Public / Private Partnerships in Alzheimer’s Biomarkers

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Alzheimer’s Association
HRA Member’s Meeting
September 18, 2017
Alzheimer’s Association: Who We Are

OUR VISION:
A world without Alzheimer’s disease®.

OUR MISSION: To eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health.
Additional Partnerships

- National Institutes of Health
- World Health Organization
- Foundation for the National Institutes of Health
- Alzheimer's Disease Neuroimaging Initiative
- Biomarkers Consortium
- Health Research Alliance
- World Wide Fingers
- Critical Path Institute
- Society of Nuclear Medicine and Molecular Imaging
- OECD
Modernizing the Diagnosis of Alzheimer’s Based on a Continuum

The diagnosis of dementia due to Alzheimer’s disease: Recommendations from the National Institute on Aging-Alzheimer’s Association workgroups on diagnostic guidelines for Alzheimer’s disease

Guy M. McKhann, David S. Knopman, Howard Chertkow, Bradley T. Hyman

The diagnosis of mild cognitive impairment due to Alzheimer’s disease: Recommendations from the National Institute on Aging-Alzheimer’s Association workgroups on diagnostic guidelines for Alzheimer’s disease

Marilyn S. Albert, Steven T. DeKosky, Dennis Dickson

Toward defining the preclinical stages of Alzheimer’s disease: Recommendations from the National Institute on Aging-Alzheimer’s Association workgroups on diagnostic guidelines for Alzheimer’s disease


Alzheimer’s & Dementia

alzheimer's association

THE BRAINS BEHIND SAVING YOURS
Funded Dr. William Klunk for first studies on beta-amyloid imaging through IRGP.

Added Amyloid PET Imaging to the Alzheimer's Disease Neuroimaging Initiative through IRGP.

Alzheimer's & Dementia publishes revised diagnostic NIA-Alzheimer's Association guidelines.

FDA approves beta-amyloid imaging agents for clinical use.

Launched IDEAS Study, working to ensure individuals can access beta-amyloid imaging.
Alzheimer’s Disease Neuroimaging Initiative (ADNI)

- To validate biomarkers for clinical AD trials
- To standardize biomarkers for clinical AD trials
- To optimize biomarkers for clinical AD trials
- AD trials include Phase 2 (POC) and Phase 3
- To provide all the data to those designing trials
- To help create a world wide network for AD trials
- Ultimately to facilitate development of a surrogate biomarker outcome measure: tau?
WW-ADNI – Worldwide Collaboration
Global Biomarkers Standardization Consortium (GBSC)

• CSF as a Potential Biomarker
• A Consortia of Academic Experts and Diagnostic Companies
• On-going research to improve diagnostic accuracy
• Potentially detects early biological changes
• Lumbar puncture (spinal tap)
• Identify & monitor the biochemical effect of a drug candidate in clinical trials
• Standardize $A\beta_{1-42}$, t-tau and p-tau$_{181}$ measurements
Background for starting the Alzheimer’s Association CSF program

The Alzheimer’s Association external quality control program for cerebrospinal fluid biomarkers


Large variability for CSF Aβ42 across laboratories

Need of standardization efforts

Variability due to:

Pre-analytical factors:
- e.g. type of test tube, CSF transfer, freeze-thaw effects

Analytical factors:
- e.g. analytical procedures, technician training, run acceptance

Assay manufacturing:
- e.g. reagent purity, plate coating variability, calibrator stability, lot-to-lot consistency (batch bridging procedure)

CSF Pre-Analytic Protocol Working Group
The CSF biomarker assays on fully automated clinical analyzers

• Fully automated - minimize variations due to differences in laboratory procedures
  - reduced between-run, between-batch and between-lab variations

• Single sample analysis ➜ fast results (< 30 min) to the clinician

Appropriate Use Criteria for CSF in AD in Progress
– Led by the Alzheimer’s Association
Prevention of Alzheimer’s?

**Primary Prevention**
Delay onset of AD pathology
- Decrease Aβ_{42} production
- Prevent tangle formation

**Secondary prevention**
Delay onset of cognitive impairment in individuals with evidence of pathology
- Decrease accumulated Aβ burden
- Decrease neurodegeneration with anti-tau or neuroprotective agents

**Tertiary prevention and treatment**
Delay onset or progression of dementia
- Neuroprotection-prevent neuronal loss
- Enhance function of remaining neurons
- Neurotransmitter replenishment

Clinical disease stage:
- No pathology
- Preclinical
- MCI
- Dementia
Collaboration for Alzheimer’s Prevention (CAP)
In the News: Published Report of Aducanumab Phase 1B

• First seen at AAIC 2015
• Using beta-amyloid PET for enrollment
• Promising Phase 1 monoclonal antibody Aducanumab
  – Lowering levels of beta-amyloid, as measured by PET
  – Saw improvement in cognition, as measured by CDRsb & MMSE
• Currently recruiting for Phase 3
• Results expected in 2020

Adapted from Sevigny et al. Nature 2016
In Summary …

• Alzheimer’s Association is the global leader in research, providing care and support to all of those affected, and leading the public policy efforts.

• Significant advances in biomarker research have been facilitated by the Alzheimer’s Association led Public-Private Partnerships.

• Alzheimer’s disease biomarkers tell us that the disease is a continuum; need to identify earliest biological change and intervene at that time point.

• There is hope in research!
THE END OF ALZHEIMER’S STARTS WITH YOU

alzheimer’s association
alz.org