ARIC Manuscript Proposal #723

PC Reviewed: 04/18/00	**Status: Approved**	**Priority: 2**
SC Reviewed: 05/04/00	**Status: Approved**	**Priority: 2**

1.a. Full Title: Association of ethnicity and vascular stiffness

1.b. Abbreviated Title (Length 26): Race/ethnicity and stiffness

2. Writing Group (list individual with lead responsibility first):

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3. Timeline: Manuscript to be submitted for the next Committee meeting

4. Rationale:

Clinical research shows that arterial dilation impairment occurs earlier than arterial thickening in the atherosclerotic process. Normotensive African-Americans reportedly have a generalized attenuation of both endothelial- and non-endothelial-dependent vasodilation compared to European-Americans. Arterial dilation impairment with the subsequent arterial stiffness predicts the development of hypertension. African-Americans have a high burden of hypertension. To our knowledge, data on large artery mechanical properties in African-Americans do not exist, and serve as the focus for the manuscript proposed here. Because the beta index appeared to greatly vary by examination center, we restricted the study population to the Forsyth County center that provided a large enough and randomized biethnic sample to test our hypothesis. Estimates of vascular stiffness were obtained from echotracking ultrasound measurements, by means of pulsatile arterial diameter change and arterial stiffness beta index, and automatic brachial blood pressure.

5. Study Hypothesis:

(1) Do African-Americans have stiffer elastic arteries than European-Americans independently of age, blood pressure, body-mass-index, and artery geometry?

(2) Do other major cardiovascular risk factors besides age, blood pressure, BMI, and artery geometry offer a statistical explanation (and thereby insight into potential explanatory mechanisms) of this differential arterial stiffness by ethnicity
(3) Are these factors differentially associated with arterial stiffness within ethnic group?

6. Data (variables, time window, source, inclusions/exclusions):

Data are cross-sectional. Ultrasound measurements of vascular stiffness from ARIC visits 1 and 2 have been assembled into a cohort-representative file.
Covariates: demographic variables; anthropometric measurements; smoking; prevalent CHD and CVA; hypertension; diabetes; medication use; systolic and diastolic blood pressure; heart rate.