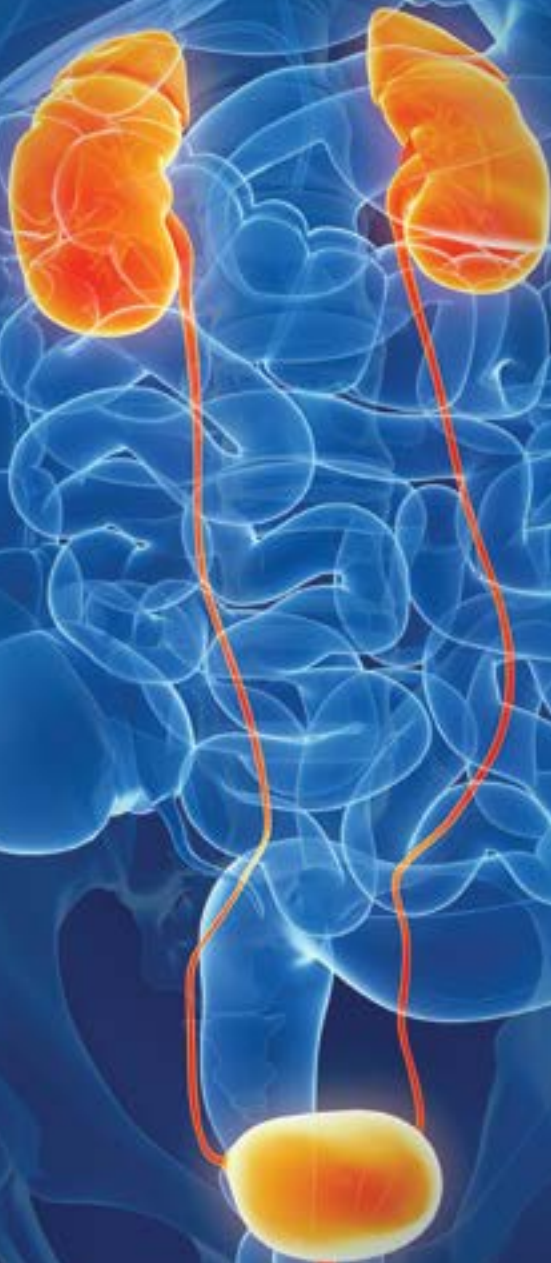
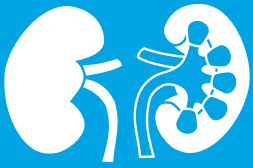


# HOW YOUR KIDNEYS WORK



# How your kidneys work



## HELPFUL TIP

The first two chapters describe your kidneys and kidney disease and introduce some medical terms that you may not have heard before. If you don't understand something, make a note in the margin and bring this handbook to your next appointment. Or start a separate notebook for your questions.

**Kidneys** are as important to your health as your heart or your lungs. Kidneys remove waste products from your body, regulate water and produce hormones. In this chapter we will briefly look at how the kidneys work. If you know what the kidneys do when they work properly, it will be easier to understand what can happen if your kidneys begin to fail.

## How do kidneys work?

Normally, people have two kidneys, one on each side of the spine under the lower ribs. They are reddish brown in colour and shaped like kidney beans. Each kidney is about the size of your clenched fist.

One of the main jobs of the kidneys is to remove wastes from the blood and return the cleaned blood back to the rest of the body. Every minute, about one litre of blood (one fifth of all the blood pumped by the heart) enters the kidneys through the **renal arteries**. After the blood is cleaned, it flows back toward the heart through the **renal veins**.

## NOTES:

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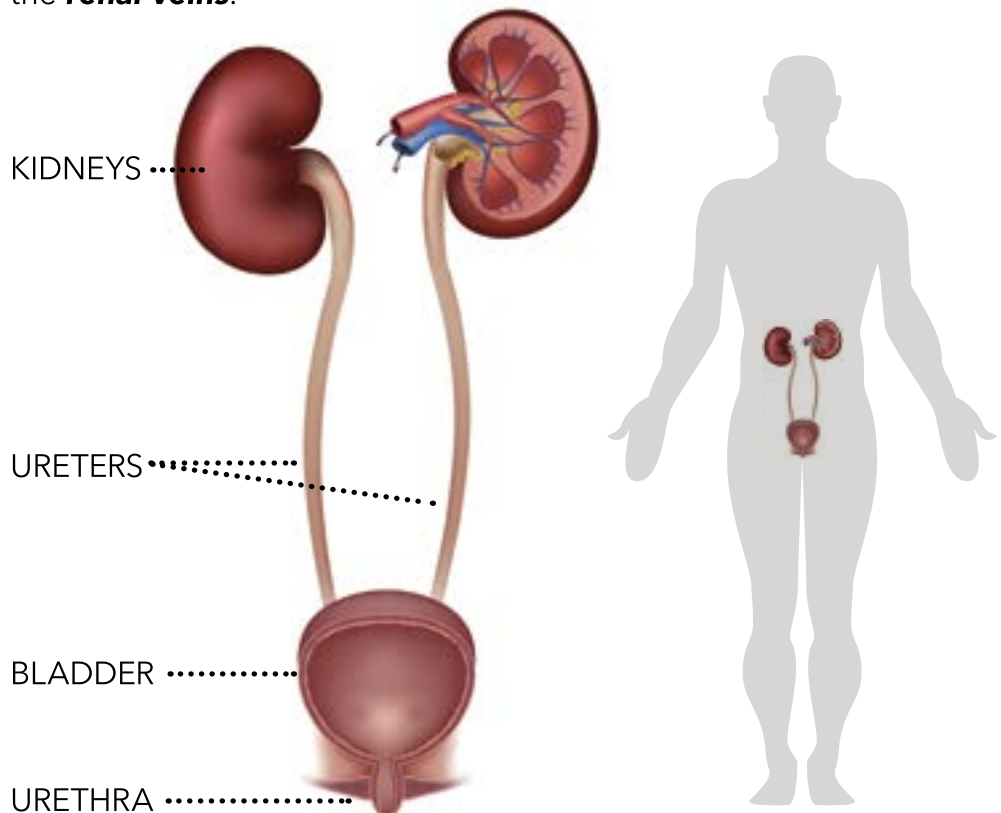
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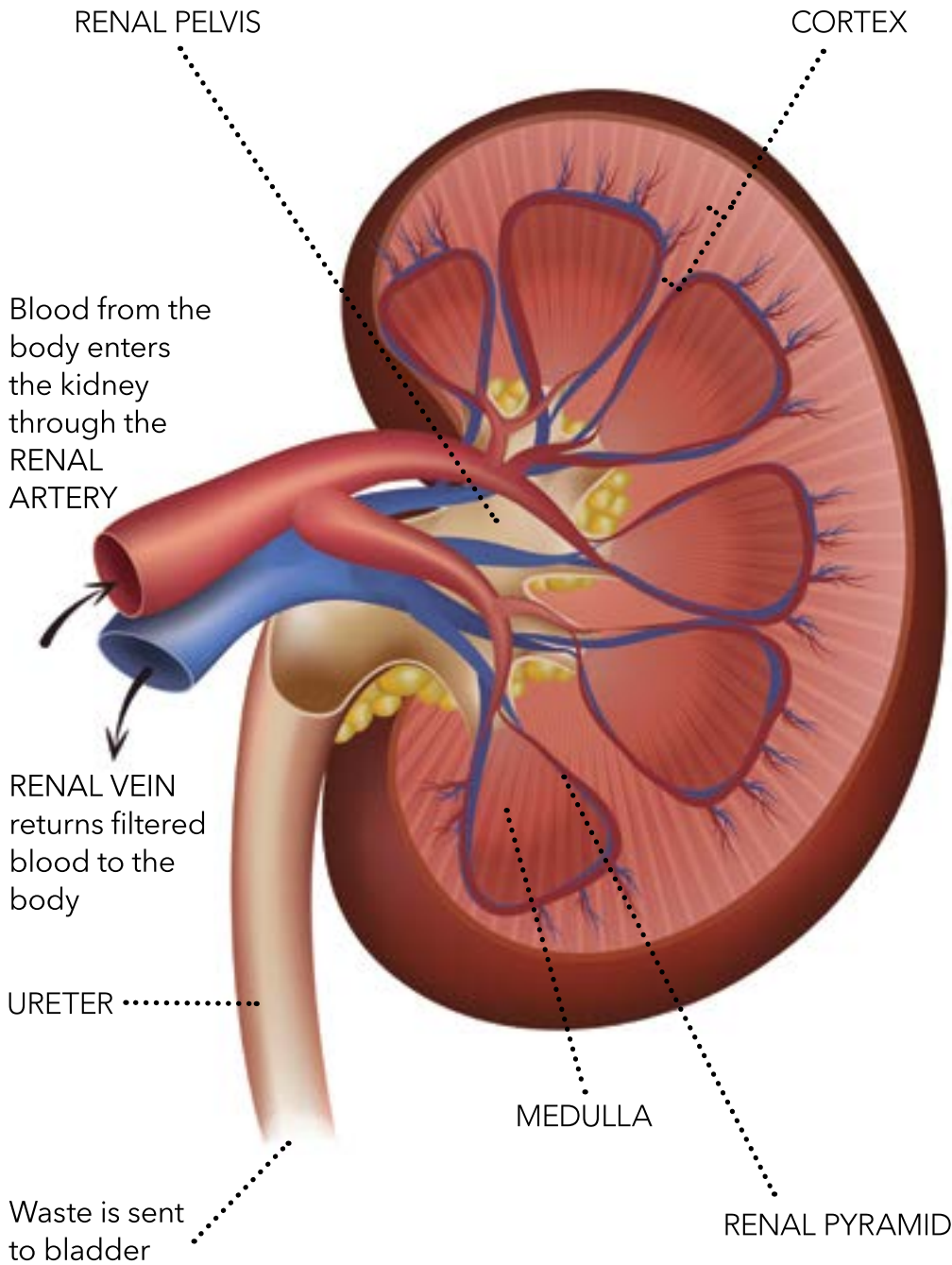
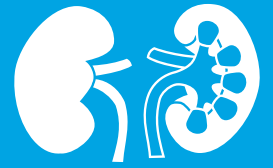
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# How your kidneys work



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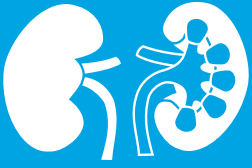
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# How your kidneys work

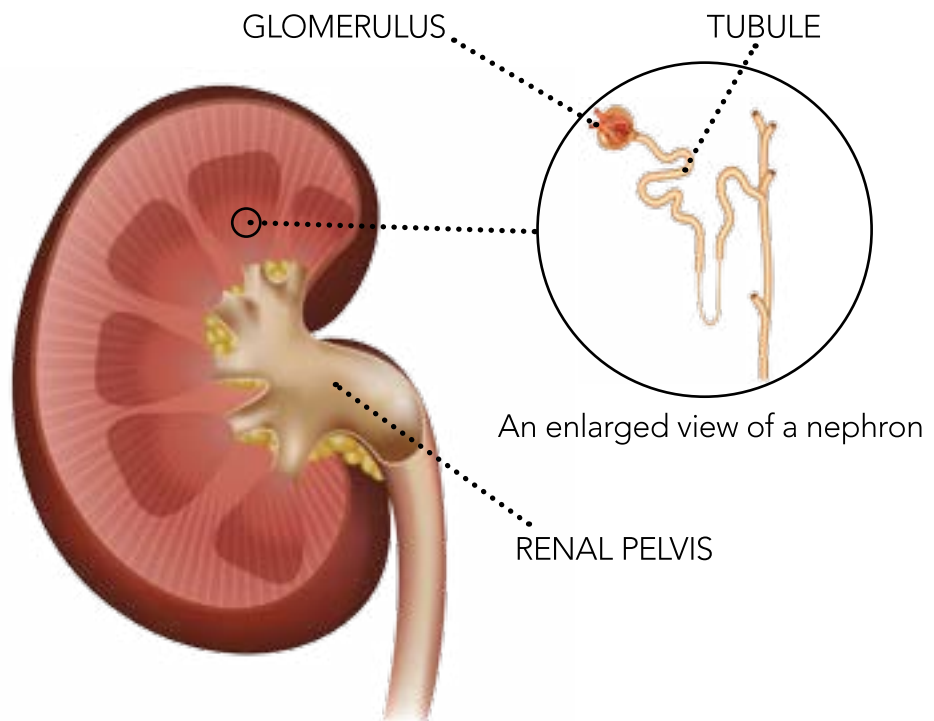


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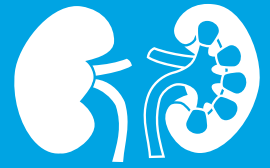
Inside each kidney there are more than one million tiny units called **nephrons**. Each nephron is made up of a very small filter called a **glomerulus**, which is attached to a **tubule**. Water and waste products are separated from the blood by the filters and then flow into the tubules. Much of this water is reabsorbed by the tubules and the wastes are concentrated into urine.

The urine is collected from the tubules in the funnel-like **renal pelvis** and then flows through tubes called the **ureters** into the **bladder**. Urine passes out of the body through a tube called the **urethra**. Together, the kidneys normally make one to two litres of urine every day depending on how much you drink.

Usually, the kidneys are able to provide more than twice as much kidney function as your body needs to work well. A normal kidney can greatly increase its workload: if you were born with one kidney or if one kidney is injured or donated, the remaining kidney can work harder to keep your body healthy.



# How your kidneys work



## Why are kidneys so important?

Your kidneys are important because they do three essential things:

### 1. Kidneys regulate water

For your body to work properly, it must contain just the right amount of water. One of the important jobs of the kidneys is to remove excess water from the body or to keep water when the body needs more.

### 2. Kidneys remove waste products and help to balance the body's minerals

Many of the substances in the blood and other body fluids must be kept at the correct level for the body to function properly. For example, **sodium** (salt) and **potassium** are minerals that come from food. The body needs these minerals for good health, but they must be kept at certain levels. When the kidneys are working properly, extra minerals, such as sodium and potassium, leave your body in the urine. The kidneys also help to adjust the levels of other minerals, such as **calcium** and **phosphate** (which are important for bone strength, growth and other functions).

Your kidneys help remove waste products, such as **urea** and **creatinine**, from your body. Urea and other wastes are made when the body breaks down **protein**, such as meat. Creatinine is a waste product of the muscles. As kidney function decreases, the levels of urea and creatinine in the blood increase. *The creatinine level in the blood is a very useful measure of kidney function.* It is measured by a simple blood test.

### 3. Kidneys produce hormones

Normal kidneys also make important chemicals in your body called **hormones**. These hormones circulate in the bloodstream like "messengers" and regulate blood pressure, red blood cell production and the calcium balance in your body.

## NOTES:

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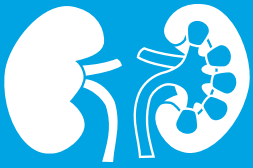
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# How your kidneys work



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## Summary

- One of the main jobs of your kidneys is to remove wastes from the blood and return the cleaned blood to the rest of the body.
- Together, the kidneys normally make one to two litres of urine every day, depending on how much you drink.
- Your kidneys help control how much water you have in your body. They “clean” your blood by removing wastes from the body through your urine.
- Your kidneys produce hormones that help your body make red blood cells and regulate blood pressure.