



Method for determining disease progression and survival prognosis in patients with Amyotrophic Lateral Sclerosis (ALS)

Applicants

Università degli Studi di Padova, Università degli Studi di Torino, Azienda Ospedaliera Universitaria Modena, Nemo Lab Srl, The Medical Research infrastructure and health services fund of the Tel-Aviv Medical Center, Istituti Clinici scientifici Maugeri, Hadasit Medical Reserach Services and Development LTD

Inventors

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Protection

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Priority

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What we are looking for

We are looking for a suitable partner to enter into a license deal/co-development partnership

What it is needed for?

This method makes it possible to simulate the clinical course of patients with Amyotrophic Lateral Sclerosis (ALS) starting from the variables measured during a single visit (e.g., the first one).

It allows prediction of disease evolution over time, showing the probability of losing functional independence in four specific domains (breathing, swallowing, communication, and walking/self-care), along with survival.

Based on Dynamic Bayesian Networks (DBNs), the method has been implemented on a cohort of more than 4,000 patients from 6 different international clinical centres and validated on an independent test set.

Enabling the generation of *in silico* population with specific features, the present invention was developed for the purpose of supporting clinical trial as an alternative to placebo cohorts. In addition, it can be used in clinical settings to support medical decision-making.

Advantages

Support to clinical decision making and treatment pathway planning:

- *Personalized medicine* – description of the course of disease for individual/groups of patients
- *Prognosis prediction* – forecasting of survival and loss of autonomy in specific functional domains over time and in a probabilistic fashion
- *Simulation of placebo cohorts for clinical trials* – in silico simulation of the clinical course of new untreated patients
- *Homogeneous cohort analysis* – population stratification studies to highlight prognostic differences
- *Biomarker detection* – identification of the variables that influence disease progression.

Applications

- A computer tool for prognostic support, useful for *specialty clinics* and *digital medical records providers*.
- An in silico simulator of placebo cohorts, useful for *pharmaceutical companies/CROs*.
- A tool for *institutional stakeholders* for data-driven decision and policy making, improving patient care, and supporting disease management.

TRL scale

