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Bridging the Gap in Multiple Sclerosis Care: A Real-World Analysis of Untreated Populations and Treatment Efficacies in the German NTD Registry

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Disclosure of Potential Conflicts of Interest

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- **S. Braune** has received honoraria from Kassenärztliche Vereinigung Bayerns and health maintenance organisations for patient care, and from Merck, Takeda, Roche and Sanofi for consulting, project management, clinical studies and lectures; he also received honoraria and expense compensation as a board member of NeuroTransData
- **A. Bergmann** has received fees for consulting, advisory board membership, speaking and other activities from NeuroTransData and fees for project management, clinical studies and travel from Novartis and Servier
- **Y. Heer** is an employee of Rewoso; Rewoso received funding from Roche for the conduct, management, and data analysis of this study
- **C. G. Berardo** and **M. Traber** are employees and shareholders of F. Hoffmann-La Roche
- **N. Joschko** is an employee of Roche Pharma, Germany, and a shareholder of F. Hoffmann-La Roche
- **A. Ferro** is an employee of Roche Products and a shareholder of F. Hoffmann-La Roche

- This study was sponsored by F. Hoffmann-La Roche Ltd

Background

- While German Multiple Sclerosis (MS) guidelines advocate for early intervention and use of category 3 high-efficacy therapies in highly active disease,[1] real-world practice alignment with these recommendations remains unclear

Objective

This study uses real-world data to characterize treated and untreated pwMS in Germany, evaluating potential discrepancies between clinical guidelines and routine practice

Research Questions

- What are the real-world prevalences, trends and clinical profiles of treated and untreated pwMS?
- Do patient treatment pathways differ depending on the disease activity?

PwMS, people with MS.

1. Hemmer B, Ghering K, et al. Deutsche Gesellschaft für Neurologie S2k-Leitlinie. 2026. Version 9.0. Available at: https://www.dgn.org/cms-content/030050_Living_Guideline_MS_V9_2026_1777557729023.pdf. Accessed October 13, 2026.

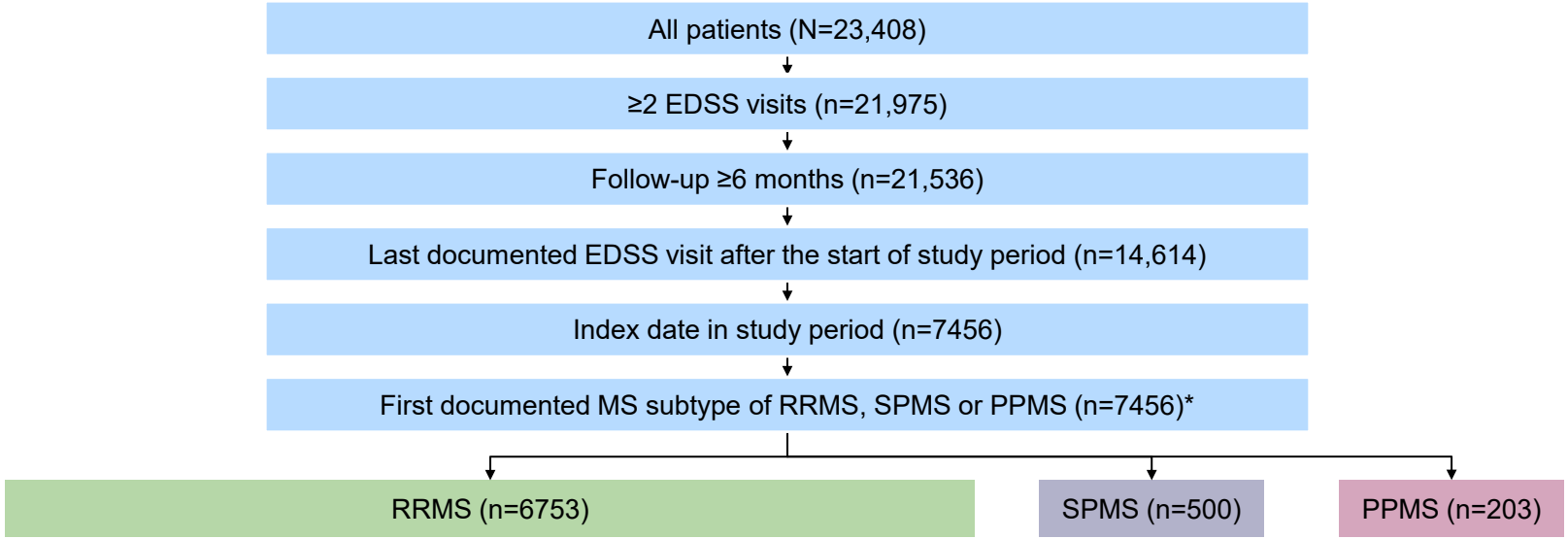
Methods

- This retrospective cohort study analysed data from the German NeuroTransData (NTD), a disease-specific MS outpatient registry, with a total of 119 neurologists in 59 offices
- PwMS were included if they had ≥2 documented Expanded Disability Status Scale (EDSS) visits and a minimum follow-up of 6 months between January 2018 and December 2024. Start of the therapy was defined as the index date
- All data (clinical, patient demographics, treatment status, or decision reasons) were collected by physicians and study nurses during regular office visits through a web-based platform; routine visits typically occurred 3-4 times per year
- People with relapsing-remitting MS (RRMS), secondary progressive MS (SPMS) and primary progressive MS (PPMS) were monitored, with RRMS cohorts stratified into treatment-naive and treatment-experienced
- Disease-modifying therapies (DMTs) were categorized as low (LE), medium (ME) or high efficacy (HE) according to German treatment guidelines
- HE therapies in RRMS were further segmented into HE-treated anti-CD20 and HE-treated natalizumab/alemtuzumab
- A subgroup of treatment-naive and treatment-experienced pwMS was defined as high disease activity (HDA) based on EDSS (total EDSS and pyramidal subscore), MRI (Gd^+ lesions and T2 lesions) and relapses, as suggested by German treatment guidelines[1]

Gd^+, gadolinium-enhancing; pwMS, people with MS.

1. Hemmer B, et al. Deutsche Gesellschaft für Neurologie S2k-Leitlinie. 2026. Version 9.0. Available at: https://www.dgn.org/cms-content/030050_Living_Guideline_MS_V9_2026_1777557729023.pdf. Accessed October 13, 2026.

Figure 1: Attrition



*Numbers may be different due to maturation from RRMS to SPMS.
LE DMTs: interferon, teriflunomide, glatiramer acetate, azathioprine; ME DMTs: fumarates, cladribine; HE DMTs: anti-CD20, natalizumab, mitoxantrone, daclizumab, alemtuzumab.
ALEM, alemtuzumab; CD, cluster of differentiation; EDSS, Expanded Disability Status Scale; HE, high efficacy; LE, low efficacy; ME, medium efficacy; NTZ, natalizumab; PPMS, primary progressive MS; RRMS, relapsing-remitting MS; SPMS, secondary progressive MS.

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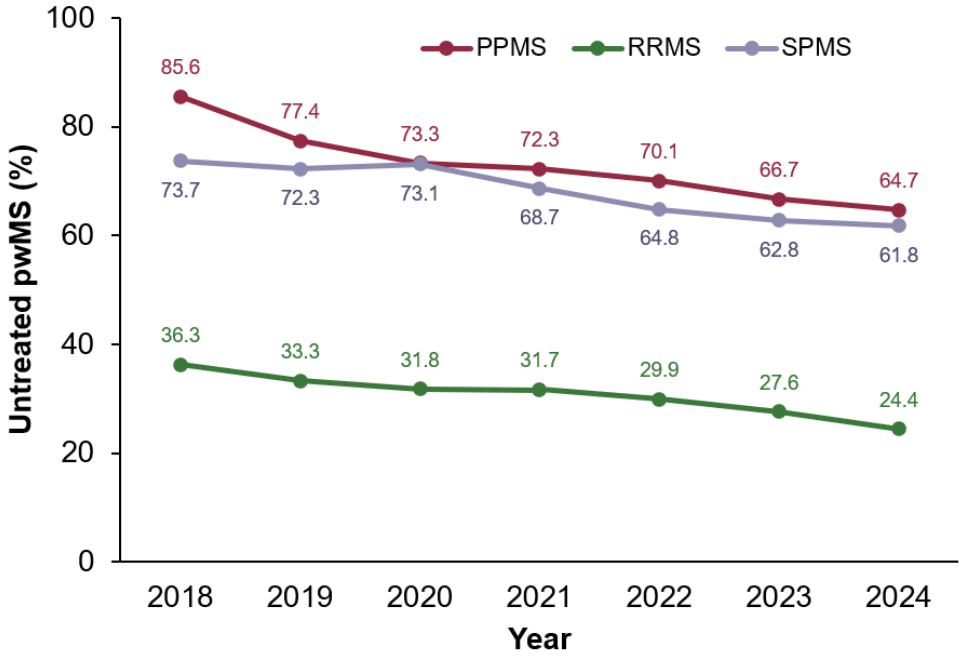
Table 1: Baseline Characteristics of All Relevant Cohorts

Baseline Characteristics	LE-treated RRMS n=3737	ME-treated RRMS n=1592	HE-treated anti-CD20 RRMS n=1611	HE-treated NTZ/ALEM RRMS n=622
Unique patients, n	2984	1519	1462	540
Age, mean (SD), years	39.67 (11.33)	41.34 (11.51)	40.70 (11.14)	35.27 (9.34)
Female, n (%)	2824 (75.6)	1192 (74.9)	1083 (67.2)	499 (80.2)
EDSS, mean (SD)	1.61 (1.40)	2.25 (1.72)	2.60 (1.85)	2.24 (1.60)
Missing, n (%)	1019 (27.3)	326 (20.5)	357 (22.2)	154 (24.8)
Years since diagnosis, mean (SD)	6.36 (7.33)	9.51 (7.94)	9.44 (8.00)	7.33 (6.27)
Annualised relapse rate in previous year, mean (SD)	0.41 (0.61)	0.55 (0.75)	0.54 (0.76)	0.68 (0.91)
HDA at index, n (%)	1674 (44.8)	1137 (71.4)	1095 (68.0)	431 (69.3)
Number of previous DMTs, n (%)				
0	1581 (42.3)	278 (17.5)	380 (23.6)	113 (18.2)
1	1179 (31.5)	564 (35.4)	419 (26.0)	185 (29.7)
≥2	977 (26.1)	750 (47.1)	812 (50.4)	324 (52.1)

LE DMTs: interferon, teriflunomide, glatiramer acetate, fumarates; ME DMTs: cladribine, S1P; HE DMTs: anti-CD20, natalizumab, alemtuzumab.
ALEM, alemtuzumab; CD, cluster of differentiation; DMT, disease-modifying therapy; EDSS, Expanded Disability Status Scale; HDA, high disease activity; HE, high efficacy; LE, low efficacy; ME, medium efficacy; NTZ, natalizumab; RRMS, relapsing-remitting MS; S1P, sphingosine-1-phosphate.

High Untreated Rates Persist, Especially in PwPPMS and PwSPMS

Figure 2: Percentage of Untreated PwMS by MS Subtype



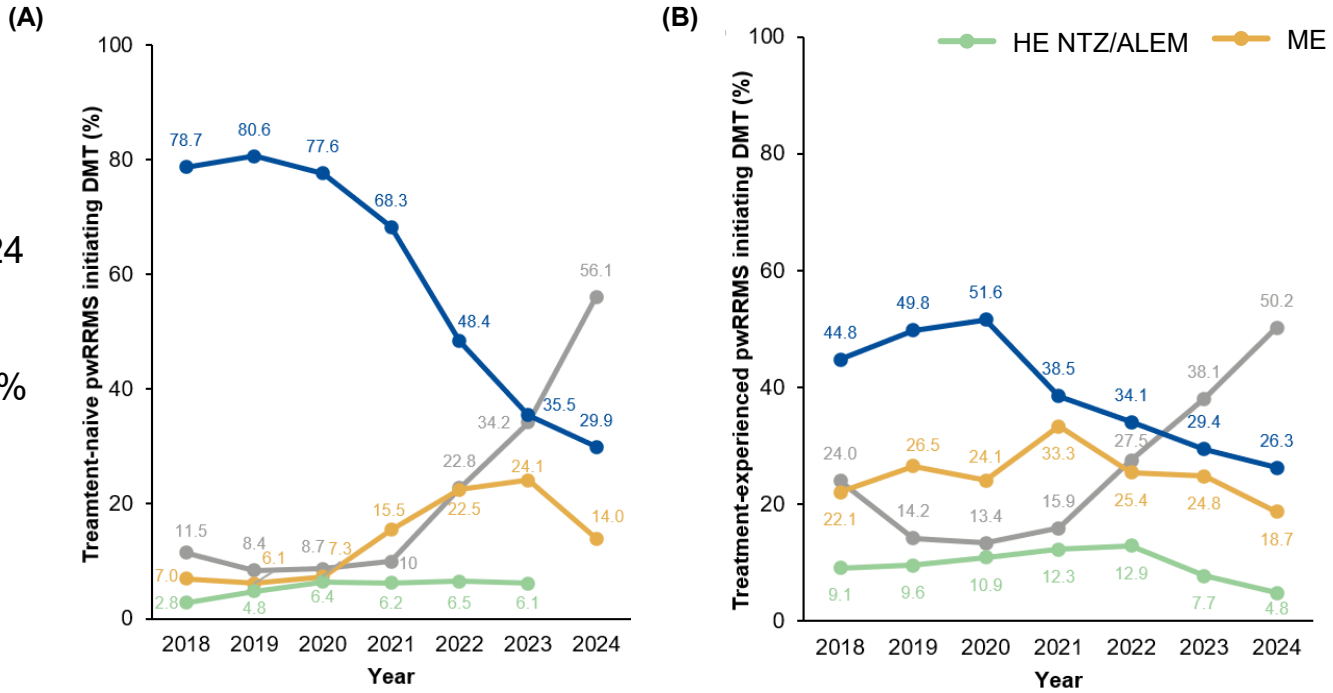
- In 2024, 24% of pwRRMS, 62% of pwSPMS and 65% of pwPPMS patients remained untreated
- Between 2018-2024, pwRRMS had the lowest untreated rate compared with other MS subtypes, with nearly a quarter of pwRRMS not initiating treatment in 2024

Disclaimer: this figure was previously presented at the MSToronto 2026 10th Joint ACTRIMS-ECTRIMS Meeting.
DMT, disease-modifying therapy; PPMS, primary progressive MS; pw, people with; RRMS, relapsing-remitting MS; SPMS, secondary progressive MS.

Anti-CD20 Therapies are the Primary Choice in PwRRMS

Figure 3: Overall DMT Usage Over Years and by Treatment Experience

- For treatment-naive pwRRMS, HE anti-CD20 use increased from 12% in 2018 to 56% in 2024
- LE therapies for treatment-naive pwRRMS decreased from 79% to 30% over the same period
- Trends for treatment-experienced pwRRMS were similar



LE DMTs: interferon, teriflunomide, glatiramer acetate, fumarates; ME DMTs; cladribine, S1P; HE DMTs; anti-CD20, natalizumab, alemtuzumab.
ALEM, alemtuzumab; CD, cluster of differentiation; DMT, disease-modifying therapy; HE, high efficacy; LE, low efficacy; ME, medium efficacy; NTZ, natalizumab; pwRRMS, people with relapsing-remitting MS; S1P, sphingosine-1-phosphate.

Despite a Shift Towards Anti-CD20 Initiation, an ≈30% Treatment Gap Persists

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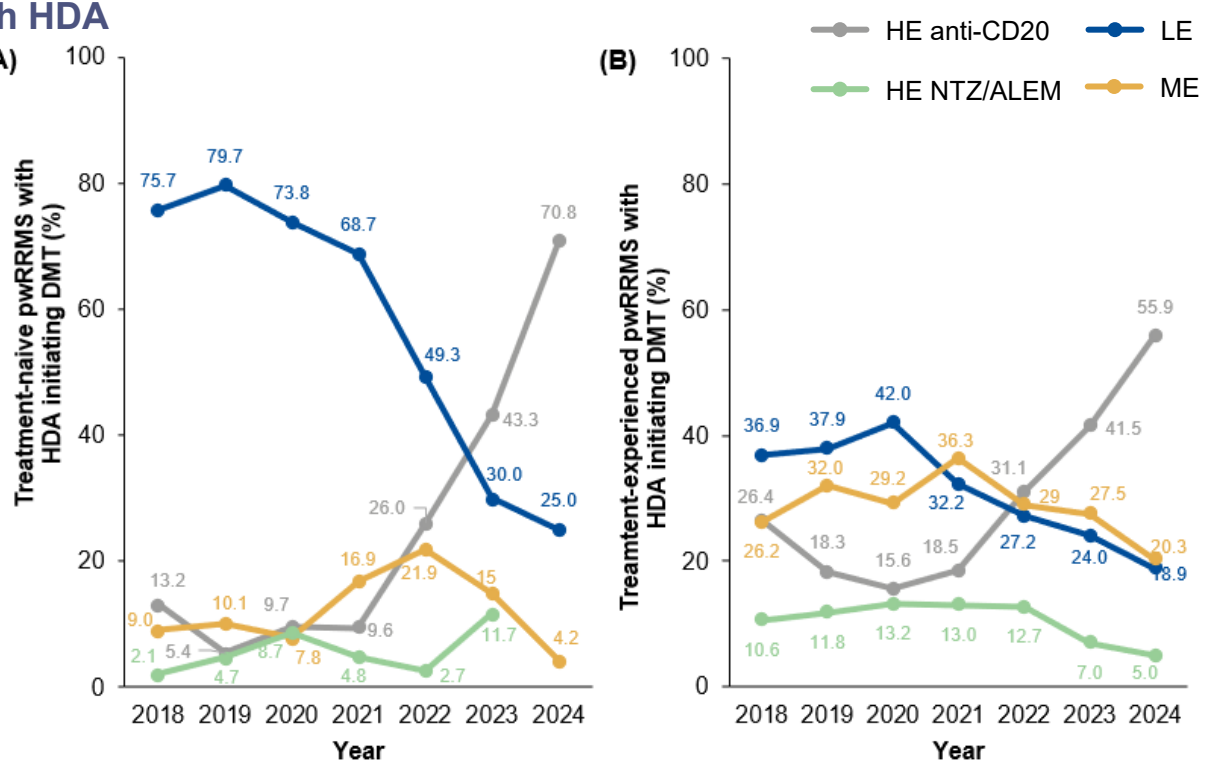
Figure 4: DMT Usage in PwRMS With HDA

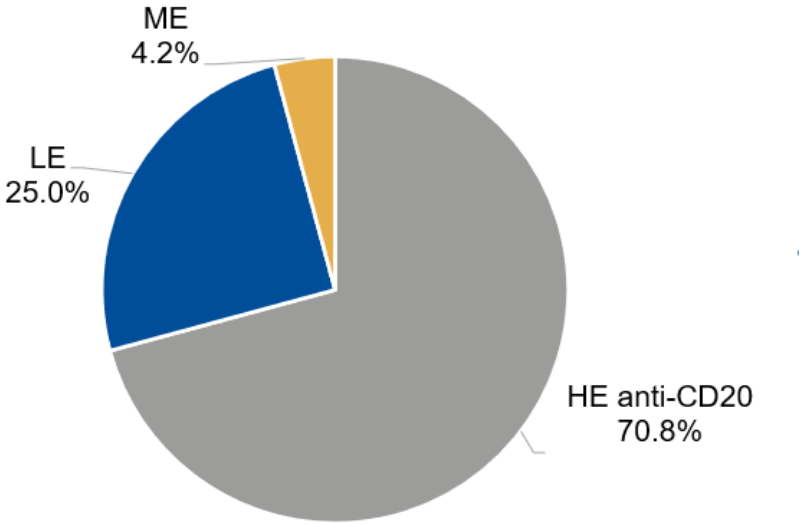
- HE anti-CD20 therapies are now the dominant first-line choice for treatment-naive pwRRMS with HDA, jumping from 13% in 2018 to 71% in 2024
- LE therapy use has sharply declined in treatment-naive pwRRMS, dropping from a peak of 80% in 2019 to 25% in 2024
- Similar observations were made for treatment-experienced pwRRMS with HDA



LE DMTs: interferon, teriflunomide, glatiramer acetate, fumarates; ME DMTs; cladribine, S1P; HE DMTs; anti-CD20, natalizumab, alemtuzumab.
ALEM, alemtuzumab; CD, cluster of differentiation; DMT, disease-modifying therapy; HDA, high disease activity; HE, high efficacy; LE, low efficacy; ME, medium efficacy; NTZ, natalizumab; pw, people with; RMS, relapsing MS; RRMS, relapsing-remitting MS; S1P, sphingosine-1-phosphate.

Despite a Shift Towards Anti-CD20 Initiation, an ≈30% Treatment Gap Persists (cont'd)

Figure 5: DMT Usage in Treatment-Naive PwRRMS With HDA in 2024



- Despite the shift to HE anti-CD20 therapies, roughly 30% of pwRRMS with HDA initiated LE or ME therapies in 2024

LE DMTs: interferon, teriflunomide, glatiramer acetate, fumarates; ME DMTs; cladribine, S1P; HE DMTs; anti-CD20, natalizumab, alemtuzumab.
CD, cluster of differentiation; DMT, disease-modifying therapy; HDA, high disease activity; HE, high efficacy; LE, low efficacy; ME, medium efficacy; pwMS, people with MS; pwRRMS, people with RRMS; RMS, relapsing MS; RRMS, relapsing-remitting MS; S1P, sphingosine-1-phosphate.

Conclusions

- A significant proportion of pwMS remain untreated across different MS subtypes
- Despite a strong shift toward HE anti-CD20 initiations in Germany from 2018-2024, indicating an overall strategy change in outpatient care, usage of LE DMTs persist

In 2024, nearly one-third of pwMS with highly active disease initiated LE or ME DMTs, despite potential eligibility for HE DMT according to current clinical guidelines

CD, cluster of differentiation; DMT, disease-modifying therapy; HE, high efficacy; LE, low efficacy; ME, medium efficacy; pw, people with.