

Kidney Basics

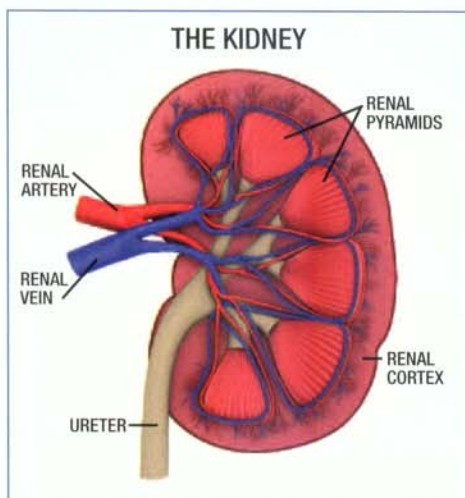
What Are Kidneys?

Kidneys are a pair of bean-shaped organs, each about the size of your fist. They are located near the middle of your back, just below your rib cage.



Some Functions The Kidneys Perform That Help Keep The Body Healthy:^{1,2}

- Filter waste and extra fluid from your blood and turn them into urine
- Maintain electrolyte concentrations
- Help control blood pressure
- Balance blood pH levels
- Produce the active form of Vitamin D, which promotes calcium absorption for healthy bones and body function
- Produce erythropoietin (EPO), which stimulates the formation of red blood cells in the bone marrow

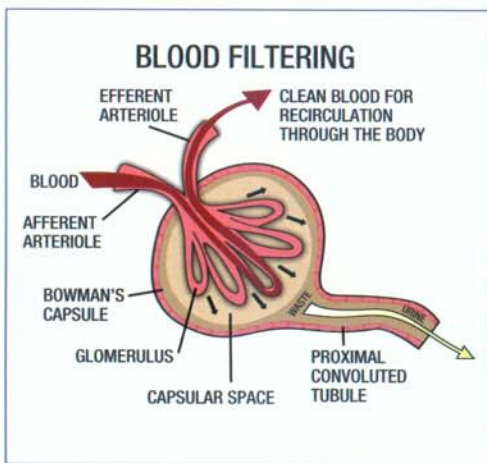


Why Is The Kidneys' Job Of Filtering Waste So Important?

Waste removal is important to maintain a stable balance of body chemicals. Your kidneys act as very advanced filtering systems. They keep the body healthy by processing about 200 quarts of blood daily, cleansing the entire blood stream every two minutes, and filtering out extra water and waste. The waste and water become urine, which flows to your bladder through tubes called **ureters**. If your kidneys do not remove these wastes, they can build up and damage your body.

¹[http: kidney.niddk.nih.gov/kudiseases/pubs/yourkidneys/](http://kidney.niddk.nih.gov/kudiseases/pubs/yourkidneys/)

²Belk, Colleen, et al. *Human Biology*. San Francisco: Benjamin Cummings, 2009: 252-263



How Do Kidneys Work To Remove Waste?

1. The renal (kidney) artery brings blood to your kidneys.
2. Your kidneys filter waste and extra fluid from your blood and turn the waste into urine.
3. Your urine then goes to your bladder.
4. The clean blood is circulated back to your heart through the renal (kidney) vein.

Chronic Kidney Disease (CKD)

CKD is the permanent, progressive loss of kidney function. Your healthcare provider can estimate how well your kidneys are functioning by ordering blood work and estimating your Glomerular Filtration Rate (GFR). GFR is the best test to measure your level of kidney function and to determine your stage of kidney disease.

Stage	Description	(GFR mL/min/1.73m ²)
1	Kidney damage with normal or increased GFR	More than 90
2	Kidney damage and mild decrease in GFR	60 – 89
3	Moderate decrease in GFR	30 – 59
4	Severe decrease in GFR	15 – 29
5	Kidney failure (dialysis or kidney transplant needed)	Less than 15

Adapted from National Kidney Foundation, 2009

Most patients with CKD may not experience symptoms until the disease is very advanced. Some symptoms may include:

- Feeling unusually tired or having less energy
- Having trouble concentrating
- Having muscle cramping at night
- Having swelling of the ankles and feet
- Having more frequent urination

This guide does not replace advice from your doctor. Talk to your doctor about your symptoms and any health or treatment questions that you may have.

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The Kidney and Hypertension Center
 2123 Auburn Ave, Suite 404
 Cincinnati, OH 45219
 P: 513/241-5630