Department of Nutrition and Dietetics

Dietary Management of Kidney Stones

Kidney stones are fairly common, with around 12% of men and 6% of women being affected at some stage in their life. They can develop in one or both kidneys, and can affect people of any age, but most commonly between 20-60 years of age.

What causes kidney stones?

The main causes of kidney stones are:

- High levels of calcium, oxalate, cystine or uric acid in the urine
- Not drinking enough (resulting in the urine becoming very concentrated)
- Recurrent urinary tract infections
- Some genetic conditions can increase the risk of stone formation.

If you have had kidney stones in the past, you are more likely to develop kidney stones again in the future, so it is important that you follow your treatment plan to reduce this risk.

Types of kidney stones

There are four types of kidney stones:

1. Oxalate stones
2. Calcium phosphate stones
3. Uric acid stones
4. Cystine stones

You may know what type of stone you produce if you have had one analysed, or had a urine sample analysed.

How are kidney stones treated?

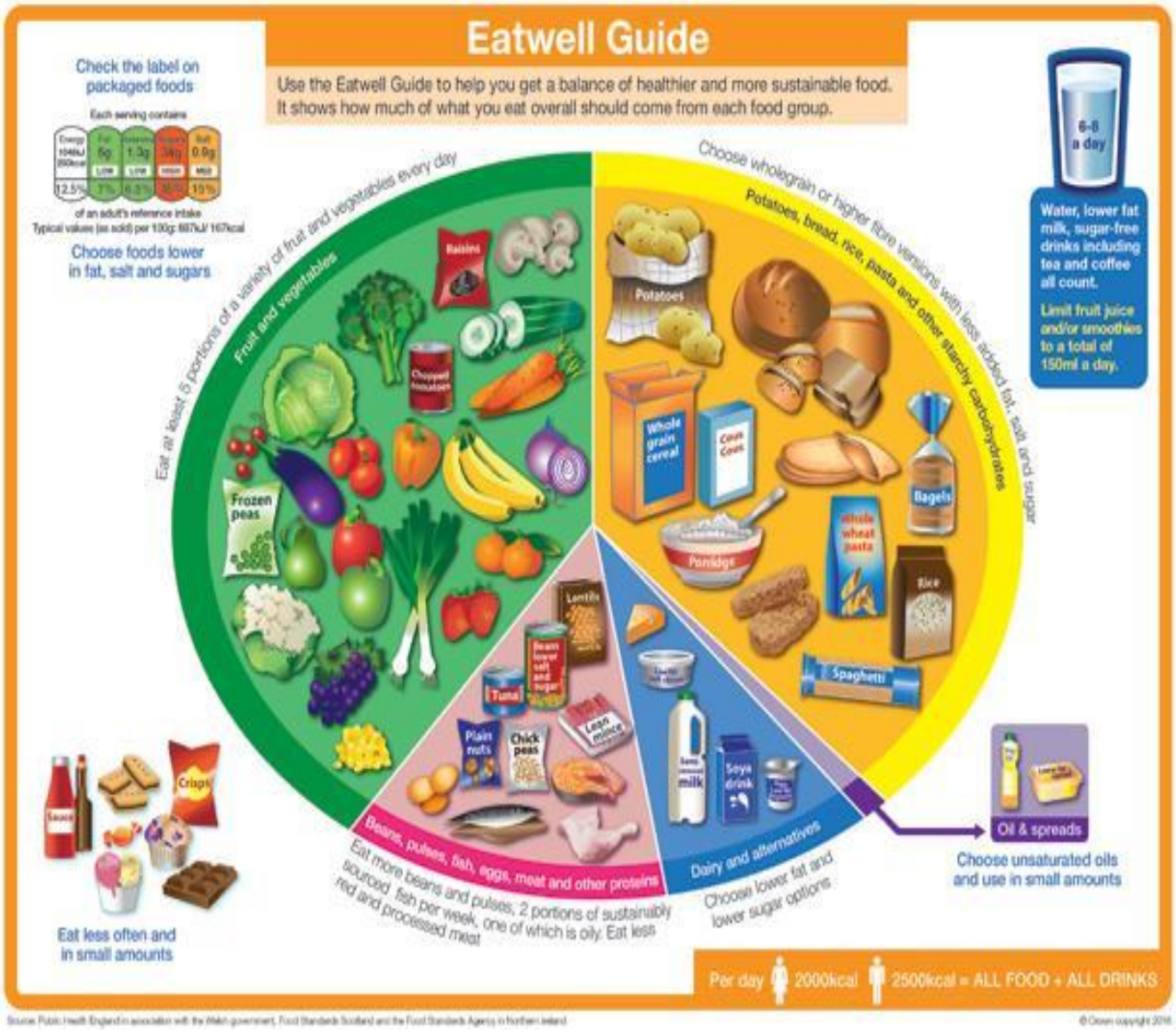
- If the stones are not causing you any problems, they may be left to pass out when passing urine
- Medication - tablets such as Tamsulosin, may be prescribed which can encourage the stone to pass
- Surgery - there are a variety of techniques that may be used, depending upon the size and location of the stone
- **Dietary management is perhaps the most important treatment to minimise the risk of future stones being formed**.

Dietary management

Whilst you may need to be careful with some specific foods if you have been diagnosed with kidney stones, it is still important for you to enjoy a well-balanced diet each day.

The Eatwell Guide is a national model designed to help you achieve a balanced diet.

The Eatwell Guide



The Eatwell Guide is based on the five food groups. Choosing a variety of foods from each group will ensure you consume a wide range of nutrients, which are essential for your general health.

If you are following any specific diets for your kidney disease (or any other health condition), discuss with your dietitian how you can best achieve a balanced and healthy diet.

Dietary management continued

Depending on the type of stone you produce, dietary advice will vary a little.

Fluid

You are more likely to develop kidney stones if you are dehydrated.

For all types of stone, you should aim to drink at least:-

3 litres (5 pints) daily

(more if you have been exercising hard, or if the weather is very warm).

This can include:

- Water/carbonated water, diluted fruit squash, fruit juice, fruit/herbal teas
- Tea or coffee in moderation.

Adding fresh lemon juice to drinking water may help reduce the risk of stone formation.

Avoid:

- Fizzy soft drinks/soda (these can encourage stone formation).

Limit:

- Caffeine and alcohol (these can make you dehydrated).

Salt

High intakes of salt can significantly increase the amount of calcium in your urine, increasing the risk of stone formation.

For all types of stone, you should limit salt to a maximum of:-

6g (2.4g sodium) per day

- Avoid adding salt when cooking. If necessary, use only a small pinch in the water with vegetables and potatoes
- Avoid adding salt at the table. Try alternative flavourings such as pepper, garlic, herbs and spices
- Avoid salty foods such as smoked, cured or canned meat or fish, soups, crisps and other savoury or salted snacks
- If you rely on processed foods or ready meals, try to choose ones with less salt in them (green or amber traffic light, or less than 1.5 g salt/100 g).

Salt substitutes such as LoSalt and Saxa So-Low are not recommended for patients with kidney disease.

Protein

Eating large amounts of animal protein increases the calcium, oxalate and uric acid in the urine.

If you produce **oxalate, calcium phosphate or uric acid stones**, you should limit your daily intake of animal based proteins to:

- 50-75g (2-3oz) meat/poultry or fish
- 50g (2oz) hard cheese or 2 eggs

As a high intake of animal protein is linked with an increased risk of kidney stones, it is recommended to try replacing animal protein with a plant-based alternative more often (eg beans, pulses or lentils).

Calcium

Although some stones contain calcium, a low calcium diet is not recommended. Calcium tends to be bound to other minerals as it is digested, and so dietary calcium in normal amounts does not appear to increase the risk of kidney stone formation.

Aim to include 3-4 portions of calcium rich foods daily:

- 200 mls (⅓ pint) milk
- 150g pot yoghurt
- 30g hard cheese (this would be included in the 50g cheese eaten for protein)
- 50g tinned sardines(this would be included as the 50g portion of fish above)

Fruit & Vegetables

Fruit and vegetables are good sources of citrate, which is known to inhibit stone formation. Citrate can also help to stop any stones that are already present from getting any larger.

Fruit and vegetables are good sources of fibre, which is also thought to help reduce the risk of stone formation.

Everyone should aim to have at least 5 servings of a variety of different fruits and vegetables daily as part of a healthy and balanced diet (see the Eatwell Guide on page 2). However, if you produce oxalate stones, you may need to be careful with the types of fruit and vegetables that you eat (see the section on oxalate stones on page 5).

Specific Advice

Oxalate stones

Reduce your intake of oxalate rich foods

If you have been told that you produce oxalate stones, you should reduce your dietary intake of oxalate.

Foods high in oxalate include:

- Blackberries, gooseberries, kiwi fruit, raspberries, purple grapes, rhubarb, strawberries, tangerines
- Beetroot, celery, leeks, okra, spinach, Swiss chard, sweet potatoes
- Soy products eg soy milk, soy sauce, tofu and miso
- Chocolate and cocoa drinks
- Nuts and nut butters
- Tea and coffee (limit to 2-3 cups per day, and make them fairly weak).

Summary

- Maintain a good fluid intake. Aim for 3 litres/5 pints daily
- Eat a healthy well-balanced diet
- Minimise your intake of salt
- Include plenty of fruits and vegetables daily
- Reduce your intake of animal proteins and include more vegetable protein foods
- Include foods containing calcium to meet your requirements, however, avoid calcium supplements
- Reduce oxalate intake if you know your stones are oxalate-based
- Any medications you are prescribed to treat your kidney stones will work better if you follow the guidance on the dietary management of kidney stones.

Contact Numbers:

We hope that you have found this information useful. If you have any questions or are worried about anything, please speak to the Kidney Dietitians on:

01305 255377 (Direct Dial)
07880 432682 or 07833484301 (Kidney Dietitian mobile phones)

Useful Websites:

NHS website:
https://www.nhs.uk/conditions/kidney-stones/

Kidney Care UK website:
https://www.kidneycareuk.org/about-kidney-health/conditions/kidney-stones/

Finally, your kidney dietitian is a reliable source for information - discuss your monthly results with them and see how you can vary your diet. Remember, not everyone is on the same renal diet.

About this leaflet:

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If you have feedback regarding the accuracy of the information contained in this leaflet, or if you would like a list of references used to develop this leaflet, please email pals@dchft.nhs.uk

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