

Basics

- When an artery is occluded flow to corresponding vascular bed is decreased.
- To compensate for decreased flow, the body can only do two things
 - Increase pressure
 - Decrease resistance
 - » Decreased by vasodilatation, whereby both volume and inflow capacity of the vascular bed is increased, thus “drawing” blood into the area.

CT Perfusion Parameters

- **Cerebral Blood Volume (CBV)**
 - Volume of blood per unit of brain tissue
 - Normal for gray matter = **4 ml / 100g**
 - **CBV < 2 = Infarct**
 - Normal for white matter = 2 ml / 100g
- **Cerebral Blood Flow (CBF)**
 - Volume of blood flow per unit of brain tissue per minute
 - Normal for gray matter = **60 ml / 100g / min**
 - White matter = 25 ml / 100g / min
 - **< 30 % volume = infarct**
- **Mean Transit Time (MTT)**
 - Time difference between arterial inflow and venous outflow
 - Normal for gray matter = **4 sec**
 - White matter = 4.8 sec
- **Time to drain (TTD)**
 - Normal = **4 sec**
- **Time to Peak (TTP)**
 - Very sensitive measure of decrease in flow
 - Very similar to MTT and TTD

CT Perfusion Basics

- $CBV = \text{Core infarct} = DWI$
- $MTT = \text{Core} + \text{reversible ischemia}$
- $\text{Mismatch} = \text{Penumbra} = MTT - CBV$
- MTT – Similar to TTD & TTP

Normal Perfusion Curve

