ARIC Manuscript Proposal # 824

PC Reviewed: 08/23/01	**Status: __A__**	**Priority: _K___**
SC Reviewed: 09/06/01	**Status: __A__**	**Priority: _K___**

1.a. Full Title: Ischemic Stroke Risk Prediction

b. Abbreviated Title (Length 26 characters): Ischemic Stroke Risk Prediction

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

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3. Timeline: Analysis can begin now, using events through 1998, but final analysis will use events through 1999, which should be available Feb, 2002

4. Rationale: The Framingham Study (1) has published a risk prediction model for stroke, including age, blood pressure, antihypertensive medications, diabetes, smoking, prior CVD, atrial fibrillation, and LVH by ECG (472 strokes of any type or TIAs over 10 years follow-up from each of two exams, spread over 36 years). The Copenhagen City Heart Study (2) developed a similar model and compared to Framingham (474 stroke or TIA events over 10 years follow-up). The British Regional Heart Study (3) has published a risk prediction model including age, SBP, angina, and smoking (177 strokes (not TIAs) of all types over 11.5 years, persons with prior stroke not excluded). ARIC has confirmed the age-, sex-, and race-adjusted associations of incident ischemic stroke with diabetes, waist-hip ratio (but not BMI), vWF, factor VIII, factor VII, fibrinogen, WBC (4), carotid artery intima-media thickness (5), LDL-cholesterol (women), apoB (women), triglycerides (women) (6), and physical activity (7). Now that ARIC has up to 12 years of follow-up on a cohort of around 15,000 free of prior stroke at baseline, with over 250 incident ischemic strokes, we have the opportunity to address how well these factors collectively predict 10 year risk of incident ischemic stroke, separately for men and women.

5. Main Hypothesis/Study Questions: We will consider a risk score for stroke among persons without self-reported prior physician diagnosis of stroke, using the factors in the three

stroke risk prediction studies discussed above, and compare with those studies. We will also consider the addition to predictability offered by the other risk factors that ARIC has considered. We will describe the absolute 10 year risk at deciles of the risk score. We will compare a risk score from a basic model with an expanded model, in terms of area under the ROC curve, and test for significant increases when additional risk factors are added. Within the constraints of our sample size we will examine the modifying role on absolute risk of putative risk factors described above, plus sex and family history of stroke, subclinical markers of atherosclerotic disease already described above plus ABI or PAD defined by ABI, and finally by the summary risk score. In order to compare with the published studies we will consider risk prediction for all stroke, but because of our interest in the effect of the additional putative ischemic stroke risk factors we will also consider risk prediction for ischemic stroke

6. Data (variables, time window, source, inclusions/exclusions): Incident ischemic stroke data through 1999, and baseline risk factors as described above. Since the published papers on risk scores for stroke also include hemorrhagic stroke, our analysis will consider both all stroke and ischemic stroke. We will use ECG information from the 2 minute rhythm strip in place of an atrial fibrillation variable.

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/cscc/ARIC/stdy/studymem.html

____X__ Yes _____ No

References:

(1) Wolf PA et al, Probability of Stroke: a risk profile from the Framingham Study. Stroke 1991;22:312-318.
(2) Truelsen T, et al. Comparison of probability of stroke between the Copenhagen City Heart Study and the Framingham Study. Stroke 1994;25:802-807.

(3) Coppola WGT, et al. Scoring system to identify men at high risk of stroke: a strategy for general practice. Brit J of Gen Prac 1995;45:185-189
(4) Folsom AR et al. Prospective associations of fasting insulin, body, fat distribution, and diabetes with risk of ischemic stroke. Diabetes Care 1999;22:1077-1083.
(5) Folsom AR, et al. Prospective study of markers of hemostatic function with risk of ischemic stoke. Circulation 1999;100:736-742.
(6) Shahar E, et al. Plasma lipids. Lipoproteins, and apolipoproteins and incident ischemic stroke: the ARIC Study. Abstract presented at AHA Conference on CVD Epidemiology and Prevention, 2001.
(7) Evenson K, et al. Physical activity and ischemic stroke risk: the ARIC Study. Stroke 1999;30:1333-1339.