

PRODUCT

An explainable algorithm to predict risk of developing a neurodegenerative disease.

INDICATION

Alzheimer's disease (AD)
Parkinson's disease (PD)
Multiple sclerosis (MS)
Amyotrophic lateral sclerosis (ALS)

VALUE PROPOSITION

- Identifies risk up to 5 years prior to onset
- Only requires variables routinely collected by PCP
- Risk score is attributed to specific variables, thus enabling custom interventions
- Enables clinical trials on critical patient group – those at risk without observable symptoms

MARKET

- Prevalence of conditions:
PD: 911K, ALS, ~31K,
MS: ~802K, AD: ~8.6M

PUBLICATION

<https://doi.org/10.1177/20552076241249286>

CONTACT INFORMATION

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IDF: 2024-101

An explainable algorithm for predicting neurodegeneration

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UMMET NEED

The burden of neurodegenerative disease is ever-increasing. While early interventions can delay disease onset and progression, we lack quantitative methods to identify at-risk individuals. Previous approaches to do so relied on expensive and non-standard imaging or genetic markers. Thus, their adoption was limited in primary care. There is a need for solutions that yield reliable insights to better treat these patients and to expedite new therapeutics and interventional strategies to thwart disease progression.

SOLUTION

The inventor team developed explainable machine learning models trained on over 52,000 patients to predict conversion to several major neurodegenerative diseases (AD, PD, MS, or ALS) from regularly collected medical data. The models produce risk insights at various timepoints prior to a potential clinical diagnosis (0-, 12-, 24-, and 60-months before; see figure below)). It also explains which variables are most strongly contributing to the risk. For primary care, this enables custom recommendations (i.e., recommending a sleep study if sleep is a highly contributing variable) and targeted diagnostic screening. For clinical trials, it could enable a more homogeneous patient population to enroll.

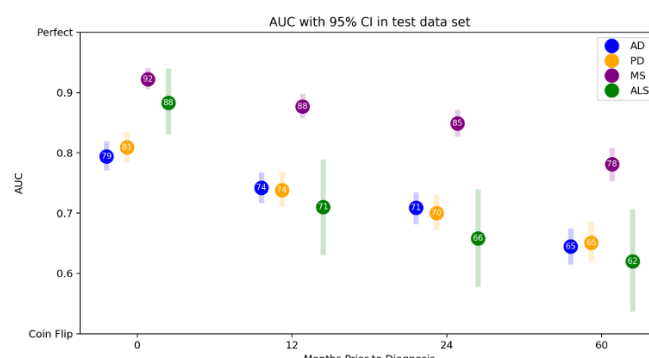


Figure 1. Model performance at 4 timepoints for each condition (AD, PD, MS, and ALS).