

## ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #593S

1. Full Title: Relationship of Cardiovascular Disease (CVD) Risk Factors to Sleep Disordered Breathing (SDB) in Those at Risk for Incident CVD

Abbreviated Title [length, total of 26 letters + spaces]: CVD Risk Factors and SDB

2. Writing Group:

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3. Timeline [target start and finish dates, assuming P&P approval and Coordinating Center availability for analysis]:

Start ASAP.

4. Rationale:

To evaluate the relationship of SDB to incident CVD, it is important to first characterize the population at risk. A thorough evaluation of the relationship of CVD risk factors to SDB will help identify:

- 1) the relative importance of these factors as potential confounders or biologic mediators of the hypothesized pathway of SDB to CVD events
- 2) potential important interactions in age/race/gender subgroups.

To some extent, these relationships will be evaluated in the two baseline papers on the relationship of the RDI to prevalent CVD and to hypertension. Neither of these papers will specifically exclude those with prevalent CVD. Risk factor relationships may be similar in those with and without hypertension or with and without prevalent CVD, but should be described in the renewal application.

5. Hypotheses:

Preliminary analyses have shown a strong relationship of the respiratory disturbance index to measures of obesity. It has been long debated whether the RDI is just a marker

of obesity. Independence of the RDI as a risk factor may be difficult to document analytically. It is possible that the relationship of RDI to risk factors will differ in older and younger men and women of various ethnic origins.

I expect that the risk factor relationships with RDI will be stronger in the younger participants and in the men and in the most obese, with less relationship to race/ethnicity. There may be an interaction of age and weight, in that weight may be less strongly related to the RDI at increasing ages, and risk factor relationships with RDI may be weaker in older participants. Further analyses may be needed, for example stratifying women at older and younger than age 50, to account for weight and risk factor changes before and after the menopause.

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

- 1) Population: SHHS cohort excluding those with reported prevalent CVD (MI, Stroke, Angina, CHF). a) Descriptive: RDI quintile or quartile distribution by age, gender, and ethnicity.
- 2) Descriptive analysis:
  - a) Stratify all RDI analyses below by age (<65/65+) and gender,
  - b) then further stratify by race/ethnicity,
  - c) then show just by age (10 year strata) and overall

Relation of RDI quartiles or quintiles to:

- i) Weight, BMI, waist, waist/hip (t-test and correlations, then do chi square of RDI quartiles or quintiles by BMI quartiles or quintiles)
- ii) Self-reported hypertension (Proportions, Chi-sq Test)
- iii) Self-reported diabetes (proportions, Chi-sq Test)
- iv) Total cholesterol (t-test mean and do correlation)
- v) HDL-cholesterol (t-test and correlation)
- vi) Major ECG abnormality or AAI, 0.9 either leg
- vii) Smoking (proportion of current, mean pack years)

3) Assuming that relationship of RDI to ethnicity does not show much significance that is not explained by age and race, repeat the descriptive analysis ii-vii stratified by BMI quartiles (quintiles), adjusted for age and gender. (MANOVA)

4) Linear regression: predicting RDI, forcing age, gender and ethnicity, then each risk factor individually, with and without BMI quartiles.