# Urine tests

infoKID
Information for parents and carers about children's kidney conditions

This infoKID topic is for parents and carers about children's kidney conditions. Visit www.infoKID.org.uk to find more topics about conditions, tests & diagnosis, treatments and supporting information.

Each topic starts with an overview followed by several sections with more information.

» Links to sections in topic | **Other topics** available on website

**Your child may need some tests at the clinic or hospital. These tests help find out whether your child has a health condition, and the best treatment. For children with a kidney condition, the tests can find out how well a treatment is working. They can also see if there is damage to their kidneys or other parts of their body.**

**One very common test is a urine test. Your doctor or nurse will ask you to collect a sample of your child's urine (wee) in a small, sterile (completely clean) pot. They will test the urine using a chemically treated paper called a dipstick. This can show whether there are certain substances in the blood, such as proteins and blood cells. The sample may also be sent to a laboratory for more tests.**

**This topic gives you information about:**

- **what a urine test is**
- **why your child may need a urine test**
- **how urine samples are collected in babies and children**
- **24-hour urine tests**
- **what the urine tests are looking for**
- **how to test your child's urine at home if needed.**

## Overview

### About the urinary system

The **urinary system** gets rid of things that the body no longer needs, so that we can grow and stay healthy.

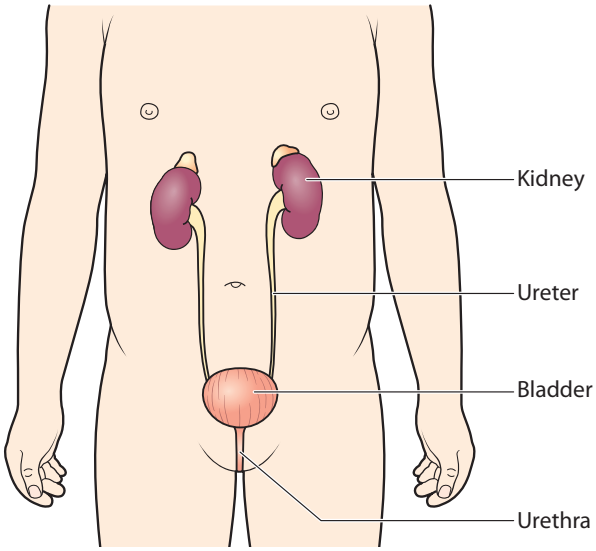
The **kidneys** are bean-shaped organs. They filter blood to remove extra water and waste in urine (wee). Most of us have two kidneys. They are at the back on either side of our spine (backbone), near the bottom edge of our ribs.

The two **ureters** are long tubes that carry urine from the kidneys to the bladder.

The **bladder** is a bag that stores urine until we are ready to urinate. It sits low down in the tummy area.

The urethra is a tube that carries urine from the bladder to the **outside** of the body.

**Urine** is mostly made up of water. It also contains many chemicals, including waste products and extra minerals that our body no longer needs.



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## Why does my child need a urine test?

Your nurse or doctor will tell you why your child is having a urine test, and when you will get the results.

Common reasons for testing urine in children include:

- to find out more about their general health
- to find out whether they have a condition or an infection, such as a **urinary tract infection (UTI)**
- to check how well their kidneys are working (**kidney function**)
- for children who have a kidney condition, to find out whether their kidney function is getting worse
- to check whether treatment is working.

## Getting urine samples

Your child's doctor or nurse will give you a sterile container to collect the urine sample. You may need to do this at the clinic, or take the container home and bring it back.

When getting a urine sample, it is important to make sure it is not contaminated. This means that there is dirt or bacteria in the urine sample.

### When to get the urine sample

Your doctor or nurse will let you know if you need to get the urine sample at a certain time of day.

You may be asked to get the **first morning urine**. This is the urine that your child passes when they first wake up in the morning and go to the toilet.

### Tips to help

Some children find getting a urine sample embarrassing or difficult. Here are some tips.

- Explain to your child why they need a urine test.
- They may drink lots of fluids (like water) before to help them wee more easily.
- For babies and young children, you may like to have someone help you.
- If your child has pain when weeing, you may be able to help by encouraging them to think about another part of their body.
- Ask your doctor or nurse whether they have any special equipment, such as a bedpan or a bag to hide the container.

### Returning the urine sample

When you have collected the urine sample, you may need to write your child's name, and any other information required, such as his or her date of birth and today's date, on the container label. (Your doctor or nurse may do this for you – they will let you know.)

Return the urine sample to your doctor or nurse as soon as possible. This should usually be within 2 hours, but your doctor or nurse will let you know.

If you cannot hand in the sample within 2 hours, put the sealed container of urine into a plastic bag, and store it in a fridge (not freezer) for up to 24 hours. If possible, take it to the clinic in a cool box or bag.

» Getting urine samples

## 24-hour urine sample

It is sometimes useful to know how much urine a child is passing, or how much of a substance is in their urine, over one whole day. You may be asked to provide a 24-hour urine sample. This means you will need to get every drop of your child's urine over 24 hours (one day and one night).

» 24-hour urine sample

## About the tests and results

Examining urine to help diagnose diseases is called urinalysis. There are different stages of urinalysis.

» About the tests and results

## Testing urine at home

Some children need to have their urine tested at home for a certain amount of time. You will need to collect a urine sample, test it with a dipstick and record the results to bring to the next clinic visit.

» Testing urine at home

## Blood tests

Urine tests may be used alongside **blood tests** to find out more information about your child's health.

# Getting urine samples

**Your child's doctor or nurse will give you a sterile (completely clean) container to collect the urine sample. You may need to do this at the clinic, or take the container home and bring it back.**

**When getting a urine sample, it is important to make sure it is not contaminated. This means that there is no dirt or bacteria in the urine sample.**

**This section describes getting urine samples:**

- **from older children and young people**
- **from babies and young children who use nappies – different methods**
- **from children who are using a catheter, Mitrofanoff or urinary stoma**
- **using a catheter or a procedure called suprapubic aspiration – these may be used for children who are very ill, especially with a urinary tract infection (UTI).**

## Children and young people

For children and young people, urine can be collected as they pass urine normally.

- Do not open the sterile container until you and your child are ready.
- To help make sure the urine sample is clean, make sure your child washes his or her hands and genital area with soap and water. They may dry themself with a clean towel. If you are helping your child, wash and dry your hands too.
- While your child is weeing, catch some of the urine into the container. You usually do not need to fill it to the top.
- To help make sure this does not have any germs that may be on your or your child's skin, you may need to get a **mid-stream sample**. This is from the *middle* part of the urine flow. Your child can start weeing into the toilet or potty. After one or two seconds, catch some of the urine into the container. Take the container away before your child stops urinating.
- Screw the lid on tight.

### Further tips for teenage girls

Teenage girls need to be especially careful when getting a mid-stream sample.

- Your daughter should wash her hands and her genital area, and dry them with a clean towel.
- She should sit on the toilet with her legs wide apart.
- Before weeing, she should separate her labia – this is the skin around her genital area.

## Babies and children in nappies

For babies and young children who use nappies, you will need another way to collect urine. There are three ways:

- clean catch
- using an absorbent pad
- using a collection bag

### Clean catch

The most common method is called **clean catch**. The urine is less likely to be contaminated than with other methods. This means waiting up to an hour for your child to wee and catching it in a container. Good times are after a bottle feed, during a nappy change, or before a bath.

Your doctor or nurse will give you a container. To keep the sample as clean as possible, follow these steps.

- Wash your hands thoroughly with soap and water.
- Wash your child's genitals (the area covered by the nappy) with lukewarm water and a soft cloth or cotton wool. Always clean from the front area backwards, towards the bottom.
- Wait until your child wees. When he or she does, catch the urine in the smaller container – you do not need to fill it to the top. Make sure your child's skin does not touch the container.
- Screw the lid on tight.

### Absorbent pad

Your doctor or nurse may give you a special **absorbent pad**, with a syringe and a sterile container. They will show you what to do.

- Wash your hands thoroughly with soap and water.
- Wash your child's genitals (the area covered by the nappy) with lukewarm water and a soft cloth or cotton wool. Always clean from the front area backwards, towards the bottom. When dry, put the pad in your child's nappy.
- Check the nappy every 10 minutes until the pad is wet. Replace the pad with a clean one after 30 minutes, or earlier if your child does a poo.
- When the pad is wet, remove it from the nappy and put it on a clean surface, wet side up.
- Wash your hands.
- Put the tip of the syringe into the wet pad. Gently pull back on the plunger – the urine should slowly draw up into the syringe.
- Empty the urine from the syringe into the sterile container, by pushing the plunger.
- Repeat if needed, until enough urine has been collected. Screw the lid on tight.

### Collection bag

Using a **collection bag** is a quicker way to collect urine than the clean catch method, but there is a higher rate of contamination. It is sometimes used in clinic, but you may be asked to use one at home. It is most often used when the urine is being tested for something other than infection.

- Make sure you are using the correct bag – there is a different one for boys and girls.
- Clean your child's nappy area with lukewarm water and a soft cloth or cotton wool. Always clean from the front area backwards, towards the bottom.
- Make sure the skin is dry, then apply the sticky part of the bag to your child's skin. You can put a nappy on your child – make sure the closed part of the bag is pointing down and can be seen outside of the nappy.
- When you see urine in the bag, carefully remove the bag.
- Hold the bag over the sterile container. Using a clean pair of scissors, make a small cut in the bottom of the bag so that the urine can drain into the sterile container.

## For children who use a catheter, Mitrofanoff or urinary stoma

Some children cannot wee in the normal way. They need to use special equipment to empty their bladders. For these children, a urine sample can be collected using their usual method of emptying their bladder.

» Read more on the next page

## If a urine sample us needed urgently

In some children, it is important to get a urine sample quickly. This is normally only used in children who may have a serious urinary tract infection (UTI), so that treatment can be started as soon as the urine is collected. These methods are done in the hospital:

- using a catheter
- suprapubic aspiration.

These methods are normally only used in children who may have a serious urinary tract infection (UTI). UTIs are caused by germs, which are usually bacteria.

## Getting urine samples: Read more about procedures

Children with UTIs need to take an antibiotic, a medicine that stops the germs growing in their urine. Your child's doctor will need to get a urine sample as soon as possible, to find which germ is causing the infection and decide on the best antibiotic.

These methods are done in the hospital:

- using a catheter
- suprapubic aspiration

### Using a catheter

- Your nurse or doctor will clean your child, wearing sterile gloves.
- They will pass a small catheter through the urethra, which is the tube that your child normally passes urine out of. They will pass the catheter through to the bladder.
- Urine will pass out of the catheter almost straight away. It will be collected in a sterile container.
- The tube will be removed, and your child will start to be given the antibiotic.

### Suprapubic aspiration

In **suprapubic aspiration**, a needle is inserted through the tummy's skin into the bladder. Some urine is taken up into the needle.

- Your child may be given a **local anaesthetic**, which is a medicine that is put on his or her skin so that it goes numb.
- Your nurse or doctor cleans your child's tummy, the area over the bladder, wearing sterile gloves.
- An **ultrasound scanner**, which can look inside the body, may be used to find the bladder. A special probe (small hand-held device with jelly on tip) is moved around the outside of your child's tummy, and an image of the bladder can be seen on a screen.
- A thin needle is inserted through your child's skin into their bladder. The needle is the same size as, or smaller than, those used to take blood.
- Your child's urine is collected in a syringe attached to the needle, and then into a sterile container.
- The needle is taken out straight away and a small plaster put on your child's skin.

"Supra" means above and "pubic" means the genital area, because the needle is put into the area above the genitals. "Aspiration" means to remove by suction (sucking).

- A **urinary catheter** is a thin, plastic tube that is usually inserted through the area where your child normally wees from and into the **urethra**, the tube that leads up to the bladder.
- A **Mitrofanoff** is a small tunnel from the bladder to the outside of the body, which is created during an operation. It is made from an unused part of the body. To empty the bladder, a catheter is placed inside the Mitrofanoff.
- A **urinary stoma** is a small opening, which is created during an operation. There are two types of operations.
  - A **ureterostomy** creates a stoma connected to the **ureter** (the tube from the kidney to the bladder).
  - A **vesicostomy** creates a stoma connected to the bladder.

# 24-hour urine sample

**It is sometimes useful to know how much urine a child is passing, or how much of a substance is in their urine, over one whole day. You may be asked to provide a 24-hour urine sample. This means you will need to get every drop of your child's urine over 24 hours (one day and one night).**

**You will be given some equipment to help you collect the urine. This is usually a large container or bag, a plastic funnel, a bag and a request form.**

## Before you start

- You will be given some equipment to help you collect the urine. This is usually a large container, a plastic funnel, a bag and a request form.
- Check with your doctor or nurse whether your child needs to change what they eat or drink before or during the 24-hour period.
- You may want to choose a day when you and your child are both at home. Remember that you will need to collect the urine throughout the whole day and your child will need to take the container with them if they go out.
- Sometimes there is a small amount of liquid in the bottom of the container. Do not throw this out – this is a preservative which is required for some urine samples.

## During the 24 hours

- Start when your child wakes up in the morning.
- Your child should wee and flush this first urine down the toilet.
- Write the exact time and date on the label on the container.
- Both the container and your child's bladder are now empty.
- Then, collect every drop of urine your child passes over 24 hours. Use the funnel to get it all into the container.
- If your child finds it difficult to use the funnel, collect the urine into a clean, dry, non-metal object (like a potty, bowl or jug) – then pour this through the funnel into the container.
- If your child does a poo, make sure you collect the urine separately.
- Finish when your child wakes up the next morning. They should pass their first urine of the day into the container at the same time as their first urine of the day before – even if they do not feel they 'need' to wee at that time.
- Write the exact date and time on the container label. Now the container has all the urine your child has passed in a 24-hour period.
- Keep the container away from heat and light, and with the cap closed tightly, between each time you use it.

## After the 24 hours

- Fill in the label on the container, with your child's full name and date of birth, the clinic or GP surgery that asked for the urine collection, and today's date.
- Check that the cap is screwed on tightly.
- Return the filled container with the request card to the clinic or GP surgery, as soon as possible.
- If you have it for a day or two, keep it away from heat and light. If you have it for longer, keep it in the fridge.

## Any problems

If you have a problem collecting the 24-hour urine sample – for example, if you forget one of the urines – let your doctor or nurse know. You may need to start again.

If the sample is not accurate, this may affect important decisions about your child's treatment.

# Testing urine at home

**Some children need to have their urine tested at home for a certain amount of time. You will need to collect a urine sample, test it with a dipstick and record the results to bring to the next clinic visit.**

## Why do I need to test urine at home?

You may need to test your child's urine at home each day for a while, to look for:

- protein
- blood
- signs of an infection

This is important for children who have some conditions affecting the kidney, including:

- **nephrotic syndrome** – when a lot of protein is lost in the urine, causing swelling in the body
- **glomerulonephritis** – a group of conditions that affect the kidneys, causing protein and blood to leak into the urine
- **Henoch–Schönlein purpura (HSP)** – blood vessels in the body, often including the skin, stomach and kidneys, become inflamed, causing a skin rash and stomach and joint pains
- **recurrent urinary tract infections (UTIs)** – for children who have UTIs that keep coming back

The urine test results will give important information about your child's heath and the best treatment to use.

## How do I test urine at home?

You will be given:

- a sterile (completely clean) container to collect urine
- dipsticks for each day that you need to collect urine
- instructions about how to read the dipstick

Your doctor or nurse will tell you what time to collect urine. For example, if your child has nephrotic syndrome, you will probably be asked to collect a sample of his or her **first morning urine** - the first urine passed after waking.

- Put the dipstick in the urine sample and remove it.
- The results will take some time to show. You will need a watch or a clock with a second hand or that is digital to make sure you read the dipstick at the correct time. Use the instructions included in the package.

### Keeping records

Record the result in a diary – make sure you include:

- the date
- the urine test result
- any medicines taken (including the dose, or amount)
- any comments about your child's health (e.g. feeling unwell)

Bring the diary to your next clinic visit.

## Example of a home urine testing diary

| Date | Urine test results | Medicines (with dose) | General health |
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# About the tests and results

**Examining urine to help diagnose diseases is called urinalysis. There are different stages of urinalysis.**

## Physical examination

Your doctor or nurse can examine your child's urine for clues about their health, by looking at:

- its colour
- its smell
- its cloudiness

## Dipstick test

Your doctor or nurse will place a dipstick into the urine. The dipstick is a strip with chemical pads that change colour depending on what substances are in the urine.

The dipstick can detect signs of a **urinary tract infection (UTI)**, protein, blood, sugars, and acid (pH balance).

## Laboratory test

Depending on the results of the dipstick test, the sample may be sent to a laboratory to be looked at under a microscope. These tests will help with the following:

- to confirm whether there is an infection, and which germs are causing it
- if there is protein in the urine, to find out how much is there
- if there is blood in the urine, to count the number and types of blood cells
- how concentrated the urine is – to give more information about how well the kidneys are working (kidney function).

## About tests and results: Read more about dipstick and laboratory tests

### Dipstick test

*Infection*

If there are certain substances in your child's urine, this may be a sign there is a urinary tract infection (UTI). UTIs are caused by germs – these are usually bacteria – that affect one or more parts of the urinary system.

- **White blood cells** are a type of cell normally found in the blood that helps the body fight infection.
- **Nitrites** are chemicals that the body sometimes makes when there is a bacterial infection.

*Protein*

The dipstick can show whether there is protein in your child's urine. There is usually no or very little protein in the urine – an abnormal amount is called **proteinuria**.

If your child's urine sample shows proteinuria, your doctor will do more tests to find out more.

*Blood*

The dipstick can show whether there is blood in your child's urine – this is called **haematuria**. There is usually no blood in the urine.

If your child's urine sample shows haematuria, your doctor will do more tests. If there is a lot of blood, the urine may be coloured red or dark brown (like a cola drink).

*Sugars and other substances*

**Glucose** is a type of sugar, and may be found in the urine in some conditions such as diabetes.

If there are substances called **ketones** in your child's urine, this may be a sign of dehydration (not enough water in the body).

*Concentration*

A specific gravity test finds out how concentrated the urine is. This can give your doctor information about how well your child's kidneys are working (kidney function).

### Laboratory test

*Infection*

Urine cultures check whether the urine sample has germs, such as bacteria and yeasts (a type of fungus). It can take up to 48 hours for this result to be available.

*Protein*

The dipstick urine test can detect whether there is any protein, but is not very accurate. Your doctor may also calculate the amount of protein. He or she can do this by comparing the amounts of protein and creatinine in the urine. Creatinine is continuously made by muscles and normally removed by the kidneys in urine.

There are two measurements that can be used.

- **Urine protein:creatinine ratio (PCR)** – this measures the amount of all protein and the amount of creatinine. The ratio compares the amount of protein to the amount of creatinine.
- **Albumin:creatinine ratio (ACR)** – this measures the amount of one type of protein called albumin and the amount of creatinine in the urine. The ratio compares the amount of albumin to the amount of creatinine.

If your child needs to have this test, he or she will normally need to provide a sample of their first morning urine, the urine that they pass when they first wake up in the morning and go to the toilet.

*Blood*

The dipstick urine test can detect whether there is any blood. A laboratory test can identify and count the number of blood cells.

# Your notes and contact information

www.infoKID.org.uk

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For details on any sources of information used in this topic, please contact us through our website www.infoKID.org.uk.

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