

Neuroimaging / evaluating treatments

U.S. POINTER Imaging: Study design and launch

Samuel N. Lockhart¹ | Laura D. Baker¹ | Maria C. Carrillo² | Charles DeCarli³ |
Mark A. Espeland¹ | Danielle J. Harvey³ | Clifford R. Jack Jr.⁴ | William J. Jagust⁵ |
Youngkyoo Jung³ | Robert A. Koeppe⁶ | Laura Lovato¹ | Heather M. Snyder² |
Arthur W. Toga⁷ | Prashanthi Vemuri⁴ | Nancy Woolard¹ | Susan M. Landau⁵ |
the U.S. POINTER Study Group¹

¹ Wake Forest School of Medicine,
Winston-Salem, NC, USA

² Alzheimer's Association, Chicago, IL, USA

³ University of California Davis, Davis, CA, USA

⁴ Mayo Clinic, Rochester, MN, USA

⁵ University of California, Berkeley, Berkeley,
CA, USA

⁶ University of Michigan, Ann Arbor, MI, USA

⁷ University of Southern California, Los
Angeles, CA, USA

Correspondence

Samuel N. Lockhart, Wake Forest School of
Medicine, Winston-Salem, NC, USA.
Email: snlockha@wakehealth.edu

Abstract

Background: Recent studies suggest that lifestyle changes (physical exercise, Mediterranean diet adherence, cognitive stimulation, vascular risk management) may protect against cognitive decline and reduce AD pathophysiology. The U.S. Study to Protect Brain Health Through Lifestyle Intervention to Reduce Risk (U.S. POINTER) is a 2-year randomized controlled trial to evaluate whether lifestyle interventions can protect cognitive function in older adults (60-79 years) who are at increased risk for cognitive impairment and dementia. The POINTER Imaging ancillary study will assess effects of the POINTER lifestyle interventions on neuroimaging biomarkers of AD and cerebrovascular pathophysiology, and whether baseline neuroimaging measures predict cognitive responses to the interventions.

Method: The POINTER Imaging ancillary study aims to enroll 1250 participants from the five U.S. POINTER sites. Ancillary study participants will undergo PET imaging (Baseline, Month 24) to measure A β ([¹⁸F]Florbetaben) and tau ([¹⁸F]MK-6240) burden, and MRI (Baseline, Months 12 & 24) to measure brain morphometry, white matter (WM) hyperintensities and microstructure, and cerebral blood flow. U.S. POINTER provides standardized cognitive, clinical, genetic (e.g. APOE), and lifestyle activity assessments, and demographics for integration with neuroimaging data.

Result: The study design and methods for the POINTER Imaging ancillary study will be presented. The study will examine whether: (1) neuroimaging biomarkers at baseline (A β , tau, hippocampal volume, WM hyperintensities) predict intervention-related cognitive changes and (2) biomarker outcomes are differentially modified by participation in lifestyle interventions. It will also examine changes in exploratory biomarkers (tensor-based morphometry, microstructural integrity, microbleeds, cerebral blood flow).

Conclusion: The POINTER Imaging study aims to address gaps in our understanding of how a variety of lifestyle practices (diet, exercise, cognitive stimulation and vascular risk management) influence brain health. In particular, the study will deter-

mine whether imaging measurements of AD and cerebrovascular pathophysiology are amenable to improvement with the POINTER lifestyle interventions. It also aims to determine pathological profiles of individuals who benefit most from such interventions.