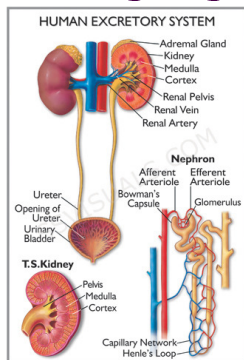


# Excretory System



Mar 12-3:11 PM

## The Excretory System

- 1 main function: removes excess, unnecessary, or dangerous materials from the body.
- It helps to maintain homeostasis within the organism and prevent damage to the body.
- Works closely with the Circulatory System
- Sometimes called the Urinary System
- Organs of the Excretory System
  - > Kidneys
  - > Ureters
  - > Urinary bladder
  - > Urethra



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Let's Watch a Quick Video About...

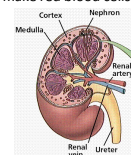


- 1.) What are the 4 main parts of the urinary system?
  - kidneys, ureters, bladder, and urethra
- 2.) What do the kidneys do?
  - filter blood and remove waste
- 3.) Where is urine stored?
  - in the bladder

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## • Kidneys

- Two bean shaped organs located near the middle of the back, just below the rib cage, one on each side of the spine.
- Primary organs of the Excretory system
- Every day, a person's kidneys process about 200 quarts of blood to sift out about 2 quarts of waste products and extra water.
- Kidneys are also responsible for the re-absorption of water, glucose, and amino acids.
- The kidneys also produce certain hormones and enzymes specifically...
  - Erythropoietin, which stimulates the bone marrow to make red blood cells
  - Renin, which regulates blood pressure
  - Calcitriol, which helps maintain calcium for bones



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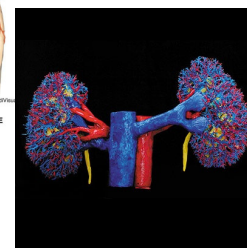
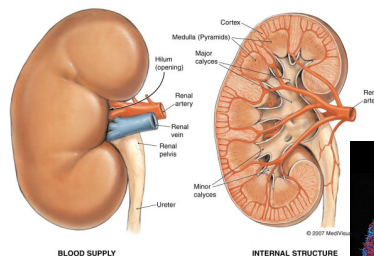
## Kidneys Continued...

- > The word "renal" in medical terminology primarily refers to and deals with the kidneys.
- > Located within each kidney are structures called nephrons.
  - Nephrons are the filtering factory within the kidney.
  - There are about 1 million nephrons in each kidney.
  - Within the nephron, urea as well as other substances are exchanged between the blood and the kidney.
    - « Urea is the by-product generated in the liver from the breakdown of protein within the body.
  - Urea is then combined with water & other waste products to produce Urine.



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## The Right Kidney



Mar 18-6:05 PM

- **Ureters**
  - > Narrow tubes that lead from the kidneys to the Urinary bladder.
- **Urinary bladder**
  - > Sac-like muscular organ that stores urine.
- **Urethra**
  - > Small opening through which urine exits the body.

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- **Steps of the kidney filtering process**
  - > Blood flows from artery into a nephron in the kidney.
  - > Blood reaches a cluster of capillaries. There urea, water, glucose, & other materials are filtered out of the blood. These materials pass into a capsule that surrounds the capillaries.
  - > The removed materials pass into a long, twisting tube surrounded by capillaries.
  - > As the material flows through the tube most of the glucose & water is reabsorbed into the blood. Urea stays in the tube.
  - > After re-absorption is complete the liquid remaining in the tube is called urine.

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- **Urinalysis**
  - Medical procedure in which the urine of a patient is taken and tested for array of medical ailments.
  - Things that "should not" be found in urine.
    - > Protein in the urine could be a sign of proteinuria.
      - « A chronic kidney disease (CKD), which can result from diabetes, high blood pressure, and diseases that cause inflammation in the kidneys.
    - > Blood in the urine could be a sign of hematuria.
      - « A condition that can result from bleeding anywhere along the urinary tract, whether it originates in the kidneys, ureters, bladder, or the urethra.
    - > Glucose in the urine could be a sign of diabetes.
      - « A condition that can result from an inability of the body to produce enough insulin breakdown sugar or a failure of the Excretory system to reabsorb glucose as it passes through the system.

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- **Other systems and organs involved in excretion include...**
  - > **Circulatory system**
    - Picks up waste and brings it to the kidneys for removal.
    - Returns filtered items back into the blood stream
  - > **Liver**
    - Breaks down protein and sends the by-product, urea to the kidneys for removal.

**The entire process helps to maintain homeostasis as it removes harmful substances from the body before they began to build up & adversely affect the body.**

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