National Institute of Aging/Center for Medicare and Medicaid Services Neuroimaging Expert Panel

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Meeting Summary

NIA and CMS convened an expert panel meeting on April 5, 2004 to assess the value of neuroimaging technology including FDG-PET scanning in the diagnosis and management of patients with dementia, or mild cognitive impairment (MCI), who have undergone a standard evaluation as described in the American Academy of Neurology (AAN) guidelines. Participants included expert practitioners, clinical researchers, methodologists, provider and patient advocates, reimbursement specialists as well as CMS and NIA representatives.

The agenda included formal presentations and open group discussions. Various presenters indicated that the work-up recommended by the AAN encompassing medical history with caregiver input, clinical examination, mental status exam including cognitive tests and other parameters remains the standard of care, and that “the clinical diagnosis of dementia in the hands of experienced clinicians is actually quite accurate.” The discussion centered on whether such high standard of accuracy can be improved by the use of FDG PET or other neuroimaging techniques in specific instances. A key question was whether imaging or any other biomarker-

based test could help differentiate between AD and other causes of dementia, specifically frontotemporal dementia, a subtype for which the clinical pathological correlation may prove challenging.

Presenters reviewed recent research data on the use of PET, SPECT, and MRI in the differential diagnosis among neurodegenerative subtypes in patients with early dementia as well as for the prediction of progression towards AD dementia in patients with MCI, and other at-risk groups. Other topics discussed were histopathological distinctions amongst various dementias, the treatment for AD and the impact on patient outcomes and the cost effectiveness of including PET in the AD workup.

A view shared by a number of panelists was that the preliminary evidence warrants use of PET for a very limited number of cases, where patients have had thorough workups but the diagnosis remains uncertain. This view was accompanied by serious concerns about potential misuse leading to misdiagnosis, unnecessary radiation exposure, and unnecessary financial cost. The following statements drawn from the meeting transcript illustrate these perspectives.

- It is likely that the amnestic form of MCI develops into AD but data on the accuracy in predicting progression of FDG-PET in particular and neuroimaging in general based on longitudinal follow up are preliminary, raising the need for additional prospective and larger studies than those currently available.

- While promising, longitudinal studies and larger samples are also needed to help clarify the clinical role of FDG-PET in the differential diagnosis of AD.

- In “difficult” dementia cases where uncertainty remains following a comprehensive clinical assessment, completion of a referring physician checklist would ensure that a comprehensive

clinical exam has been performed and would minimize inappropriate use of FDG-PET (e.g., as a substitute for appropriate referral to an AD specialist).

- FDG-PET scan readers should be certified or otherwise demonstrate understanding of interpretation criteria and adequate reliability in reading a set of training scans.

- Clinical studies in addition to the NIA Neuroimaging Initiative are needed to support the added value of PET readings and to identify image analysis techniques with even greater diagnostic accuracy.

Dr. William Thies from the Alzheimer's Association presented the organization's position on the use of PET in a limited number of appropriately selected patients. At the conclusion of the panel discussions, Dr. Anand Kumar of the American Geriatric Association of Psychiatry also expressed the desire to have PET scans available but agreed with other presenters and the Alzheimer's Association on the importance that the technology not be inappropriately utilized.