

Kidney Flow

Each of your kidneys is made up of about a million filtering units called nephrons. Each nephron includes a filter, called the glomerulus, and a tubule. The nephrons work through a two-step process: the glomerulus filters your blood, and the tubule returns needed substances to your blood and removes wastes.

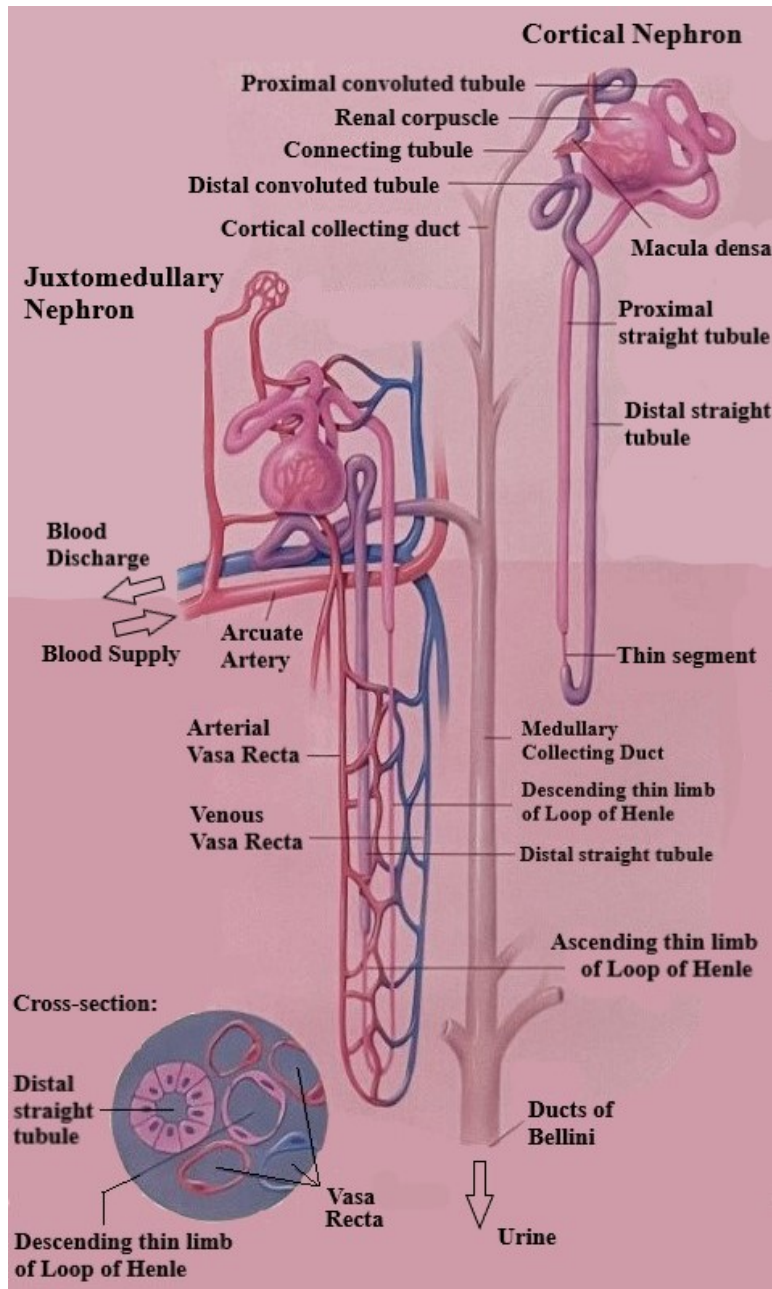


Figure 1: Diagram of the human kidney.

As blood flows into each nephron, it enters a cluster of tiny blood vessels, the glomerulus. The thin walls of the glomerulus allow smaller molecules, wastes, and fluid (mostly water) to pass into the tubule. Larger molecules, such as proteins and blood cells, stay in the blood vessel.

A blood vessel runs alongside the tubule. As the filtered fluid moves along the tubule, the blood vessel reabsorbs almost all of the water, along with the minerals and nutrients your body needs. The tubule helps remove excess acid from the blood. The remaining fluid and wastes in the tubule become urine.

Blood flows into your kidney through the renal artery. This large blood vessel branches into smaller and smaller blood vessels until the blood reaches the nephrons. In the nephron, your blood is filtered by the tiny blood vessels of the glomeruli and then flows out of your kidney through the renal vein.

Your blood circulates through your kidneys many times a day. In a single day, your kidneys filter about 160l of blood. Most of the water and other substances that filter through your glomeruli are returned to your blood by the tubules. Only 1l to 2l become urine. Children produce less urine than adults, and the amount produced depends on their age.