ARIC Manuscript Proposal # 975

PC Reviewed: 11/21/03	**Status: A**	**Priority: 2**
SC Reviewed: 11/24/03	**Status: A**	**Priority: 2**

1.a. Full Title: The use of ROC curves for evaluation of risk assessment from survival data

b. Abbreviated Title (Length 26 characters): ROC for survival data

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

Lead: Lloyd Chambless
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Writing group members: Guoqing Diao, Mary Jo Earp

3. Timeline: The paper has been drafted and we hope to submit by Dec 1, 2003.

4. Rationale: Beta coefficients from survival analysis models have been used to produce a risk score for the prediction of risk of incidence of disease, and the ability of the score to discriminate between high and low risk persons has been assessed by means of the area under the ROC curve (AUC). It is not clear in some of the published applications how the papers have accounted for censoring or the variation over time of AUC.

5. Main Hypothesis/Study Questions: The purpose of this paper is to provide algorithms for time-dependent computations related to assessment of performance of risk score estimated from survival data in the presence of censoring. We compare estimates from this survival analysis approach with an approach that simply ignores time, say by the use of logistic regression on the risk score, or by simple calculation of proportions for the AUC.

6. Data (variables, time window, source, inclusions/exclusions): Comparisons between methods accounting for censoring with those not doing so are illustrated with data from the Atherosclerosis Risk in Communities (ARIC) Study for coronary heart disease (CHD) risk prediction, as in ms611 (already published). We also simulate censored data with known population AUC, and then compare average values of sample estimates of these values between our estimators and those ignoring censoring.

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://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)? This is a methodology paper and ARIC data used only for illustration purposes.

11. 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.