Acute Stroke Activation

- Any sudden onset focal neurological symptoms within the past 24 hours
-History: Get a last seen well time, not when symptoms were noticed, but when they were last witnessed to be normal. Get information on anticoagulants, antiplatelets, CrCl, any allergies to medications, make sure to get their code status. See if they have any premorbid diabilities such as walking with assistance or bedridden, makes you more likely for stroke. Contraindications to tPA or TNK (long list, go through checklist)
- PE: hemiplegia (weakness/paralysis of affecting half of the body), lateralized facial weakness, focal sensory deficits, and dysfunction of speech vision and hearing. Most predictive findings include facial paresis, arm drift/ weakness, and abnormal speech.
-Activate code stroke
-evaluate at bedside, and obtain a 18g PIV. Place on travel monitor.
-Get the ABCDEs, vital signs to see if stable. EKG, telemetry, glucose, place bed at 30 degrees.
-Do not treat HTN unless BP>220/120, ACS or ICH. Confirm weight and MRI contraindications
Orders:
- STAT CTA Head/Neck (apparently CTA includes NCHCT)

if unable to receive contrast, stroke team may consider STAT MRI +/- MRA
- STAT labs: FSBG, CMP, CBC, PT/PTT/INR, Type and screen, VBG, troponin, Ua/UCx, tox screen and antiepileptic drug levels and b hcg if woman and less than 50 years.
-Nursing performs NIHSS at bedside, validated scale that predicts stroke.
Workup:
-lipids, a1c, tsh, esr, crp, rpr, hiv,
-carotid ultrasound, ekg, tte, tele less than 30d, MCOT or LINQ (Cardiac devices)

Pathophysiology:
Ischemic (85%) Hemorrhagic (15%) Intracerebral Hemorrhage (10%) Subarachnoid Hemorrhage (5%)

Ischemic causes:
Cardioembolic stroke, suspect when aca/mca/pca occlusion without significant vascular disease, infarcts in multiple vascular territories or cerebellar stroke, any arryhthmia, known la/lv thrombus, lvef<35%,
TTE with bubble study if less than 60, tele followed by 30 days mcot vs linq, if pfo less than 60 close. transfer to long term anticoagulation in 2-14 days. if concerned, delay 2-4 weeks

carotid stenosis
suspect when carotid stenosis present on ipsilateral side,

history of amaurogus fugax. cta vs mra of head and neck, carotid ultrasound needed prior to endarectomy. if stroke/ tia and either stenosis>50% or having high risk plaque features, consider revascularization within 2 weeks of symptoms, consider temporary anticoagulation, consider induced htn if symptoms fluctuate with bp.

infective endocarditis
suspect when unexplained fever with stroke or patient with valvular disease. workup is blood cultures followed by tte followed by tee if negative. cta head +/- conventional angio to identify mycotic aneurysms that increase bleeding risk. tx: immediate antibiotics, tpa contraindicated. early cardiac surgery if stroke is small and non hemorrhagic, delayed surgery in 2-4 weeks if large or hemorrhagic stroke. avoid anticoagulation or antiplatelet without separate indication, which gives high risk for hemorrhagic conversion and increased mortalitiy.

carotid and vertebral dissections
suspect when less than 60 years old or posterior circulation stroke in patient without risk factors, neck pain, headache, or horners syndrome, trauma or chiropractor or coughing spells
diagnostic workup: CTA vs mra with t1 fat saturation. consider connective tissue diseases such as marfans or fibromuscular dysplasia.

Hemorrhagic stroke
causes are trauma, ruptured aneurysm, avm (SAH,IPH),

also caused by HTN, cerebral amyloid, tumor most common with metastatic breast CA, lung CA, melanoma, RCC, choroid, thyroid carcinoma, cortical venous/venous sinus thrombosis, hemorrhagic conversion of ischemic stroke
- presents with acute focal neurological deficit +/- progressive loss of consciousness, nausea and vomiting
SAH: Thunderclap HA, N/V, meningismus; epidural or subdural hematoma; status post trauma ; lucid interval with epidural hematoma
intraparenchymal hemorrhage: focal neurological symptoms often with headache
Tests: same thing except CTA if SAH or IPH, stat neurosurgery if SAH/SDH/EDH: otherwise neuro.
elevate head of bead to 30-45% to reduce icp and prevent aspiration.
bp control strict sbp<140 with arterial line monitoring, use iv labetalol, nicardipine, clevidipine, or esmolol. less restrictive bp goal for patients with sbp 180-220, or 25% reduction if sbp>220. for aneursymal sah, po nimodipine.

Acute Stroke Management:
if its an ischemic stroke, you give iv thrombolysis, either tpa or tnk 0.25 mg/kg (max 25 mg); tpa is given as infusion, tnk is given as bolus. TNK is now preferred thrombolytic.
-LSW<3 hours: IV TPA/TNK within 60 minutes
-LSW3-<4.5 hours: IV TPA TNK recommended but with relative exlusion criteria such as age >80, anticoagulation,

nihss greater than 24, history of both stroke and diabetes mellitus 2
-wake up stroke or unknown onset: IV TPA if lesion is <70ml w/o flair changes, defer to radiology
-intrarterial therapy: in patients with disabling deficit and large vessel occlusion with LSW <6 hours, may extend time to 24 hours based on imaging criteria.

BP Control:
-low SBP <150 associated with poor outcome
-if tpa/tnk candidate goal bp <=185/110 prior to thrombolysis, treat STAT if higher, first is labetalol or nicardipine, goal bp<= 180/105 after tnk/tpa for 24 hours.
-if no tpa tnk, goal bp<=220/120 for 1 day, gradually reduce bp goal subsequently.
-if anticoagulated goal bp <=180, if active cardiovascular disease, discuss with neuro
-monitor neuro exam: q4h NIHSS checks, if sx are worse -> lay bed flat, give ivf bolus, stat page neuro
-consult pt/ot/speech language pathologist, npo until bedside swallow eval, keep euthermic and euglycemics fsg <180
-post intervention, start antiplatelet and dvt ppx
-if not: aspirin 325mg x 1 followed by long term antiplatelet or anticoagulation for large ischemic strokes, start dvt ppx if ischemic stroke

TPA/TNK Criteria:
inclusion criteria: severe or disabling neurological deficit,

second is age >=18, third is LSW<4.5 hours or wake up stroke (patient went to sleep and woke up with symptoms of stroke)
Exclusion criteria: anything that causes increased bleeding

Intraarterial Therapy (Thrombolysis or Thrombectomy):
Inclusion criteria for intraarterial therapy: NIHSS >=6, LSW <=24 hours, age 18-90, minimal to moderate disability as determined by modified rankin scale, life expectancy greater than 12 months. radiologic inclusion critera include ica/mca m1/m2 occlusion, basilar/vertebral occlusion, small infarct core volume. Basically if there is something that you can do that is fixable you should do it. exclusion criteria is anaphylaxis to contrast, acute ICH.

Things that present like a stroke but arent:
MINT
Metabolic: Glucose, sodium, uremia, toxic metabolic encephalopathy, thyroid disorders, melas (mitochondrial encephalopathy, lactic acidosis), hypoxia, hypercarbia
Infection: bells palsy, meningitis, encephalitis, vestibular neuronitis
neurological: migraines, todds paralysis/post ictal, functional neurological disorder, mutliple sclerosis, myelin oligodendrocyte glycoprotein, neuromyelitis optica spectrum disorder, toxins and traumas
T=toxins and traumas

Radiology
hypodensity is a ischemic infarct, hyperdensity is a

hemorrhagic infarct, if its a chronic lesion, but defer to radiology