

ARIC Manuscript Proposal #2102

PC Reviewed: 3/12/13
SC Reviewed: _____

Status: A
Status: _____

Priority: 2
Priority: _____

1.a. Full Title: Validity of Hospital Discharge Diagnosis Codes for Stroke in Four US Communities

b. Abbreviated Title (Length 26 characters): Validity of Hospital Stroke Diagnosis

2. Writing Group:

Writing group members: Wayne Rosamond, Sydney Jones, Rebecca Gottesman, Eyal Shahar, Lisa Wruck

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

First author: Sydney Jones

Address: 137 E. Franklin St. Suite 303
Chapel Hill, NC 27514

Phone: 512-762-8682 Fax:
E-mail: sydneyaj@email.unc.edu

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).

Name: Wayne Rosamond
Address: 137 E. Franklin St. Suite 400
Chapel Hill, NC 27514

Phone: 919-962-3230 Fax: 919-966-9800
E-mail: wayne_rosamond@unc.edu

3. Timeline:

March 2013: submission of manuscript proposal
September/October 2013: submission of abstract to national conference

4. Rationale:

Hospital discharge diagnosis codes are an increasingly common data source for epidemiological, health services and outcomes research. Administrative data is of particular importance for studies of cerebrovascular disease, for which timely, nationally representative incidence data are unavailable. Administrative data may also be used to understand patterns in stroke rehospitalization. However, the validity of International Classification of Disease (ICD) discharge codes for cerebrovascular disease diagnosis varies widely across populations and geographic regions. Published evidence for the modification of ICD coding accuracy by stroke subtype, hospital type, and sex is inconsistent. The validity of coding stratified by race/ethnicity has not been assessed and it is unclear whether coding accuracy is different for incident compared to recurrent strokes. With over one thousand validated stroke events accrued over 25 years of follow-up, the ARIC cohort study is well placed to assess variations in hospital discharge code validity for incident and recurrent strokes. With ARIC data it will be possible to explore modification of coding accuracy by ethnicity, gender, geographic region and over time.

A preliminary validation of ICD codes for stroke in the ARIC cohort was published as part of a manuscript on stroke incidence rates in 1999 (including strokes 1987-1995) (Rosamond W, Folsom A, Chambless L, Wang C, McGovern P, Howard G, Copper L, Shahar E. Stroke incidence and survival among middle-aged adults: Nine year follow-up of the Atherosclerosis Risk in Communities (ARIC) study. *Stroke* 1999;30:736-743). As the premium to quantify the validity of administrative data increases, updating and expanding the analyses of discharge coding for stroke is important.

5. Main Hypothesis/Study Questions:

The goal of the proposed study is to describe the validity of hospital discharge codes for subtype (ischemic vs. hemorrhagic) of stroke events in the ARIC cohort. Secondly, we plan to assess whether race/ethnicity, gender, time, hospital type (teaching vs. non-teaching) or geographic location modify the accuracy of hospital discharge coding. An additional secondary aim is to explore the validity of composite sets of discharge codes that have clinical relevance to 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).

Study Design: We will compare the final stroke diagnostic classification from ARIC review with hospital discharge codes (ICD-9-CM) applying standard metrics of validity including positive predictive value and sensitivity. ARIC classification will be used as gold standard. Stratification of analyses will include stroke subtype,

race/ethnicity, gender, hospital type and geographic location. We will also explore validity of discharge code for incident compared to recurrent events and trends in validity of discharge codes over time.

Inclusion: Cohort event occurring from 1987 through 2010.

Exclusion:

Variables of interest: ARIC stroke diagnosis, ICD-9-CM discharge codes. Other variables: date of stroke, type of hospital (teaching vs. non-teaching), gender, race/ethnicity, and study center.

Limitations: small number of stroke hemorrhagic events may limit our ability to precisely quantify the accuracy of some ICD-9-CM codes. Geographic analysis is limited to the four ARIC communities from which the cohort was drawn.

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

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?

Yes No

(This file ICTDER 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 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.csc.unc.edu/ARIC/search.php>

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 W, Folsom A, Chambless L, Wang C, McGovern P, Howard G, Copper L, Shahar E. Stroke incidence and survival among middle-aged adults: Nine year follow-

