ARIC Manuscript Proposal #1884

1.a. Full Title: Does collaborative care between primary care physicians and cardiologists improve outcomes or heart failure?

b. Abbreviated Title (Length 26 characters): HF types of care

2. Writing Group: Anna Kucharska-Newton
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I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. _AMKN_____ [please confirm with your initials electronically or in writing]

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3. **Timeline:** Analyses to start following approval. It is anticipated that these data will be submitted for presentation at the Heart Failure Society of America meeting – September 2012, with manuscript following shortly thereafter.

4. **Rationale:**
Examination of the continuum of care for patients with heart failure is critical to the effort of secondary prevention aimed at reducing hospital readmissions and mortality. Although the majority of care for patients with heart failure (HF) occurs in the outpatient setting, there are significant gaps in research concerning that care. The type of ambulatory care received by HF patients following hospital discharge varies significantly, with varied proportions of patients receiving care either through primary care clinics or through cardiology practices or both. Disease complexity and ongoing need for cardiac testing have been cited as barriers to successful disease management by primary care; at the same time, effectiveness of primary care depends on the coordination of care between primary care physicians and specialty physicians (1, 2).

In the current context of healthcare reform and a renewed emphasis on primary care in the management of chronic disease, the role of the primary care physician relative to that of the cardiologist is of interest in evaluating factors associated with improving care and outcomes for patients with HF. Existing studies on the type of ambulatory care following index HF hospitalization, focused on the comparison between primary care and care by cardiologists, have been inconclusive. A recent study by Lee et al (3) suggest that collaborative care provided by a primary care physician and a cardiologist is associated with better outcomes as compared to primary care alone or cardiologist care alone.

We propose to use the ARIC CMS Medicare data to evaluate the type of physician care received by ARIC Cohort participants hospitalized with heart failure. Performing this evaluation in the setting of an observational study, where information concerning study participants is not limited to hospital record data or to administrative claims, can be informative and will add to the existing literature. We propose to examine care received within 30 days and within 6 months of discharge and to evaluate association of type of physician care with use of diagnostic tests and procedures, hospital readmission, and post-discharge mortality (one year).

References:


5. **Main Hypothesis/Study Questions:**
1. Collaborative care, defined as care shared between primary care physicians and cardiologists, will decrease survival-adjusted hospital readmission rates for HF patients as compared to care delivered exclusively by either primary care physicians or by cardiologists.

2. In the population of HF patients, collaborative care, as compared with primary care or cardiology-only care is associated with decreased one year mortality.

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 population: All ARIC cohort participants hospitalized with acute definite heart failure, acute probable heart failure, or chronic heart failure during the years 2005-2009, who were 65 years of age or older at the time of hospitalization. Window of observation (2005-2009) was chosen to capture all adjudicated HF events. Physician type (primary care, cardiologist, other) will be determined from the Outpatient Evaluation and Management (E&M) codes found in the CMS Medicare Carrier files. Heart failure hospitalizations will be stratified by incident versus recurrent. Incident heart failure will be defined as the first hospitalization for heart failure. The study population will be limited to those study participants for whom hospitalization records will be available in both the ARIC database and the CMS Medicare database.

Outcomes: Outcomes will be ascertained on the basis of CMS Medicare data at 7 days, 30 days, 6 months and 1 year following discharge. We will evaluate the following outcomes: use of diagnostic tests (e.g. echocardiography, ECG); use of procedures (e.g. placement of Automatic Implantable Cardioverter Defibrillators – AICD); frequency of HF-related and all-cause re-hospitalizations; emergency department visits; mortality. Mortality will be evaluated within one year following discharge. All analyses will be stratified by type of care (no medical care, primary care only, cardiologist care only, primary care + cardiologist care). Use of procedures and diagnostic tests will be evaluated for both the inpatient and outpatient setting.

Analytical methods: We will evaluate the association of type of physician care with outcomes using propensity score matched analysis, which can account for non-random allocation. We will select from the following exposures ascertained through ARIC study visit data and on the basis of the hospitalization record, the most parsimonious set of covariates for inclusion into the propensity score: age, gender, race, study center, diabetes, hypertension, cardiovascular procedures (CABG, PCI, implantable defibrillator, pacemaker), history of coronary heart disease, history of angina, history of cerebrovascular disease, anemia, Charlson comorbidity index, additional (i.e. in addition to CMS Medicare) medical insurance (presence, type), SES status, frequency of outpatient visits (pre and post hospitalization), prior hospitalizations.
Risk of death and risk of re-hospitalization (all cause) in the propensity score matched exposure groups will be examined using Cox proportional hazard models. In addition to propensity score models, we will use multilevel frailty models which will account for multiple observations per study participant and subsequent clustering of the data (e.g., clustering by hospital or provider).

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 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? _x_ 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.cscce.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)?
   #1799; #1826 First author is the same as the first author of this proposal. Both proposals address continuity of care. This proposal which also addresses patterns of care should be complementary.

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/

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.