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Costs beyond the drug: a micro-costing study comparing hospital-based and home-based administration of multiple sclerosis treatments

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What did we want to find out?

Administration of high-efficacy disease-modifying therapies (DMTs) for relapsing-remitting multiple sclerosis (RRMS) varies by route and setting, with some administered intravenously (IV) in hospital and others self-administered subcutaneously (SC) or as tablets at home. DMTs also differ in dosing frequency and treatment regimen, being either continuous or induction-based.

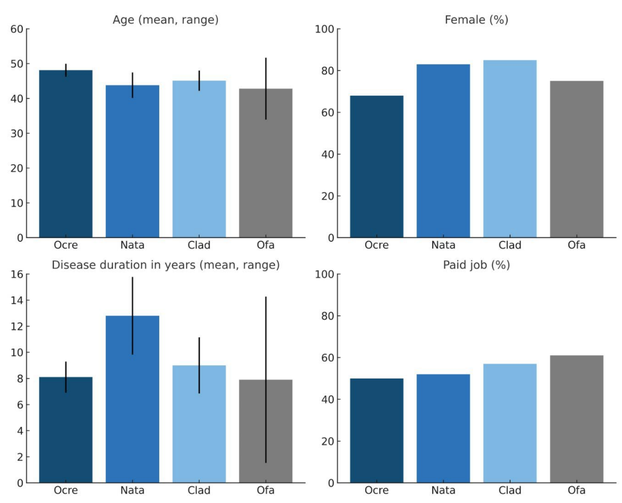
These differences may lead to cost variations from both a healthcare and societal perspective. To enable a representative cost comparison across DMTs, these differences should be quantified.

The MICRO-MARS study assesses the societal costs for administering four commonly prescribed high-efficacy RRMS treatments in the Netherlands.

How did we approach this?

The MICRO-MARS study was an observational study employing a bottom-up micro-costing approach. Patients aged ≥18 years were included. First-time administrations of IV or SC therapies were excluded. Data were collected between July 2024 and May 2025 through case report forms, patient questionnaires, and facility-level data. Costs were categorized as direct healthcare costs (including healthcare professional wages, consumables, costs related to diagnostics, and facility and overhead costs) and non-healthcare costs (including travel expenses, informal care[1], and productivity losses[2]). Analyses were conducted in accordance with Dutch health economic guidelines[3], using unit prices from the same source, and expressed in 2024 prices.

Figure 1. Patient characteristics by treatment group



121 patients across 5 treatment centers

- Ocrelizumab (IV) N = 40
- Natalizumab (IV) N = 33
- Cladribine (Oral) N = 7
- Ofatumumab (SC) N = 41

What did we find out?

Figure 2. Healthcare costs for a single treatment administration, in euros

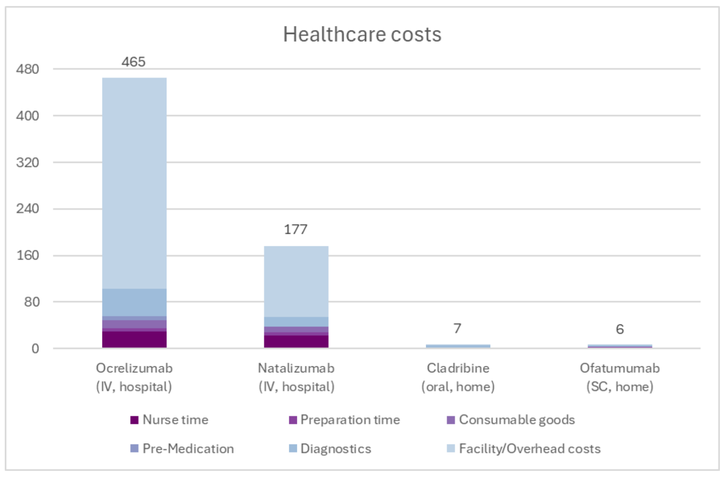
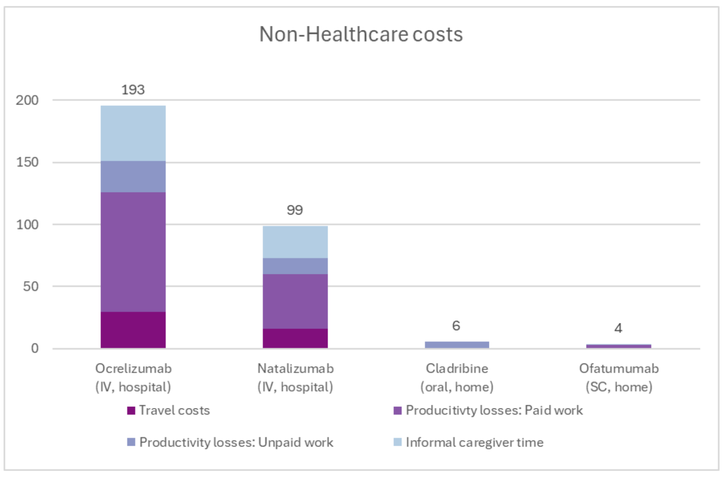


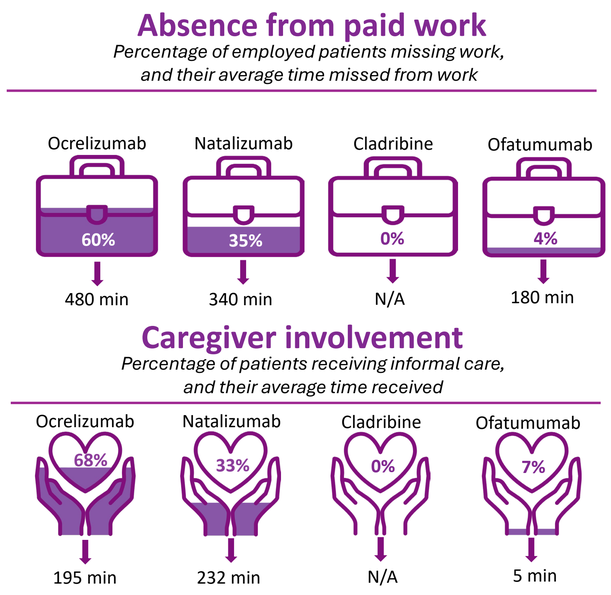
Figure 3. Non-healthcare costs for a single treatment administration, in euros



Informal care and productivity impact

- Among patients with a paid job, 60% and 35% missed work during hospital-based administrations of ocrelizumab and natalizumab, respectively, compared with 0% and 4% during home-based administrations of cladribine and ofatumumab.
- When patients missed paid work, the average duration of absence was 8.0 and 5.7 hours for ocrelizumab and natalizumab, respectively, and 3.0 hours for ofatumumab.
- Informal care was rarely needed for home-based treatments (0% for cladribine and 7% for ofatumumab) but was frequently required for hospital-based treatments (68% for ocrelizumab and 33% for natalizumab).
- When caregivers were involved, the average time spent aiding was 3.3 and 3.9 hours for ocrelizumab and natalizumab, respectively, compared with 5 minutes for ofatumumab.

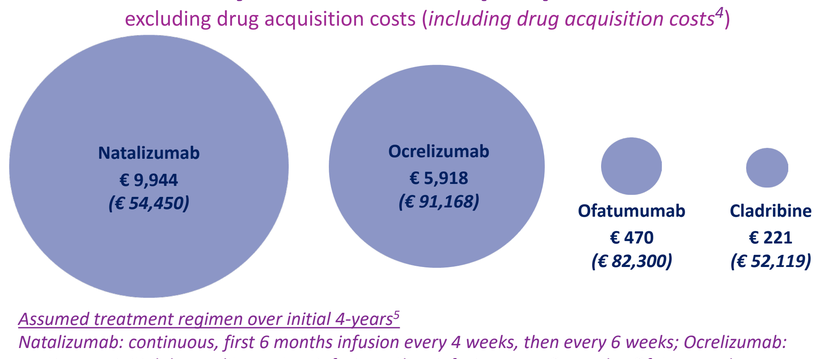
Figure 4. Impact of a single treatment administration on paid work and informal care



Cost impact

- Healthcare costs per administration were highest for hospital-based treatments (€465 for ocrelizumab and €177 for natalizumab), driven primarily by facility and overhead costs. In contrast, healthcare costs were minimal for home-based treatments (€7 for cladribine and €6 for ofatumumab), where diagnostic costs were the main driver.
- Non-healthcare costs were highest for ocrelizumab (€193 per administration) and lowest for ofatumumab (€4), mainly driven by productivity losses.
- Total societal costs per administration, excluding drug acquisition costs, ranged from €9–12 for home-based treatments and €275–658 for hospital-based treatments.
- Over four years, accounting for dosing frequency and treatment type (continuous or induction), cumulative societal administration costs per patient were €5,918 for ocrelizumab and €9,944 for natalizumab, compared with €221 for cladribine and €470 for ofatumumab.
- When drug acquisition costs are included, administration costs account for less than 1% of total costs for home-based treatments, but for a more substantial share of hospital-based treatment costs (6%–18%).

Figure 5. Total administration costs over 4 years per patient, in euros



Assumed treatment regimen over initial 4-years[5]
Natalizumab: continuous, first 6 months infusion every 4 weeks, then every 6 weeks; Ocrelizumab: continuous, initial dose split over two infusions, then infusion every 6 months; Ofatumumab: continuous, initiation period of 3 injections in first month, then every month; Cladribine: induction, 9 administrations in year 1 and 9 administrations in year 2, no treatment in year 3 and year 4.

What can we take away?

High-efficacy DMTs for RRMS differ substantially in administration-related societal costs. Hospital-based IV therapies are associated with higher healthcare professional time, facility use, and caregiver burden compared with home-based oral or SC options. The varying dosing frequencies and treatment regimens affect total cost estimates over longer time periods, in particular reducing the relative costs for cladribine which is an induction treatment. While societal administration costs are modest relative to drug acquisition costs, they accumulate in long-term treatment and are relevant for patients, providers, and policymakers. Shifting care towards home-based administration or reducing infusion frequency may help lower societal costs.

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