Opportunities and challenges for conducting research on Secondary Progressive Multiple Sclerosis across International Multiple Sclerosis registries through a research network collaboration

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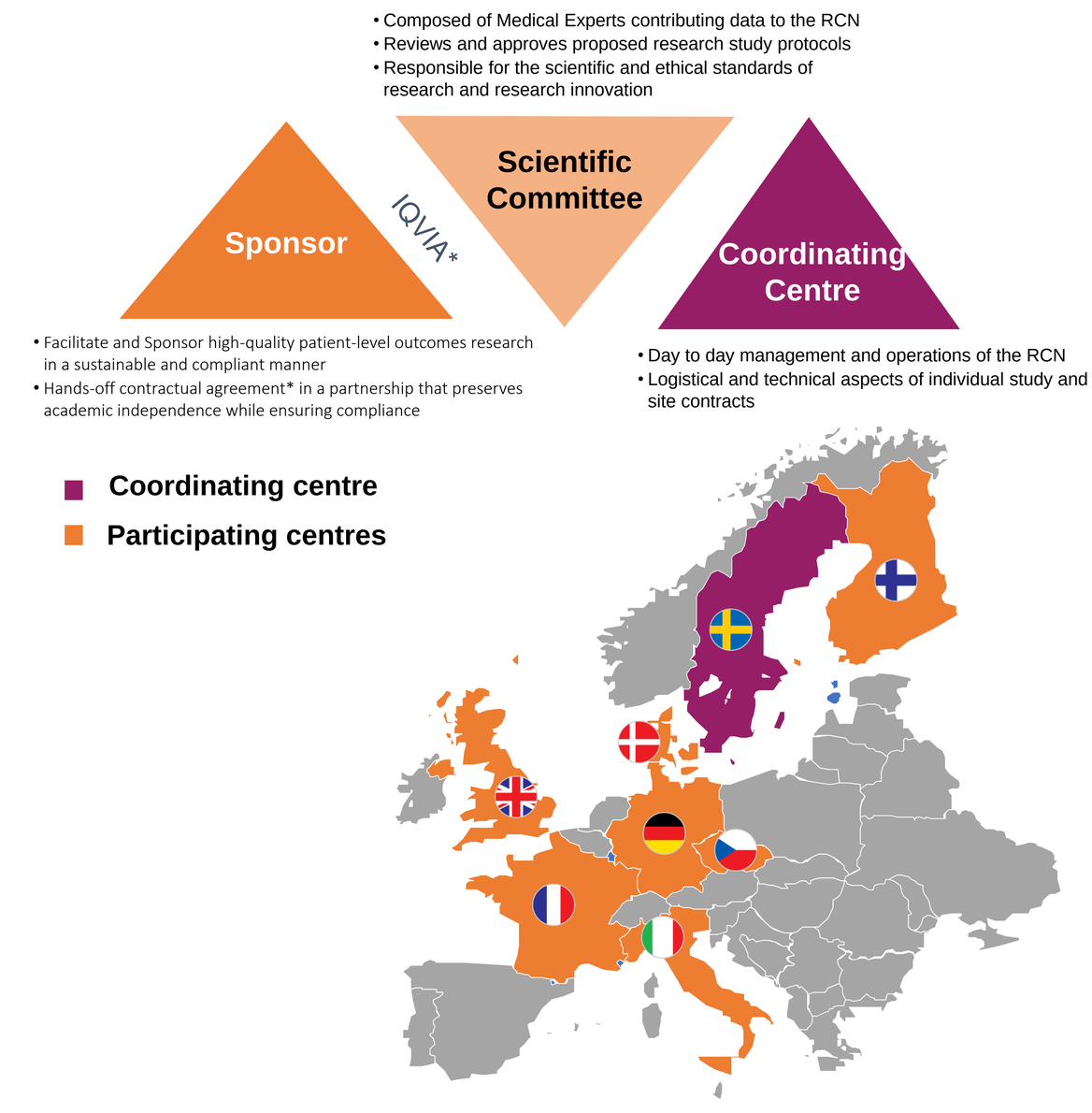
Introduction and Purpose

High-quality data from large, retrospective cohorts are required to perform real-world evidence (RWE) studies for Multiple Sclerosis (MS). In secondary progressive MS (SPMS), the inherent complexity of the disease, the lack of consistent diagnostic criteria, and the relatively low prevalence of the disease limits the possibility to conduct RWE studies. This has restricted the study of the natural history of SPMS, disease progression and outcomes.

European MS registries collecting data on SPMS patients have formed a research collaboration network (RCN) to generate data for RWE studies on SPMS (**Figure 1**). Apart from facilitating RWE study opportunities, the RCN can be used to systematically identify data gaps and to facilitate the definition of a minimal dataset for future studies, especially those that could support evidence requirements from health technology assessment (HTA) bodies.

Figure 1. *Governance structure and participating registries of the SPMS RCN*



Here, we describe the European RCN in SPMS and aim to assess patient numbers and data availability across participating registries. Specifically, we aim to describe the high-level feasibility of conducting two pilot studies: measuring variability in SPMS prevalence as a function of diagnostic criteria (Study 1) and describing characteristics and treatment patterns of SPMS patients in routine clinical practice (Study 2).

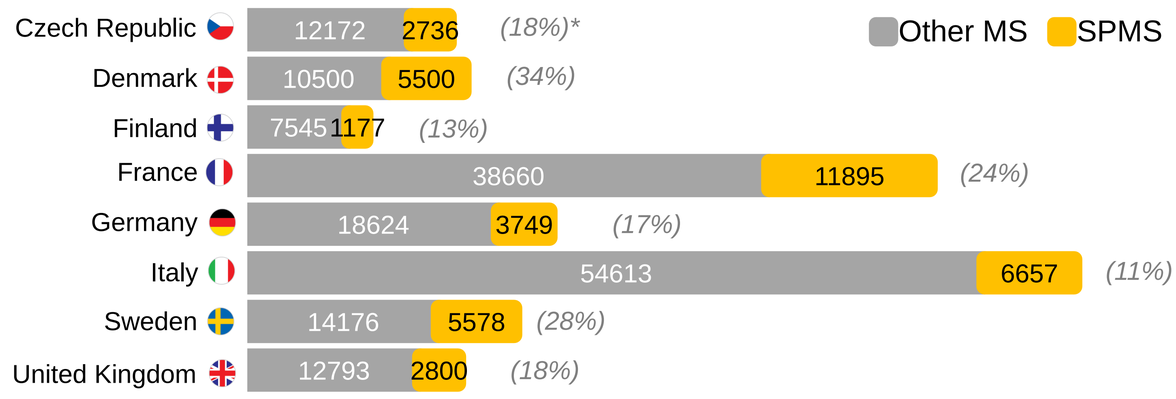
Methods

Surveys were developed and completed by European MS registries to complement published information on data captures. The feasibility of each registry's participation in the two pilot studies was evaluated by assessing availability of required variables for the two pilot studies.

Results

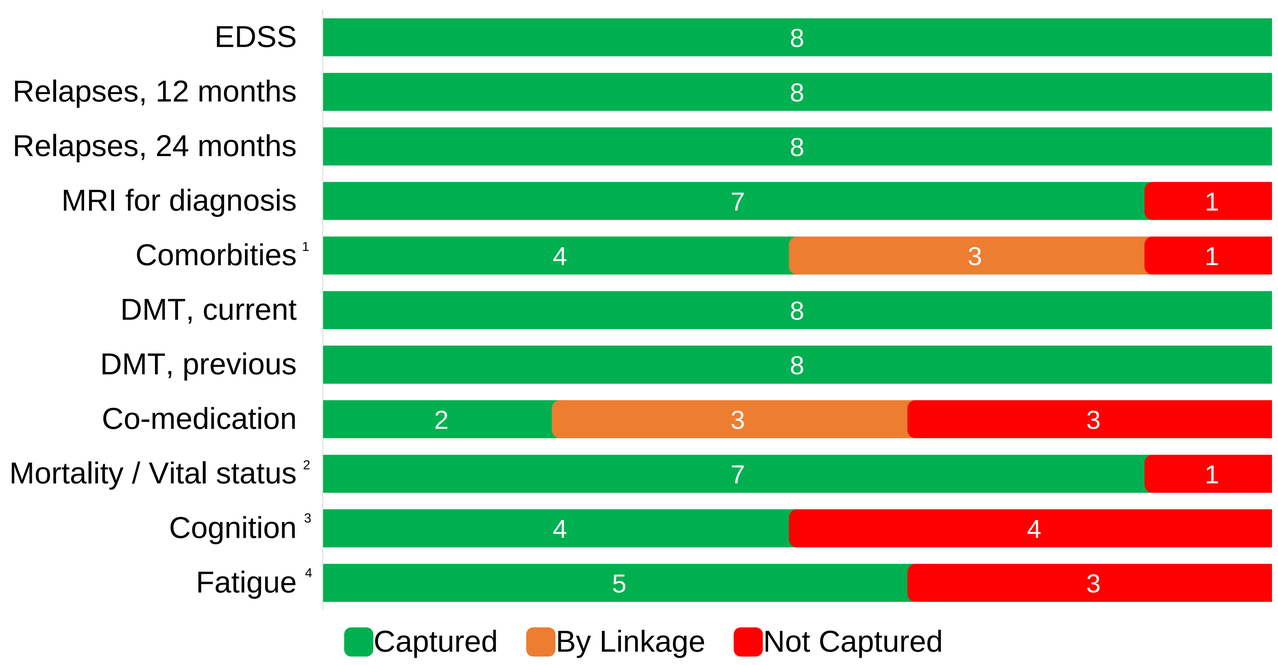
Eight MS registries agreed to form the SPMS RCN, covering ~209,000 MS patients, including ~40,000 SPMS patients (**Figure 2**). Of the clinical variables relevant for these studies, all eight registries capture the Expanded Disability Status Scale (EDSS), number of relapses in the last 12 or 24 months, current and past disease modifying therapies (DMT), and mortality rates. Comorbidities and key diagnostic data from Magnetic Resonance Imaging (MRI) is captured in seven of the registries. Five collect information on co-medication and fatigue. Four capture information on cognition. In some countries, some of the above information can be obtained by linkage to national, population-based registries (**Figure 3**).

Figure 2. *Patient counts in the SPMS RCN as of December 2018*



* Indicates the percentage of SPMS patient with respect to the total number of patients (Other MS and SPMS) of a given cohort

Figure 3. *Variables relevant for Studies 1 and 2 collected in Eight European neurology registries*



[1] Two of the registries indicated data item is available for this variable but data density expected to be insufficient for scientific use
[2] One of the registries indicated data item is available for this variable but data density expected to be insufficient for scientific use
[3] One registry indicated data item recorded as symptom + PASAT3
[4] One registry indicated data item recorded but only as a general symptom, no scale employed

Conclusions

The SPMS RCN, which includes ~40,000 SPMS patients, enables the analyses of core variables in the real-world setting. These variables include the majority of core disease activity measures (e.g. EDSS) required for the two proposed pilot studies. Nonetheless, variables that could improve SPMS diagnosis and patient characterization such as cognition are not as widely collected. The RCN highlights addressable challenges and could facilitate future studies by prompting improvements in SPMS data collection.

Funding: This study was supported by Novartis **Disclosures:** Anna Glaser: nothing to disclose. Maria Trojano has served on scientific Advisory Boards for Biogen, Novartis, Merck Serono, Roche and Genzyme; has received speaker honoraria from Biogen Idec, Sanofi-Aventis, Merck Serono, Roche, Teva, Genzyme and Novartis; and has received research grants for her Institution from Biogen Idec, Merck Serono, Roche and Novartis. Pietro Iaffaldano has served on scientific advisory boards for Biogen Idec, Bayer, Teva, Roche, Merck Serono, Novartis and Genzyme and has received funding for travel and/or Speaker honoraria from Sanofi Aventis, Genzyme, Biogen Idec, Teva, Merck Serono and Novartis.Sandra Vukusic has received consultancy fees, speaker fees, or honoraria from Biogen, Celgene, GeNeuro, MedDay, Merck Serono, Novartis, Roche, Sanofi and Teva and research support from Biogen, GeNeuro, MedDay, Merck Serono, Novartis, Roche and Sanofi. Dana Horakova received compensation for travel, speaker honoraria, and consultant fees from Biogen Idec, Novartis, Merck, Bayer, Sanofi Genzyme, Roche and Teva, as well as support for research activities from Biogen Idec. Richard Nicholas has received honoraria for speaking, travel, advisory boards and participating in clinical research from Biogen, Novartis, Roche. Rod Middleton: nothing to disclose. Alexander Stahmann: nothing to disclose. Merja Soilu-Hänninen has received honoraria for serving on advisory boards for Merck, Roche and Sanofi-Genzyme and speaker's fees from Biogen, Merck, Novartis, Sanofi-Genzyme and Teva and has served as P.I. or received unrestricted research support from Bayer, BiogenIdec, Merck, Roche and Sanofi-Genzyme. Melinda Magyari has served on scientific advisory board for Biogen, Sanofi, Teva, Roche, Novartis, Merck, has received honoraria for lecturing from Biogen, Merck, Novartis, Sanofi, Genzyme, has received research support and support for congress participation from Biogen, Genzyme, Teva, Roche, Merck, Novartis. Carol Lines and Nicholas Adlard are full-time employees of Novartis Pharma AG. Jan Hillert has received honoraria for serving on advisory boards for Biogen, Celgene, Sanofi-Genzyme, Merck KGaA, Novartis and Sandoz and speaker's fees from Biogen, Novartis, Merck KGaA, Teva and Sanofi-Genzyme. He has served as P.I. for projects, or received unrestricted research support from, BiogenIdec, Merck KGaA, Novartis and Sanofi-Genzyme. His MS research was funded by the Swedish Research Council and the Swedish Brain foundation.