Dr. Selvidge's MRI Brain Search Pattern

DWI / ADC – remember that other things besides stroke (such as abscess) can have restricted diffusion.

Sag T1 – midline anatomy: corpus callosum, pituitary, infundibulum, pineal, tectum, cribriform plate, optic chiasm, clivus, cerebellum, foramen magnum (cranio-cervical junction), brainstem, upper cervical cord, etc. Don't forget Chiari malformations. Can scan into para-midline cuts as well.

Ax FLAIR – abnormal brain parenchyma—especially white matter (high signal). SAH seen well. Demyelination processes if clinical situation is correct. May be able to see edema from stroke or parenchymal / leptomeningeal mets.

Ax T2 – evaluating the gray / white matter interface and deep gray matter. Best for CSF spaces. Extra-axial fluid collections, ventricular size, midline shift, vascular flow voids, sinuses, globes and orbits, mastoids, CP angles, IAC, CN's 7 and 8, inner / middle ears, petrous apex. Also good for AVM's or cavernous angiomas.

T2* / GRE – moderate to late blood products and calcium. DAI, amyloid angiopathy, cavernous angiomas and AVM's if microhemorrhage present.

Post-contrast images – review the sequences again in a similar fashion as on the noncontrast sequences, but evaluate for parenchymal and dural abnormal enhancement. Don't forget the ventricles here—mets, ventriculitis, etc. Always be sure to review the noncontrast images before saying something enhances. Coronals: skull base, cerebral and cerebellar convexities; anterior structures—olfactory nerves, optic nerves, etc.

In General – always remember to look at old studies including CT's. When evaluating the CNS, finish it first before moving out to the sinuses, globes, etc. This goes for dictating the report as well. You will have to go back to the T2's, for instance, to look at several of these things. In the report, don't forget to talk about abnormalities as it relates to their signal characteristics on the different sequences, enhancement, homogeneous / heterogeneous appearance, location, what it borders or has mass effect on, size in all three planes, etc.