Annual Conference EMSP

Prevention in Multiple Sclerosis and Related Disorders:

Uncovering Risk and Protective Factors

PRAGUE | 16-17 MAY 2025

EUROPEAN MULTIPLE SCLEROSIS PLATFORM

Czech multiple sclerosis society MS UNIE ROSKA

Annual Conference EMSP

PRAGUE 16-17 MAY 2025

Ageing with Multiple Sclerosis and Related Disorders: Challenges and Strategies

Prof Dr Bart Van Wijmeersch

EUROPEAN MULTIPLE SCLEROSIS PLATFORM

Czech multiple sclerosis society MS UNIE ROSKA

What is the Impact of Ageing on MS Evolution, Treatment and Symptom Burden?

Age and…

- Neurological Brain Reserve

- Comorbidities

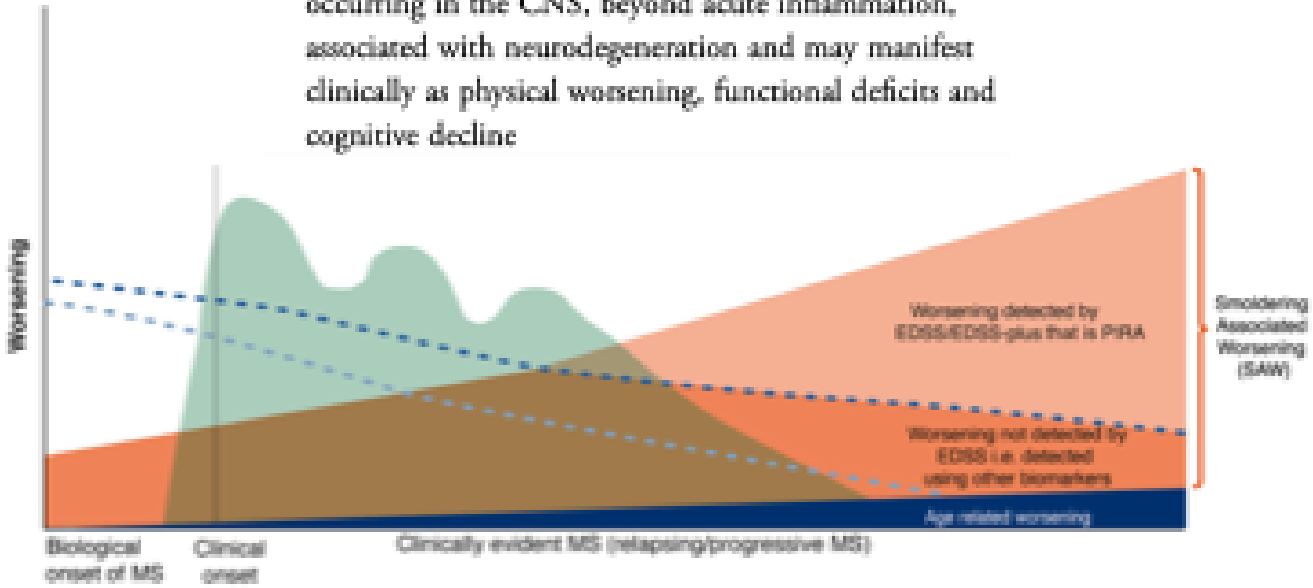
- Evolving MS Symptoms

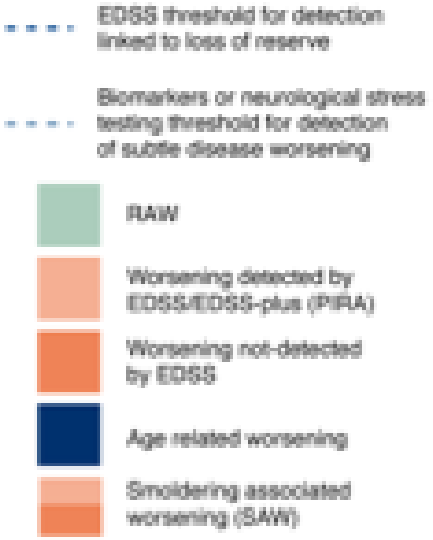
- Impact of MS-treatment

Neurological Brain Reserve

Definition

Smouldering disease in MS is an umbrella term characterizing chronic pathobiological processes occurring in the CNS, beyond acute inflammation, associated with neurodegeneration and may manifest clinically as physical worsening, functional deficits and cognitive decline

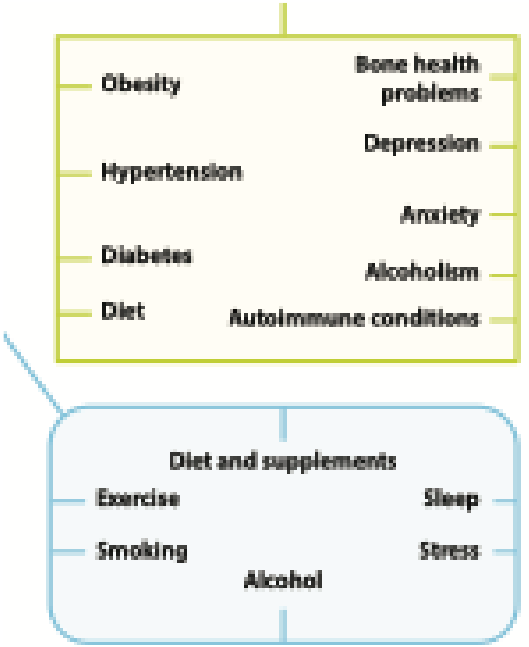


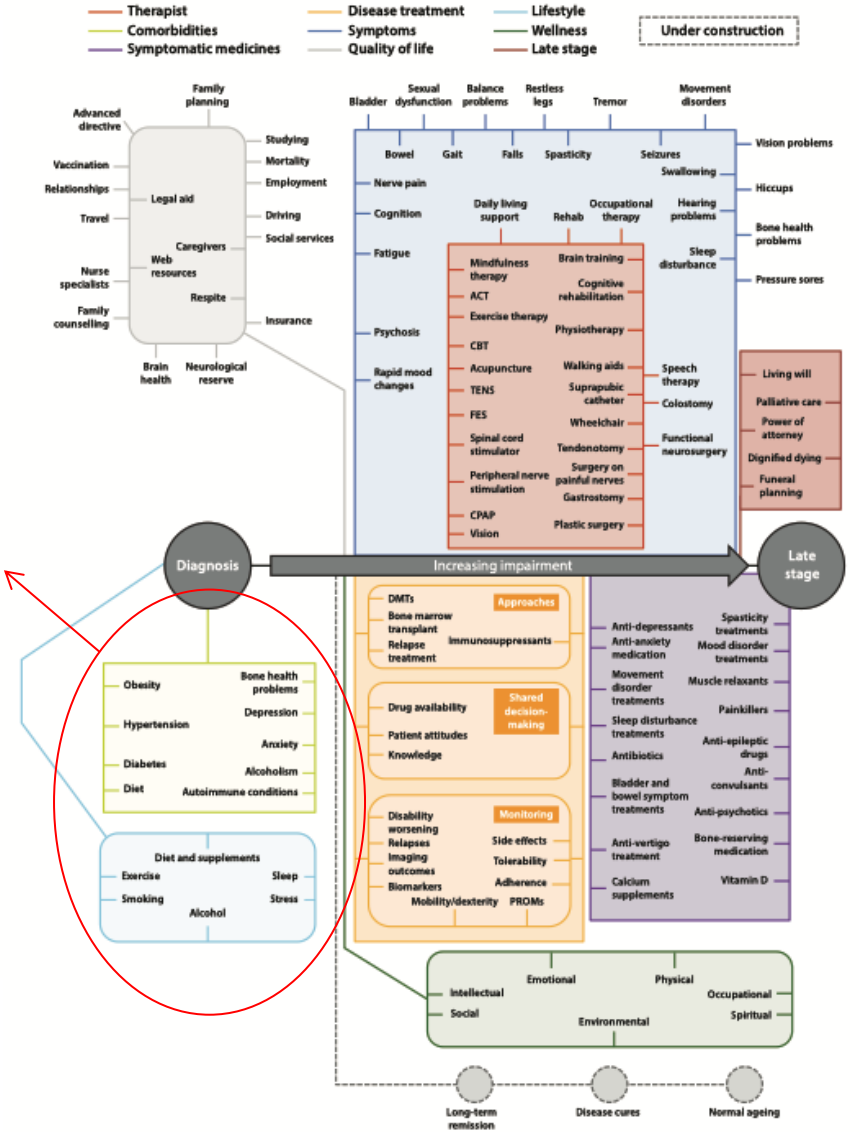


A. Scalfari, et al. Ann Neurol. 2024 Jul 25. doi: 10.1002/ana.27034.

Comorbidities

Impact of Brain Health in MS





Evolving MS symptoms

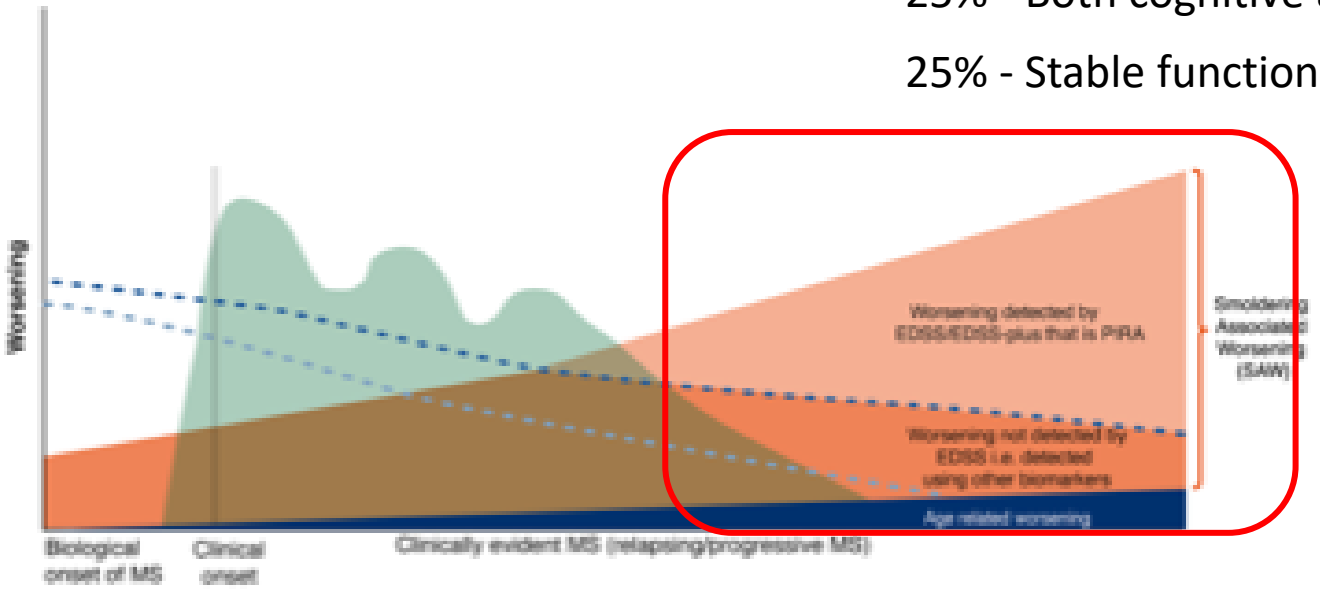
<u>Progressive Disease type:</u>

25% - Motor function (long tracts): Gait – Balance

25% - Cognitive function decline

25% - Both cognitive and motor progression

25% - Stable function



Impact of MS treatments

Immunosenescence = the natural aging of the immune system, that weakens defense mechanisms

With age, the innate and adaptive immune systems undergo numerous changes:

- decreased pool of naïve T cells,
- decreased diversity in T-cell and B-cell receptors
- age-related changes in B cell development and function
- accumulation of memory T cells

Other biological processes associated with aging:

- telomer shortening, DNA mutations, mitochondrial dysfunction, stem cell exhaustion, cellular senescence, or compromised repair capacity of the CNS, …

-> generates a state of chronic low-grade inflammation known as "**inflamm-aging**".

Both inflammaging and immunosenescence can increase susceptibility to infections in older adults.

DMTs that cause immunosuppression (cell depleting agents) also increase Susceptibility to infections.

- Rommer PS, Bsteh G, Zrzavy T, Hoeftberger R, and Berger T, Immunosenescence in Neurological Diseases-Is There Enough Evidence? *Biomedicines* (2022) 10. doi: 10.3390/biomedicines10112864
- Macaron G, Larochelle C, Arbour N, Galmard M, Girard JM, Prat A, et al., Impact of aging on treatment considerations for multiple sclerosis patients. *Frontiers in Neurology* (2023) 14. doi: 10.3389/fneur.2023.1197212
- Perdaens O, and van Pesch V, Molecular Mechanisms of Immunosenescene and Inflammaging: Relevance to the Immunopathogenesis and Treatment of Multiple Sclerosis. *Front Neurol* (2021) 12:811518. doi: 10.3389/fneur.2021.811518
- López-Otín C, Blasco MA, Partridge L, Serrano M, and Kroemer G, Hallmarks of aging: An expanding universe. *Cell* (2023) 186:243-278. doi: 10.1016/j.cell.2022.11.001
- Neumann B, Segel M, Chalut KJ, and Franklin RJ, Remyelination and ageing: Reversing the ravages of time. *Mult Scler* (2019) 25:1835-1841. doi: 10.1177/1352458519884006
- Krysko KM, Henry RG, Cree BAC, Lin J, Caillier S, Santaniello A, et al., Telomere Length Is Associated with Disability Progression in Multiple Sclerosis. *Ann Neurol* (2019) 86:671-682. doi: 10.1002/ana.25592
- Kuhlmann T, Moccia M, Coetzee T, Cohen JA, Correale J, Graves J, et al., Multiple sclerosis progression: time for a new mechanism-driven framework. *Lancet Neurol* (2023) 22:78-88. doi: 10.1016/s1474-4422(22)00289-7