Scientific achievements of the BigMSData Network

The big Multiple Sclerosis data network

Background and aims

Each of the participating Registers has established the groundwork for numerous scientific publications. With the purpose of enabling joint analysis and allowing the integration of datasets, the BigMSData Network (BMSD) aims to promote studies at a bigger scale.
BMSD has investigated similarities and differences between the contributing registries and found that merging datasets is possible.
So far, the projects here included have resulted in the following publications.

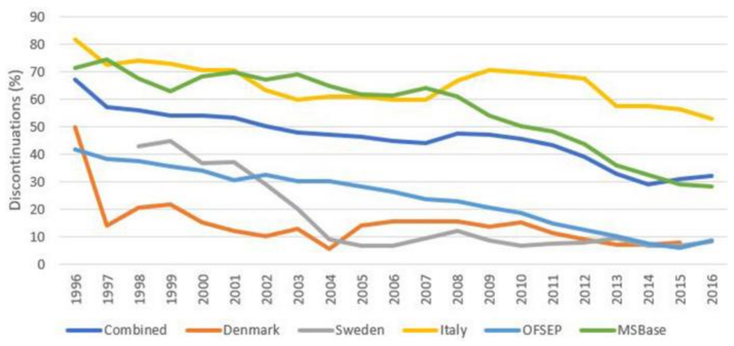
The network's aspiration is to harness the data from over 350,000 MS patients provided by the participating registries: this vast amount of data holds the potential to yield valuable insights and findings that would otherwise be unattainable. This may be especially valuable in the context of uncommon events such as rare serious adverse events but also for the analyses of the study of subgroups of patients under-represented in clinical trials (e.g. children and the elderly, or patients with specific comorbidities).

frontiers in Neurology **2021**

Treatment Switching and Discontinuation Over 20 Years in the Big Multiple Sclerosis Data Network

Jan Hillert[1], Melinda Magyari[2,3], Per Soelberg Sørensen[2], Helmut Butzkueven[4,5], Anneke Van Der Welt[4], Sandra Vukusic[6,7,8], Maria Trojano[9], Pietro Iaffaldano[9], Fabio Pellegrini[10], Robert Hyde[10], Leszek Stawiarz[1], Ali Manouchehrinia[1] and Tim Spelman[1,4] on behalf of the Big MS Data Network (BMSD): a collaboration of the Danish MS Registry, Italian MS Registry, the Observatoire Français de la Sclérose en Plaques (OFSEP) registry, the MSBase Study Group and the Swedish MS Registry*

Conclusion: **DMT stopping reasons and rates were mostly stable over time with a slight increase in recent years, with the availability of more DMTs. The overall results suggest that discontinuation of MS DMTs is mostly due to DMT properties and to a lesser extent to risk management and a competitive market.**

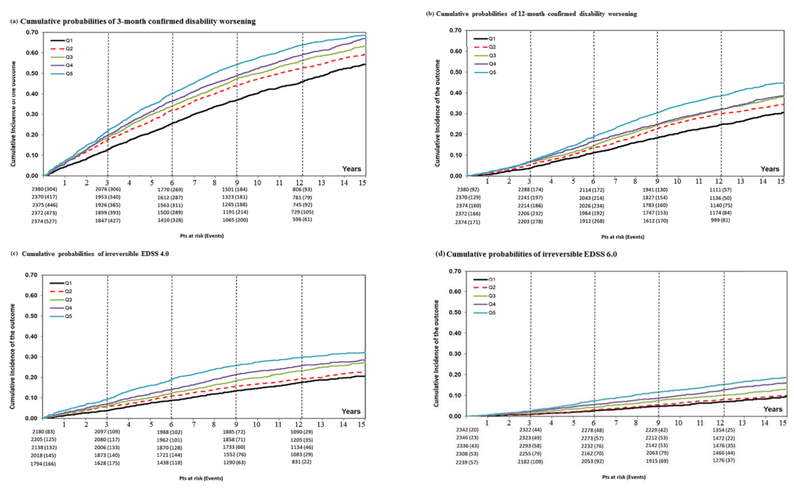


MULTIPLE SCLEROSIS JOURNAL | MSJ **2021**

Early treatment delays long-term disability accrual in RRMS: Results from the BMSD network

Pietro Iaffaldano, Giuseppe Lucisano, Helmut Butzkueven, Jan Hillert, Robert Hyde, Nils Koch-Henriksen, Melinda Magyari, Fabio Pellegrini, Tim Spelman, Per Soelberg Sørensen, Sandra Vukusic and Maria Trojano; on behalf of the Big MS Data Network: a collaboration of the Danish MS Registry, Italian MS Registry, Swedish MS Registry, MSBase and the OFSEP

Conclusion: **Real-world data from the BMSD demonstrate that DMTs should be commenced within 1.2 years from the disease onset to reduce the risk of disability accumulation over the long term.**

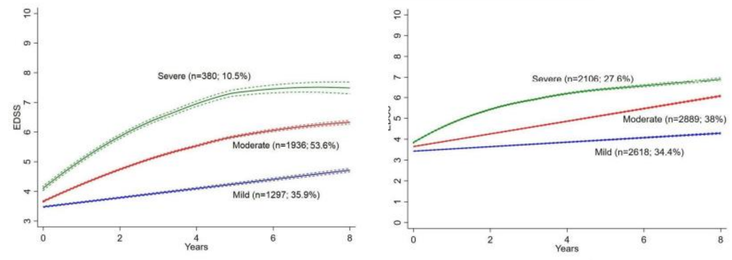


JOURNAL OF NEUROLOGY NEUROSURGERY &PSYCHIATRY **2023**

Heterogeneity on long-term disability trajectories in patients with secondary progressive MS: a latent class analysis from Big MS Data network

Alessio Signori, Johannes Lorscheider, Sandra Vukusic, Maria Trojano, Pietro Iaffaldano, Jan Hillert, Robert Hyde, Fabio Pellegrini, Melinda Magyari, Nils Koch-Henriksen, Per Soelberg Sørensen, Tim Spelman, Anneke van der Walt, Dana Horakova, Eva Havrdova, Marc Girard, Sara Eichau, Francois Grand'Maison, Oliver Gerlach, Murat Terzi, Serkan Ozakbas, Olga Skibina, Vincent Van Pesch, Maria Jose Sa, Julie Prevost, Raed Alroughani, Pamela A McCombe, Riadh Gouider, Saloua Mrabet, Tamara Castillo-Trivino, Chao Zhu, Koen de Gans, José Luis Sánchez-Menoyo, Bassem Yamout, Samia Khoury, Maria Pia Sormani, Tomas Kalincik, Helmut Butzkueven, on behalf of the Big MS Data Network

Conclusion: **Contrary to previous interpretations, patients with SPMS progress at greatly different rates. Our identification of distinct trajectories can guide better patient selection in future phase 3 SPMS clinical trials. Additionally, distinct trajectories could reflect heterogeneous pathological mechanisms of progression.**



frontiers in Neurology **2024**

Predictors of treatment switching in the Big Multiple Sclerosis Data Network

Tim Spelman[1,2*], Melinda Magyari[3,4], Helmut Butzkueven[2,5], Anneke Van Der Walt[2,6], Sandra Vukusic[7,8,9], Maria Trojano[10], Pietro Iaffaldano[11], Dana Horáková[12], Jiri Drahota[12], Fabio Pellegrini[13,14], Robert Hyde[13], Pierre Duquette[15], Jeannette Lechner-Scott[16,17], Seyed Aidin Sajedi[18], Patrice Lalive[19], Vahid Shaygannejad[20], Serkan Ozakbas[21], Sara Eichau[22], Raed Alroughani[23], Murat Terzi[24], Marc Girard[15], Tomas Kalincik[25], Francois Grand'Maison[26], Olga Skibina[5], Samia J. Khoury[27], Bassem Yamout[27], Maria Jose Sa[28], Oliver Gerlach[29], Yolanda Blanco[30], Rana Karabudak[31], Celia Oreja-Guevara[32], Ayse Altintas[33], Stella Hughes[34], Pamela McCombe[35], Radek Ampapa[36], Koen de Gans[37], Chris McGuigan[38], Aysun Soysal[39], Julie Prevost[40], Nevin John[41], Jihad Inshasi[42], Leszek Stawiarz[1], Ali Manouchehrinia[1], Lars Forsberg[1], Finn Sellebjerg[4], Anna Glaser[1], Luigi Pontieri[3], Hanna Joensen[3], Peter Vestergaard Rasmussen[43], Tobias Sejbaek[44], Mai Bang Poulsen[45], Jeppe Romme Christensen[3], Matthias Kant[46], Morten Stilund[47,48], Henrik Mathiesen[49], Jan Hillert[1] and the Big MS Data Network: a collaboration of the Czech MS Registry, the Danish MS Registry, Italian MS Registry, Swedish MS Registry, MSBase Study Group, and OFSEP

Conclusion: **Switching between DMTs is associated with female sex, age, and disability at baseline and has increased in frequency considerably in recent years as more treatment options have become available. Consideration of a patient's individual risk and tolerance profile needs to be taken into account when selecting the most appropriate switch therapy from an expanding array of treatment choice.**

TABLE 2 Associations between baseline factors and treatment switching (shared frailty survival model).

Factor at treatment start	Level	Unadjusted HR (95% CI) *p*-value	Adjusted HR (95% CI) *p*-value
Gender	Females	1.09 (1.06, 1.11) <0.001	1.11 (1.08, 1.14) <0.001
	Males	Reference	Reference
EDSS at treatment start		1.07 (1.06, 1.07) <0.001	1.08 (1.07, 1.08) <0.001
Age at treatment start (10 year units)		1.16 (1.15, 1.17) <0.001	1.04 (1.03, 1.05) <0.001
Disease duration at treatment start[a]		1.03 (1.03, 1.03) <0.001	
Years since diagnosis[a]		1.04 (1.04, 1.05) <0.001	
Calendar year of treatment start[b]		1.16 (1.15, 1.16) <0.001	
Treatment epoch	1996–2006	Reference	Reference
	2007–2012	2.01 (1.97, 2.05) <0.001	2.48 (2.40, 2.56) <0.001
	2013+	5.67 (5.54, 5.81) <0.001	8.09 (7.79, 8.41) <0.001

TABLE 3 Associations between baseline factors and treatment switching–stratified by treatment epoch.

Factor at treatment start	Treatment epoch		
	1996–2006	2007–2012	2013+
	Adjusted HR (95% CI) *p*-value	Adjusted HR (95% CI) *p*-value	Adjusted HR (95% CI) *p*-value
Age at treatment start (10 year units)	1.05 (1.03, 1.08) <0.001	1.05 (1.04, 1.06) <0.001	1.14 (1.11, 1.16) <0.001
Female sex	1.13 (1.07, 1.20) <0.001	1.11 (1.07, 1.16) <0.001	1.11 (1.06, 1.17) <0.001
EDSS	1.14 (1.13, 1.16) <0.001	1.10 (1.09, 1.11) <0.001	1.02 (1.01, 1.03) 0.001
Calendar year	1.17 (1.16, 1.18) <0.001	1.24 (1.22, 1.25) <0.001	1.08 (1.06, 1.10) <0.001

Journal of NEUROLOGY **2024**

Big Multiple Sclerosis Data network: an international registry research network

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Conclusion: **Presently, BMSD is seeking a qualification opinion from the European Medicines Agency (EMA) to conduct post-authorization safety studies (PASS) and aims to pursue a qualification opinion also for post-authorization effectiveness studies (PAES). BMSD aspires to promote the advancement of real-world evidence research in the MS field.**

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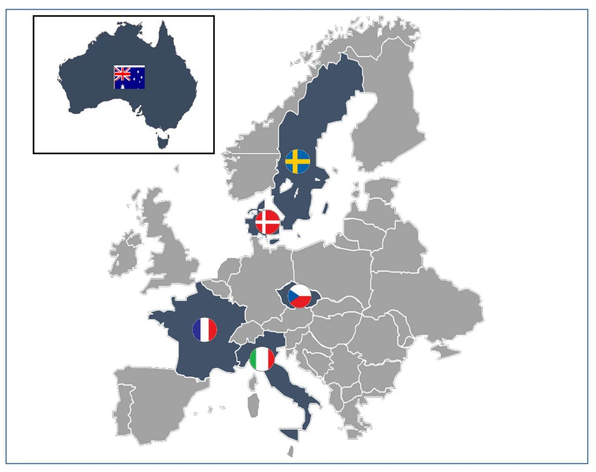

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