Glomerular Filtration

NFP = GHP – (CHP + GOP)

Filtration coefficient: K_f X NFP

K_f normally is 12.5 mL/mmHg

Substance	Molecular Weight	Filterability
Water	18	1.000
Na	23	1.000
Glucose	180	1.000
Insulin	5,500	1.000
Myoglobin	17,000	0.75
Albumin	69,000	0.005

Filtration size = 8 nanometers (80 angstroms)
Albumin size is 6 nanometers (60 angstroms)
Very little is filtered because albumin is negatively charged.

Factors that affect filtration rate:

1. Sympathetic nerves
    a. Reduce GFR by constriction of afferent and efferent arteriole

    b. Caused by severe hemorrhage, brain ischemia, severe stress

2. Hormones
    a. Nor-epinephrine constricts afferent and efferent arterioles

    b. Endothelin from damaged blood vessels of kidneys constrict afferent arterioles and reduces GFR

    c. Angiotensin II constricts efferent arteriole more than afferent arteriole, increases GFP and stimulates release of Aldosterone

    d. ENDO (Endothelium derived Nitric Oxide) from vascular endothelium throughout body, decreases renal constriction

    e. Prostaglandins: small importance overall, dampens constriction of afferent arteriole. Aspirin and NSAIDS may lower GFR in inhibiting prostaglandin activity.