1.a. Full Title: Differences in Case Fatality Rates Following ST-elevation MI, Non-ST-elevation MI, and Unstable Angina, 1987-2000

b. Abbreviated Title (Length 26 characters): Trends in mortality for the spectrum of acute coronary syndromes

2. Writing Group (list individual with lead responsibility first):

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3. Timeline: Should be completed in 6 months.

4. Rationale: Studies from the late 1980’s and early 1990’s suggest that one-year mortality following ST-elevation MI (STEMI) is slightly better than the one-year mortality from non-ST-elevation MI (NSTEMI).(1) This data comes from an era when treatment for acute coronary syndromes was largely medical and the utilization of coronary revascularization procedures was low. We propose to examine the differences in the trends of in-hospital, 28 day, and 1-year mortality following STEMI, NSTEMI, and unstable angina. Preliminary analysis of non-ST elevation acute coronary syndrome admissions between 1987-2000 demonstrates a significant increase in 1-year case fatality during the late 1990’s compared with the early 1990’s. This trend of increasing fatality is worrisome and begs the question of whether similar tends exist for STEMI or NSTEMI.

5. Main Hypothesis/Study Questions: Is one-year mortality different for ST-elevation and non-ST elevation MI? Are mortality trends similar across the spectrum of acute coronary syndromes? If differences exist, do trends in medical/procedural care account for these changes?

6. Data (variables, time window, source, inclusions/exclusions): STEMI will be defined as an admission with ST elevation or left bundle branch block (LBBB) on presenting ECG and an ARIC enzyme diagnosis of “Abnormal.” This case definition identifies 2926 STEMI admissions from 1987-2000 of which 89% have an ARIC diagnosis of “Definite MI” 11% have an ARIC diagnosis of “Probable MI.” NSTEMI will be defined as an admission with cardiac chest pain, an ARIC enzyme diagnosis of “Abnormal,” and an initial ECG which does not have ST elevation or LBBB. This definition identifies 9068 NSTEMI admissions from 1987-2000, of which 86% have an ARIC diagnosis of “Definite MI” and 14% have an ARIC diagnosis of “Probable MI.”
The unstable angina population will be defined as patients with cardiac chest pain and initial ECG coded as ST depressions or T-wave inversions with an ARIC enzyme diagnosis of “equivocal” or “normal.” This definition identifies 3225 unstable angina admissions from 1987-2000 of which 56% have an ARIC MI diagnosis of “No MI,” 38% have an ARIC MI diagnosis of “Probable MI,” and 7% have an ARIC MI diagnosis of “Definite MI.” The outcome measure will be national death index confirmed one-year case-fatality. Exposure variables will include use of medical and surgical therapies, clinical and demographic attributes. The modified PREDICT score will be used for case-mix adjustment. Trends will initially be examined by graphing one-year case fatality rates. In addition, survival analysis techniques (Kaplan-Meier and adjusted 1-year survival) will be used to examine survival during the first year following an event and changes over time in risk factors. Finally, calendar year will be modeled as a predictor of survival in a Cox model before and after taking into account relevant MI prognostic factors (PREDICT score).

Comment - There is some overlap between the ARIC diagnostic criteria for MI and the clinical definitions of STEMI and NSTEMI. For the case of STEMI, all of the “Probable MI’s” are patients with presenting LBBB (which have an ECG diagnosis of “Other”). Because clinically these patients are treated as ST-elevation MI’s they have been included in this category (as they have in other studies of ST-elevation MI). In the case of NSTEMI the coding of the ECG’s also determines whether they are “Definite” or “Probable.” All of the “Probable MI’s” have either a right bundle branch block or an incomplete right bundle branch block (ECG diagnosis “Other”). Clinically these patients are termed NSTEMI regardless of these ECG changes (as long as they are not ST elevation or LBBB). This is not to say that presenting ECG changes do not portend a worse prognosis among NSTEMI patients, and changes in the presenting ECG (degree of ST depression, etc.) are factored into the case-mix adjustment (PREDICT score). Most importantly, the outcome measure (NDI confirmed death) is assessed in exactly the same manner for both “Probable” and “Definite” MI’s, and thus the inclusion of the “Probable MI’s” should not significantly affect this analysis.

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 ICTDER02 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 ICTDER02 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 ICTDER02 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://bios.unc.edu/units/csc/ARIC/study/studymem.html
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)?
Manuscript 338- Trends in MI incidence and CHD mortality- Rosamond

11. 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