

ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #433

1. a. Title: Pulmonary Function Impairment and Risk of All Cause Mortality, Cardiovascular Disease Mortality and Risk of Fatal and Non-fatal Myocardial Infarction.
b. Abbreviated Title: PFT impairment and mortality

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4. Timeline and Sample Size:

Analysis will begin immediately after a sufficient number of cases are available. It was determined using Schoenfeld's sample size formula for the proportional hazards that an estimated 580 cases are needed to detect a relative risk of 1.5 at 90% power (one-sided, $\alpha=.05$). At 80% power (one-sided, $\alpha=.05$) and the same relative risk of 1.5, 418 cases are needed. NOTE: Inclusion of data from the Cardiovascular Heart Study (CHS) was considered in order to increase the number of cases. However, a similar manuscript has been proposed by CHS investigators as thus eliminates the possibility of combining data from CHS with ARIC.

5. Rationale:

Impaired pulmonary function has been related to both total (Higgins, Ashley, Krzyzanowski) and cause specific mortality (Krzyzanowski, Cullen, Peto, Lange) in several longitudinal studies. The relationship between poor lung function and increased death has been observed even among nonsmokers. It is evident that a strong relationship should exist between impaired lung function and increased risk of death from lung disease. However, little is known about the association between lung function impairment and mortality not associated with lung disease. The literature suggests that lung function could serve as measure of overall health status or "vitality," whereas other reports suggest that impaired pulmonary function is causally related to incidence of non-pulmonary diseases. ARIC provides an opportunity to address whether pulmonary function is related to all cause mortality, cardiovascular disease mortality and fatal and non-fatal myocardial infarction.

6. Main Study Questions:

a. Is there an association between pulmonary function and all cause mortality, cardiovascular disease mortality and fatal and non-fatal myocardial infarction?

b. Are these associations statistically independent of smoking and other "established" risk factors?

7. Data to be Used:

ARIC Visit 1 and Visit 2 data. All cause mortality, cardiovascular mortality as well as incident myocardial infarction cases are currently being validated in the ARIC surveillance system.

8. Central/Distributed Analyses:

Analysis Will be carried out at the Department of Epidemiology, UNC at Chapel Hill.

9. References:

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Higgins MW, Keller JB, Arbor A. Predictors of mortality in the adult population of Tecumseh. *Arch Environ Health*, 1970, 21, 418-424.

Krzyzanowski M, Wysocki M. The relation of thirteen year mortality to ventilatory impairment and other respiratory symptoms: The Cracow Study. *Int J Epidemiol.*, 1986 15, 56-64.

Lange P, Nyboe J, Appleyard M, Jensen G, and Schnohr P. Ventilatory function and chronic mucus hypersecretion as predictors of death from lung cancer. *Am Rev Respir Dis.*, 1990, 141, 613-617.

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