# ARIC Manuscript Proposal #2916

PC Reviewed:  1/10/17          Status: _____          Priority: 2
SC Reviewed:  _____          Status: _____          Priority: ____


**1.a.  Full Title**:  Diabetes-related factors and abdominal aortic aneurysm risk: the Atherosclerosis Risk in Communities Study

  **b.  Abbreviated Title (Length 26 characters)**:  DM-related factors and AAA

**2.    Writing Group**:
    Writing group members: Yasuhiko Kubota, Weihong Tang, James Pankow, Aaron Folsom

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

   F**irst author**: **Yasuhiko Kubota**
   Address:  Division of Epidemiology and Community Health
               University of Minnesota

         Phone:  612-625-1016              Fax:  612-624-0315
         E-mail:  kubot007@umn.edu

**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).
     Name: Aaron R. Folsom
     Address:  Division of Epidemiology and Community Health
               University of Minnesota

         Phone:  612-626-8862              Fax:  612-624-0315
         E-mail:  folso001@umn.edu

**3.    Timeline**:
Data analysis: 1-2 months from manuscript approval date.
First draft of the manuscript: 2-3 months from manuscript approval date.

**4.    Rationale**:
Abdominal aortic aneurysm (AAA) is a common disease in Western populations, especially in elderly people, with a prevalence of 4–9% in men and 1% in women (1). Once rupture occurs, mortality rates can be as high as 65–85% (2). So far there is no treatment for AAA other than surgery. Since AAA is usually asymptomatic and AAA

growth is discontinuous, with periods of growth alternating with periods of stability, it is often difficult to estimate the prognosis of AAA or offer interventions (3). Thus, it is very important to identify AAA risk or protective factors in order to prevent AAA.

While most cardiovascular disease risk factors, including atherosclerosis, old age, male sex, hypertension, and smoking, are associated with AAA risk (4), diabetes mellitus (DM), surprisingly, is inversely associated with AAA (5–7). In addition, a previous study suggested obesity might also be inversely associated with AAA (8) although this appears controversial (9, 10). Obesity is closely related to DM, and thus, other DM-related factors such as insulin and metabolic syndrome might also be inversely associated with AAA risk. To date, there is no prospective study investigating the association between them.

The Atherosclerosis Risk in Communities Study (ARIC) has hospitalized AAA data through 2011, and metabolic syndrome, plasma fasting glucose and insulin, and plasma leptin (11) are available as DM-related factors. Therefore, we sought to test the hypothesis those DM-related factors are inversely associated with AAA risk using the ARIC cohort study.

**5.    Main Hypothesis/Study Questions**:
To investigate the associations between DM-related factors and AAA risk.

**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).**

Design
Prospective design.

Inclusions
Participants with information on DM-related factors at visit 1.

Exclusions
Those who had prior AAA surgery or aortic angioplasty at visit 1.

Main exposures
Metabolic syndrome, plasma fasting glucose and insulin, and plasma leptin (the last factor was measured for coronary heart disease case-cohort studies. For this study, we will use the cohort random sample) measured at visit 1.

Statistical analysis
We will present the prevalences of potential AAA risk factors at visit 1 (age, sex, race, smoking status, drinking status, body mass index, height, hypertension, HDL-C, LDL-C, and triglycerides) and main exposures of interest according to DM status. Then, we will examine the associations between each DM-related factor and AAA risk using Cox proportional hazard models adjusting for potential AAA risk factors. Analyses using the cohort random sample will incorporate sampling weights for the various strata.

**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 ICTDER 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

**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)?**

    #1505: Risk Factors for Abdominal Aortic Aneurysm (PMID: 27834688)
    #2633: Associations between Novel Biomarkers and Risk of Abdominal Aortic
        Aneurysm (PMID: 26085454)

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

**11.b. If yes, is the proposal**
   _X_ **A. primarily the result of an ancillary study (list number\* 2006.16)**
   _____ **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/

**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.cscc.unc.edu/aric/index.php, under Publications, Policies & Forms. http://publicaccess.nih.gov/submit_process_journals.htm shows you which journals automatically upload articles to Pubmed central.

**13. Per Data Use Agreement Addendum for the Use of Linked ARIC CMS Data, approved manuscripts using linked ARIC CMS data shall be submitted by the Coordinating Center to CMS for informational purposes prior to publication**.
Approved manuscripts should be sent to Pingping Wu at CC, at pingping_wu@unc.edu. I will be using CMS data in my manuscript ____ Yes __x__ No.

**References:**
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associated with small abdominal aortic aneurysm expansion rate. JAMA Surg. 2015 Jan;150(1):44-50.

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