

# MULTIPLE SCLEROSIS

## FACTS AND FIGURES

SYMPTOMS INCLUDE<sup>1</sup>  
**PAIN FROM SPASTICITY**  
**BLURRED VISION**  
**WEAKNESS**  
**ATAXIA AND TREMOR**  
**BLADDER DYSFUNCTION**  
**FATIGUE**



Estimated number of people living with Multiple Sclerosis worldwide in **2020: 2.8 million<sup>2</sup>**

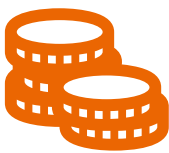
United Kingdom has the highest death rate: **2.08 deaths per 100,000 in 2019<sup>3</sup>**



**Women**  
approximately  
**2-3** times  
more  
affected  
**than men<sup>2</sup>**



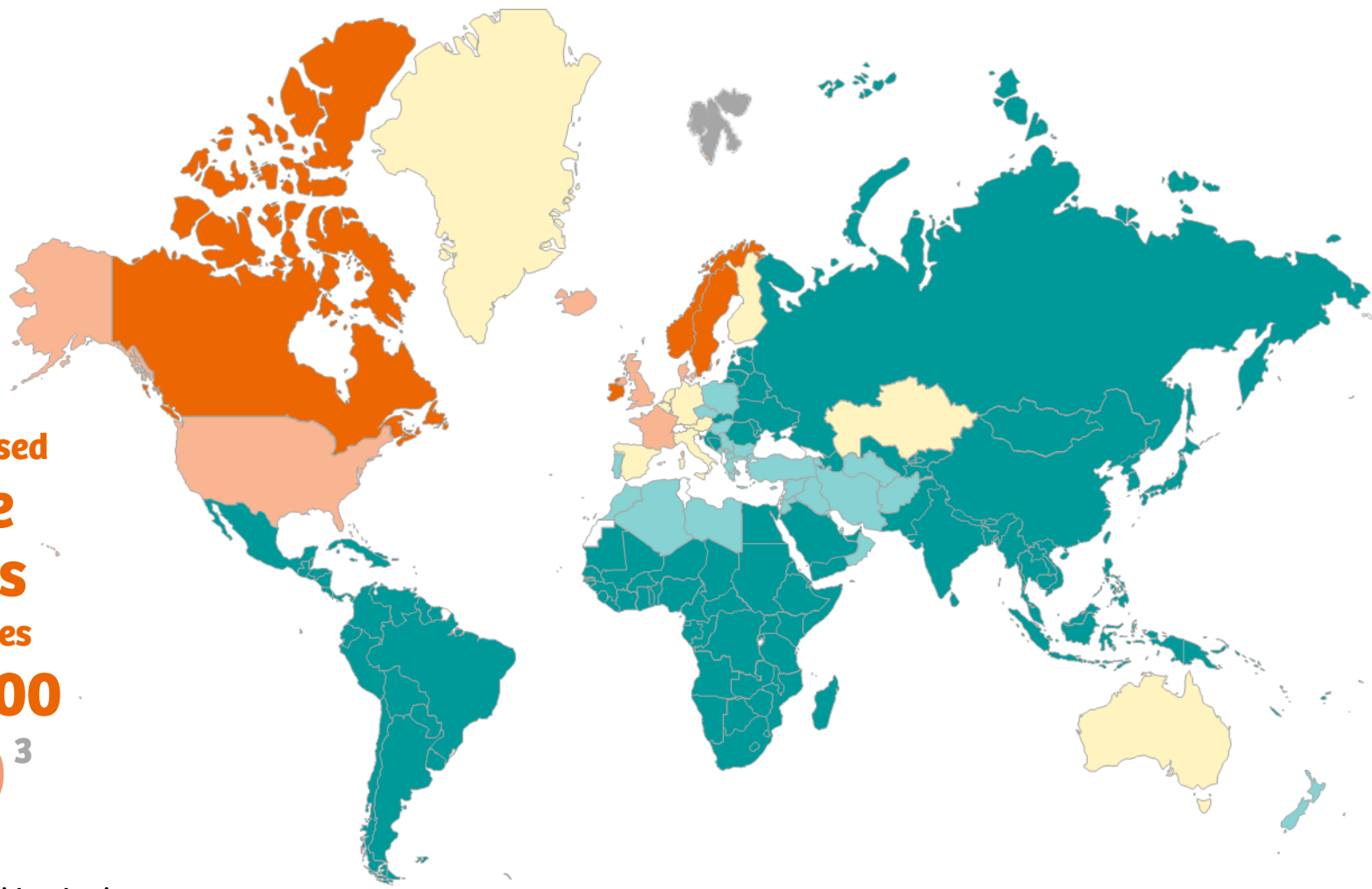
**Total economic burden of Multiple Sclerosis in the United States in 2019 was \$85.4 billion, including \$63.3 billion in direct medial costs<sup>4</sup>**



## RISK FACTORS<sup>1</sup>

- **Vitamin-D deficiency**
- **Epstein-Barr virus infection**
- **Cigarette smoking**
- **Family history**

Age – standardised  
**Multiple Sclerosis**  
prevalence rates  
per 100,000  
**2019<sup>3</sup>**



0 - 30

60 - 90

120 - 150

30 - 60

90 - 120

No data available

**Disclaimer:**  
This publication on the multiple sclerosis pathway framework was updated on 06.09.2022. It cannot be taken as a recommendation for the readers, especially not as a guideline for treatment, and it is not a medical document. There is no guarantee for completeness or global correctness, the various pain points, solutions, and statistical data are examples only. Sources are multiple, such as public statistics, expert opinions, open innovation workshops, research, own data and many more (see references).  
The products and features mentioned may not be available in all countries and their future availability cannot be guaranteed. Some products mentioned are planned and under development.

1. Mayo Clinic . Multiple sclerosis. Retrieved September 06, 2022, from <https://www.mayoclinic.org/diseases-conditions/multiple-sclerosis/symptoms-causes/syc-20350269#:~:text=Those%20symptoms%20include%20loss%20of,sexual%20dysfunction%2C%20and%20walking%20difficulties>  
2. Walton, C., King, R., Rechtman, L., Kaye, W., Leray, E., Marrie, R. A., Robertson, N., La Rocca, N., Uitdehaag, B., van der Mei, I., Wallin, M., Helme, A., Angood Napier, C., Rijke, N., & Baneke, P. (2020). Rising prevalence of multiple sclerosis worldwide: Insights from the atlas of MS, Third edition. *Multiple Sclerosis Journal*, 26(14), 1816–1821. <https://doi.org/10.1177/1352458520970841>  
3. Viz Hub. (2019). GBD Compare. Retrieved September 06, 2022, from <https://vizhub.healthdata.org/gbd-compare/>  
4. Bebo, B., Cintina, I., LaRocca, N., Ritter, L., Talente, B., Hartung, D., Ngorsuraches, S., Wallin, M., & Yang, G. (2022). The economic burden of multiple sclerosis in the United States. *Neurology*, 98(18). <https://doi.org/10.1212/wnl.000000000000200150>



An extensive research-based analysis from 40+ scientific articles and journals in combination with hospital workflow experience allowed the identification of painpoints and solutions.

These solutions were proposed based on AI, IoMT, AR/VR, biosensors, nanorobotics and smart wearable technologies.

THROUGH THIS CAREPLAN WE HIGHLIGHT DATA FROM A COLLECTION OF

35  
painpoints

41  
solutions

connected to  
different stakeholders

### Solution categories

- Existing in healthcare sector
- Ongoing research in healthcare
- Futuristic solution (may or may not be implemented)

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\*MR fingerprinting (SHS): The product is not for sale in the U.S. Its future availability cannot be guaranteed.  
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