

Queen Elizabeth Hospital Birmingham



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All about my kidneys

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www.uhb.nhs.uk/patient-information-leaflets.htm

Introduction

The purpose of this leaflet is to provide information about how the kidneys work, how we measure the function of the kidneys and what can happen when things go wrong with the kidneys.

What do my kidneys do?

Most people have two kidneys and they have the crucial role of removing waste from the blood and controlling overall fluid balance in the body either by removing or conserving fluid and salt.

The urine that you pass is a combination of the fluid that the body has to remove so that you do not get waterlogged (swollen with oedema or breathless), and waste products that would make you feel unwell (e.g. nauseous) if they were not removed.

The kidneys also help to:

- control blood pressure
- prevent anaemia by making healthy blood cells
- keep the bones strong
- make sure that the blood doesn't become too acidic

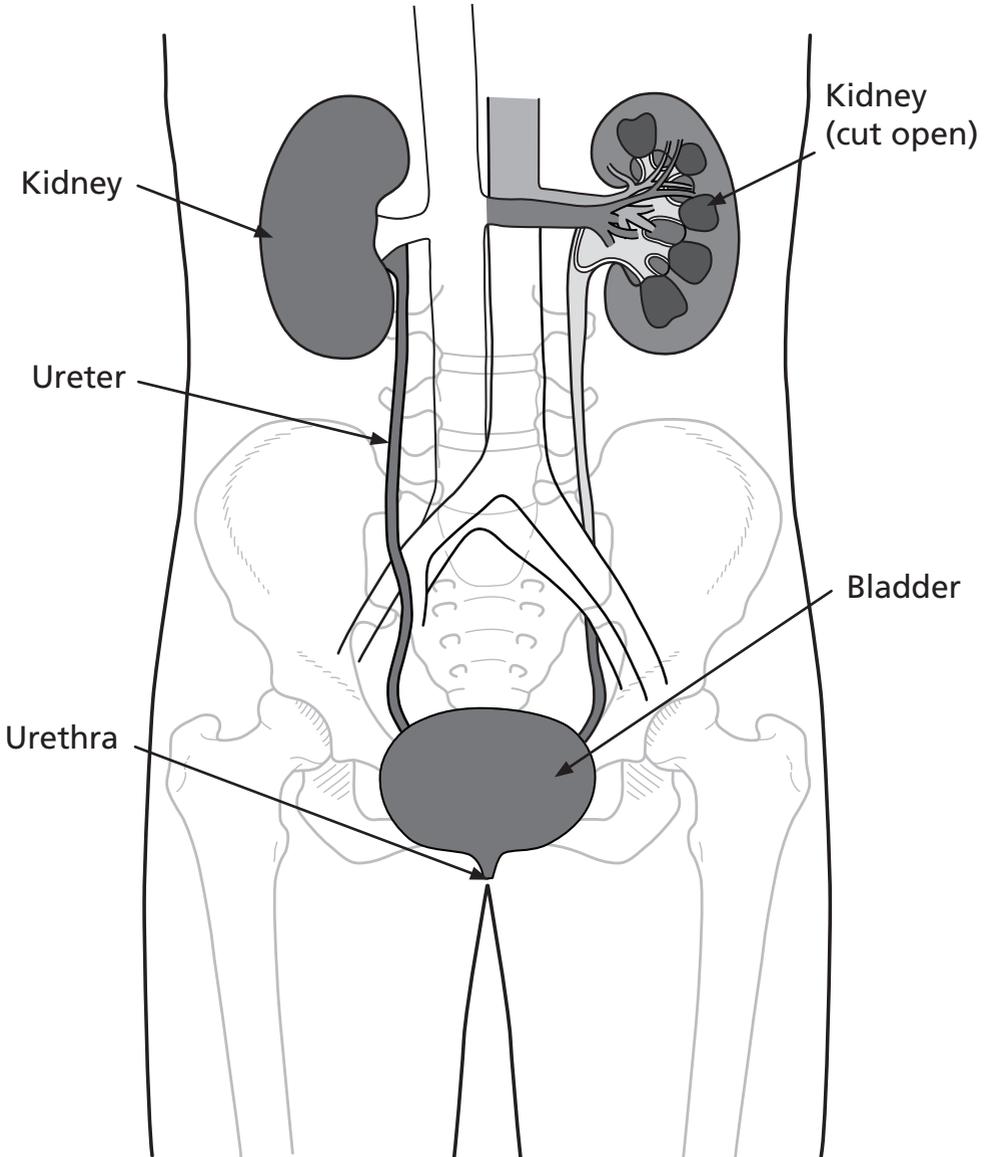
From these functions you can understand that when the kidneys don't work properly people can become unwell. However the kidneys do have a lot of reserve and in many people up to 80% of kidney function must be lost before they become unwell.

Where are my kidneys and what could damage them?

The position of the kidneys are shown in the picture on the next page. You can see that each kidney is linked to the bladder by a small tube called the ureter; urine is produced by each kidney and trickles down the ureters into the bladder which acts as a reservoir to collect urine. From the bladder there is a single tube called the

urethra through which urine is passed out when we urinate.

Problems within the kidneys, the ureters, the bladder or urethra or any problems that might reduce the blood supply that the kidneys receive (like a weak heart or a serious infection) can cause the kidneys to not function properly. In most cases where the kidneys do not function properly the damage to the kidneys occurs very slowly with time.



How does kidney disease (damage to the kidneys) develop?

People with kidney disease do not usually feel unwell until they have a lot of kidney damage; therefore most people with kidney disease do not have any symptoms or signs of kidney disease and are identified by tests that measure kidney function and kidney damage. These tests are either being done specifically to look for kidney problems or because there are other health conditions that place them at risk of kidney disease (screening), or they are identified by chance when checking blood tests for other reasons.

The tests for kidney disease include blood tests (that measure toxins in the blood) and urine tests (which look for blood or protein in the urine, neither of which should be there). The urine is tested by putting a special stick into a sample of urine; it will change colour to indicate if there is blood or protein present. Urine is then sent to a laboratory so that the amount of protein can be more accurately measured.

The main kidney blood tests that we measure are;

Creatinine: this is a small protein produced by muscle and released into the blood stream and removed by the kidneys; therefore the levels of creatinine increase if the kidneys are not working properly. It is also used to more accurately estimate the overall function of the kidneys by allowing a calculation called the estimated glomerular filtration rate (eGFR). The eGFR reading allows us to classify the amount of kidney function in a person with kidney problems.

Urea: this is produced from proteins in the body and is excreted by the kidneys; the levels in the bloodstream therefore goes up if the kidneys aren't working properly.

Potassium: this can go up in severe kidney problems and can be dangerous to the heart.

When someone is found to have abnormal kidney function they may need to undergo more detailed tests to find out what the cause is; these may include:

- an ultrasound scan of the kidneys (just like the scan that ladies have during pregnancy) – to make sure that the kidneys are not blocked and to assess their size
- blood tests to look for problems with the immune system
- blood tests to identify other health problems that affect the kidneys
- referral to a kidney specialist for more tests

Who is at risk of kidney disease?

The groups known to be at risk of kidney disease are listed below. However it is quite possible for someone with no obvious risk factors to develop kidney disease.

1. **Diabetes:** when the blood sugar is high for a long period of time it causes damage to small blood vessels; this can result in injury to small blood vessels such as those to the back of the eyes, that can lead to blindness if not treated early, and to those that supply the kidneys.
2. **High blood pressure:** this also causes damage to the small blood vessels in the kidneys. High blood pressure can be both a cause and a result of kidney disease because of the important role that the kidneys have in controlling blood pressure.
3. **Vascular disease:** patients who have a history of narrowed and blocked arteries leading to heart disease or problems with the blood supply to their legs, often have furred up arteries to their kidneys. This means that the kidneys' blood supply is not as good as it should be and they therefore do not work as well as they should.
4. **People with a family history of kidney disease:** some kidney diseases run in families. The commonest of these is Autosomal Dominant Polycystic Kidney Disease (APKD), but there also maybe other causes and you should always mention to your

doctor if anyone else in the family has kidney disease.

5. **People with an abnormal structure of the urinary system:** any problem that causes failure of drainage of the kidney or passage of urine back up from the bladder to the kidneys can cause kidney damage.
6. **People with an inflammatory disease:** such as systemic lupus erythematosus (SLE) which affects several organs of the body and may cause inflammation in the kidneys.

When do people with kidney disease feel unwell?

Many people with kidney disease have no symptoms; it is fairly common for people to feel completely well until they have lost most of their kidney function. This is because we all have quite a lot of spare capacity or reserve in our kidneys. This is why it is possible for a healthy person to donate a kidney to someone or to be able to live a long and healthy life with only one kidney. Because of this reserve the kidneys are able to compensate for damage until a fairly late stage. However at some point damaged kidneys will cause symptoms. This may need treatment to:

- help retention of fluid
- help anaemia
- in the case of kidney failure, dialysis or transplantation to provide adequate cleaning of the blood

What can be done for people with kidney disease?

There are very few kidney conditions for which there are specific treatments, (for example if the problem is related to the immune system then drugs can be used to suppress the immune system). The main aims of treatment for people with kidney disease are:

- to reduce the risk of further kidney damage
- to reduce the risk of other medical problems associated with kidney disease

Where can I find web based sources of information?

The National Kidney Federation

www.kidney.org.uk

British Kidney Patient Association

www.britishkidney-pa.co.uk

Kidney Research UK

www.kidneyresearchuk.org

NHS Choices

www.nhs.uk

Other sources of information

A wide range of patient information leaflet and fact sheets are available through the University Hospitals Birmingham NHS Trust website and can be accessed via

www.uhb.nhs.uk/patient-information-leaflets.htm

The National Kidney Federation website www.kidney.org.uk

West Midlands Renal Network website www.wmrn.co.uk

Go online and view NHS Choices website for more information
www.nhs.uk



The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk/health-talks.htm or call 0121 371 4957.

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