

Kidney Creatinine clearance

12th week

Kidneys

- kidney weight: 1% of body weight
- basic structural and functional unit – nephron
- 2 million nephrons (< 20,000 - renal insufficiency)
- preferential perfusion (500 – 600 mL of plasma per minute)
- diuresis: 1 – 1.5 L / 24 h
- glomerular filtrate: $120 \text{ mL} / \text{min} = 2 \text{ mL} / \text{s} = 180 \text{ L} / 24 \text{ h}$

Kidney function

Excretory:

- nitrogenous metabolites: urea, amino acids, peptides, uric acid ...
- minerals – cations: Na^+ , K^+ , Mg^{2+} , Ca^{2+}
- minerals – anions: Cl^- , H_2PO_4^-

Homeostatic function:

- filtration: some nitrogenous metabolites
- filtration + resorption: glucose, minerals, amino acids ...
- filtration + secretion: exogenous substances, medicines ...
- filtration + resorption + secretion: Na^+ , H^+ , H_2O , uric acid ...

Kidney function

Metabolic:

- glucose synthesis
- cleavage of peptides and proteins
- activation of vitamin D

Endocrine:

- erythropoietic hormone
- renin
- prostaglandin

Urine formation



