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Cognitive Biomarkers: SAGE screening for the early identification of mild cognitive impairment and Alzheimer's disease

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With the advent of potential disease modifying agents, early identification and diagnosis of individuals with Mild Cognitive Impairment (MCI) and Alzheimer's disease is critical. Unfortunately, primary care doctors do not identify these patients for roughly 3.5 years after symptoms are obvious to others. Cognitive screening for early identification is exceedingly less expensive than using amyloid PET, MRI or CSF evaluations. Cognitive biomarkers with good sensitivity and specificity need to be validated. Memory, naming low frequency words, verbal fluency, 3-D construction, clock drawing, Trails B, and problem solving tasks are sensitive for identifying early deficits. A global cognitive screening tool like the Self-Administered Gerocognitive Examination (SAGE) incorporates all these tasks. Validity studies have shown 95% specificity and 79% sensitivity to detect cognitive impairment from normals. Its self-administered feature with four equivalent forms makes it practical to rapidly screen large numbers of individuals. 1032 individuals (mean age 72) were recruited from community events and screened using SAGE. MCI and dementia were identified in 29% of those screened. Lower education and older age were associated with lower scores ($p<0.05$). Individual item correlations with total score were higher (0.68-0.49) for the items testing problem solving, modified trails B, memory, clock drawing, 3-dimensional construction, abstraction, and verbal fluency. Principal component analyses revealed that SAGE is an internally consistent test that is well balanced with language, cognition, visuospatial, executive, and memory domains each contributing equally and similarly to the variability of the data. Further research should validate the utility of SAGE as a cognitive biomarker.

Biography

Dr. Scharre graduated from Georgetown University School of Medicine, completed his Neurology residency in San Francisco and Neurobehavior fellowship at UCLA before becoming the Director of the Division of Cognitive Neurology in the Department of Neurology at Ohio State University in 1993. He has participated in over 100 multi-center clinical trials in dementia including those sponsored by industry, the Alzheimer's Disease Cooperative Study (ADCS) and the National Institute of Health (NIH). He has published over 100 articles, book chapters and abstracts on dementia, Alzheimer's disease, Parkinson's disease, dementia with Lewy bodies, frontotemporal dementia, neuroimaging in dementia, and neuropsychiatric disease.

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