## Neurologic Injury

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| 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 hematoma (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 |