Urine formation begins with filtration of large amounts of fluid through the glomerular capillaries into Bowman's capsule.Determinant of the GFR The GFR is determined by (1) the sum of the hydrostatic and colloid osmotic forces across the glomerular membrane , which gives the net filtration pressure, and (2) the glomerular capillary filtration coefficient, Kf. Expressed mathematically, the GFR equals the product of Kf and the net filtration pressure GFR=Kf/net filtration pressure The net filtration pressure represents the sum of the hydrostatic and colloid osmotic forces that either favor or oppose filtration across the glomerular capillaries.The filtration fraction is calculated as follows: Filtration fraction=GFR/Renal plasma flow Despite the high faction rate, the glomerular filtration barrier selective in determining which molecules will filter, based on their size and electrical charge.These forces include: (1)hydrostatic pressure inside the glomerular capillaries (glomerular hydrostatic pressure,PG) which promotes filtration(60); (2)the hydrostatic pressure in Bowman's capsule (PB) outside the capillaries, which opposes filtration(18); (3)the colloid osmotic pressure of the glomerular capillary plasma proteins (pG), which opposes filtration(32), and (4) the colloid osmotic pressure of the proteins in Bowman's capsule (pB), which promotes filtration .surrounding the endothelium is the basement membrane, which consists of a meshwork of collagen and proteoglycan fibrillae that have large spaces through which large amounts of water and small solutes can filter.?Filterability of solutes inversely related to their size.?

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