

BENEFITS OF EARLY DIAGNOSIS

The following special report is from 2018 Alzheimer's Disease Facts and Figures



An Evolving Understanding of Alzheimer's Disease

- › The search for biomarkers of Alzheimer's disease is a major area of research that is transforming the way physicians understand Alzheimer's disease.
- › Individuals can be identified using biomarkers during the mild cognitive impairment (MCI) due to Alzheimer's stage.
- › In the future, if biomarker changes are detected and validated in preclinical populations, individuals who are not yet showing symptoms may also be identified as being on the Alzheimer's disease continuum.

What Are Biomarkers?

- › Biomarkers, or biological markers, are measurable indicators of a biological state or condition in the human body.
- › Researchers are investigating several promising biomarkers for Alzheimer's disease including but not limited to the amount of accumulation of the proteins beta-amyloid and tau in the brain. These can be measured using brain imaging or the levels in cerebrospinal fluid or blood. Other biomarkers are changes in brain size and activity.
- › Biomarkers enable researchers to enroll in clinical trials only those individuals with the biomarker changes targeted by a treatment.

- › Research on new strategies for earlier diagnosis, including ongoing efforts to identify and validate biomarkers for Alzheimer's disease, is among the most active in Alzheimer's science.

What is the Alzheimer's Disease Continuum?

- › The Alzheimer's disease continuum encompasses the full course of the disease
- › It begins with a period during which an individual experiences brain changes due to Alzheimer's but symptoms have not yet appeared.
- › It continues through a period of changes in cognitive, functional and physical abilities that occur because of brain changes.
- › Alzheimer's is fatal, so the continuum ends only with an individual's death due to Alzheimer's.
- › Between the beginning of Alzheimer's and the emergency of overt symptoms, the Alzheimer's continuum represents a decades-long window of hope because it is during this time that researchers believe treatments to prevent symptoms or slow or cure the disease will be most effective.

Changing Diagnostic Criteria

- › Alzheimer's was historically defined as beginning once dementia symptoms appear and confirmed on autopsy by elevated levels of beta-amyloid and tau in the brain.
- › In 2011, the National Institute on Aging and the Alzheimer's Association revised diagnostic guidelines incorporating biomarker tests in addition to clinical symptoms and gave researchers tools for diagnosing Alzheimer's earlier in the Alzheimer's continuum.
- › This was a move from a symptom-based definition to a biology-based definition of Alzheimer's disease and is leading to better understanding of the underlying mechanisms of the disease.

Neuroimaging Biomarkers

- › PET imaging accurately reflects levels of amyloid deposits (neuritic plaques) in the brain.
- › Three amyloid PET radiotracers are currently approved by the FDA: florbetapir, flutemetamol and florbetaben and these aid in the diagnosis of Alzheimer's disease.
- › While elevated levels of beta-amyloid detected via PET cannot be used in clinical practice to conclusively diagnose Alzheimer's, they give clinicians a reason to conduct additional Alzheimer's testing.
- › Other neuroimaging biomarkers currently used are: elevated cortical tau shown with PET imaging; decreased glucose metabolism shown by FDG-PET imaging and atrophy by structural MRI.

BENEFITS of EARLY DETECTION and DIAGNOSIS

- › Diagnosis provides an accurate determination of what may be causing an individual's cognitive decline.
- › Individuals who receive a diagnosis of MCI due to Alzheimer's can begin health measures to preserve their existing cognitive function for as long as possible: these include control of blood pressure and diabetes, smoking cessation, aerobic exercise, mental activity and social engagement.
- › An early diagnosis of Alzheimer's maximizes the chances of participation in a clinical trial.
- › Early diagnosis gives the individual time to assemble medical and caregiving teams to provide support.
- › Early diagnosis enables potential safety issues such as driving to be addressed.
- › Early diagnosis offers emotional and social benefits, reducing anxiety and providing a sense of relief as symptoms are finally given a name.
- › Early diagnosis gives individuals time to plan for the future while they are cognitively able to make decisions and understand available choices. Planning includes legal, financial and end-of life-decisions.

