1. Title: The Relationship Between Prevalent Clinical Disease with MRI-Defined Cerebral Infarction and White Matter Disease.

2. Writing Group:

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3. Timeline:

   Analysis can begin upon approval of the writing group

4. Background/Rationale:

MRI defined abnormalities have been observed in population-based samples of middle-aged and older adults (1-3). Although the long-term significance of these cerebral changes have not been determined, previous studies have observed a relationship between cardiovascular disease risk factors with white matter changes and infarct-like lesions detected by MRI (1, 3, 4). It is possible that factors associated with MRI defined cerebrovascular changes may differ from known risk factors for CVC events. For example, factors associated with small vessel disease such as diabetes, hypertension and smoking have been shown to be stronger predictors of cerebrovascular events than lipids and lipoproteins (5, 6).

MRI defined infarction and white matter disease may represent either intermediate or asymptomatic markers of cerebrovascular disease. As such it is likely that substantial
overlap may exist for these different markets of disease. In addition risk for both clinical and subclinical measures of cardiovascular disease may be similar. Given the known differences in risk factors for coronary heart disease compared to cerebrovascular disease, these analyses will provide an opportunity to better understand the interrelationships between the MRI-defined lesions and prevalent disease in middle-aged adults.

5. Main Hypothesis:

An association will be observed between measures of prevalent disease, the presence of white matter disease and cerebral infarction in ARIC participants.

6. Data Analyses:

Prevalent disease and CVD risk factor information will be obtained from the most recent ARIC data. ARIC Visits 1 and 2 data are currently available and those analyses will involve the use of visit 3, events surveillance and MRI data that are currently available. MRI data to be used include cerebral infarction information (including infarct like lesions) and white matter score. For the purposes of these analyses infarct-like lesions will be stratified by size (large and small) similar to previous MRI manuscripts. Prevalent disease data to be used include MI, angina, peripheral vascular disease and stroke/cerebrovascular disease. In order to minimize misclassification of prevalent cerebrovascular disease, we propose to use the stroke surveillance data which is currently available providing additional information through 1993 on the cohort. Risk factor data will be used in a multivariable model as covariates to determine if associations can be explained by shared risk factors. Risk factor data will include age, ethnicity, gender, blood pressure variables, lipids and lipoprotein variables, diabetes status, smoking status, and coagulation factors.

7. References:


