Manuscript #462

1. Full Title: Carotid Artery size and stiffness vs. Incident Events
   Abbreviated Title (length 26): Events vs CA size/stiffness

2. Writing Group (list individual with lead responsibility first):
   Lead: Greg Evans
   Address: Department of Public Health Sciences
   Bowman Gray School of Medicine
   Winston Salem, NC 27157-1063
   Phone: (910) 716-6016                FAX: (910) 716-5425
   Email: gevans@rc.phs.bgsm.edu

   Riley WA                   Crouse JR               Arnett
   Sorlie P                      Liao D                    Sharrett AR

3. Timeline:
   Preliminary analysis will begin immediately. Final analysis will await distribution of
   1994 incident events. A draft ms is expected by fall of 1997.

4. Rationale: ARIC has recently demonstrated that B-mode measurements of carotid
   intima-media thickness are predictive of incident events. We have previously shown that
   both arterial (lumen) diameter and common carotid arterial distensibility have complex,
   curvilinear relationships with IMT (ms #003b). Thus, any association of distensibility
   with CHD may be independent of IMT.

   The extent to which differences in arterial size or stiffness between participants may
   contribute to prediction of incident events, with or without adjustment for IMT or SBP, is
   not known. We propose to examine these relationships in the ARIC cohort.

   Since reduced distensibility is believed to indicate pathological changes in the artery
   measured, we hypothesize that reduced distensibility will be positively associated with
   CHD incidence. Lumen diastolic diameter, however, may be a protective factor for CHD
   after adjustment for BP and the measures of arterial pathology (IMT and reduced
   distensibility).

5. Main Hypothesis:
   1) After control for age, height, race, gender, SBP, DBP and IMT, both arterial (lumen)
      diameter and CCA arterial distensibility will significantly predict incident events. This
      relationship may or may not be apparent without controlling for IMT.
   2) Arterial diameter & CCA distensibility will continue to significantly predict events
when included in the same model (i.e., diameter is significant after control for
distensibility, and vice versa).
3) The above relationships persist after control for major CVD risk factors
(acknowledging that this may constitute over-adjustment). Furthermore, the relationships
described above will not demonstrate important interactions with CVD risk factors such
as smoking.

6. Data (variables, time window, source, inclusions/exclusions):
Ultrasound and risk factor data will be obtained from distributed data sets for ARIC
Visits 1 & 2 (visit 2 information is required since distensibility was collected on less than
half the cohort at baseline, but roughly 80% of the cohort has data in either V2 or V1).
Incident events will be defined based on events that occurred after the visit in which
distensibility data was collected (V1 or V2) and before 12/31/94.