1. Title:
Dietary cholesterol and incident CHD: The ARIC Study

2. Writing Group:
(lead) David Goff, Marsha Eigenbrodt, George Howard, June Stevens, Pam Schreiner
Correspondence:  David Goff
Medical Ctr Blvd
Winston-Salem, NC 27157-1063
Email: dgoff@phs.bgsu.edu; FAX: (910) 716-5425; Phone (910) 716-9837

3. Timeline:
Manuscript draft by end of winter of 1997-8

4. Rationale:
Previous cohort studies have found an association between dietary cholesterol and CHD mortality independent of serum total cholesterol (TC). It is possible that postprandial lipemia mediates this association and that the adjustment for fasting TC is insufficient. Alternatively, it is known that dietary cholesterol intake changes the ratio of LDL to HDL in addition to changing TC levels. Perhaps adjustment for IC is insufficient. One limitation of the previous studies has been the inability to adjust by specific lipoprotein components of TC. ARIC has the advantage of plasma lipoprotein concentrations in addition to dietary data and other covariates. A specific interaction of interest involves adiposity (body mass index and waist to hip ratio). One previous study (Chicago Western Electric has reported that the association between dietary cholesterol and CHD mortality is modified by obesity (BMI, in this case) (Goff. et al., Arterioscler Thromb. 1992.) We would examine this issue in ARIC by examining the incidence data. If the incidence data look promising, subsequent manuscripts in this area of investigation could focus on 1) IMT progression as an outcome, 2) the case-comparison design for examining postprandial lipemia as a potential mechanism under the interaction and 3) the effect of adiposity on the relationship between dietary cholesterol and plasma lipoprotein concentrations. (Goff et al., Am J Epidemiol 1993 supports the contention that fatter persons are less responsive than leaner persons to the hypercholesterolemic effects of dietary cholesterol.)

5. Objectives/Hypotheses:
(1) Dietary cholesterol intake is positively associated with risk of incident CHD events, independent of plasma lipoprotein concentrations, age, gender, race, SES, smoking status, HTN, DM, family history of CHD, BMI, WHR and total energy
intake.
(2) Adiposity modifies this association, such that fatter people show a weaker association than thinner people.

6. Design:
Cohort follow-up for incident events

7. Data:
Cohort follow-up database
Inclusion: free of CHD at baseline dietary and other data available, ETOH intake <50 gm/day
Independent variables: Incident CHD events
Dependent variables: dietary cholesterol adjusted for total energy intake, BMI, WHR, plasma lipoproteins (LDL, HDL), TG, age, gender, race, SES, smoking status, HTN, DM, family history CHD.
Analysis: Product-limit survival analysis by dietary cholesterol quantiles (given the sample size of events we will determine the number of quantiles prior to initiating the analysis). Proportional hazards regression analysis. Examine BMI* dietary cholesterol interaction by stratification test using proportional hazards analysis.