Dietary Treatment to Help Prevent Recurrence of Kidney Stones

Information for patients, relatives and carers

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Caring with pride
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Introduction

Kidney stones form when waste products in the blood cause crystals to collect inside the kidneys. Over time the crystals may build up to form a hard stone-like lump.

Kidney stones can develop for a number of reasons. This is more likely to happen if you don't drink enough fluids, if you're taking some types of medication, if your urine becomes more acidic or if you have a medical condition that raises the levels of certain substances in your urine.

If the urine becomes saturated with these substances over a long period of time the stones will slowly grow in size.

Your diet can affect the levels of these substances in the urine as well as the acidity of your urine. The dietary advice in this booklet outlines the general advice to help prevent the recurrence of the most common types of kidney stones, and gives specific advice relevant to particular types of stones.
Types of kidney stones

Calcium stones

Calcium stones, usually in the form of calcium oxalate, are the most common type of kidney stone and are caused by increased calcium in the urine.

Uric acid stones

Uric acid is the waste product created when the body breaks down purines (a type of protein found in many foods and all of our cells). The body is not able to break down uric acid, so it can accumulate in the blood and urine. Uric acid can begin to form very small crystals in the urine, which eventually give rise to uric acid stones.

Factors that encourage uric acid stones to form are:

- Producing urine that is more acidic than normal.
- Producing a smaller volume of urine due to drinking less fluid.
- Having a higher level of uric acid due to eating more foods that are higher in purines, such as meat, liver, oily fish and seafood.

Having more acidic urine is thought to be the most important factor. This can be associated with:

- Diabetes
- Insulin resistance or ‘pre-diabetes’.
- Eating a high protein diet.
Current dietary guidelines

These dietary factors will help reduce the risk of recurrent kidney stones:

- A high fluid intake – aim for two to three litres daily.
- Weight loss if you are overweight.
- Reduce your salt intake.
- Moderate your protein intake.

If your kidney stones are caused by too much calcium in the urine these additional dietary factors are important:

- Calcium – intake not restricted, but ensure not excessive (500-1000mg (milligrams) daily).
- Moderate intake of oxalate rich foods.

These specific dietary factors will be explained in detail in this booklet, and should be included within a balanced diet.
A balanced diet

It is important to eat a wide variety of foods to ensure we get all the nutrients our body needs.

- Eat three regular meals per day.
- Base meals around breads, cereals, rice, pasta or potatoes. These foods give us carbohydrates. Choose the higher fibre options of these foods.
- Have a serving of meat, fish, egg, pulses or cheese at two meals. These foods give us protein which is needed every day for repair and replacement of body tissues.
- Eat five portions of fruit and vegetables per day. They give us fibre, and a range of vitamins and minerals.
- Milk and milk products give protein, calcium and some vitamins. Choose low fat options where possible.
A high fluid intake

Drinking enough fluid is the most important aspect of preventing stone formation. Keeping your urine diluted helps to stop waste products getting too concentrated and forming stones.

- You should aim to drink two to three litres (four to six pints) of fluid per day.

- If you are overweight you should drink a minimum of three litres per day or 30-35ml (millilitres) of fluid per kilogram (kg) of body weight (35ml per kg in hot weather) – whatever is higher.

- Try to ensure that your fluid intake is spread out over the day, evening and during the night if possible.

- If you are drinking adequate amounts of fluid your urine should be pale in colour. If it begins to look dark and concentrated then you are not drinking enough.

- It is particularly important that fluid intake is high in the evening to prevent your urine becoming too concentrated at night.
What fluids are best?

Drink freely:

- Water (tap or bottled)
- Fruit squashes (try lower sugar versions)
- Fizzy drinks (try low calorie)
- Herbal teas

In moderation:

- Fresh fruit juices, 120 ml per day
- Wines, beer & spirits, not more than the recommended units of alcohol per week
- Tea and coffee

Avoid: Oxo and Bovril as these are very salty.
Alcohol

- Both men and women are advised to avoid exceeding 14 units of alcohol per week, to keep associated health risks to a low level.

- If you do drink as much as 14 units per week, it is best to spread this evenly over three days or more.

- If you wish to cut down the amount you’re drinking, a good way to help achieve this is to have several alcohol free days each week.

How many units do drinks contain?

- 125ml of 12% wine = 1.5 units
- 175ml of 12% wine = 2 units
- 250ml of 12% wine = 3 units
- Pint of lower strength lager/beer/cider (3.6%) = 2 units
- Pint of stronger lager/beer/cider (5.2%) = 3 units
- Can of lager/beer/cider (440ml 5%) = 2 units
- Single measure/25ml of spirit (40%) = 1 unit

Please note: drinks with higher percent (%) of alcohol will contain more units of alcohol.
Are you a healthy weight?

It is not good for your health to be either overweight or underweight.

If your body weight is low or if you are unintentionally losing weight you may not be getting enough of all the nutrients that your body requires. If this is the case, please ask your doctor to refer you to a Dietitian.

If you are overweight you are more likely to develop kidney stones. It would be beneficial for you to make changes to your lifestyle to help with weight loss.
If you are overweight

Weight loss should be steady and slow – aiming for one to two pounds per week.

Try to make the following changes to your diet:

- Avoid fried foods.
- Use semi-skimmed or skimmed milk.
- Cut down on cakes, pastries and biscuits.
- Cut down on sweets and chocolates.
- Use diet or no added sugar drinks.
- Don’t add sugar to tea and coffee.
- Cut the fat off meat and take the skin off chicken.
- Have smaller portion sizes.
- Eat slowly and chew food well.
- Don’t miss meals – avoid becoming too hungry and have fruit in between meals if necessary.
- Aim to have three meals per day.
- Boredom leads to nibbling so avoid becoming bored. Plan activities or develop new interests or hobbies.
Salt

Most of us eat too much salt. Eating too much salt has been linked to several medical conditions.

Recent research suggests that people who have kidney stones are particularly “sensitive” to salt and a high salt intake can contribute to stone formation.

It is recommended that we consume no more than six grams of salt per day (one teaspoon).

How can I reduce my intake of salt?

- Avoid adding salt to your food.
- Try not to use salt or reduce the amount used in cooking – flavour with pepper or herbs and spices
- Cut down on salted meats, e.g. bacon, ham and processed meats.
- Cut down on salty snacks such as crisps and nuts.
- Stock cubes and meat extracts, e.g. Oxo, Bovril, or Marmite and gravy granules are very salty so use less or try making your own stocks, using herbs and spices for flavour.
- Where possible choose tinned foods in water rather than in brine.
• Canned, packet and instant soups are very high in salt so only have occasionally.

• Takeaways such as Chinese meals may be very high in salt so only have occasionally and avoid soy sauce.

Where does salt come from?

The salt that occurs naturally in fresh foods is enough to provide the small amount of salt that your body needs.

About three quarters of the salt we eat is hidden in processed foods. Manufacturers add salt to food as a preservative and flavour enhancer. These foods don’t necessarily taste salty and it is therefore important to look at the food labels to help you make lower salt choices.

Making sense of the labels?

Food labelling can be very confusing. You can use these levels as a guide to choosing sensibly:

• Greater than 1.5g of salt per 100g of food is high.
• Between 0.3g and 1.5g of salt per 100g is moderate.
• Less than 0.3g of salt per 100g is low.
Moderate your protein intake

It is important that you eat enough protein to meet your body’s needs. However research has shown that a high protein diet can:

- Increase the amount of calcium in the urine.
- Cause the urine to become more acidic.
- Increase the risk of kidney stone formation in some people.

The major protein sources in the diet are: meat, fish, eggs, cheese, pulses and dairy foods.

Have a serving of meat, fish, egg, pulses or cheese at two meals each day.

Sensible portion sizes for protein foods are:

- Half a pint of milk a day for drinks and cereals.
- 120g pot of yoghurt.
- 2oz (ounces) or 50g of meat, fish, chicken, or one egg at a small meal.
- 4-5oz or 100-125g of meat, fish or chicken, or two eggs at a main meal.

Be aware that cooked breakfasts contain a lot of protein and may be high in salt.
Calcium

In the past the main treatment for calcium stones was a strict calcium restriction, e.g. avoidance of all dairy products. However, we now know that this is not necessary and may even be harmful.

A low calcium diet can aggravate stone formation by increasing absorption of oxalate in the gut. This results in higher oxalate levels in the urine and an increased risk of stone formation.

An adequate intake of calcium is therefore recommended while avoiding an excessive intake.

The following foods are rich in calcium – try to include two to three of these foods as part of your protein intake each day:

- Milk – any type
- Hard cheese*
- Yoghurt (plain or fruit)
- Sardines or pilchards

*NB – this is a high salt food
Oxalate containing foods

If your kidney stone is caused by too much calcium in the urine, you may be advised to reduce the amount of oxalate in your diet. Only a small amount of urinary oxalate comes from the diet which means it is not necessary to avoid oxalate containing foods. Having an adequate calcium intake will limit oxalate absorption. These are high in oxalate and would not be recommended in large quantities:

- Beetroot
- Almonds
- Rhubarb
- Spinach

The foods listed below contain some oxalate and would not be recommended in large quantities:

- Berries
- Cocoa and chocolate
- Nuts
- Peanut butter
- Parsley
- Soy products, including soy milk, cheese and tofu.
- Tea and coffee contain a moderate amount of oxalate; aim to have no more than two to three cups per day. Adding milk to tea and coffee decreases the oxalate absorption.
What if you have a poor appetite?

It is always important to maintain an adequate nutritional intake and to stay well nourished. If you have been asked to make specific changes to your diet and fluid intake but you have a poor appetite, then you could find it difficult to make any changes.

Please ask your doctor to refer you to a Dietitian for more help and information.
Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact: Mrs Heidi Seaward, Office Manager, Nutrition and Dietetic Department, Scarborough Hospital Woodlands Drive, Scarborough, YO12 6QL, Tel: 01723 342415 or email heidi.seaward@york.nhs.uk

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