

## **Cognitive dysfunction is improved by MS specific disease modifying drugs (DMD): pro**

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Cognitive impairment, although once underestimated, is now considered one of the key symptoms of multiple sclerosis (MS). It can occur as early as at the time of clinically isolated syndrome (CIS) [Amato et al. 2008]. Disease-modifying drugs (DMDs) used for MS, especially when applied early in MS course, are likely to prevent and/or slow down disease progression. Therefore, we may expect that they will stabilize or even improve cognitive function, as well. Apart from the above-mentioned conclusion, the beneficial effect of DMDs on cognition in MS has been shown in several controlled studies. For instance, significant improvement in neuropsychological outcomes was shown for interferon beta-1B (Pliskin et al. 1996, Kappos et al. 2009), interferon beta-1A (Fischer et al. 2000), and stabilization occurred with glatiramer acetate (Schwid et al. 2007) and natalizumab (Weinstock-Guttman et al. 2012). Also, there is a number of uncontrolled trials supporting such notion. The challenge with assessing DMDs impact on cognition is that pivotal clinical trials did not use cognitive functions as primary endpoints, and where sometimes assessed only in subgroups of patients. Despite several methodological shortcomings, the evidence suggests that DMDs may have beneficial effects on cognitive functions. However, this could be secondary to effects on clinical parameters (i.e. relapses) [Patti 2012]. Most likely, combining DMD with cognitive rehabilitation could provide even better response.