Al- Mustaqbal College University
kidney dialysis
Anatomy
2nd stage

BY:-
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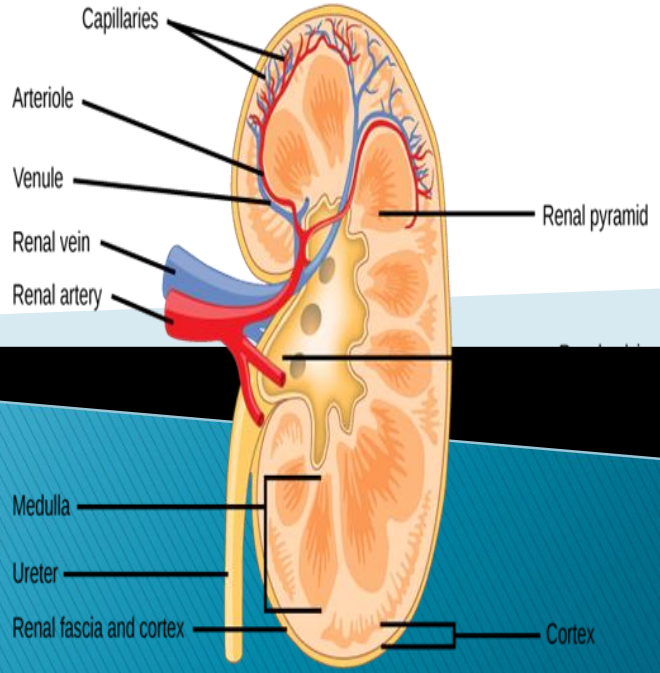
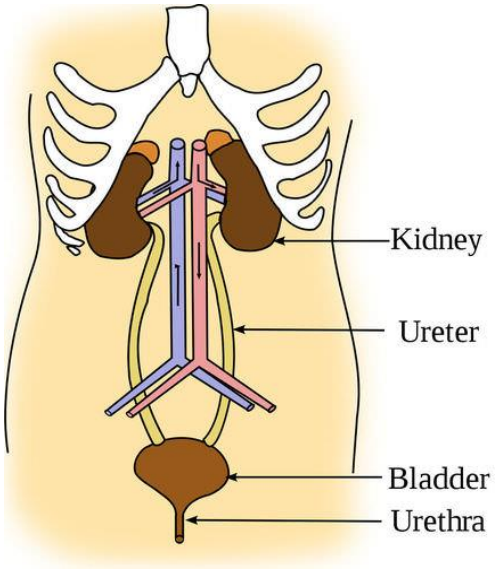
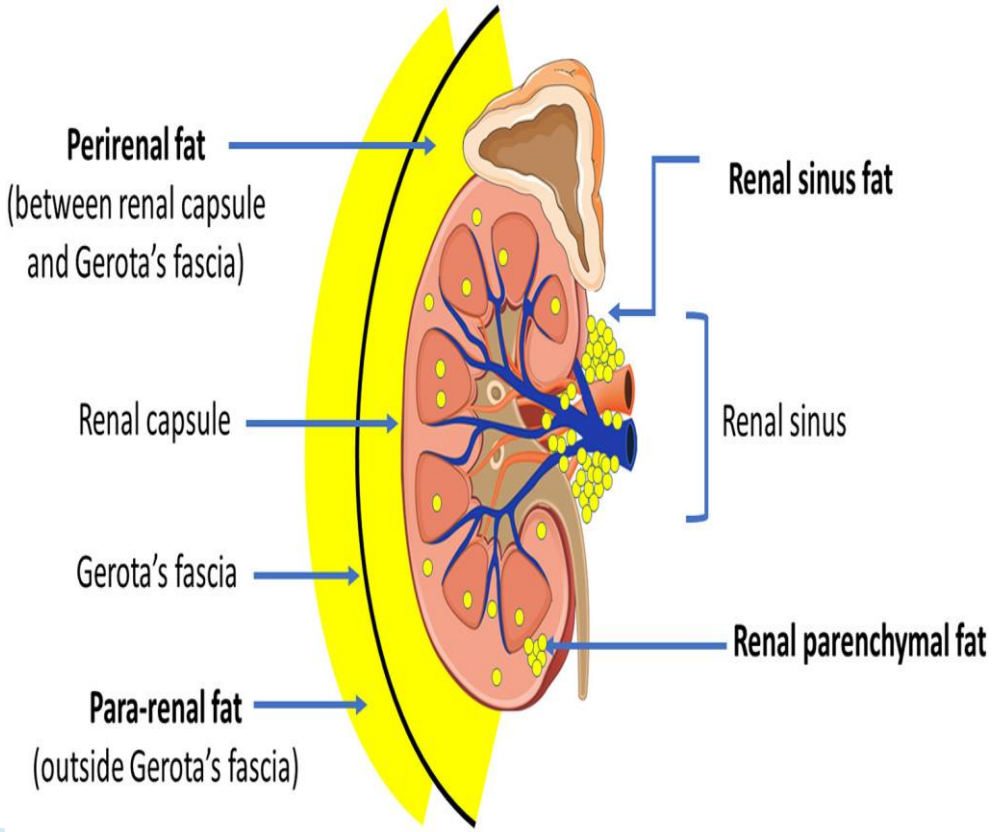
Kidney anatomy



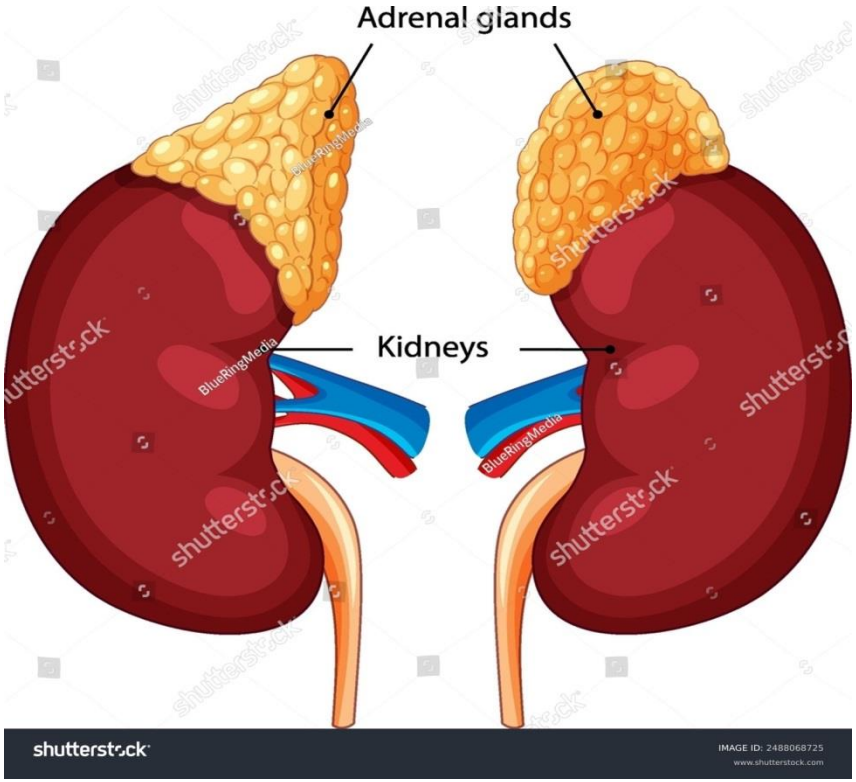
Kidneys:- are bean-shaped. Each is about (12cm) long and weighs (150 grams). 6 cm wide, and 4 cm thick ,one lies on each side of the spinal column .are located between the twelfth thoracic and third lumbar vertebrae,. The right kidney usually is slightly lower than the left because the liver displaces it downward. The kidneys, protected by the lower ribs



Each kidney is held in place by connective tissue, called renal fascia, and is surrounded by a thick layer of adipose tissue, called perirenal fat, which helps to protect it. A tough, fibrous, connective tissue renal capsule closely envelopes each kidney and provides support for the soft tissue that is inside.



On the superior aspect (top) of each kidney is the adrenal gland. The adrenal cortex directly influences renal function through the production of the hormone aldosterone to stimulate sodium reabsorption

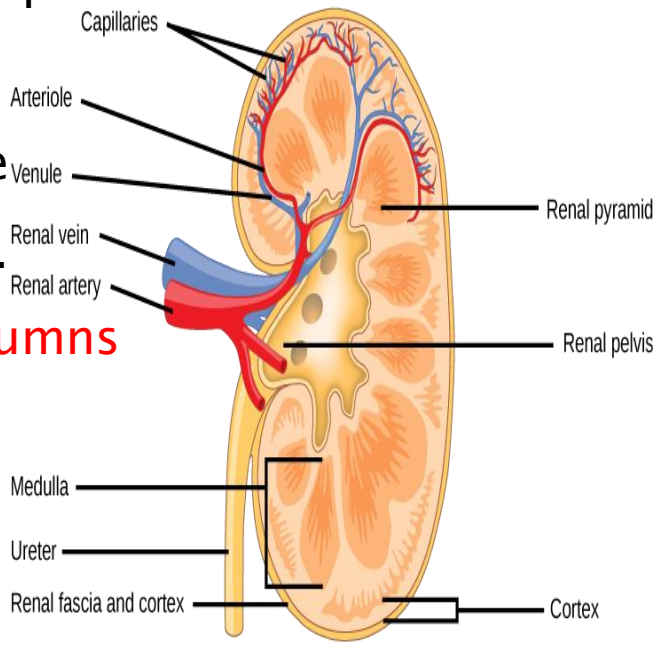


The kidney has three regions: Outer renal cortex, Inner renal medulla and Renal pelvis.

1-Renal Cortex: lighter in color compared to the rest of the kidney.Each kidney contains over a million functional units, called nephrons, in the parenchyma (cortex and medulla).

A nephron has two parts: a renal corpuscle and a renal tubule. The renal corpuscle consists of a cluster of capillaries, called the glomerulus, surrounded by a double-layered epithelial cup, called the glomerular capsule. An afferent arteriole leads into the renal corpuscle and an efferent arteriole leaves the renal corpuscle.

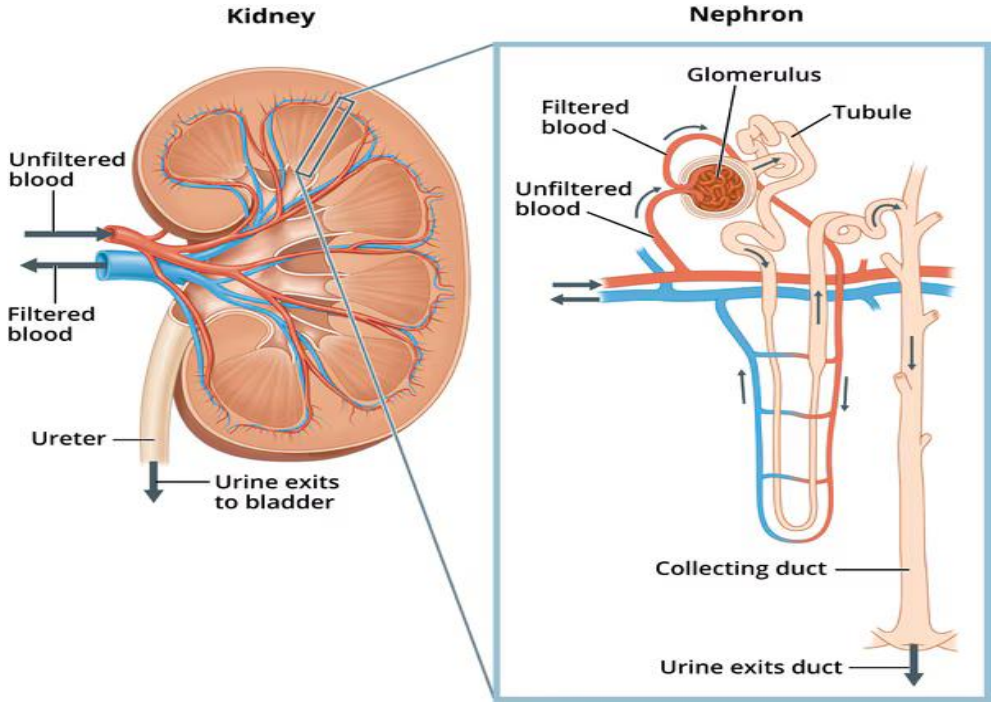
2-Renal Medulla: The medulla consists of multiple pyramidal tissue masses, called the renal pyramids. In between the pyramids are spaces called renal columns through which the blood vessels pass.



Nephron, functional unit of the kidney, the structure that actually produces urine in the process of removing waste and excess substances from the blood.

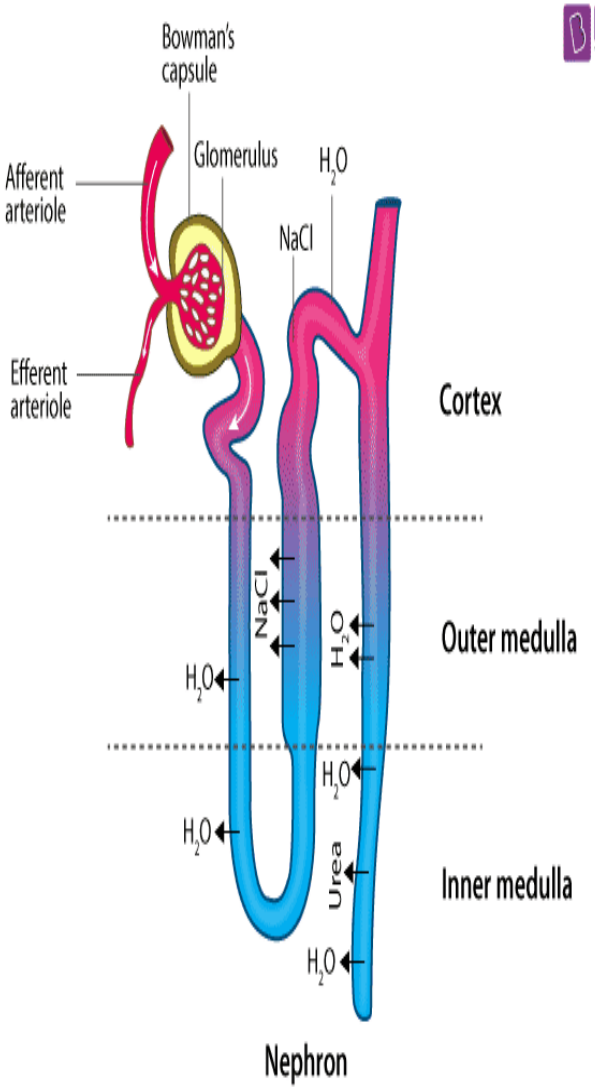
There are about 1,000,000 nephrons in . At one end this tube is closed, expanded, and folded into a double-walled cup-like structure. This structure, called the renal corpuscular capsule, or Bowman's capsule, encloses a cluster of microscopic blood vessels—capillaries—called the glomerulus.

The capsule and glomerulus together constitute the renal corpuscle

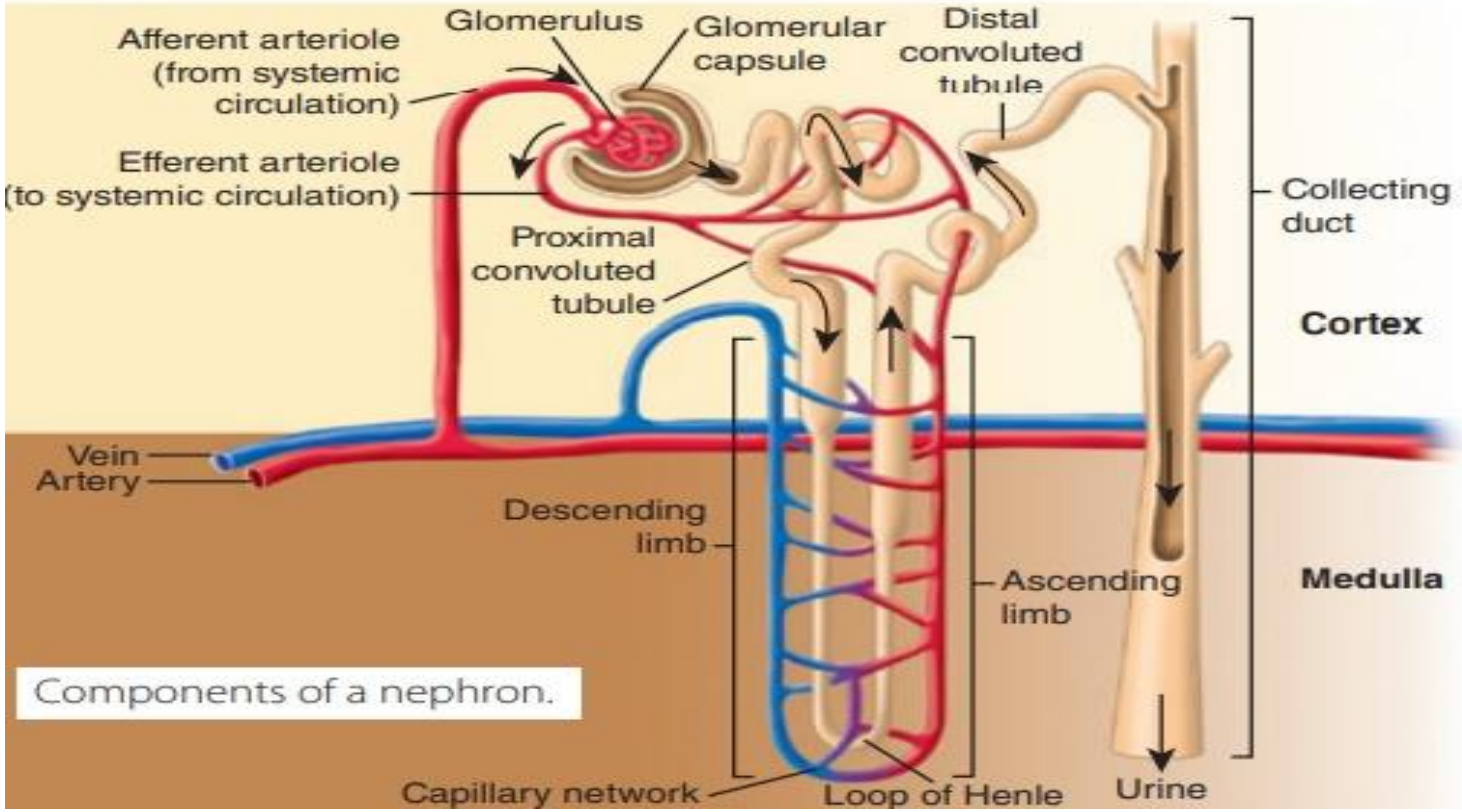


In the renal corpuscle, fluid filters out of the blood in the glomerulus through the inner wall of the capsule and into the nephron tubule. As this filtrate passes through the tubule, its composition is altered by the secretion of certain substances into it and by the selective reabsorption of water and other constituents from it. The final product is urine, which is conveyed through the collecting tubules into the renal pelvis..

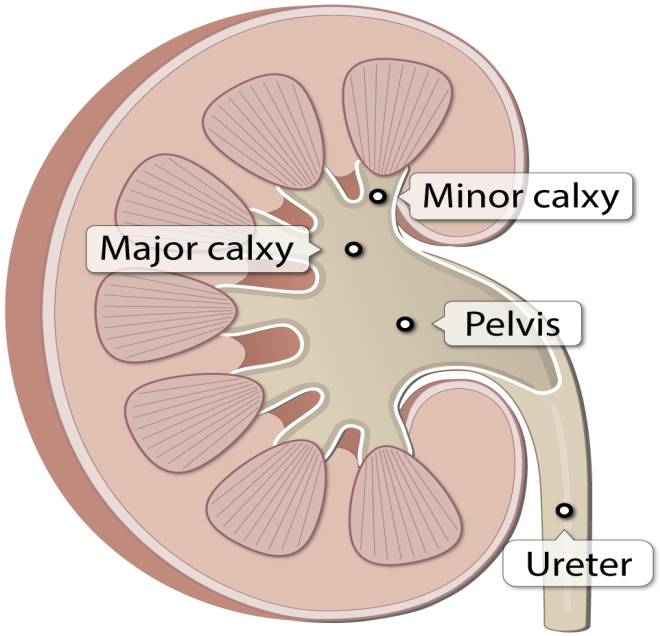
Main components of the nephron are the glomerulus, the Bowman's capsule or glomerular capsule, the proximal convoluted tubule, the loop of Henle, and the distal convoluted.



- nephrons that filter the entire five-quart water content of the blood every 45 minutes—an equivalent of 160 quarts a day. Of this, only 1 1/2 quarts are excreted; the remainder is reabsorbed by the nephrons



3-Renal Pelvis: This lead to the ureter on the outside of the kidney. On the inside of the kidney, the renal pelvis branches out into two or three extensions called the major calyces, which further branch into the minor calyces, There eight renal pelvis in each kidney



The renal hilum is the entry and exit site for structures of the kidneys: vessels, nerves, lymphatics, and ureters. Emerging from the hilum is the renal pelvis, which is formed from the major and minor calyxes in the kidney. The smooth muscle in the renal pelvis funnels urine via peristalsis into the ureter. The renal arteries form directly from the descending aorta, whereas the renal veins return cleansed blood directly to the inferior vena cava.