Amyotrophic lateral sclerosis (ALS) and multiple sclerosis (MS) are two extremely complex, degenerative neurological diseases yet with uniquely different clinical pictures, evolutions, prognoses and therapies. The common feature of these chronic diseases is their ability to affect the nervous system and progressively and significantly modify the quality of life of both patients and their families.

Despite differences in disease course, both ALS and MS pose a singular challenge to investigators and clinicians:

"How do we decipher the heterogeneity found amongst patients, which causes different patterns of disease manifestation and progression?"

BRAINTEASER responds to this challenge by integrating societal, environmental and human health data to develop patient stratification and disease progression models capable of addressing the needs of personalised medicine.

The data collected will help develop artificial intelligence (AI) tools that shed light on disease mechanisms, promote early detection, and prevent the onset of clinical complications.

The Challenge

🐦 @brainteaser2020   in brainteaser-project

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Bringing artificial intelligence home for a better care of amyotrophic lateral sclerosis and multiple sclerosis

Brainteaser

www.brainteaser.health

What is BRAINTEASER?

BRAINTEASER is a European data science project that seeks to exploit the value of AI and big data, including those related to health, lifestyle habits, and environment, to support patients with AI and ALS and their clinicians.

Taking advantage of cost-efficient sensors, apps and modern technologies, BRAINTEASER will:

Build a more comprehensive overview of patient health and care, integrating clinical data with environmental factors and patients' social conditions.

Support patient stratification and prediction of disease progression through the development of computational models.

Promote faster, more accurate prognoses by maximising big data analytics

Empower patients and caregivers by involving them in both the design of health tools and disease management via interactive apps.

Deliver cost-effective, democratised solutions by employing Cloud-accessible software and affordable technologies

Adopt an open-science approach by making developed models available to the scientific community.

The Impact of BRAINTEASER

Patients and family caregivers will:

Receive a better prognosis for either MS or ALS. Artificial intelligence models will be introduced into clinical practice and homes and large datasets integrated to improve patients' stratification and result in a comprehensive perspective on needs related to disease management and therapeutic responses.

Experience greater control over health decisions and actions by means of interactive, user-centred apps and personalised recommendations .

Health professionals and healthcare systems will:

Take advantage of streamlined resource planning and interventions, having the necessary data — all at a single glance — to support informed decisions for a more precision medicine-inspired approach.

Scientific and industrial communities will:

Benefit from BRAINTEASER's contributions to a more defined regulatory framework for in silico tools and methods.

Build on generated knowledge, ground-breaking technology and data insights provided by the open-science approach adopted by BRAINTEASER.

BRAINTEASER Open-science approach

To make scientific processes more transparent and results more accessible, BRAINTEASER will:

- Integrate and enrich the data produced and collected to share them as open data according to the FAIR (Findable, Accessible, Interoperable, Reusable) principles

- Organise three annual, open-evaluation challenges wherein participants can experiment and compare their systems and solutions, including those developed by BRAINTEASER

- Adopt a perspective centred on citizen science and patient data ownership by involving patients and their associations in the collection, analysis and description of data necessary for the open challenges

- Organise workshops and release open-access publications discussing the evaluation challenges' findings, including digested summaries for the general public, to improve health literacy

- Share the produced data with the European Open Science Cloud (EOSC) services, contributing to enriching the scientific open-data panorama provided by other EU services as well