ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #632

1. Full Title: Insulin Resistance Syndrome and Echocardiographic Indices in African Americans
   Abbreviated Title: Metabolic Syndrome and Echo

2. Writing Group:
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3. Timeline:
Analysis will begin following approval by Publications Committee and will be completed by April 1999, with initial draft to follow by June 1999 and journal submission by October 1999.

4. Rationale:
The clustering of risk factors known as the insulin resistance syndrome (IRS) or the multiple metabolic syndrome (MMS) has been recognized as an important feature of cardiovascular disease. ARIC investigators have extensively examined the occurrence of this syndrome and factors associated with its development (1-4). Several of the components of the IRS (hypertension and glucose intolerance), but not all (dyslipidemia), are particularly prevalent among the African American Jackson cohort.

While relatively few population-based studies have assessed the relationship between the IRS or associated fasting insulin levels and subclinical markers of CVD (5,6), studies that addressed associations of the IRS with echocardiographic indices of cardiac structure and function have been even more infrequent and thus far have involved relatively small sample sizes (<50) and specific subgroups (7-9). In these studies associations were observed between insulin resistance and left ventricular mass in obese subjects (7), fasting insulin level and LV wall thickness among hypertensive subjects (8,9) and insulin senstivity and LV diastolic filling indices in hypertensive subjects (9).

Obesity is strongly associated with both fasting insulin and the IRS. ARIC investigators found associations between hyperinsulinemia and CVD risk factors to vary by obesity (10). Because of the high prevalence of obesity in theJackson cohort, an opportunity exists to examine its potential influence on associations of the IRS with echocardiographic characteristics from both a pathophysiologic and public health perspective.

5. Main Hypotheses:
The IRS will be associated with LV mass, wall thickness and diastolic filling indices.

These associations will be independent of other CVD risk factors, and will be partially explained by central and generalized obesity.

Associations of the IRS with echo indices will differ by level of obesity, possibly being stronger in lean than in

obese subjects.

6. Data:
Cross-sectional analyses will be performed used variables from Visit 3 for the ARIC Jackson cohort.

Clinical and Lifestyle Variables:
Age, gender, smoking, alcohol, physical activity indices, fasting glucose, HDL-C triglycerides, SBP, DBP, antihypertensive medication, hypertension, diabetes, diabetic medication, BMI, waist circumference, waist-to-hip ratio, body surface area, prevalent CHD and stroke

Echo Variables:
LV Mass, LV wall thickness & chamber dimensions, LA and aortic root diameter, regional wall motion abnormalities, fractional shortening, mitral & aortic regurgitation, heart rate & BP at echo, and diastolic filling indices.

References:

(1) Schmidt MI, Watson RL, Duncan BB, Metcalf P, Brancati FL, Sharrett AR, Davis CE, Heiss G, for the Atherosclerosis Risk in Communities Study Investigators. Clustering of dyslipidemia, hyperuricemia, diabetes, and hypertension and its association with fasting insulin and central and overall obesity in a general population. Metabolism 1996;45:699-706.

(2) Schmidt MI, Duncan BB, Watson RL, Sharrett AR, Brancati FL, Heiss G, The Atherosclerosis Risk in Communities Study Investigators. A metabolic syndrome in whites and African-Americans. The Atherosclerosis Risk in Communities baseline study. Diabetes Care 1996;19:414-418.