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Predicting Sojourn Times by Dementia Stages: Evidence from 76,747 Patients

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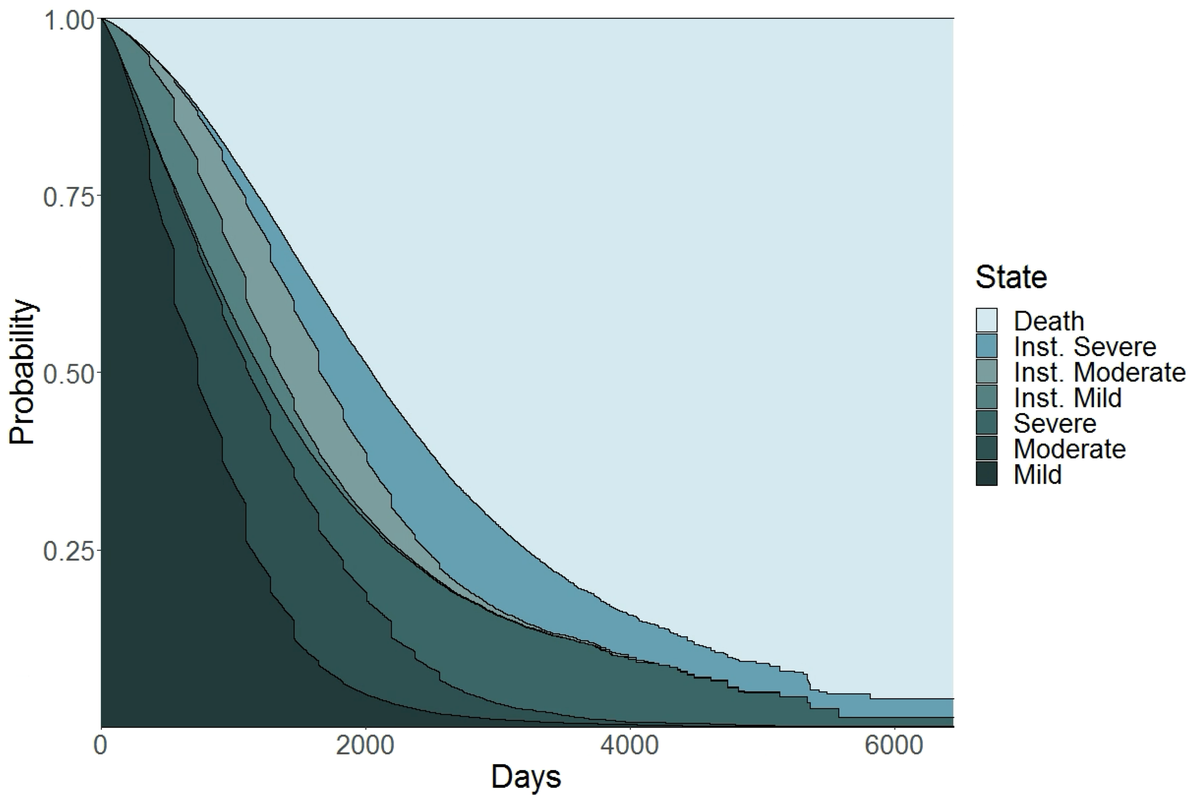

Cohort distribution.
The plot shows the transition of patients in each state over time in days.

Conclusions

The study utilizes a novel framework with a single data source to predict the time spent in disease states. The large dataset allows segmentation by baseline characteristics. The model is easily extendable to include other biomarker data and to model cost-effectiveness of disease-modifying treatments. We found that patients progressed faster in institutional care.

State	Mild	Moderate	Severe	Inst. Mild	Inst. Moderate	Inst. Severe
Total sample						
Sojourn time	860.6	383.5	407.7	122.4	202.2	396.06
Females						
Sojourn time	825.9	386.3	365.5	137.1	243.9	472.0
Males						
Sojourn time	869.1	357.7	260.4	107.5	164.8	222.3

Sojourn times for individuals starting in a mild stage of dementia.
The average days spent in each state for the total sample, the results for sex were derived with a baseline age of 80

Aim

Determine sojourn time by stages of disease severity and care setting.

Introduction

Alzheimer's disease is expected to grow to 152.8 million cases globally in 2050. A common concern for patients and caregivers is the time until disease severity onset. Predicting the time in each disease stage can be beneficial for clinical and policy decisions around disease-modifying therapies.

Population

Swedish National Register for Cognitive Disorders (SVEDEM)

N 76,747 | 58.40% | Baseline age mean (range) 80 (35 – 105)

Approach

- A multi-state model with 7 disease states
  - Mild, Moderate, Severe, Institutionalized-Mild, -Moderate, -Severe, Death
- 15 Wrapped Cox Survival models
  - States determined by MMSE and clinical diagnosis
  - Covariates: Age, Sex
  - Covariates can be removed or added in any transition model
- Benefits for multi-state modelling
  - All possible transitions are modelled, inherently accounting for competing risks
  - Very few assumptions, no parametric specifications.

SCAN ME

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The study was funded by a research grant from the Swedish Research Council for Health, Working Life and Welfare (FORTE), 2018-01887.

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