American Academy of Neurology
Resident Core Curriculum

MS Section- Education Working Group
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It is anticipated that the resident in Neurology training will manage persons with Multiple Sclerosis (MS) and related immune-mediated disease of the CNS throughout the three years of residency training, in both in-patient and outpatient settings. Clinical exposure should be supplemented by didactic lectures and seminars by faculty, working knowledge of web-based links and media, and relevant collaborations with other related subspecialty areas (neuroradiology, neuro-ophthalmology, neuropathology, neurorehabilitation, rheumatology etc.)

Learning objectives

The first year resident should be able to:

- Recognize common presentations of MS, order appropriate diagnostic evaluations, and provide a differential for conditions that may mimic MS
- Describe the basic immunopathology of MS
- Recognize the neuroradiologic features of MS
- Describe epidemiologic patterns seen in MS (e.g., geography, ethnicity, gender)
- Describe the recognized clinical courses of MS (i.e., RR, SP, PP, RP)
- Be familiar with the 2010 McDonald criteria used in the diagnosis of MS
- Discuss the characteristics of CIS and its historical, clinical, laboratory and radiological findings
- Treat an acute exacerbation of MS, in both in-patient and outpatient conditions, and know the basis for differentiating MS exacerbations from pseudoexacerbations and Uhthoff’s phenomena
- Understand and provide symptomatic treatment for common primary and secondary symptoms of MS
- Know when to prescribe basic rehabilitation modalities used in treating persons with MS
- Know how to prescribe and monitor FDA approved disease modifying agents use for treatment of MS

The second year resident should be familiar with:

- the non-MS variants of immune-mediated CNS demyelinating disease, including specifically Neuromyelitis Optica (NMO), acute disseminated
encephalomyelitis (ADEM), optic neuritis, transverse myelitis, variant manifestations of MS and MS mimics

- the clinical criteria for the clinical diagnosis of NMO
- the MRI and imaging criteria that assist in prognosis and in differentiating CIS from MS, ADEM from MS, and MS from NMO, and other MS mimics
- the diagnostic modalities for assisting in the clinical diagnoses of MS, NMO, NMO spectrum disorders, ADEM, optic neuritis, transverse myelitis and other manifestations of immune-mediated CNS disease. This should include a working understanding of:
  a. MRI with and without gadolinium of brain and spinal cord
  b. CSF analysis and assays for evidence of intrathecal immunoglobulin synthesis
  c. Evoked potentials
  d. Neuro-ophthalmology, visual perimetry and OCT
  e. medical serologies and clinical criteria for MS mimics
- the sensitivities, specificities, positive and negative predictive values of these diagnostic assays
- the use of MRI and other imaging modalities in monitoring MS disease course
- the indications for use of “second- line” disease modifying agents and response to treatment failure
- the role and clinical patterns of neutralizing antibodies according to biologic
- the risks of immunosuppressive therapy and the common clinical presentations of CNS infection including progressive multifocal leukoencephalopathy (PML) , viral encephalitides, secondary malignancy and other opportunistic infections
- commonly used scales for rating impairment and disability in persons with MS. Be able to score and interpret an EDSS score.
- non-pharmacologic treatment modalities such as environmental modifications, orthotics, etc.

The third year resident should be aware of:

- The primary literature including the pivotal trial results of the FDA approved disease modifying treatments for MS
- How to critically review the data of primary and secondary endpoints
- The role of MRI, relapse rate, and disability progression in the assessment of MS disease status
- Emerging biomarkers in the assessment and risk stratification of CNS demyelinating disease; including for example NMO IgG antibody, anti-jc IgG antibody, etc.
- The pro-inflammatory immunopathologic pathways and their heterogeneity; (i.e. cell-mediated, humorally mediated etc).
- Risk mitigation strategies when using immunosuppressive therapies
• The need for multidisciplinary care in the treatment of the patient with CNS immune-mediated disease, including the roles of:
  o Physical therapy, occupational therapy, speech pathology
  o Neurorehabilitation
  o Neuropsychology
  o Neuroophthalmology
  o Medical social work
  o The role and support systems of non-profits and foundations (e.g. National MS Society, MS Association of America, etc)
• Psychosocial issues pertaining to the disease including:
  o Family role changes, impact on loved ones and caregivers
  o Vocational and disability issues
  o Implications with pregnancy, breastfeeding
  o Symptoms related to mood, wellness, sexuality and intimacy
  o cultural and ethnic sensitivities