

Supplementary Table 2: Why historical cognitive impairment estimates may overstate individual risk?

Driver	Impact on reported prevalence
Base rate of low scores in healthy adults	20–73% of neurologically healthy individuals obtain at least one low score by statistical variation alone. Without correction, normal variability is misclassified as MS-related impairment.
The more-tests artefact	Larger and more sensitive batteries increase the probability of at least one low score, inflating apparent prevalence.
Methodological inconsistency	Earlier studies used variable criteria, often classifying impairment from a single low score.
Subjective–objective dissociation	Cognitive complaints correlate only weakly with objective performance and more strongly with fatigue, mood, sleep, and stress.
Attribution bias	Low scores are multifactorial and may reflect depression, medications, pain, poor sleep, or other nonspecific factors rather than MS pathology.
Pre-high-efficacy treatment cohorts	Most prevalence studies predate widespread use of contemporary disease-modifying therapies.
Statistical inefficiency is not progressive disability	Many individuals with low scores remain employed, independent, and fully functional.

Historical estimates suggested 50–70% of individuals with MS develop cognitive impairment. Contemporary meta-analytic work using stricter criteria estimates prevalence at approximately 32.5% in RRMS, and risk in contemporary high-efficacy treatment cohorts remains to be established.

MS: multiple sclerosis; RRMS: relapsing-remitting multiple sclerosis.