Neurologic Injury

	Basics	Diagnostics	Medical Tx	Surgical Tx
Ischemic Stroke	87% of strokes are ischemic; results from blockage of blood flow in large or small vessels; PREVENTABLE; greatest risk factor is hypertension; complications are edema, seizure and hemorrhagic conversion	-Non-contrast CT scan (negative for blood) -MRI -Cardiac studies -LP if SAH is suspected and the CT is normal	-tPA -Blood pressure control -no tPA = treat when SBP > 220 or DBP > 120 -tPA = keep below 180/105	Surgery may be indicated if a large cerebellar infarction compresses the brainstem
SAH	Bleeding into subarachnoid space. Usually caused by ruptured aneurysm (85% of cases), trauma/infection (10%) or AVM (5-6%). A ruptured aneurysm has a 30% mortality rate, ruptured AVM has 10% to 15% mortality rate. Often described as abrupt onset of "the worst headache of my life" with N/V, loss of consciousness, stiff neck, focal defects	-Non-contrast CT scan -Lumbar Puncture if CT is negative, but suspect SAH (will have RBC > 1000) -CTA (sometimes also MRA) to identify exact cause and location for surgical intervention	-Goal is to prevent and treat the complications of SAH (rebleed, vasospasm, non-neuro medical complications such as SIRS and secondary organ dysfunction) -Keep SBP <150 prior to clipping/coiling to prevent rebleeding -Seizure prophylaxis -Prevent vasospasm: Triple H Therapy (after clip/coil) and nimodipine	-Ventriculostomy to control ICP (will have drain for CSF) -Clipping/coiling of aneurysms (clipping requires craniotomy) -Removal or embolization of AVM -Cerebral angioplasty to prevent vasospasm when medical treatments have failed
ICH	Bleeding directly into cerebral tissue; usually a very small artery, can be aneurysm or AVM. Most common cause is hypertension; can also be drug abuse, coag disorders, hemorrhagic conversion of ischemic stroke and trauma. Only 20% of patients will return to functional life at 6 months.	-Non-contrast CT scan (positive for blood) -MRI/MRA to rule out aneurysm or AVM	-Blood pressure control (do not decrease too rapidly!). -Mannitol to control edema -Keep CPP > 70 and control ICP -Control temp -Euvolemia -Maybe seizure prophylaxis	
Hematoma	Epidural hematomia (rare); subdural hematoma (common); intracerebral hematoma. These are caused by trauma and are space-occupying lesions.	-Non-contrast CT scan	-Manage ICP -Optimize CPP -Maybe seizure prophylaxis	Evacuation of the hematoma by burr hole, craniotomy or catheter drainage