

ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #456

1. a. Full Title: Neighborhood socioenvironmental characteristics, race, and incidence of hypertension in the ARIC cohort

b. Abbreviated Title: Neighborhoods and hypertension

2. Writing Group:

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3. Timeline:

Submit proposal to Publications

Committee

1-97

Complete preparation of data (neighborhood variables)

9-97

Complete

Analysis

12-

98

Submit draft to Publications

Committee

3-99

4. Rationale:

Previous studies have suggested that neighborhood socioenvironmental characteristics may be related to blood pressure. Several socioenvironmental indicators, including "socioecologic stress" (James and Kleinbaum 1976), "social disorganization" (Nesser et

al 1971), and "social stressors" have been found to be related to hypertension and hypertension related mortality. Cross-sectional associations based on the ARIC cohort have also suggested that neighborhood socioeconomic characteristics may be related to blood pressure independently of individual-level indicators (ARIC manuscript 180). The prospective follow up of the ARIC Study will allow the investigation of whether neighborhood indicators of socioenvironmental stress are related to the incidence of hypertension, after accounting for individual-level SES indicators, and whether neighborhood differences may partly account for racial differences in hypertension.

5. Main Hypotheses:

Increased neighborhood socioenvironmental stress is associated with increased incidence of hypertension after accounting for individual-level variables.

Differences in neighborhood environments partly mediate racial differences in the incidence of hypertension.

6. Data:

Neighborhood indicators will be obtained from the 1990 US Census. Strategies to improve neighborhood variables will be identical to those described for the accompanying proposals. In particular, indices of neighborhood socioenvironmental stress will be constructed based on previous work by Harburg and others.

Blood pressure will be explored both as a continuous variable (systolic and diastolic blood pressure) and dichotomized. Hypertension will be defined based on ARIC standard definitions. Persons without hypertension at baseline who are classified as hypertensives at visits 2 or 3 will be considered incident cases. Data from visit 4 will be incorporated when it becomes available.

7. Analyses:

Simple exploratory analyses will initially be used to investigate trends over time in blood pressure and incidence of hypertension stratified by race and gender. Regression models will be used to explore associations of neighborhood variables with the outcomes of interest before and after adjustment for individual-level variables. If neighborhood effects are found to be similar across races, regression models pooling all races will be run. The impact of differences in neighborhood environments on racial differences will be explored by comparing coefficients for race before and after adjustment for neighborhood indicators.

Regression models for systolic and diastolic blood pressure will be similar to those described in the accompanying manuscript on risk factor trends over time. For hypertension as the outcome, discrete proportional hazards models will be used. Participants will be considered to have hypertension the first time they fulfill the hypertension criteria and will be censored after that.

When necessary, appropriate models will be used to account for residual correlation between individuals within neighborhoods. As in accompanying manuscripts, the use of categories based on joint distributions of neighborhood and individual-level SES will be explored as options to including both variables separately in the models.

REFERENCES

James SA, Kleinbaum DG. Socioecologic stress and hypertension related mortality rates in North Carolina. *Am J Public Health* 1976;66:354-358.

Jenkins CD, Tuthill RW, Tannenbaum SI, Kirby C. Social stressors and excess mortality from hypertensive diseases. *J Human Stress* 1979;September:29-40.

Harburg E, Erfurt J, Chape C, et al. Socioecological stressor areas and black-white blood pressure: Detroit. *J Chron Dis* 1973;26:595-611.

Neser WB, Tyroler HA, Cassel JC. Social disorganization and stroke mortality in the black population of North Carolina. *Am J Epidemiol* 1971;93:166-175.