Moving towards better outcomes in Multiple Sclerosis by addressing policy change

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Background & Objectives
Multiple Sclerosis (MS) is the second most common cause of neurological disability and highest per capita costs among all other neurological disorders [1]. Early Disease Modifying Therapy (DMT) (i.e. within 12 months of a single neurological attack with MRI enhancing lesions) is proposed as a preventative strategy against disability accumulation in MS patients [2,3].

We aimed to estimate the socioeconomic burden and Quality of Life (QoL) of MS patients and evaluate the role of early DMT towards better disease outcomes.

Methods
- Two web-surveys (Qualtrics®) of individuals with MS and their caregivers.
- 14 patient associations (whether at national or supra-national level) were invited to cascade the surveys to their network of patients and caregivers.
- Patient survey collected data on: i) Demographics, ii) Time between diagnosis and treatment, iii) Healthcare resource utilisation (incl. consumption of DMTs), iv) Productivity losses, v) QoL (EuroQol 5-domain; EQ-5D-5L), EQ-5D-5L VAS and vi) Physical disability (Barthel Index).
- Caregiver survey collected data on: i) Demographics, ii) Productivity losses, iii) QoL (EuroQol 5-domain; EQ-5D-5L), EQ-5D-5L VAS and iv) Emotional burden (Zarit Burden Interview).
- Microsoft® Excel 2010 was used to generate descriptive statistics and SPSS (v.21) to test for country and treatment group differences (using one way ANOVA and independent samples t-test respectively).

Results
- 246 patients (France 39%, USA 29%, Romania 18%, UK 10%, Germany 4%) and 12 caregivers (Romania 42%, France 33%, USA 17%, Germany 8%) participated.
- Average annual cost per patient was €38,820 of which 47% accounted for DMTs, 41.3% for indirect costs due to productivity losses, 5.5% for non-medical costs (formal/informal care), 3.9% for inpatient care and 2.9% for ambulatory care (Figure 1).
- Mean annual productivity loss per caregiver amounted up to €31,155.
- Country differences existed on total costs (p<0.01), direct medical costs (p<0.01), indirect costs (p<0.05) and EQ-5D-5L utilities (p<0.001) which ranged from 0.77 in Germany to 0.49 in France (Figure 2).
- Mean patient and caregiver EQ-5D-5L index and VAS scores were 0.60 (±0.12) and 63, and 0.70 (±0.19) and 72 respectively.
- Individuals treated earlier had a trend towards lower total (€38,185 vs. €42,058, p>0.05), DMT (€18,942 vs. €20,044, p>0.05) and indirect (€15,390 vs.€18,521, p>0.05) costs and a higher EQ-5D VAS score (65 vs.62, p>0.05) than those receiving no or late DMT.

Figure 1. Average annual cost (€ 2014-15) per patient between countries and between early and late treated individuals.

Figure 2. Mean patient utility, utility loss and disability between countries and between early and late treated individuals.

Conclusions & Future directions
MS introduces a significant global economic burden for societies, with DMT costs and work productivity losses representing 88% of the total average annual costs. Early DMT initiation yielded promising results in terms of reducing the overall burden of the disease.

- In the absence of long-term, real world data about the cost-effectiveness of receiving DMT earlier in the course of the disease, when to initiate treatment and which DMT to use are still to be determined.

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References
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