Title: Prediction of Dementia in Primary Care Patients.

Abstract:

Background: Current approaches for AD prediction are based on biomarkers, which are however of restricted availability in primary care. AD prediction tools for primary care are therefore needed. We present a prediction score based on information that can be obtained in the primary care setting.

Methodology/Principal Findings: We performed a longitudinal cohort study in 3,055 non-demented individuals above 75 years recruited via primary care chart registries (Study on Aging, Cognition and Dementia, AgeCoDe). After the baseline investigation we performed three follow-up investigations at 18 months intervals with incident dementia as the primary outcome. The best set of predictors was extracted from the baseline variables in one randomly selected half of the sample. This set included age, subjective memory impairment, performance on delayed verbal recall and verbal fluency, on the Mini-Mental-State-Examination, and on an instrumental activities of daily living scale. These variables were aggregated to a prediction score, which achieved a prediction accuracy of 0.84 for AD. The score was applied to the second half of the sample (test cohort). Here, the prediction accuracy was 0.79. With a cut-off of at least 80% sensitivity in the first cohort,
79.6% sensitivity, 66.4% specificity, 14.7% positive predictive value (PPV) and 97.8% negative predictive value of (NPV) for AD were achieved in the test cohort. At a cut-off for a high risk population (5% of individuals with the highest risk score in the first cohort) the PPV for AD was 39.1% (52% for any dementia) in the test cohort. CONCLUSIONS: The prediction score has useful prediction accuracy. It can define individuals (1) sensitively for low cost-low risk interventions, or (2) more specific and with increased PPV for measures of prevention with greater costs or risks. As it is independent of technical aids, it may be used within large scale prevention programs.