1. a. Full title: Low lung function and incident lung cancer in the Atherosclerosis Risk in Communities Study

1. b. Abbreviated title: Lung Function and Lung Cancer

2. Writing group:
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3. Time line:
   The data to do this basic analysis has already been collected. A draft manuscript will be distributed for internal circulation by May 2003. A secondary goal of this analysis would be to provide the basis for a separate proposal that would look at genetic factors that may predict both low lung function and lung cancer.

4. Rationale:
   Lung cancer is the leading cause of cancer-related mortality in the United States. In 2000 an estimated 156,900 deaths were attributed to lung cancer. Tobacco smoking is the most important risk factor for lung cancer, although exposures to other agents, such as radon and asbestos, are also important factors. A diagnosis of obstructive lung disease has been found to be associated with a higher rate of lung cancer in several studies. The diagnosis of obstructive lung disease has traditionally depended on the presence of symptoms, such as chronic cough or chronic sputum production. New international guidelines for the diagnosis of obstructive lung disease, however, use spirometrically determined measurements of lung function to define mild, moderate and severe obstructive lung disease.

   We propose a study which would apply the current criteria for COPD
diagnosis to data collected at visits 1 and 2 in the ARIC study to define a cohort of subjects with normal lung function and varying levels of COPD. We would then follow these cohorts through the follow-up period, looking for any hospitalization for lung cancer or death with lung cancer. The analysis will control for other known lung cancer risk factors use Cox proportional Hazards models.

5. Main Issues/Hypotheses to be addressed:

Whether an increased risk of lung cancer is associated with decreased lung function in this cohort. If there is a relation, a separate proposal would be submitted for a follow-up study to determine whether there are common genetic factors associated with both lung cancer and loss of lung function, and whether these factors differ between blacks and whites.

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

Baseline demographics, smoking history.
Lung function at visits 1 and 2
Hospitalization screening data for the follow-up period (data base where diagnoses were recorded). The cases of lung cancer that would be included have not, to our knowledge, been independently validated. A potential future proposal, should funding become available, would be to independently validate lung cancer cases and collect information on cell type.
Mortality data.
Any data to document when the subject was last known alive for use in the survival analyses.
Through 1995 there 7,147 deaths in the ARIC cohort. If these deaths follow national patterns, one would expect 400-600 deaths to be from lung cancer, which would be more than enough to do a survival analysis.
The main analytic approach will be a survival analysis, controlling for covariates related to lung function or lung cancer (age, sex, smoking duration and intensity, race, etc.) The database is big enough that we may also be able to do stratified analysis (limiting to current/former smokers with > 60 pack years of tobacco use, etc.) We acknowledge that there may be some residual confounding, but also note that this dataset offers a unique opportunity because of its size, with the resulting ability to stratify by some of these potential confounding factors.

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

b. If Yes, is the author aware that the file ICTDER02 must be used to exclude persons with a value RES_OTH = ACVD Research@ for non-DNA analysis, and for DNA analysis RES_DNA = ACVD Research@ would be used? ______ X_ Yes ___ No
(This file ICTDER01 has been distributed to ARIC PIs, and contains the responses to consent updates related to stored sample use for research.)

8.a. Will the DNA data be used in this manuscript? __ Yes  ___X___ No
8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER01 must be used to exclude those with value RES_DNA = aNo use/storage DNA@? ___ Yes  ___ No

Reference List