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Ana 204 Assignment part 2

The second layer is thick glomerular basement membrane (GBM), which is synthesized by podocytes and endothelial cells and has an inner layer composed of collagen type IV and Laminin sandwiched between layers of heparin sulfate.

IN THE CLINIC

A reduction in GFR in disease is most often due to decreases in the ultra filtration coefficient (k_f) because of the loss of filtration surface area. The GFR also changes in patho-physiologic conditions because of changes in the hydrostatic pressure in the glomerular capillary (P_{GC}), oncotic pressure in the glomerular capillary and hydrostatic pressure in Bowman's space (P_{BS}).

CLINICAL APPLICATION: Nephrotic Syndrome; it is a set of symptoms that include the following:

- a) Protein in the urine;
- b) Low blood protein levels;
- c) Swelling or edema.

It may also include elevated levels of serum lipids, anemia and

vitamin D deficiency, all because of loss of plasma proteins into the urine. Nephrotic syndrome can be primary or secondary. Primary causes are described by their histological changes which are : minimal change disease, focal segmented glomerulosclerosis and membranous nephropathy.

Secondary causes are described by their underlying cause, which include diabetes mellitus, sarcoidosis, hepatitis B, hepatitis C, bacterial infections, parasitic infections and more .