ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #340

1. Title: Focal vs. Diffuse IMT

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3. Timeline:

Preliminary data analyses have already been initiated as part of an AHA student scholarship award. A draft manuscript is anticipated by December 31, 1995.

4. Rationale:

B-mode ultrasound measurements of carotid intima-media thickness are used as an index of atherosclerosis in the ARIC study, as well as several other epidemiologic studies and clinical trials. These measurements cannot directly discriminate between intimal and medial thickening, processes which are generally considered to represent different pathologies. However, by examining the distribution of thicknesses within carotid segments with nearly complete visualization, it should be possible to distinguish between diffuse thickening characteristic of non-atherosclerotic medial changes and focal thickening characteristic of atherosclerotic changes involving the intima. Description of the relative frequency of diffuse vs. focal thickening in the ARIC cohort and the risk factor profiles associated with each type of thickening may provide an important link between research and clinically oriented studies of atherosclerotic disease.

5. Main Hypotheses:

(1) Patterns of diffuse vs. focal thickening will be examined by calculating various measures of within site variation in IMT for individuals with 10 or more paired points at the common, bifurcation or internal carotid artery. Proposed measures of within site variation include the min-max difference (range) and the standard deviation.

(2) The shapes of distributions of within site variation in IMT will be similar (i.e., the extent of focal thickening will be similar) for the three carotid segments.

(3) For all three carotid segments, the shape of distributions of within site variation in IMT will vary as a function of mean thickness, shifting from right skewed distributions (many small values typical of diffuse thickening) to left skewed distributions (many large values typical of focal thickening) as mean thickness increases.

(4) Among individuals with mean IMT more than 2SD above the cohort mean, those with small within site variation in IMT (typical of diffuse thickening) will have different risk factor profiles than those with large within site variations in IMT (typical of focal thickening).

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

Ultrasound and risk factor data will be obtained from distributed sets for ARIC visit 1, currently available at the URC. Risk factor variables will include age, race, gender, blood pressure variables, lipid variables, smoking variables, diabetes and prevalent cardiovascular disease.