



Risk Prediction of a Multiple Sclerosis Diagnosis

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Multiple sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system. The progression and severity of MS varies by individual, but it is generally a disabling disease. Although medications have been developed to slow the disease progression and help manage symptoms, MS research has yet to result in a cure. Early diagnosis and treatment of the disease have been shown to be effective at slowing the development of disabilities. However, early MS diagnosis is difficult because symptoms are intermittent and shared with other diseases. Thus most previous works have focused on uncovering the risk factors associated with MS and predicting the progression of disease after a diagnosis rather than disease prediction. This paper investigates the use of data available in electronic medical records (EMRs) to create a risk prediction model; thereby helping clinicians perform the difficult task of diagnosing an MS patient. Our results demonstrate that even given a limited time window of patient data, one can achieve reasonable classification with an area under the receiver operating characteristic curve of 0.724. By restricting our features to common EMR components, the developed models also generalize to other healthcare systems.

Subjects: **Applications (stat.AP)**; Quantitative Methods (q-bio.QM)

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