



Renal function adjusted pTau217 improves diagnostic performance and cost efficiency for detection of amyloid pathology



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BACKGROUND

- Renal dysfunction is associated with increased plasma pTau217 levels.
- It remains unclear how differences in renal function affect clinical interpretation of pTau217 results.
- We evaluated the effect of adjusting plasma pTau217 for differences in renal function on diagnostic performance and cost efficiency for detection of A β pathology in 2483 participants drawn from four independent cohorts with varying degrees of renal function.

METHODS

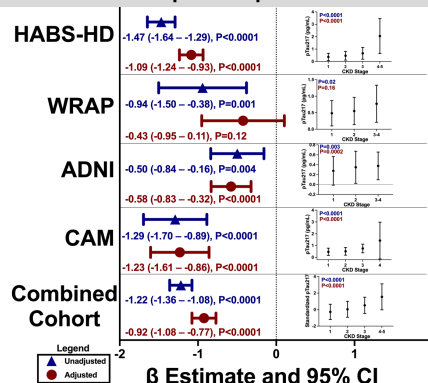
Cohort Demographics

Characteristic	Combined Cohort (N=2578)
Age	68.3 (9.5)
Female	1572 (61.0)
Caucasian	1991 (77.2)
Hispanic	601 (23.3)
APOE4 Carrier	833 (32.3)
MCI/AD ^a	722 (28.0)
A β PET Positive ^b	586 (22.7)
Days Between pTau217 & A β PET ^c	693.6 (1305.1)
Hypertension ^d	1557 (60.4)
Hyperlipidemia ^d	1703 (66.1)
Diabetes ^d	563 (21.8)
CKD ^e	355 (13.8)
eGFR (mL/min/1.73m ²)	79.7 (17.4)
Days Between pTau217 & eGFR	547.9 (1411.3)

Continuous data are shown as mean (SD), while categorical data are shown as count (%). ^aDefined by clinical diagnosis and/or cognitive impairment as assessed by the Clinical Dementia Rating or the Montreal Cognitive Assessment. ^bDefined by A β PET centiloids >23. ^cCalculation performed based on 2409 participants with A β PET imaging available. ^dDefined by the presence of a clinical diagnosis or taking associated medications. Abbreviations: APOE4, apolipoprotein E 4; MCI, mild cognitive impairment; AD, Alzheimer's disease; A β , amyloid-beta; PET, positron emission tomography; CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate.

RESULTS

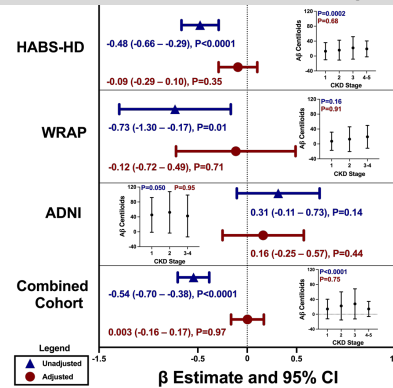
Lower eGFR is associated with increased plasma pTau217



*Adjusted models include the following covariates: age, sex, race, ethnicity, BM, APOE4 carriership, hypertension, hyperlipidemia, diabetes, smoking, stroke, cognitive status, interval between pTau217 and creatinine measurement, and global A β centiloids (not recorded in CAM).

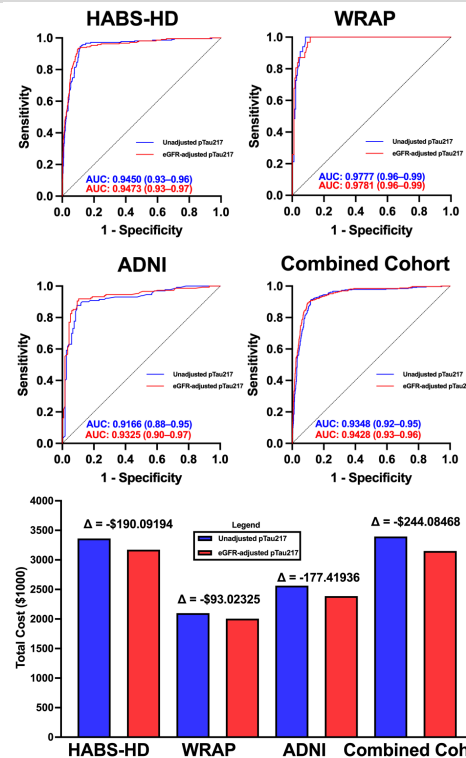
Abbreviations: eGFR, estimated glomerular filtration rate; HABS-HD, Health and Aging Brain Study: Health Disparities; WRAP, Wisconsin Registry for Alzheimer's Prevention; ADNI, Alzheimer's Disease Neuroimaging Initiative; A β , amyloid-beta; PET, positron emission tomography; CKD, chronic kidney disease

eGFR does not correlate with A β PET

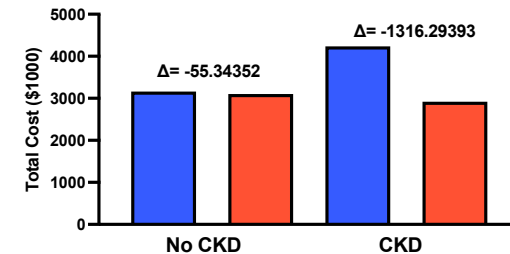
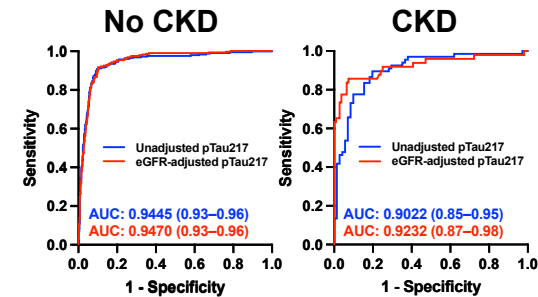


*Adjusted models include the following covariates: age, sex, race, ethnicity, BM, APOE4 carriership, hypertension, hyperlipidemia, diabetes, smoking, stroke, cognitive status, and interval between pTau217 and PET.

eGFR-adjusted pTau217 improves diagnostic accuracy and cost efficiency for detection of A β pathology



CKD patients derive the greatest benefit of eGFR-adjusted pTau217



CONCLUSIONS

- pTau217 adjustment for eGFR improved classification of A β positivity and cost-efficiency, with most improvement seen in patients with CKD.
- In patients with CKD, eGFR-adjusted pTau217 is associated with a 63.2% reduction in false positive cases, 10.9% reduction in intermediate cases, and a 31.1% cost reduction relative to unadjusted pTau217.
- eGFR-adjusted pTau217 may be useful in real-world aging and vascular patient populations that have a CKD prevalence of 20-30% or greater.

FUNDING

CAM was supported by grants from the National Institute on Aging (R01AG070987, P30AG072980, U24AG082950, National Heart, Lung, and Blood Institute (R01HL159200), State of Arizona Department of Health Services, Arizona Biomedical Research Commission (CTR056039 and CTR056056), Doris Duke Foundation, University of Arizona Health Sciences Career Development Award, and private research funding through the Richard and Jan Higberger award. HABS-HD was supported by the National Institute on Aging (R01AG054073, R01AG058553, R01AG070862, P41EB015922 and U19AG078109). ADNI was supported by the National Institute on Aging (U19AG024904). The ADNI grantee organization is the Northern California Institute for Research and Education. ADNI was also supported by the National Institute of Biomedical Imaging and Bioengineering, the Canadian Institutes of Health Research, and private sector contributions through the Foundation for the National Institutes of Health including generous contributions from the following: AbbVie, Alzheimer's Association; Alzheimer's Drug Discovery Foundation; Araclon Biotech; BioClinica, Inc.; Biogen; Bristol-Myers Squibb Company; CereSpir, Inc.; Cogstate; Eisai Inc.; Elan Pharmaceuticals, Inc.; Eli Lilly and Company; EuroImmun; F. Hoffmann–La Roche Ltd and its affiliated company Genentech, Inc.; Fujirebio; GE Healthcare; IXICO Ltd.; Janssen Alzheimer Immunotherapy Research & Development, LLC.; Johnson & Johnson Pharmaceutical Research & Development LLC.; Lumosity; Lundbeck; Merck & Co., Inc.; Mesoscale Diagnostics, LLC.; NeuroRx Research; Neurotrack Technologies; Novartis Pharmaceuticals Corporation; Pfizer Inc.; Piramal Imaging; Servier; Takeda Pharmaceutical Company; and Transition Therapeutics. WRAP was supported by the National Institute on Aging (R01AG027161, R01AG021155, R01AG062285, R01AG062167). No funding source had a role in design and conduct of the study, collection, management, analysis, and interpretation of the data, preparation, review, or approval of the manuscript, or decision to submit the manuscript for publication.