ARIC Manuscript Proposal #1351

1.a. Full Title: Incidence of atrial fibrillation in a bi-racial cohort: the ARIC study

  b. Abbreviated Title (Length 26 characters): Incidence of AFib

2. Writing Group:
Writing group members:
Alvaro Alonso, Elsayed Soliman, Marietta Ambrose, Ronald J. Prineas, Aaron R. Folsom.

I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. _AA_ **[please confirm with your initials electronically or in writing]**

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3. Timeline:
- Validation of AF diagnoses from hospital discharge records: 2 months
- Data analysis: 2 months
- First draft of the manuscript: 3 months

4. Rationale:
Atrial fibrillation (AF) is a major cardiovascular problem, associated to higher stroke risk and other cardiovascular problems.[1] Prevalence studies suggest that there are more than 2

million people living with AF in the US.[2] However, information about AF incidence in the general population is scarce. Only three population-based studies in the US have determined incidence of AF: Framingham Heart Study, Cardiovascular Health Study and a Mayo Clinic-based study in Olmsted County, Minnesota.[3-5] None of them included a significant number of minorities. Currently, information about incidence of (and risk factors for) AF in ethnic groups different from Caucasians is lacking. The ARIC study is an ideal setting to determine incidence of AF in African-Americans.

5. Main Hypothesis/Study Questions:
The aim of this proposal is to determine the age- and sex-specific incidence of AF in Caucasians and African-Americans in the ARIC study. Future papers will look at risk factors for AF.

6. Design and analysis (study design, inclusion/exclusion, outcome and other variables of interest with specific reference to the time of their collection, summary of data analysis, and any anticipated methodologic limitations or challenges if present).
We will assess incidence of AF in the ARIC study identifying new cases of AF through hospital discharges and ECGs performed during visits 1 to 4. AF and atrial flutter cases diagnosed at baseline will be excluded from the follow-up. We will include Caucasians from Minneapolis, Washington and Forsyth Counties, and African-Americans from Jackson and Forsyth County.

AF ascertainment
We will identify AF cases through two main sources:
    - Hospital discharges (ICD-9 code 427.31-Atrial fibrillation)
    - ECGs performed at visits 1-4
Individuals with evidence of atrial flutter (ICD-9 code 427.32) but without evidence of AF will not be included as incident cases (preliminary analyses suggest this is a small number of total AF/aflutter cases, approx <5%).
We are in the process of determining the validity of AF cases detected through hospital discharges. To achieve this aim, we will select a sample of AF cases identified through ICD codes, and review the hospital discharge record to determine whether AF was present or not during the hospital admission.
AF cases diagnosed and treated in the outpatient setting will be missed. In the future, we plan to determine the extent of this problem using data from CMS. However, preliminary results suggest that the incidence of AF among whites in ARIC is similar to that observed in other studies (see table at the end of the manuscript proposal), supporting the validity of the case ascertainment.

Statistical analysis
Age, sex and race specific incidence rates of AF will be estimated. Participants with AF at baseline will be excluded. Follow-up will start the date of first examination and finish when the participant develops AF, dies, abandons the study, or December 31, 2004 is reached (whatever occurs earlier). Finally, a Poisson regression analysis, adjusting for

age, sex, race, center and period, will be used to identify potential trends in the incidence of AF.

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

   b. If Yes, is the author aware that the file ICTDER03 must be used to exclude persons with a value RES_OTH = "CVD Research" for non-DNA analysis, and for DNA analysis RES_DNA = "CVD Research" would be used? ____ **Yes** ____ **No**
   (This file ICTDER03 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 ICTDER03 must be used to exclude those with value RES_DNA = "No use/storage DNA"? ____ **Yes** ____ **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. ARIC Investigators have access to the publications lists under the Study Members Area of the web site at: http://www.cscc.unc.edu/ARIC/search.php

   ___X__ Yes _____ No   Reviewed, no overlap

10. What are the most related manuscript proposals in ARIC (authors are encouraged to contact lead authors of these proposals for comments on the new proposal or collaboration)?

MS #1156. Soliman EZ et al. ECG predictors of atrial fibrillation/flutter and its impact on understanding the ethnic distribution of ischemic stroke in the ARIC study.

11. a. Is this manuscript proposal associated with any ARIC ancillary studies or use any ancillary study data? ____ **Yes   X No**

11.b. If yes, is the proposal
   ___ **A. primarily the result of an ancillary study (list number* _____)**
   ___ **B. primarily based on ARIC data with ancillary data playing a minor role (usually control variables; list number(s)* _____ _____ _____)**

*ancillary studies are listed by number at http://www.cscc.unc.edu/aric/forms/

12. Manuscript preparation is expected to be completed in one to three years. If a manuscript is not submitted for ARIC review at the end of the 3-years from the date of the approval, the manuscript proposal will expire.

References

1. Kannel WB, Benjamin EJ. Status of the epidemiology of atrial fibrillation. Med Clin North Am 2008;92:17-40.
2. Rosamond W, Flegal K, Furie K, et al. Heart disease and stroke statistics--2008 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation 2008;117:e25-146.
3. Benjamin EJ, Levy D, Vaziri SM, D'Agostino RB, Belanger AJ, Wolf PA. Independent risk factors for atrial fibrillation in a population-based cohort. The Framingham Heart Study. JAMA 1994;271:840-4.
4. Psaty BM, Manolio TA, Kuller LH, et al. Incidence of and risk factors for atrial fibrillation in older adults. Circulation 1997;96:2455-61.
5. Miyasaka Y, Barnes ME, Gersh BJ, et al. Secular trends in incidence of atrial fibrillation in Olmsted County, Minnesota, 1980 to 2000, and implications on the projections for future prevalence. Circulation 2006;114:119-25.

Table. Incidence of atrial fibrillation (new cases per 1,000 person-years) in Framingham Heart Study (FHS), Cardiovascular Health Study (CHS), Olmsted County, MN, and ARIC

	FHS [3,†]	CHS [4,†]	Olmsted Co, MN [5]	ARIC Blacks [†,‡]	ARIC Whites [†,‡]
Men					
<55	-	-	0.62	1.0	2.3
55-59	3.3	-	4.34	2.2	4.9
60-64		-		4.7	7.5
65-69	8.8	12.3	12.91	9.1	11.0
70-74		22.8		12.8	17.6
75-79	17.5	34.8	24.52	11.9	26.9
Women					
<55	-	-	0.2	0.3	0.6
55-59	2.0	-	2.2	1.6	1.8
60-64		-		3.0	3.9
65-69	5.0	10.9	6.8	5.6	6.7
70-74		9.1		11.9	11.7
75-79	14.0	23.1	17.1	9.6	14.1

† Including atrial flutter without evidence of AF in the case definition
‡ Case ascertainment based only on hospital discharges