1. **Full Title:** Seasonal trends of myocardial infarction incidence in four United States Communities: the Atherosclerosis Risk in Communities (ARIC) Surveillance Study

   **Abbreviated Title (Length 26 characters):** Season and MI

2. **Writing Group:**
   Magdalene Assimon (first author), Larisa Tereshchenko, Wayne Rosamond (senior author), others welcome

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

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3. **Timeline:**
   October 2013: Abstract submission to Epi/NPAM
   December 2013: 1st draft completed
   January/February 2014: Manuscript submission to ARIC publications committee for review

4. **Rationale:**
Seasonal patterns of acute myocardial infarction (MI) occurrence, with winter peaks and summer troughs, have been consistently observed, suggesting seasonal periodicity may reflect variation in one or more MI risk factors (e.g. environmental factors, biochemical and clinical factors, or infection). Even though many studies have described this seasonal phenomena, few have attempted to characterize seasonal trends over time. Understanding secular changes in seasonal patterns of MI incidence may provide insight into disease trends at the population level. Specifically, concomitant changes in the seasonal pattern of MI and potential causal factors over time may indicate a causal relationship, generating hypotheses for future investigations. Thus, the ARIC surveillance study, which is designed to monitor trends of validated hospitalized coronary heart disease events in 4 geographically diverse United States communities, is ideally positioned to describe the long-term seasonal trends of MI occurrence.

5. **Main Study Questions and Aims:**
   1. To describe seasonal trends of hospitalized MI in the ARIC communities.
      a. To assess if trends vary by: community location, age, gender, race and MI sub-type (STEMI versus NSTEMI).

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).**

   **Study design**
   A retrospective surveillance study to describe seasonal trends of hospitalized MI incidence in four United States communities: Forsyth County, North Carolina; Jackson, Mississippi; eight suburbs of Minneapolis, Minnesota; and Washington County, Maryland.

   **Inclusion criteria**
   All community surveillance incident MI events classified as definite or probable occurring from January 2000 to December 31, 2010 will be included.

   **Outcomes of interest**
   1. Hospitalized acute MI (incident events)

   **Variables of interest**
   *Time event occurrence:* date of event
   *Demographic:* age, gender, race and ARIC community
   *Clinical features of MI:* MI sub-type

   **Summary of data analysis plan**
   All estimates will be weighted to account for the complex ARIC Surveillance Study sampling scheme.

   **Trends of MI occurrence**
Age adjusted monthly event rates stratified by sex, race, ARIC community and MI sub-type will be calculated based upon population denominators estimated by interpolation and extrapolation of United States census population estimates. Dynamic generalized linear modeling (DGLM) as described by Lundbye-Christensen and colleagues\textsuperscript{12} will be utilized to describe seasonal trends over time. Briefly, DGLM methods are capable of handling gradual changes in both seasonal patterns and secular trends, allowing for more valid estimates of temporally changing seasonal patterns as compared with traditional time series methods.

7. a. Will the data be used for non-CVD analysis in this manuscript? 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? N/A

8. a. Will the DNA data be used in this manuscript? No

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”? N/A

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

Yes, we have reviewed the list of existing manuscript proposals and did not find any manuscript proposals with 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)?

- # 782R: Changes in cholesterol and hemostatic measures in relation to seasonal and meteorologic changes (Lead – Levy)

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

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 a. 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.

b. 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.

References