

Children's Services

Department of Paediatric Surgery

Dietary advice for children who form stones: frequently-asked questions

The urinary tract system consists of two kidneys which filter the blood extracting water, urea, mineral salts, toxins, and other waste products. Urine is created and is transported from the kidneys through the ureters that connect the kidneys to the bladder. In some children (and adults) hardened mineral deposits form in the kidney – these are called kidney stones ('calculi'). Kidney stones are made of different types of crystals.

Most are:

- Calcium oxalate
- Calcium phosphate
- A combination of calcium oxalate and calcium phosphate
- Magnesium ammonium phosphate, also known as struvite or infection stones
- Uric acid
- Cystine
- Miscellaneous types such as occur with drug metabolites

Diet, including fluid intake, plays an important role in the care of children with kidney stones. For example, a diet high in sodium (salt), fats, meat, and sugar and low in fibre, vegetable protein, and unrefined carbohydrates increases the risk for kidney stone formation. High doses of vitamin C can result in high levels of oxalate in the urine and also increase the risk for kidney stones. This leaflet is designed to give you, as a parent/carer, dietary advice for your child who forms stones and contains answers to many of the common questions.

How much does my child need to drink?

Drinking enough fluid is the most important aspect of preventing stone formation and will reduce the risk of stone formation by almost one third. Not drinking enough fluid can make urine concentrated and make stones more likely to form.

Forming a good habit of drinking regularly will allow your child to be able to drink enough fluid. Your child should plan to have a drink with each meal and an extra drink at mid morning break time, and mid-afternoon on return from school. Your child may drink water or squash. If your child drinks tea or coffee, they may continue to have a small amount, but most of your child's fluids should be water or squash.

Each drink your child has should be at least 150mls (approximately the size of a tumbler glass). Your child should aim to keep his/her urine colourless throughout the day.

There are different types of renal (bladder) stones. If you have been informed that your child has 'cystine stones' your child will need to drink more fluid, usually an extra glass in the morning and an extra one or two glasses during the day.

Should I restrict my child's protein intake?

Yes. A high intake of animal protein appears to increase the risk of stone formation. Avoid large portions of meat, fish, eggs, cheese and milk for your child.

Aim for your child to have two small servings of meat/fish/eggs/pulses each day and two to three small servings of milk or dairy food to ensure an adequate intake of calcium.

A good guide to the size of a portion of protein is the size of your fist. Cheese portions should be the size of a match box.

Example menu plan	
Breakfast	Breakfast cereal with milk.
Mid morning	Fruit or biscuit.
Lunch	Sandwich with wafer thin Ham and salad filling. Fromage frais, piece of fruit.
Mid afternoon	Slice of toast.
Dinner	One small chicken breast (approx 75g), new potatoes, vegetables. Fruit salad or cake
Bed time	Small glass of milk/biscuit.

Should I restrict the amount of salt (sodium) my child has?

Yes. A high salt intake can contribute to calcium stone formation. Do not add salt to your child's food at the table but use pepper, herbs, spices or vinegar as alternative flavourings. You can, however, add a small amount of salt during cooking.

Foods which contain less than 0.5g (50mg) of sodium per 100g are low-salt choices and you should aim to choose foods for your child that are low in sodium. This information can be found on food labels.

Avoid high-salt, tinned, packet and processed foods for example, soups, salted crisps or nuts, tinned meats, meat paste, smoked fish and fish paste.

Oxalates and stone formation:

Your child needs to avoid oxalate-rich foods to reduce the amount of oxalate in their urine. The following foods are high in oxalate:

- Tea (more than two to three cups per day).
- Chocolate.
- Nuts and peanut butter.
- Cocoa and carob.
- Strawberries.
- Rhubarb.
- Celery, spinach and beetroot.
- Parsley.

It is not necessary to exclude oxalate-rich foods completely; simply for your child to eat them in small amounts.

Does calcium restriction help?

Severe calcium restriction can actually be harmful and increase the risk of stone formation because it will result in high levels of oxalate in your child's urine. If you follow the recommendations above for milk, cheese and yogurts, no further action is needed. The calcium your child drinks in the water cannot cause kidney stones and there is no need to restrict your child's intake of tap water, to specifically drink mineral water, or for you to purchase a water softener

Should my child take vitamin supplements?

Most vitamins are harmless but your child should not take Vitamin D preparations, including fish oils and multivitamin preparations since they increase calcium absorption. Vitamin C supplements should be avoided because they can increase the excretion of oxalate in your child's urine.

Summary

A normal calcium, low-salt, moderate-protein, dietary regime can reduce the risk of stone formation by a half. Keeping your child's urine colourless may reduce the risk by a further one third.

Who can I contact for more help or information?

- **Paediatric Surgery Nurse Specialist Team:** 01223 586973
- **Paediatric Dieticians:** 01223 216655

Other information

This patient information leaflet provides input from specialists, the British Association of Urological Surgeons, the Department of Health and evidence-based sources as a supplement to any advice you may already have been given by your GP. Alternative treatments can be discussed in more detail with your Urologist or Specialist Nurse.



We are currently working towards a smoke-free site. Smoking is only permitted in the designated smoking areas.

For advice and support in quitting, contact your GP or the free NHS Stop Smoking helpline on 0800 169 0 169

Help with this leaflet:



If you would like this information in another language, large print or audio format, please ask the department to contact Patient Information: 01223 216032 or

patient.information@addenbrookes.nhs.uk



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