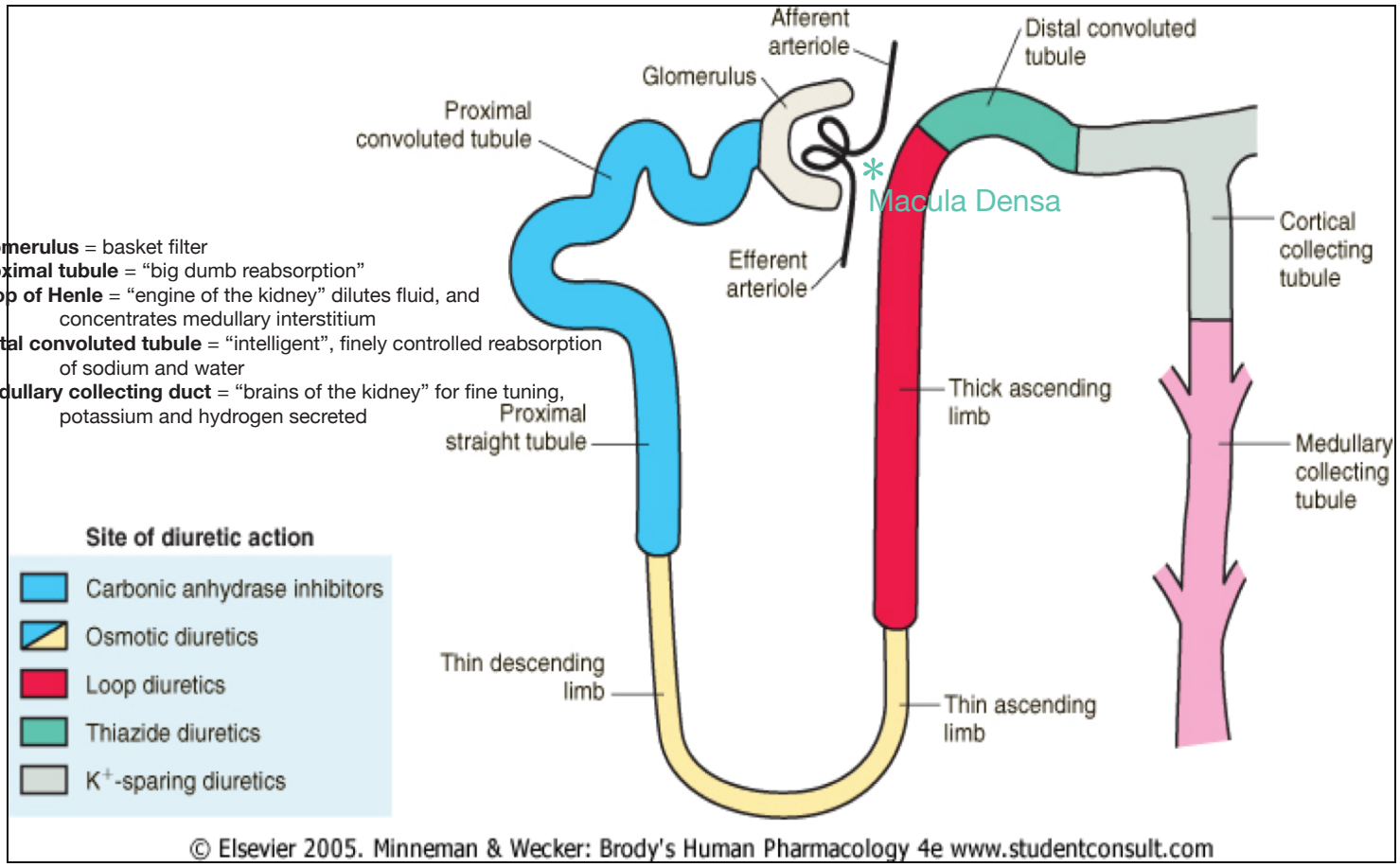
Nephron site of action of diuretics



Glomerulus = basket filter
Proximal tubule = "big dumb reabsorption"
Loop of Henle = "engine of the kidney" dilutes fluid, and concentrates medullary interstitium
Distal convoluted tubule = "intelligent", finely controlled reabsorption of sodium and water
Medullary collecting duct = "brains of the kidney" for fine tuning, potassium and hydrogen secreted

From Glomerulus, closest to farthest

Carbonic anhydrase inhibitors and osmotic
acetazolamide (Diamox)

Act immediately after glomerulus

Loop Diuretics
furosemide (Lasix) "Lasts 6" (oral and IV)
bumetanide (Bumex)
torsemide (Demedex)

Act on ascending Loop of Henle.
Block Na/K/2Cl cotransporter, inhibit reabsorption into tissue.
More effective in patients with impaired kidney function.

2° effect is increased prostaglandins, which results in vasodilation and increased blood supply to the kidney. NSAIDs block the COX pathway that synthesizes prostaglandins, so NSAIDs can reduce the efficacy of loop diuretics.

Thiazide Diuretics
hydrochlorothiazide (aka HCTZ)
chlorthalidone
metolazone (Zaroxolyn) (much more potent)

Act on Distal Convoluted Tubule.
Inhibit the sodium-chloride symporter.
More effective in patients with normal kidney function.
Used mostly for HTN, often with ACE-I, ARB, β-B, K+ sparing

See the 1st The Curbsiders episode with Joel Topf (also the reboot): • 30:18 Chlorthalidone versus hydrochlorothiazide

K+ Sparing Diuretics
triamterene (Dyrenium)
amiloride (used mostly for HTN + CHF)
Aldosterone Blockers
- spironolactone (Aldactone)
- eleprenone (Inspra)

Aldosterone increases blood pressure through sodium retention and also decreasing potassium through excretion.
Consider hyperaldosteronism as a cause of HTN in patients with low K+

Dyazide and Maxzide are (**HCTZ(thiazide)** plus **triamterene (K+)** combo)

Hyzaar and Anzaplus are (**HCTZ(thiazide)** plus **losartan (Ang-II antagonist)** combo)
With each change in dosage, it may take up to a month to see the full effect of losartan-hydrochlorothiazide on lowering blood pressure.