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**Rate of Decline in Alzheimer's Disease Measured by a
Dementia Severity Rating Scale**

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Abstract

Objective: To examine the ability to determine clinically relevant symptomatic change in Alzheimer's disease (AD) using a knowledgeable informant completed functional measure. *Background:* Measuring rate of change provides an important clinical metric. Rate of change for most neuropsychological measures is affected by the severity of impairment resulting in nonlinearity. Measures that change linearly ease clinical management throughout the course of illness. *Methods:* DSRS and Mini Mental State scores were prospectively collected on 702 consecutively evaluated patients with AD from their first evaluation until they became too severely impaired to return to clinic. The annual rate of change was calculated for each measure. *Results:* The DSRS score increased an average of 4.48 points per year (95% confidence interval [CI] = 4.14 - 4.82) over the entire observed range of severity. In contrast, the Mini Mental State score declined by an average of 2.15 points per year (95% CI = 1.85-2.46) during the first two years of observation, accelerated to an annual decline of 3.83 points (95% CI = 3.28-4.38) during the subsequent three years and then slowed to an annual decline of 1.63 points during the last two years of observation (95% CI = 0.21-3.05). A younger age of symptom onset was associated with an increased annual rate of DSRS change ($p=0.03$). There were no significant differences in the rate of DSRS change by sex, education, race, APOE or an index of occupation. *Conclusions:* The DSRS provides a clinical measure of functional impairment in AD that declines linearly from the earliest symptomatic stage until patients become too severely impaired to return to clinic.