Study Description

Alzheimer’s disease (AD) likely begins its degenerative process several years prior to the onset of clinical symptoms such as memory loss. One of the features of AD is a buildup of amyloid plaques. Until recently, amyloid plaques could only be seen after death at autopsy. However, a new compound, Pittsburgh Compound B (PIB), has been developed to safely detect amyloid in living people. PIB binds to the amyloid plaque and can be detected by a PET scanner. The areas with the most compound- and, therefore, the most amyloid– appears red.

The main objective of this study is to sample different biomarkers associated with AD and determine their relationship with the risk factors for the disease and cognition. The PET scan will be used to image amyloid & MRI will be used to analyze brain structure, blood flow and activity during memory tasks. To examine AD-related proteins, CSF and blood samples will be collected. It may be that this research will eventually help diagnose AD earlier so that treatments can begin sooner.

Who Can Participate?

We are currently recruiting:

- **Volunteers ages 50-80 with or without a history of Alzheimer’s Disease**

People with objects implanted in the body (e.g., stents, pacemakers, shrapnel) and people who are claustrophobic should not participate in this study. Also, women who are pregnant should not participate.

What Will I Be Asked to Do?

Participants will be asked to attend two-three visits within two months and an annual phone follow-up for up to four years.

Visit 1 will take 3 hours and includes an MRI.

Visit 2 & 3 will take 2 hours each and will include a PET scan and a lumbar puncture respectively. The lumbar puncture is OPTIONAL. In addition, participants will undergo a brief neurological exam and cognitive assessment. Each annual follow-up will take 1.5 hours and will entail only cognitive assessment.

All participants will be compensated for their time and travel as follows: $50 for MRI, $50 for PET scan, $100 for Lumbar Puncture.

How Can I Receive More Information?

If you have further questions or would like to schedule a study visit, please contact the study coordinator at 608-256-1901 ext. 11075.

What is PET Imaging?

Positron emission tomography (PET) has been used for decades in the diagnosis and research of various diseases and conditions. A radioactive substance is injected into the body and temporarily binds to tissue in the area of the body that will be studied. A PET scanner detects the radiation released from the radioactive particles (called positrons) and produces an image.

The brain images above were produced by two different types of imagine tools. The MRI image on the left simply shows the brain tissue in a person with AD. The PET image on the right was produced using PIB.

What is MRI?

Magnetic resonance imaging (MRI) is commonly used imaging tool to visualize the internal structure and function of the brain.

What is Lumbar Puncture?

A lumbar puncture, also called a spinal tap, is a medical procedure in which a small amount of cerebrospinal fluid (CSF) is removed by inserting a needle into the lower spine. The procedure is performed by a physician and under local anesthetic to reduce discomfort.
University of Wisconsin researchers are utilizing several methods of neuroimaging, including “functional” MRI, “perfusion” MRI, and PET to study the areas of the brain that are most often compromised early in the course of Alzheimer’s Disease. By combining this new technology with other clinical information, we will gain a better understanding of the processes underlying the learning and memory problems in Alzheimer’s Disease. We hope this information will help us detect the disease earlier and provide a way to monitor brain changes associated with disease progression and treatment.

Are these Procedures Safe?

PET imaging involves exposure to small amounts of ionizing radiation (the total for this study is less than one year of background radiation you receive from living on this planet), and this dose is well below federal guidelines. The compounds have been tested to be safe to humans and clear rapidly from the body. Persons with MRI-incompatible devices or implants are not advised to undergo MRI.

Lumbar Puncture is performed under local anesthetia and involves drawing approximately 22 milliliters of spinal fluid which the body will replenish. The procedure may cause temporary pain and discomfort in the back. Some people may experience a headache. In very rare circumstances, an allergic reaction to the local anesthetic may occur.

What if I Change My Mind?

Participation in this research is entirely voluntary and you may discontinue at any time.