Alzheimer's Disease

Profile Status

The Profile addresses each of the tasks in the workflow from technical preparedness of the PET scanner and the process at the imaging facility to preparing for and performing the amyloid PET scan and the interpretation component. Below and to the left is an illustrated sequential plan (step by step) of the work flow that highlights technical specification thresholds are set by the Profiles. To the right is an outline of some specific tasks applicable to the Amyloid Profile.

PET Amyloid Uptake Digital Reference Object (DRO)

Goal: Design and construct a prototype brain Digital Reference Object (DRO) phantom with properties appropriate for testing user characterized amyloid PET uptake patterns in a quantitative fashion.

PET Amyloid Uptake Physical Phantom

• Easy to build (no bubbles, less dose for person filling)
• More representative of amyloid distribution
• Easy to fill (no bubbles, less dose for person filling)
• Help qualify and calibrate PET scanners

Phantom Projects: Physical & DRO

Sections through the MRI patient image after processing

PET scan can affect the diagnosis, management and future healthcare of people whose cognitive impairments are evaluated for AD. Images to the right show a spectrum of normal neuritic plaque density in adults with cognitive impairment being evaluated for AD. Images on the right show a spectrum of normal neuritic plaque density in adults with cognitive impairment being evaluated for AD.

Further investigations could build on the findings of this study to better understand the relationship between increased spatial deposition in the brain relative to the clinical and pathological symptoms of AD. Clinical trials investigating the use of biomarkers to assess the efficacy of therapies to prevent or slow disease incidence and progression.

Alzheimer’s disease (AD) is a type of dementia which involves progressive cognitive and behavioral problems. As of April 2015, the Centers for Medicare & Medicaid Services has approved the protocol for a four-year, $36 million study, called Imaging Evidence: Evidence-Based Amyloid Imaging (IMaging Evi). This study, which will be managed by the American College of Radiology, aims to examine how well amyloid PET imaging performs in identifying individuals with Alzheimer’s disease. The study will assess whether getting an amyloid PET scan can affect the diagnosis, management and future healthcare of people whose cognitive impairments are evaluated for AD. Alzheimer's disease (e.g. enlarged sulci) Alzheimer's is the sixth leading cause of death in the U.S.; it is expected that affected with the disease will be 7.1 million Americans by 2025.

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Imaging Biomarkers

Imaging of Alzheimer’s Disease has been directed at changes in brain anatomy (regional, gray matter, white matter, regional perfusion, cerebrospinal fluid [cerebrospinal fluid, chemotherapy, nutrition, and amyloid], as well as deposition of depositional proteins. These are currently focal/functional (or practicality/willingness) of a site to perform each of the Profile’s performance specifications.

Checklist: Each of the performance requirements in the Profile will be compiled as a checklist. The project summary will address the efficiency of therapies to prevent or slow disease incidence and progression.

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