Predictors of 30-day readmission among heart failure patients

b. Abbreviated Title (Length 26 characters):

30-day readmission

2. Writing Group:

Writing group members:

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

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3. **Timeline:**

Analyses to begin Spring 2011. A manuscript draft is expected during Summer 2011.

4. **Rationale:**

There has been an upsurge in 30-day readmissions among HF patients during the last two decades. Readmissions are increasing against a backdrop of increasing comorbidites, shorter length of stay and lower in-hospital and 30-day mortality rates. Centers for Medicare and Medicaid Services (CMS) data suggest that there exists little variation in 30-day risk-standardized readmission rates, now averaging 25%. Costs related to HF hospitalizations vary widely and are largely dependent upon length of stay.

According to the Patient Protection and Affordable Care Act of 2010, CMS will soon withhold up to three percent of all inpatient Medicare payments based upon hospitals’ excessive payments for conditions such as HF. Clinical outcomes data from fiscal year 2012 will determine the amount of reimbursement that will be withheld the following year. Hospital-level initiatives are underway nationwide in response to the pending changes in reimbursement; however, while hospital performance characteristics promote better 30-day survival among HF patients, the same factors do not appear to reduce 30-day readmissions.

Research is needed to identify factors that predict 30-day readmission among HF patients. Preliminary evidence suggests the following selected patient-level factors are associated with an increased risk of 30-day readmission among HF patients: male sex, black race, social instability, Medicare coverage, diabetes and glycemic control, renal disease, history of depression, and illicit drug use. A review of extant literature found that few patient-level factors were consistently associated with risk of readmission across studies, possibly due to distinct methodological approaches and omission of data related to post-discharge care.

5. **Main Hypothesis/Study Questions:**

1. Identify the demographic, socioeconomic, clinical, and psychosocial factors that predict 30-day all-cause readmission among patients with an index HF admission.
   
   a. Determine if 30-day readmission varies with outpatient service utilization following the index HF admission.

6. **Data (variables, time window, source, inclusions/exclusions):**

ARIC cohort data will be analyzed over the time period baseline-2008.

Incident HF hospitalizations occurring among cohort participants will be identified (1987-2008). Multivariable logistic regression models, unadjusted and adjusted, will evaluate predictors of rehospitalization within 30 days for these patients. Specifically, we
propose a multinomial logit (MNL) model to analyze readmission data in the presence of a death as a competing risk. A traditional logistic regression model is used to analyze discrete survival time for situations in which each subject is at risk for only one type of event. The MNL model allows for different types of failure events. Thus, the dependent variable will be coded as 0 if no failure event, 1 if readmitted for HF, and 2 if died.

Covariates of interest for these analyses include age, race, study community, gender, educational attainment, health insurance status, hospital type (teaching vs. non-teaching), neighborhood (census tract-level) median household income, marital status, self-rated health, smoking, body mass index, hypertension, and diabetes.

Among a subset of patients with outpatient data available for analysis outpatient service utilization (yes/no) will be examined as an effect measure modifier of the 30-day readmission models.

It is hypothesized that factors such as age, race, educational attainment, comorbidity burden and marital status will predict 30-day readmission among HF patients. In the subset of patients with outpatient data available, we hypothesize that the aforementioned associations will be stronger among those not seen as an outpatient (vs. those seen as an outpatient) within 30 days of the index admission.

7.a. Will the data be used for non-CVD analysis in this manuscript?  
_x__ Yes    ____ 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?  
_x__ Yes    ____ No

Cancer data (diagnosis date) will be used for this research.

(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://www.csec.unc.edu/ARIC/search.php
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)?

MS# 1324 (Foraker) Neighborhood and individual socioeconomic status and heart failure rehospitalization: the ARIC cohort study

MS# 1462 (Foraker) Socioeconomic status (SES) and the trajectory of self-rated health (SRH): Before and after a heart failure event

MS# 1489 (Chang) Surveillance of heart failure hospitalizations requires more than just the ICD-9 code: rates of acute decompensation versus chronic disease in the ARIC Study

MS# 1528 (Massing) Concordance of heart failure diagnostic codes comparing medical records and Medicare administrative claims in ARIC cohort participants

MS# 1607 (Rosamond) Heart failure diagnostic schemes in hospitalized patients and follow up outcomes: The Atherosclerosis Risk in Communities (ARIC) Study

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
   ___ 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.

References


