



Renal Physiology

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Functions of The kidney

1- Filters blood plasma

- returns useful substances to blood

- eliminates waste

2- Regulation

- osmolarity of body fluids, blood volume, BP

- acid base balance

3- Secretes

- renin and erythropoietin

4- Detoxifies free radicals and drugs

THE URINARY SYSTEM

1- Kidneys

-Nephron (is the functional unit of kidney responsible for formation of urine)

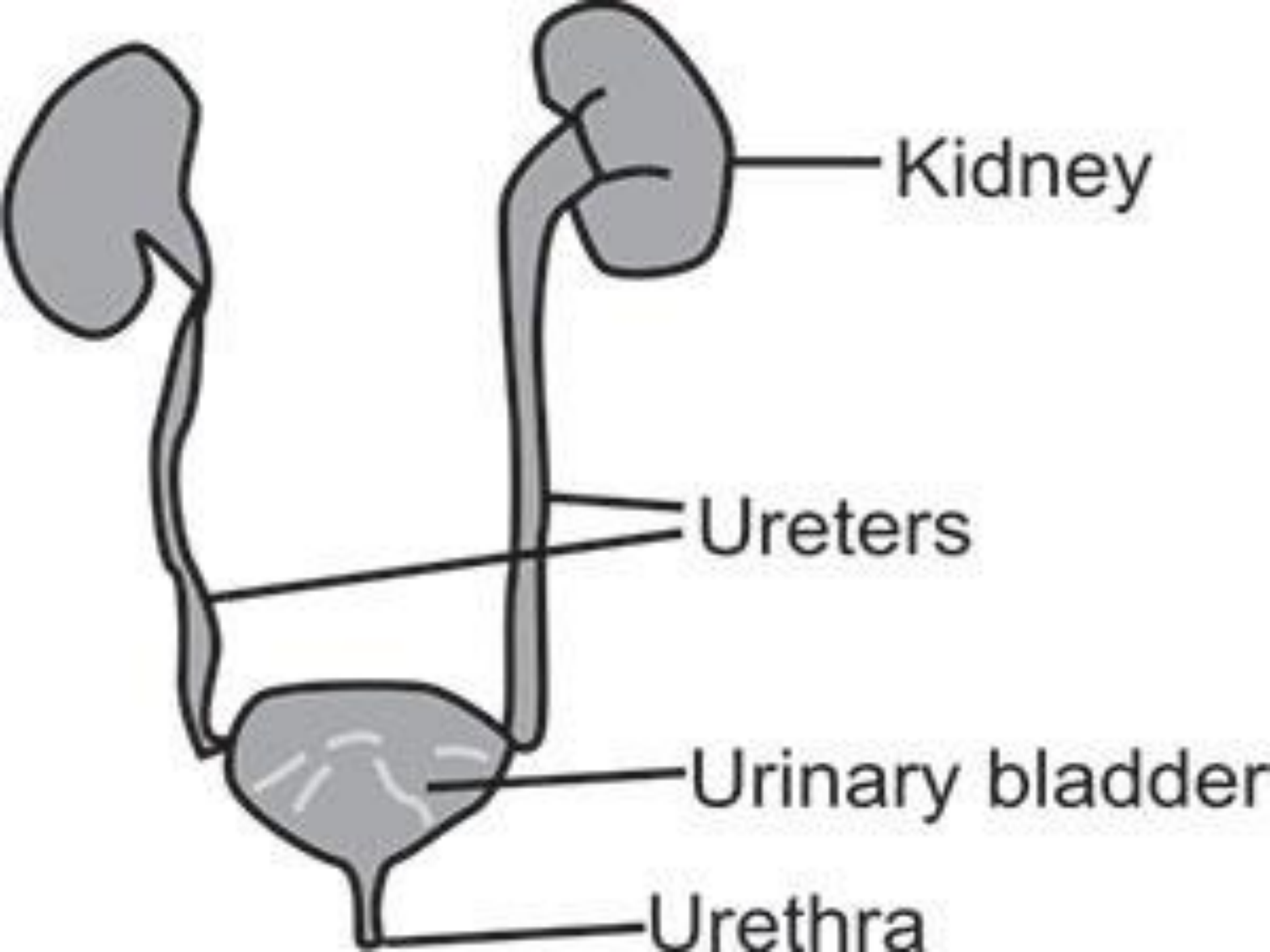
-Renal arteries (Blood supply)

-Bowman's Capsule (is where glomerular filtration occurs)

2- Ureter

3- Urinary bladder

4- Urethra



Urine

- Urine is a waste by product formed from excess water and metabolic waste molecules during the process of renal system filtration.
- The primary function of the renal system is to regulate blood volume and plasma osmolarity, and waste removal via urine is essentially a convenient way that the body performs many functions using one process.
- Urine formation occurs during three processes:

Basic Renal Process

- 1) Glomerular Filtration:*** Filtering of blood into tubule forming the primitive urine.
- 2) Tubular Reabsorption:*** Absorption of substances needed by body from tubule to blood.
- 3) Tubular Secretion:*** Secretion of substances to be eliminated from the body into the tubule from the blood.

Renal secretion

The substances that are secreted into the tubular fluid for removal from the body include:

- 1) Potassium ions (K^+)
- 2) Hydrogen ions (H^+)
- 3) Ammonium ions (NH_4^+)
- 4) Creatinine
- 5) Urea
- 6) Some hormones
- 7) Some drugs (e.g., penicillin)

Renal Failure

- ***Acute:*** Sudden onset, rapid reduction in urine output - usually reversible
- ***Chronic:*** Progressive, not reversible
- **Up to 75%** function can be lost before it is noticeable.

Thank
You

