

Considerations for Determination of Multiple Sclerosis Disease-Modifying Therapy Failure or Loss of Efficacy

Patient factors

- Drug tolerability
- Drug toxicity
- Adherence to dose regimen
- Adherence to monitoring requirements

Clinical factors

- Comparison of pretreatment and on-treatment relapse rates
- On-treatment relapse rate (eg, ≥ 1 per year), severity, and degree of recovery
- Increased neurological impairment (eg, Expanded Disability Status Score increased by 1 point in 1 year)
- Increased cognitive dysfunction
- Presence of neutralizing antibodies (for interferon beta drugs and natalizumab)

MRI factors

- Increase in brain lesion number (serial MRI scans)
- Occurrence of on-treatment active (gadolinium-enhancing) lesions
- Increase in brain stem or spinal cord lesions
- Increase in brain MRI T1 “black holes” (marker of irreversible axonal loss)
- Development or worsening of cerebral atrophy

Wingerchuk D, et al. *Mayo Clin Proc.* 2014;89(2):225-240.