water (50:50)<br><br>Milk substitutes, including some plant-based milks such as oat milk<br><br>Avoid plant-based milks containing calcium phosphate  |
| Bakery            | Baked goods or puddings with phosphate-containing raising agents e.g. crumpets, muffins, scones, pastries, naan bread and tortillas/wraps   | Foods containing chocolate or nuts   | Baked goods without phosphate-containing raising agents* e.g. croissants, English muffins and hot cross buns<br><br>Plain or jam/cream filled biscuits, plain cakes, teacakes, cream cakes and doughnuts<br><br>Cream crackers, wholemeal or white bread, pitta bread, chapattis, rice cakes |
| Starchy foods     | Frozen, chilled and dried potato products e.g. potato waffles, potato cakes   |  | Fresh potatoes, homemade chips, wedges, roast potatoes<br><br>Rice, couscous, pasta  |
| Breakfast cereals | Check the label for phosphate-containing additives  | Cereals containing chocolate or nuts   | Porridge oats, rice and wheat-based cereals  |
| Dry product mixes | Cake, biscuit, pancake and dessert mixes<br><br>Packet sauces<br><br>Instant pasta or noodle dishes   | Dried cheese, white sauce mixes  | Pasta, rice, noodles with homemade sauces/flavourings  |
| Meat              | Frozen beef burgers or takeaway foods<br><br>Processed chicken e.g. chicken nuggets, Kiev and popcorn chicken<br><br>Sausages, bacon, ham, salami<br><br>Tinned meats, meat paste, pâté | Not usually limited but portion sizes may need to be reduced   | Most fresh, unprocessed beef, lamb, chicken, pork, duck and turkey (check supermarket brands and choose options that do not contain phosphate additives)<br><br>Homemade sausages from a butcher's shop<br><br>Homemade beef burgers and meatballs   |

\* A phosphate free raising agent can be made using cream of tartar and sodium bicarbonate in place of baking powder. This may not be suitable if you are also restricting potassium intake.

## Step 1.

## Step 2.

|                     | High in<br>phosphate additives  | High in<br>natural phosphate  | Lower<br>phosphate alternatives   |
|---------------------|---|---|---|
| Plant-based protein | Some processed plant-based meals/products<br>e.g. meat-free country pie, meat-free hot dogs, chicken-free crispy grills | Portion sizes may need to be reduced<br><br>Nuts<br>e.g. almonds, hazelnuts, peanuts, walnuts<br><br>Seeds<br>e.g. pumpkin, sesame, sunflower, tahini paste | Tofu, Quorn®, textured soya protein, soya or pea-based veggie burger, beans and pulses e.g. lentils, kidney beans and chickpeas   |
| Fish and shellfish  | Processed fish products<br>e.g. fish fingers/cakes, battered or crumbed fish<br><br>Fish paste                          | Portion sizes may need to be reduced  | Fresh, unprocessed fish e.g. cod, haddock, salmon and tuna<br><br>Tinned fish: salmon, tuna, mackerel, sardines, pilchards (only if without bones and without skin)                     |
| Dairy               | Processed cheese slices/strips/spreadable cheese  | Hard cheese e.g. cheddar, edam<br><br>Yogurt<br><br>Ice cream   | Cottage, cream or ricotta cheese<br><br>Small amount of hard cheese<br>Vegan coconut or soya oil cheese<br><br>Cream, soured cream<br>Crème fraîche<br><br>Jelly, sorbet, fruit lollies |
| Eggs                | Some baked egg products<br>e.g. quiche  | Egg yolks   | Egg whites<br><br>To make scrambled eggs (with 2 eggs) replace one of the whole eggs with 1 egg white   |
| Spreads & dips      | Processed cheese spreads<br>Processed dips  | Nut butters and chocolate spread  | Biscuit spread, jam, marmalade, syrup, honey<br><br>Small amount of natural yogurt/sour cream/salsa/pureed vegetable dips<br><br>Hummus, guacamole and refried beans                    |
| Drinks              | Dark colored fizzy drinks<br>e.g. colas*<br><br>Chocolate or malt-based drinks  | Cow's milk  | Light colored fizzy drinks<br>e.g. lemonade<br><br>Water, diluted fruit squash, cordials and some natural fruit juices<br><br>Coffee*, tea*, herbal and fruit teas                      |

\*Children under the age of 12 years should not have caffeine-containing drinks



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