

ARIC Manuscript Proposal # 1091

PC Reviewed: 07/26/05

Status: A

Priority: 2

SC Reviewed: 07/28/05

Status: A

Priority: 2

1.a. Full Title:

Favorable risk-factor profile and long term cardiovascular disease incidence among black and whites: the Atherosclerosis Risk in Communities (ARIC) Study

b. Abbreviated Title (Length 26 characters):

Low risk factor profile and CVD

2. Writing Group:

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3. Timeline: August 2005

4. Rationale:

It is well known that traditional risk factors for cardiovascular disease (CVD), such as high blood pressure (BP), high serum cholesterol, current smoking, or diabetes, explain the vast majority of CVD incidence (1) (2). Furthermore, it is well known that CVD risk factor clustering yields high CVD event rates (3). However, there is limited information about the risk in persons with favorable levels of all the major risk factors, i.e., optimal BP, optimal cholesterol, never smoked, and no diabetes, on CVD (4-6). This is natural because large numbers of subjects with favorable risk profiles are needed to clarify the issue.

Evidence from these prior studies was mostly derived from whites (4,5) or had insufficient numbers to analyze blacks and whites separately (6).

Recently, the relative importance of “borderline” risk factors received attention because BP and total cholesterol have continuous relations with CVD events (7-9), and some data indicated that people with an average level of risk factors (below recognized intervention thresholds) account for a sizable proportion of individuals who develop vascular disease (10)(11). Only one study reported the relative importance of borderline risk factors (5); however, participants of the study were only whites.

Thus, we considered that calculating the absolute CVD risk of ARIC subjects with a favorable risk profile or subjects with borderline risk profile would be worthwhile. To our best knowledge, no other studies reported these issues among African Americans.

5. Main Hypothesis/Study Questions:

Relative hazards or incidence rates of CVD in subjects with a low risk profile are much lower than in subjects with risk factors for CVD

Relative hazards or incidence rates of CVD in subjects with a borderline risk profile are lower than in subjects with risk factors for CVD

Relative importance of borderline risk on CVD is small both in whites and blacks.

Population attributable fractions of high or borderline risk profile are higher in blacks than whites and higher in women than men.

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

Dependent variable: CVD incidence (composite endpoint: overall stroke incidence and coronary heart disease incidence), through 2002

Risk profiles follow National guidelines.

For hypertension: the JNC 7 report (12).

For total cholesterol: The National Cholesterol Education Program (NCEP) (13)

Definition of high risk profile

Having one of the following elevated risk factors

Total cholesterol ≥ 240 mg/dl or cholesterol lowering medication use

BP: systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg and/or antihypertensive medication use

Smoking: current smoking

Diabetes: Fasting glucose ≥ 126 mg/dl or nonfasting glucose ≥ 200 mg/dl or taking diabetes medication or history of diabetes

Definition of borderline risk profile:

No elevated risk factors but having one of these borderline risk factors

Total cholesterol: 200-240 mg/dl

BP: systolic BP 120-140 mmHg and diastolic BP 80-90 mmHg

Smoking: former smoker

Definition of low risk profile:

Total cholesterol < 200 mg/dl,

BP: systolic BP < 120 mmHg and diastolic BP < 80 mmHg,

Smoking: never smoked, and

Diabetes: no diabetes

Independent variable: Subjects with low risk (no borderline or high risk profile), subjects with borderline risk (subjects with borderline risk, but without high risk profile), and subjects with high risk (at least one risk factor).

Adjustment for

Age, education

Basically we will analyze sex and race separately.

Exclusion: history of CHD or stroke, no total cholesterol information, no blood pressure information, no diabetes information, no smoking, and no confounding factors, race other than black and white

The tests of the main hypotheses involve calculating the CVD incidence rates in subjects with low risk or borderline risk. We also calculate their relative risk of compared with subjects with high risk profile, and population attributable fraction of borderline and high risk subjects.

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 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 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.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)?

Manuscript ARIC#611

Coronary heart disease risk prediction in the Atherosclerosis Risk in Communities (ARIC) Study (Chambless)-Published

Manuscript ARIC#824

Ischemic stroke risk prediction in the Atherosclerosis Risk in Communities study (Chambless)-Published

Manuscript ARIC#865

High Normal Blood Pressure and the Risk of Cardiovascular Disease (Kshirsagar AV)-unpublished

Manuscript ARIC#882

The impact of high normal blood pressure and hypertension on cardiovascular disease and all-cause mortality in women (Powell)-unpublished

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 (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.csc.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

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2. Chambless LE, Heiss G, Shahar E, Earp MJ, Toole J. Prediction of ischemic stroke risk in the Atherosclerosis Risk in Communities Study. *Am J Epidemiol.* 2004;160(3):259-69.
3. Lowe LP, Greenland P, Ruth KJ, Dyer AR, Stamler R, Stamler J. Impact of major cardiovascular disease risk factors, particularly in combination, on 22-year mortality in women and men. *Arch Intern Med.* 1998;158(18):2007-14.
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6. Daviglius ML, Stamler J, Pirzada A, Yan LL, Garside DB, Liu K, Wang R, Dyer AR, Lloyd-Jones DM, Greenland P. Favorable cardiovascular risk profile in young women and long-term risk of cardiovascular and all-cause mortality. *JAMA.* 2004;292(13):1588-92.
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9. Neaton JD, Wentworth D. Serum cholesterol, blood pressure, cigarette smoking, and death from coronary heart disease. Overall findings and differences by age for 316,099 white men. Multiple Risk Factor Intervention Trial Research Group. *Arch Intern Med.* 1992;152:56-64.
10. Jousilahti P, Vartiainen E, Pekkanen J, Tuomilehto J, Sundvall J, Puska P. Serum cholesterol distribution and coronary heart disease risk: observations and predictions among middle-aged population in eastern Finland. *Circulation.* 1998; 97:1087-94.
11. Svetkey LP. Management of Prehypertension. *Hypertension.* In press 2005.
12. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, Jones DW, Materson BJ, Oparil S, Wright JT, Roccella EJ, Roccella EJ, Roccella EJ. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA.* 2003;289(19):2560-72.
13. Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, And Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III). *JAMA.* 2001;285(19):2486-97.

