Overview & Facts

- Alzheimer’s Disease (AD) is a type of dementia which manifests as progressive cognitive impairment and behaviors.
- Of the estimated 5.3 million Americans with AD, most patients are 65 or older.
- Barring breakthroughs to prevent or cure the disease, 7.1 million Americans aged 65 or older will be affected by 2025.
- No cure or prevention is currently available.
- Amyloid plaques and neurofibrillary tangles associated with beta amyloid deposition (particularly Alzheimer’s disease) from patients without evidence of such causes of death that cannot be prevented, cured or even slowed at this time.
- Confusion intervals can be systematically reconstructed using numerous algorithms and parameters. In

Profile Status

- For the amyloid PET Profile, the current longitudinal claims address the change in beta-amyloid deposition in the brain.
- The clinical utility of the PET profile is to assess the rate of change longitudinally. The potential impact of this diagnostic tool on future disease management is significant. Consequently, the goal is to precisely quantify a change in disease status, which includes measuring any clinical change on PET images.
- Key Points:
  - Imaging between En-Tx scans during abnormal administration (correction) can have a substantial impact upon measured amyloid values, varying with direction and worsened with significant misregistration.
  - The error introduced by misregistration of image to template (alignment to ROI) can be substantial, even without Em correction error, not realignment.

Workforce & Technical Requirements

The Profile addresses each of the tasks in the workflow from technical requirements of the PET scanner and the process in the imaging facility to processing and analyzing the amyloid PET data. Each task and process is identified in the QIBA PET Amyloid Profile. For each task, the technical requirements, along with the clinical impacts of misregistration, are discussed. For the task in the top row, changes are taken from the specific tracer’s label.

2016 Groundwork Projects

- Objectives:
  - Quantify the impact of misregistration between injection (En) and transmission (Tx) scans upon measured amyloid values.
  - Quantify the effect of baseline region and target region definitions upon measured SUVR.

- Key Findings:
  - Management between En-Tx scans during abnormal administration (correction) can have a substantial impact upon measured amyloid values, varying with direction and worsened with significant misregistration.

- Consideration for Longitudinal Profile Claims:
  - Using the effect of misregistration on the accuracy of longitudinal changes, it is, for example, necessary to ensure a high level of consistency across scanners.

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AMYloid PET Tracers

Image Display

- Quick control diligence
- Correct subject positioning
- Head stabilization to minimize movement
- Apply all quantitative corrections during image reconstruction
- Use standardization reference objects to assess work performance
- Evaluate image registration; realign or exclude data as necessary
- Ensure correct ROI placement to target and reference regions

Amyloid PET Overview & Issues

- The Amyloid PET Biomarker Committee is comprised of volunteers who work together in a non-competitive environment. The current composition of the committee is indicated by stakeholder categories in the following diagram.
- The committee’s goal is to provide a published QIBA profile for beta-amyloid imaging agents for PET. The committee is open to qualified and interested individuals. Comments or questions about the QIBA profile or regarding material on the poster should be directed to qiba@rsna.org.