Supplemental Digital Content 5. Summary of methods for inverse probability weighting

To examine how differential attrition and study selection may have influenced the study results, we performed a sensitivity analysis using inverse probability weighting (IPW), a method that has been described in detail previously.[1,2] Briefly, IPW is a weighting procedure which allows one to account for selection by assigning higher weights to participants included in the analysis who have demographic, physiological, and clinical characteristics associated with study dropout or non-selection into the analytic sample. To obtain estimates which are adjusted for potential selection bias related to study dropout before Visit 5, we calculated IPW weights from predicted probabilities derived using logistic regression to model the probability of dropout due to study withdrawal between Visits 1 and 5 using participant demographic, physiological, and clinical data collected at ARIC Visit 1 (the ARIC study baseline) as covariate information. Specifically, the following covariates were included in the IPW model: age, center-race, APOE ε4 status, sex, education level, total cholesterol, total HDL cholesterol, body mass index (BMI), and the presence of hypertension, diabetes, coronary heart disease, cancer, and current and past cigarette smoking and alcohol use. To help account for differential dropout of participants with hospitalization, we also included total number of hospitalizations before ARIC Visit 5 and previous surgical hospitalization (yes/no) as covariates in the IPW model. To account for the PET sampling strategy, we also used logistic regression to model the probability of a participant being selected for and completing PET imaging based on the following variables: race, education, sex, age, cognitive status (normal/mild cognitive impairment), and previous surgical hospitalization (yes/no) among participants who attended ARIC Visit 5 and were non-demented at the time of PET imaging (because this analyses focuses on non-demented individuals). To derive the final weights for study dropout before Visit 5 and selection into the ARIC-PET study, we calculated the product of each participant's two predicted probabilities (the probability of Visit 5 attendance and the probability of selection into the ARIC-PET study), and then calculated the inverse of this product. These weights were applied to regression analysis to examine the weighted association of surgical hospitalization with amyloid-positive status. Results from this analysis are presented in **Supplemental Digital Content 9**.

References

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2.   Seaman SR, White IR: Review of inverse probability weighting for dealing with missing data 2013; 22:pp 278–95