Manuscript #106

1. Title:
LDL Chemical Composition: Case-Control Analysis of Atherosclerosis & Established Risk Factors

2. Writing Group:
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3. Timeline:
Ongoing direct determination and analysis of LDL-cholesterol and LDL-apoB measurements in all case-control pairs.

4. Rationale:
Elevated plasma levels of LDL-cholesterol are known to increase risk for coronary heart disease. LDL particle size is heterogenous and is believed that a range of smaller LDL particles may influence risk of coronary heart disease. LDL phenotyping is one approach to determining relative LDL particle size [Manuscript 96]. A second approach is the chemical analysis of the major determinants of LDL: LDL-cholesterol and LDL-apo3 concentrations. In a well-defined case-control population, the correlation of specific apo[a] phenotypes to degree of atherosclerosis and other established risk factors has not been determined.

The ARIC Study allows for the examination of the association of progressive carotid wall thickness to determined apo[a] phenotypes in case-control pairs.

5. Main Hypothesis/Issues to be Addressed:
1.) Cases will have a distribution with a mean smaller LDL size than controls.
2.) Covariants, such as age, sex, medications, and race, will be examined by multivariate analysis to determine the effect and significance of these variables.

6. Data Requirements:
Data analysis will be performed by Dr. K. Bunn at Baylor College of Medicine, Department of Medicine.

LDL-cholesterol and LDL-apoB data will be collected. Dependent variables: lipoproteins, apolipoproteins, hemostatic factors, medical history, body mass index, antihypercholesterolemic medication, diabetes, blood pressure, smoking status, alcohol consumption, physical activity, gender, race, age, field center. Independent variables: average and maximum far wall thickness at the common and internal carotid artery and its bifurcation.