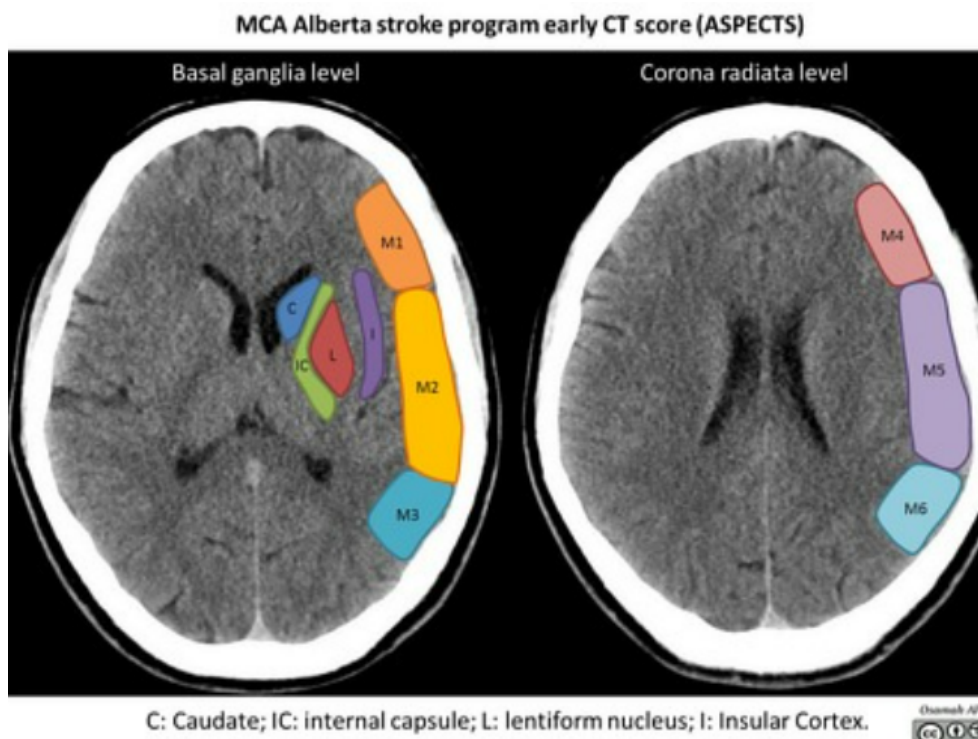


VIVEK'S CT PERFUSION (CTP) PEARLS

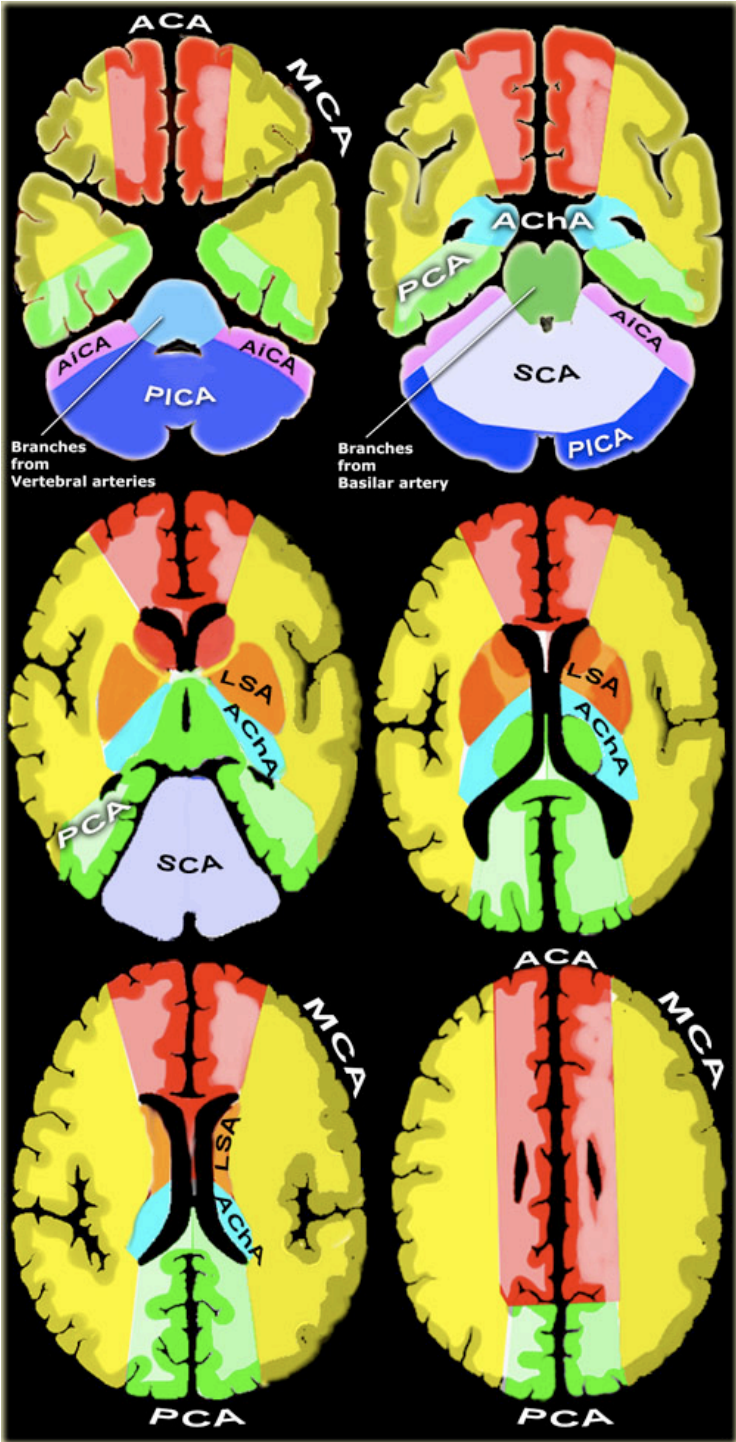
BASICS PEARLS

- rCBF (<30%) is core infarct
- Tmax (>6 sec) map is core infarct + penumbra
- Don't dictate just the numbers. MUST be read in context with the noncontrast CT and CTA. Noncontrast CT supersedes CTP core infarct whether its better or worse.
 - Small CTP core infarct with "bad-looking" noncontrast CT should be called as artifactual
 - CTP can highlight M2/M3 occlusions on CTA that are otherwise easy to miss



- CBF (Cerebral Blood Flow) is direct FLOW so it is decreased with an LVO
- CBV (Cerebral Blood Volume) is total VOLUME of blood (direct flow plus collaterals)
 - Some blood didn't reach involved brain via direct flow OR collaterals causing a core infarct
- Tmax (Time to Peak) and MTT (Mean Transit Time) are both time representations.
 - Decreased direct flow and delayed collateral routes increase the time it takes for blood to arrive (increased Tmax)
 - Tmax is better than MTT as representation of involvement
 - Tmax represents the core + penumbra
- CBF, CBV, and MTT are relative to contralateral brain, so if patient is positioned poorly (tilted) it can be nondiagnostic

- If the penumbra does not correlate with an anatomic arterial territory, under call the exam as likely artifactual
- Small volume is less than 15 cc, Moderate volume is between 15 cc and 70 cc, Large volume is between 70 cc and 200 cc, Massive volume is above 200 cc



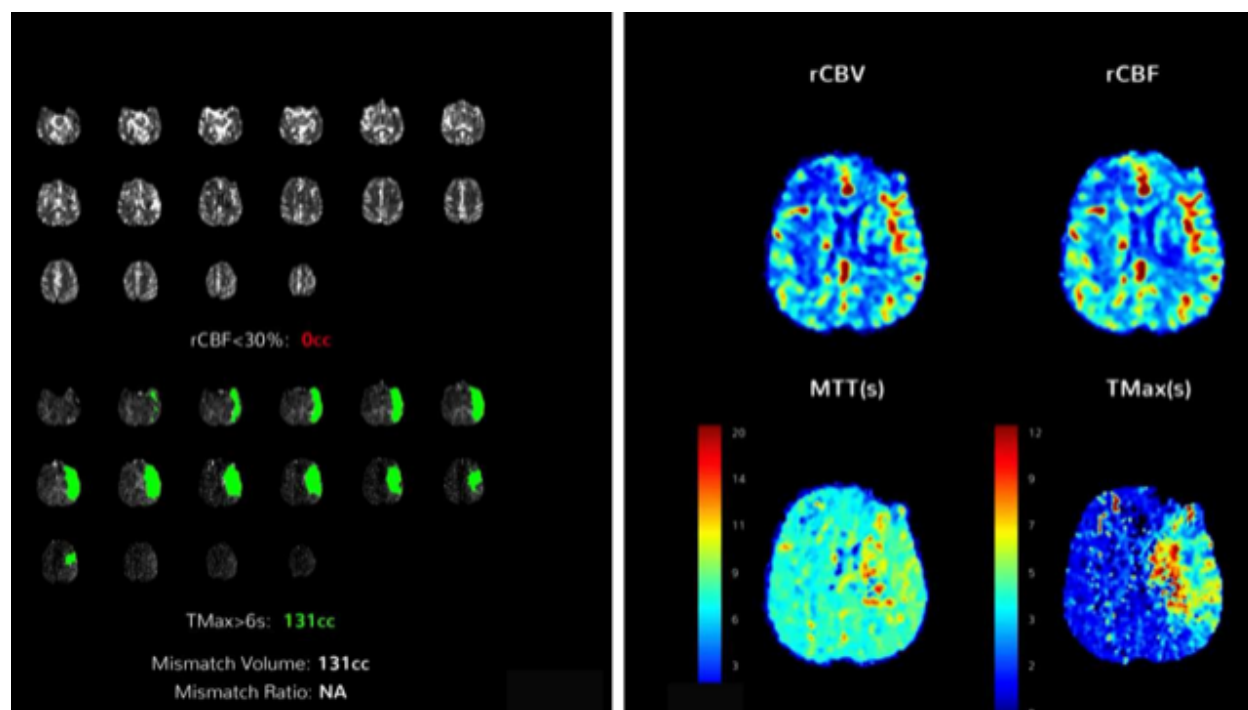
ADVANCED PEARLS

- Qualitative evaluation uses MTT - CBV (core) = penumbra
- Quantitative evaluation uses Tmax > 6s - CBF < 30% (core) = penumbra
- ASPECT score above 5 still candidate for reperfusion therapy even if there is a large perfusion score
- Mismatch Ratio of < 1.8 and core volume > 70 cc are traditional cutoffs for reperfusion therapy
- MTT = rCBV/rCBF which is less accurate than Tmax
- Ghost core = overestimated CTP core infarct size by 10 cc compared to DWI or 24 hr CT ASPECT score when < 3 hrs after stroke onset. Early imaging of severe hypoperfusion can overcall an infarct when associated with poor collaterals
- Perfusion scotoma = underestimated CTP core compared to noncontrast CT (low ASPECT score) when > 6 hrs after stroke onset. This is caused by post-completed infarct spontaneous partial recanalization, luxury perfusion, and contrast staining

YOUTUBE PERFUSION BASICS VIDEO

<https://www.youtube.com/watch?v=FtwOCRbUgA>

EXAMPLE CASE



L MCA large volume penumbra, no core infarct