

## ARIC Manuscript Proposal #2459

PC Reviewed: 11/11/14  
SC Reviewed: \_\_\_\_\_

Status: A  
Status: \_\_\_\_\_

Priority: 2  
Priority: \_\_\_\_\_

### 1.

**a. Full Title:** The Association Between Alcohol Consumption and Incident Atrial Fibrillation: The Atherosclerosis Risk in Communities (ARIC) Study.

**b. Abbreviated Title (Length 26 characters):** Alcohol & Atrial Fibrillation

### 2. Writing Group:

Writing group members: Shalini Dixit, Alvaro Alonso, Elsayed Soliman, Lin Y. Chen, Gregory M. Marcus

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

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**ARIC author** to be contacted if there are questions about the manuscript and the first author does not respond or cannot be located (this must be an ARIC investigator).

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### 3. Timeline:

Dr. Marcus has this data available from previously approved manuscript proposals and grant funding. Shalini Dixit, the first author, is a medical student at UCSF on a yearlong pre-doctoral clinical and translational research grant, simultaneously taking classes in epidemiology and biostatistics. As such, she should have sufficient time and support from Dr. Marcus and the biostatistics department at UCSF to complete this project within six months from its approval. In addition, we already have certification from the UCSF Committee on Human Research to perform this study, as they do not require specific approval to analyze de-identified data.

#### **4. Rationale:**

Atrial fibrillation (AF) affects millions of Americans and is growing in incidence and prevalence.<sup>1</sup> It is one of the most common causes of stroke and nearly doubles mortality.<sup>2,3</sup> Though the cause of AF remains largely unknown, several risk factors have been established including age, male sex, hypertension, heart failure, diabetes, and obesity.<sup>4</sup> Episodic heavy alcohol consumption, or binge drinking, has long been posited as a trigger for AF. In recent years, researchers have also begun to investigate the effects of chronic alcohol consumption on AF risk. Several studies have found an association between heavy alcohol consumption, usually defined as >3 drinks/day, and incident AF.<sup>5,6</sup> Though the data on moderate alcohol consumption is less conclusive, a previous meta-analysis determined that there is a linear relationship between alcohol consumption and AF, reporting an 8% increase in risk associated with each 10g/day of alcohol intake.<sup>7</sup> Thus, lowering alcohol intake could be a potentially effective strategy for preventing AF.

Interestingly, an analysis of the Cardiovascular Health Study (CHS), a population-based cohort of elderly women and men, published in 2007 had largely negative findings regarding alcohol and AF.<sup>8</sup> The authors found that current moderate alcohol consumption was not associated with risk of AF but that former drinking identified individuals at higher risk of AF. Possible explanations for this paradox include that past drinkers drank more alcohol or that they had other comorbidities which led them to quit. Nonetheless, this begets the question of how past drinking affects AF risk as compared to current alcohol consumption.

While studies on alcohol and AF have been performed in several major cohorts and trials, including the Framingham Study, the Women's Health Study, and CHS, the data from ARIC on this important matter has yet to be reported. The senior author on this project (and mentor of the first author) currently has an R01 grant from the NIAAA to explore the mechanisms underlying the potential relationship between alcohol and AF, and these data would complement that ongoing effort. Using data from ARIC, we would be able to examine the relationship between alcohol and AF in a large, population-based cohort with previously validated AF ascertainment, thereby adding to the growing body of knowledge on chronic alcohol consumption and AF. Furthermore, in the spirit of searching for modifiable risk factors for AF, we could begin to answer the question of whether one can reduce one's risk of AF by quitting drinking given the specific data available in ARIC.

#### **5. Main Study Questions:**

- 1) Does chronic moderate alcohol consumption increase the risk of incident AF?
- 2) Do past drinkers have an increased risk of incident AF?
  - Related sub-questions:
    - Is this risk affected by the length of time for which they drank?
    - Is this risk affected by the length of time for which they have abstained?
- 3) Does type of alcohol consumed influence the risk of incident AF in current and past drinkers?

#### **6. Design and Analysis (study design, inclusion/exclusion, outcome and other variables of interest with specific reference to the time of their collection, summary**



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.csc.unc.edu/ARIC/search.php>

Yes     No

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)?**

- Alcohol consumption and the incidence of hypertension: The Atherosclerosis Risk in Communities Study.
- Relationship of alcohol consumption and type of alcoholic beverage consumed with plasma lipid levels: differences between Whites and African Americans of the ARIC study.
- Alcohol consumption with age: a cross-sectional and longitudinal study of the Atherosclerosis Risk in Communities (ARIC) study, 1987-1995.

11.a. **Is this manuscript proposal associated with any ARIC ancillary studies or use any ancillary study data?**     Yes     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.csc.unc.edu/aric/forms/>

12a. **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.**

12b. **The NIH instituted a Public Access Policy in April, 2008** which ensures that the public has access to the published results of NIH funded research. It is **your responsibility to upload manuscripts to PUBMED Central** whenever the journal does not and be in compliance with this policy. Four files about the public access policy from <http://publicaccess.nih.gov/> are posted in <http://www.csc.unc.edu/aric/index.php>, under Publications, Policies & Forms. [http://publicaccess.nih.gov/submit\\_process\\_journals.htm](http://publicaccess.nih.gov/submit_process_journals.htm) shows you which journals automatically upload articles to Pubmed central.

1. Naccarelli GV, Varker H, Lin J, Schulman KL. Increasing prevalence of atrial fibrillation and flutter in the United States. *The American journal of cardiology* 2009;104:1534-9.
2. Fuster V, Ryden LE, Cannom DS, et al. ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Revise the 2001 Guidelines for the Management of Patients With Atrial Fibrillation): developed in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society. *Circulation* 2006;114:e257-354.
3. Chugh SS, Blackshear JL, Shen WK, Hammill SC, Gersh BJ. Epidemiology and natural history of atrial fibrillation: clinical implications. *Journal of the American College of Cardiology* 2001;37:371-8.
4. Andrade J, Khairy P, Dobrev D, Nattel S. The clinical profile and pathophysiology of atrial fibrillation: relationships among clinical features, epidemiology, and mechanisms. *Circulation research* 2014;114:1453-68.
5. Djousse L, Levy D, Benjamin EJ, et al. Long-term alcohol consumption and the risk of atrial fibrillation in the Framingham Study. *The American journal of cardiology* 2004;93:710-3.
6. Conen D, Tedrow UB, Cook NR, Moorthy MV, Buring JE, Albert CM. Alcohol consumption and risk of incident atrial fibrillation in women. *JAMA : the journal of the American Medical Association* 2008;300:2489-96.
7. Kodama S, Saito K, Tanaka S, et al. Alcohol consumption and risk of atrial fibrillation: a meta-analysis. *Journal of the American College of Cardiology* 2011;57:427-36.
8. Mukamal KJ, Psaty BM, Rautaharju PM, et al. Alcohol consumption and risk and prognosis of atrial fibrillation among older adults: the Cardiovascular Health Study. *American heart journal* 2007;153:260-6.