

ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #396

1. Title: Association of pulmonary function and MRI detected cerebral abnormalities - The ARIC Study
Short title: PFT and MRI abnormalities

2. Writing Group:

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4. Timeline:

Submit Proposal to Publications Committee	June, 1996
Complete analysis	August, 1996
Submit first draft to Publications Committee	December, 1996
Submit to Journal	February, 1997

5. Rationale:

Cerebral abnormalities, such as infarction, white matter lesions (WML) are seen with some frequency on MRI scans of the brain. In general, they are believed to be the consequence of arteriosclerosis, generalized hypoperfusion and / or ischemia of the brain. An association between pulmonary function and CVD morbidity as well as mortality has been reported, although not consistently replicated in various population-based studies, after statistical adjustment of pertinent covariates. Preliminary results from the ARIC study indicate associations between lung function indices and carotid artery intim-media thickness, as well as with the ankle-arm blood pressure ratio. In the latter case, the association is present when adjusting for pertinent covariates. We postulate the existence of an association between covariate-adjusted lung function indices -- specifically FEV1/Ht² and the equivalent FVC index -- and atherosclerosis-mediated cerebral abnormalities detected cerebral infarction and WML has not been reported in the literature. In the ARIC study, MRI scans were performed on a random sample of 2000 participants from MS and NC study sites at Visit 3. Pulmonary function tests were performed in the entire ARIC cohort during Visit 1 and Visit 2 using identical protocol. The average of pulmonary function tests from these two visits will provide an estimate of the participant's pulmonary function, and then this average pulmonary function will be related to MRI detected cerebral abnormalities. Therefore, the proposed analysis will address the research questions listed below.

6. Main Study Questions:

- (1) Are MRI detected cerebral abnormalities (infarction and WML) associated with pulmonary function, estimated as FEV1 and FVC, adjusted for Ht squared (averaged over examination visits 1 and 2).
- (2) Do the above associations persist after control for other established CVD risk factors?
- (3) Do the expected, above association persist in never smokers?

7. Data (variables, source, inclusion/exclusion):

The following variables are needed for this analysis: V3 MRI data, V1 and V2 pulmonary function test data, V1 standing health, smoking status at V1, V2 and V3, age at visit 3, and V3 hypertension status, race, gender,

field center, education levels, BMI, total cholesterol and its fractions, diabetes.