ARIC Manuscript Proposal # 1648

PC Reviewed: 5/11/10   **Status: <u>A</u>**   **Priority: <u>2</u>**
SC Reviewed: _____   **Status: _____**   **Priority: ____**

1.a. Full Title: **Survival after treatment during hospitalization for myocardial infarction: A community-based perspective.**

Note: This is a proposed update to ARIC manuscript proposal #85: Survival after treatment during hospitalization for myocardial infarction: A community-based perspective

b. Abbreviated Title (Length 26 characters): Acute MI treatment and survival

2.   Writing Group:

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I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. _EO__ **[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:

April 2010 – August 2011

4. Rationale:

A wealth of data from clinical trials over the past 20 years has led to the introduction of a diverse set of pharmacological therapies and surgical intervention for treatment of acute MI. However, clinical trial results do not always agree with what is observed in clinical practice, and observational studies of survival after MI hospitalization in diverse patient populations is needed. We will assess the therapeutic benefit associated with MI treatments in actual clinical practice in 4 U.S. communities over time.

5. Main Hypothesis/Study Questions:

Our study aims are as follows:

1) Estimate the 30 day and one-year survival associated with 8 interventions for acute MI including:
- Aspirin
- Beta blockers
- Calcium channel blockers
- IV heparin
- Ace Inhibitors
- Thrombolytics
- Percutaneous transluminal coronary angioplasty (PTCA)
- Coronary Artery Bypass Graft (CABG)

2) Evaluate how these associations vary with
- Age
- Demographics
- Multiple therapy
- Prior medical history
- Presenting severity
- Clinical complications
- PREDICT Score

3) Comparative analysis: Is survival for those receiving evidence based treatments better than those who do not in community practice?

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 plan to use data on hospitalization from ARIC surveillance (1987 – 2007) in four US communities. Information on length of hospitalization, type and number of procedures carried out, clinical characteristics of patients, laboratory tests related to MI, and patient disposition can be found on HRA forms. Hospital characteristics, including teaching/non-teaching, rural/urban, and large/small bedsize will be identified.

Inclusions
-Proper age and residence with ICD-9 code consistent with MI
-Discharge dates restricted to ensure 1 year of follow-up
-Only include "definite" and "probable" MI

Event classification
-Definite plus probable MI as validated in ARIC

Outcome classification
-Outcome: # of days surviving through 1 year after hospitalization
-Death from any cause ascertained from National Death index or monthly searches of the state vital statistics files
-Cases censored at 365 days after hospitalization

Variables
Variables of interest fall into 5 groups:
    1)Therapies (MAIN EXPOSURE)
        -Therapies will be documented as "received" if appeared on discharge prescription list or administered during hospitalization
        -Dichotomous yes/no classification. Any dose/course of therapy classified as exposure to drug
    2)Demographics
        Age, race, gender, center, insurance, teaching hospital status
    3)Relevant clinical history
        -MI, Stroke, Hypertension
    4)Measures of presenting severity
        Systolic Blood Pressure
        Pulse
        Chest Pain
        PREDICT Score
    5)Complications during hospitalization
        Shock, Stroke, CHF/Pulmonary Edema

Statistical analysis

- We will use Cox proportional hazards ratios to estimate the association between each therapy and 1 year survival. We will also use Proc survival in SAS-callable SUDAAN to account for sampling probabilities in the 4 study communities.
- A secondary model adjusting for exposure to each of the 7 other treatments will be used to account for multiple treatment.
- We will first run the Cox models all events (probable or definite MI) before restricting to only definite MIs.
- Propensity score adjustment: Given the high likelihood for confounding by indication for severity, adjustment of regression analyses using the Predicting Risk of Death in Cardiac Disease Tool (PREDICT) will be used to control for increased post-MI risk of death not due to medication use. PREDICT score components include shock, clinical history, age, ECG findings, congestive heart failure, kidney function, and the Charlson Comorbidity Index. This tool has been validated in community-based populations by Singh and colleagues (*Circulation* 2002;106:2309 –2314) and has been adapted for use in the ARIC study (*Am J Cardiol.* 2005;96:1349 –1355).

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

   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)?

Rosamond, WR. ARIC manuscript proposal #85: Survival after treatment during hospitalization for myocardial infarction: A community-based perspective

Pearte, CA. Variation and Temporal Trends in the Use of Diagnostic Testing During Hospitalization for Acute Myocardial Infarction by Age, Gender, Race, and Geography (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.**