Manuscript #549

1. REVISED Full title: Extent of macrovascular and microvascular disease by new and old diagnostic criteria for diabetes mellitus and other categories of glucose tolerance.
   REVISED Abbreviated title (length 26): Diabetes cutpoints & disease

2. REVISED Writing Group (list individual with lead responsibility first):
   Lead: Wagenknecht, Lynne
   Address: Dept. Of Public Health Sciences
            Wake Forest University School of Medicine
            Winston-Salem, NC 27157
   Phone: (336) 716-7652
   Fax: (336) 716-5425
   Email: lwagenkngrc@phs.bgsm.edu
   George Howard
   David Goff
   Ron Klein
   Aaron Folsom
   Fred Brancati

3. Timeline:
   Initial analyses will begin when first OGTT data set is released; Paper to be completed 3 months following closing of OGTT data set.

4. Rationale:
   New criteria for the classification of diabetes mellitus and other categories of glucose tolerance were recently released by the ADA (The Expert Committee 1997). In contrast to the traditional WHO criteria which require an oral glucose tolerance test, these criteria require only fasting plasma glucose. Both criteria provide cutpoints for normal glucose regulation, impaired glucose regulation, and type 2 diabetes. The new criteria were selected on the basis of microvascular complications; their relation to macrovascular complications are unknown. (Folsom et al (1994) have previously shown a relationship between fasting glucose and IMT in ARIC.

5. REVISED Main hypotheses:
   For both criteria (WHO and new), carotid wall thickness (and retinopathy at V3) will increase across the glucose regulation categories from normal to impaired to type 2 diabetes. For IMT, the most pronounced increase will occur at the level of undiagnosed and previously diagnosed diabetes (Wagenknecht, submitted). The relationship will be
independent of traditional IMT risk factors. The relationship will be similar in men and women, and in the two race groups. We will also examine IMT and retinopathy by the combined criteria, hypothesizing, for example, that persons who are “impaired” by both criteria, have a greater extent of disease than persons impaired by only one criteria.

Secondary Hypotheses:
Using previous fasting glucose measures (V1-3), we will also consider the relationship between duration of impaired fasting glucose and vascular disease.

6. Data (variables, time window, source, inclusions/exclusions):
Inclusions: participants with OGTT and IMT data at V4.
Exclusions: none
Previously diagnosed (prevalent) diabetes will be considered as a separate category (types 1 and 2 will be combined). [Fasting glucoses from V1-3 will be used in a secondary hypothesis to assess duration of IFG].
Dependent variable: carotid IMT at V4; retinopathy at V3
Covariates: Model 1- demographics, smoking
      Model 2- plus possible mediators, ie lipids, blood pressure, insulin
Source: V4 data set primarily. Other data points as indicated above.
Sample size: Based on data from NHANES III (Harris 1997), and a presumed total sample size of 6500 at V4 with IMT data, there will be 4250 persons with total normal glucose tolerance on both criteria, 253 persons with impaired glucose tolerance on both criteria, 221 persons with undiagnosed diabetes on both criteria and 513 persons with previously diagnosed diabetes. 715 will be normal on the new criteria and IGT on WHO criteria and 286 will be normal on WHO criteria and IFG on new criteria. Other categories will include fewer than 118 persons, but may still be considered.

REFERENCES: