ARIC Manuscript Proposal # 866

PC Reviewed: 02/13/02 **Status: ___A_** **Priority: __2__**
SC Reviewed: 02/14/02 **Status: ___A_** **Priority: __2__**

1.a. Full Title: Association between Asthma and Incident Cardiovascular Disease

b. Abbreviated Title (Length 26 characters): Asthma and CVD

2. Writing Group (list individual with lead responsibility first):

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Timeline: -time for analysis: 2-15-02 to 5-15-02
-expected time of first draft: 5-30-02

4. Rationale:

Inflammation is believed to play a key role in the pathogenesis of cardiovascular disease. Asthma is a chronic inflammatory lung disease that affects between 5.8% and 7.2% of the US population. Few studies have investigated the relationship between asthma or asthma symptoms and cardiovascular events. These studies have found a positive association between asthma and CVD. Musk et al showed an standardized mortality ratio of 1.3 from ischemic heart disease of patients discharged with a diagnosis of asthma. (Medical Journal of Australia. 147(9): 423-7, 1987 Nov 2) Toren et al studied patients with severe asthma and found excess mortality from ischemic heart disease with a RR of 1.9 among men and a RR of 2.4 among women. (International Journal of Epidemiology. 25(3):617-20, 1996 Jun). At the 2001 AHA Epidemiology Council meeting, Iribarren et al showed that self-reported asthma among non-smokers was associated with a RR of 1.33 compared to no self-reported history of asthma. This RR was 1.82 for treated asthma.

ARIC assessed asthma through the use of a health history questionnaire, which asked if the subject had ever been diagnosed with asthma by a doctor. We also have data on wheezing and pulmonary function tests. CVD was measured as incident myocardial infarct and cerebrovascular events during follow up time. The aim of this cohort study is to assess the relationship between asthma and CVD, using the Atherosclerosis Risk in Communities (ARIC) cohort.

5. Main Hypothesis/Study Questions:
There is a positive, independent association between asthma and incident CVD.

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

-Source: entire ARIC cohort, with CVD follow-up through 1999

-Variables:

The main independent variable is asthma as determined through self-reported physician diagnosis. These data are available from each of the exams 1-4 and subsequent annual follow-ups. Also, asthma symptoms and lung function data are available at visits 1 and 2.

The dependent variables are incident myocardial infarct and/or stroke, ascertained using community surveillance techniques, such as ongoing review of death certificates and hospital discharge records to identify CVD events.

Potential confounding variables are age, race, gender, center, total cholesterol, triglyceride level, height and weight, physical activity, smoking, diabetes, hypertension, HDL-cholesterol, socio-economic status, and education. Asthma medications and other comorbid lung diseases (chronic bronchitis, emphysema) need special consideration.

-Analysis

Self-reported doctor diagnosis of asthma (yes, no) will be considered the major exposure.

Participants described the onset and duration of their asthma. Asthma duration will be used in secondary analyses. Some participants will develop asthma during study follow-up time and will contribute person years to both exposed and unexposed categories (time dependent variables).

Self-report may not be entirely valid, but sensitivity analyses will be done using a variety of definitions, including consistent self-report over time, wheezing symptoms, pulmonary function tests (PFT), and medicine use for asthma. Asthma medication use and its relation to CVD incidence will be analyzed according to any treatment versus no treatment and according to medication type.

Analysis primarily will involve proportional hazards regression. Confounding will be dealt with using multiple regression techniques or by restriction (e.g., analyses in nonsmokers only).

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7.a. Will the data be used for non-CVD analysis in this manuscript? ____ Yes ___x_ No

8.a. Will the DNA data be used in this manuscript? ____ Yes _x___ No

9. The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status.

___x___ Yes _____ No