Thank you again for your attendance of Multiple Sclerosis Pearls 2020! As promised, below are the questions that were asked but went unanswered due to timing.

Follow up from Dr. Carrie Hersh DO, MSc on *Breakthroughs in Cognition in Multiple Sclerosis*

In terms of understanding clinical relevance how much % change in SDMT is considered worsening or improving?

Data from a robust validation study evaluating SDMT as a cognitive outcome measure for MS suggested that a raw score change of 4 points, or a 10% change, is considered clinically meaningful [Benedict R, DeLuca J, Phillips G, et al. Validity of the Symbol Digit Modalities Test as a cognition performance outcome for multiple sclerosis. Mult Scler. 2017 Apr;23(5):721-733. doi: 10.1177/1352458517690821

Follow up from Dr. Elizabeth Morrison-Banks MD, MSed on *Multiple Sclerosis Symptom Management*

What is the side effects of cannabinoids that are of concerns if used for neuropathic pain / spasticity?

Please refer to Allen Bowling's web site "…Common side effects that have been reported include dizziness, dry mouth, nausea, fatigue, somnolence, euphoria, vomiting, disorientation, drowsiness, confusion, loss of balance, and hallucinations. Other possible side effects with neurological relevance include impaired cognitive processes (memory, attention, and learning) immediately after use and possibly after discontinuing use. Also, cannabis use has been associated with strokes (due to a condition known as "RCVS"), visual difficulties, and leg weakness. Other side effects that have been associated with use include addiction, psychosis, depression, suicidality, anxiety, heart attack, lightheadedness with standing ("orthostatic hypotension"), uncontrolled vomiting, liver toxicity, worsened respiratory symptoms (including bronchitis), and testicular cancer….Cannabis use doubles the risk of motor vehicle accident. It has been recommended to abstain from use for 8 hours before driving."

Any thoughts on uvitis and shingles on the eye and vision problems?

Uveitis is uncommonly associated with MS, but there is a clear association between the two conditions. Uveitis is an intraocular inflammation of the uveal tract, retina or vitreous body that can occur in the anterior chamber of the eye (iridocyclitis), or more posteriorly (e.g., pars planitis). Patients with any type of uveitis need to be followed by an ophthalmologist. Shingles in the eye (herpes zoster ophthalmicus) is completely different from uveitis, as it is a herpetic infection caused by varicella zoster virus (VZV). I have occasionally seen it in patients on immunosuppressive therapy including rituximab. HZO has also been reported to trigger MS relapses. Both uveitis and HZO can cause decreased visual acuity and other vision problems. Both require urgent ophthalmology consultation.

Follow up from Dr. Christina Azevedo MD, MPH on *MRI in the Clinic*

Is the Central Vein MRI protocol available at select academic centers for clinical use (or is it still limited to research)?

FLAIR*, the imaging technique I mentioned in the central vein section, is not yet commercially available. It is still a research prototype that requires dedicated research software that is only available through certain MRI manufacturers, a cloud-based imaging company, or the NIH. Hopefully it will become a commercial product in the future, if the ongoing studies I mentioned validate the use of FLAIR* in MS (i.e. show that it does improve diagnostic accuracy or specificity).