Notes

- Brain studies:
  - Precontrast T1 images:
    - On 3T, prefer sagittal T1 MPRAGE, reformat coronal & axial
      - If age < 2 years old, use the 2D sagittal T1 and axial T1 instead
    - On 1.5T, prefer sagittal T1 TSE and axial T1 TSE
      - Exceptions: epilepsy patients MUST have a 3D T1
    - If motion on 3T, replace MPRAGE with standard 2D sagittal and axial TSE
  - Diffusion:
    - 3T: RESOLVE preferred, can substitute short DWI if too much motion
      - Exceptions: epilepsy surgery patients need DTI; DTI may also be requested for other preoperative planning MRIs
    - 1.5T: DTI preferred, can substitute short DWI if too much motion
    - If on GE scanner, be sure to send the ADC map on every case
  - Susceptibility:
    - Prefer SWI to GRE if available (if >2 years old)
  - Post-contrast images:
    - On w & w/o brain studies, need a delay of at least 3 minutes between contrast injection and T1 acquisition. This is accomplished by moving the axial T2 after the injection.
    - Be sure to reformat axial and coronal images from the MPRAGE and send to PACS on every case
  - FLAIR should be fat-suppressed if possible (not on Signa)

Notes

- Spine:
  - Lumbar spine axial coverage
    - Straight axial image stacks on both T1 and T2
    - Axials through disk space only are NOT adequate—must cover pedicle to pedicle at minimum
    - For whole-spine metastatic workup/tumor sagittals, can use two stations if the FOV allows. Consider patient size and whether there is too much artifact at the edge of the field.
  - Hardware
    - Should be scanned on 1.5T if at all possible.
  - Phase encoding in the thoracolumbar spine
    - Axial images: R→L
    - Sagittal images: H→F

Notes

- If excessive patient motion:
  - Can replace as many sequences as possible with BLADEs or shorter acquisitions as necessary to obtain a readable study
  - GRE/SWI cannot be acquired as BLADE, but there are short GRE sequences available
  - Replace MPRAGE (pre and/or post) with three-plane 2D sequences
  - Replace RESOLVE or DTI with short DWI
  - If excessive motion on the MPRAGE, please do three-plane 2D spin echo T1+C
  - If in doubt, ask radiologists if the scan is adequate to address the clinical question (applies to other artifacts as well, i.e., dental hardware)

Notes

- If an indication doesn't make sense for a particular order, please feel free to ask us! Neuro staff are available during the day, an upper level resident is in-house every night until 10 pm, and 2nd call is always available via pager after hours.
- Even if one of the faculty or residents already protocolled a case, you can ask anyway—we won't be offended. It's better to check and make sure we're doing the right study the right way the first time rather than having to bring the patient back.
  - In general, please check behind us. The person protocoling the study may have been unaware of renal problems, pregnancy, contrast allergy or implanted devices.