Tips for Neurocritical Care

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1. *General Tips:*
    a. Show up early and be interested. I typically showed up 15 minutes before morning rounds/dividing the patient list to print the list for the team and check the latest values/overnight events for my patients.
    b. Each day I would update the handoff section in Epic as well as the hospital course so that discharge summaries could be easily completed as needed.
    c. Read around cases. Each time I didn't know something, I would search it up on AMBOSS, UpToDate, textbooks, clinical guidelines, etc.
    d. Some of the best resources for neurocritical care would be Stroke/AHA clinical guidelines, Greenberg's Handbook for Neurosurgery, and landmark papers in NEJM, JNS, etc.

2. *Approach to ICU standards:*
    a. For spontaneous breathing trials, you should be on pressure support and minimal PEEP. Each site has different values but in general the principles should hold. Patients who are generally favourable to attempt extubating must be able to follow commands, have a cuff leak, have a rapid shallow breathing index (RSBI) < 105 (but ideally well below, e.g., <40). If there is no cuff leak, direct visualization is strongly recommended—this is often quite irritating, so lidocaine would be recommended as well.
    b. Evaluate fluid balance and fluid status every day. Edematous with ++fluid balance? Give Lasix. Dry on exam? Give appropriate fluids.
    c. How sedated are patients? Set a reasonable Richmond agitation sedation scale (RASS) goal.
    d. Give GI prophylaxis to people not on feeds to prevent stress-induced ulcers. Do not feed people with significant pressor requirements as this can lead to bowel ischemia. If the patient is on feeds, you can discontinue the PPI.
    e. Disposition: Are the patients extubated and generally too stable for the ICU? If so, transfer of care is warranted.
    f. Always check vitals, DVTp, diet, recurring orders, etc. These are easily missed if you don't specifically look for them. If you want to start DVTp, make sure the patient does not have a brain bleed, recent operation, or bleeding disorder. Check in with consultants, e.g., neurosurgery, about restarting DVTp.

3. *Approach to progress notes:*
    a. The key is to have a systematic approach. I typically looked at the latest labs, then imaging, then orders. I looked through every order each day and asked

myself whether or not things should be discontinued, modified, started, or held.
   b. I typically always checked neuro vitals, CV, respiratory, abdo, volume, and peripherals in my physical exam.
   c. I would use a template obtained from a resident to start the progress note.
   d. All problems on the progress notes should be in order of urgency.
   e. There is no need to have bloated progress notes—make sure to delete anything that is resolved and trivial (while ensuring updated discharge notes/hospital course notes), move items to the investigations part of your note. If multiple problems have the same management, just say "as above" or "as per problem X" rather than repeating yourself.
   f. Make sure to note days of antibiotics (i.e., when they started, when is the proposed end date, dosing, transitioning).

4. *Approach to consults:*
   a. Most patients would come in without a chart for neuro ICU. This means I would review the ED note and then go assess the patient.
   b. Patients were often decreased LOC, so history was not a huge part of it. I would ask family or anyone around the patient for the story.
   c. Always assess quick neuros: pupils, central pain, peripheral pain, brainstem reflexes (if unconscious).
   d. Most issues had a pretty clear etiology by the time neuro ICU is consulted. This means review the imaging, in particular always look at the imaging yourself first then see if what you think is abnormal matches with the radiology report.

5. *Approach to studying:*
   a. Other than reading around patient cases, I would do Anki every day. I mainly used the AnKing v12 deck. I would also do 20-40 Step 2CK UWorld questions each day during the week and 60-100 questions each day during the weekend.
   b. For anything I felt weak on, I would review that condition using Toronto Notes, UpToDate, or the clinical guidelines themselves.
   c. I tried to read around my patients and their conditions.

6. *Common high yield topics*
   a. Elevated ICP. Have an approach. This means knowing your Tier 1, 2, and 3 therapies.
   b. Brain bleeds: epidural, subdural, subarachnoid (traumatic and aneurysmal), intraparenchymal, intraventricular. Know their imaging characteristics on CT, relevant anatomy (e.g., lobar vs basal ganglia vs brainstem vs etc.), know about relevant associations (e.g., vasospasm for aSAH 4-21 days and do transcranial dopplers—know about velocities and Lindegaard ratios, Cushing

triad, neurogenic cardiac ischemia, neurogenic pulmonary edema). Know specific management guidelines, e.g., no glucocorticoids for ICH.

c. Brain herniation syndromes.
d. Ventilator-associated pneumonia. Most patients are intubated so very important to watch out for this.
e. Approach to shock.
f. Volume assessments.
g. Approach to prolonged LOC. Have a good DIMES workup (drugs, infection, metabolic, epilepsy, structural). If there are no good explanations for things or if neuros decline, strongly consider reimaging.
h. Approach to antimicrobials and common pathogens in the ICU.
i. Placement of central lines (internal jugular and subclavian), femoral lines, arterial lines, intubation, and lumbar puncture.
j. Basic ultrasound principles. E-FAST exam.