

ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #554

1. Full Title: Echocardiographic characteristics related to diabetes mellitus
Abbreviated title (length 26): Echo abnormalities—diabetes

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

Lead: Murilo Foppa

Address: Rua Domingos Martins, 363
Canoas RS Brazil 92010-170

Phone: +55 51 472 1843

Email Address: mfoppa@writeme.com

Bruce Duncan Donna Arnett Philip Liebson

Teri Manolio Robert McNamara Tom Skelton

3. Timeline:

2/98 – 10/98

4. Rationale:

Echocardiographic data regarding hypertrophy and ventricular dysfunction are associated with increased risk for CHD and for heart failure [1]. Diabetes is a risk factor for both of these conditions. Clinical studies suggest that cardiac dysfunction is associated with diabetes. However, as diabetes frequently clusters with other cardiovascular risk factors, it is not known if morphological and functional alterations found in diabetes are related to these factors, to pathophysiological modifications in the heart specific to diabetes, or to an underlying higher prevalence of ischemic heart disease in diabetes [2,3]. In elderly persons, diabetes associates with ventricular structure and diastolic function independently of body weight, blood pressure, heart rate, and CHD [4]. No study has been of adequate size to investigate adequately these questions in African-Americans.

This proposal will describe echocardiographic patterns found in diabetes, and investigate to what extent they are independent of associated factors.

1. Levy D. Prognostic implications of baseline electrocardiogram features and their serial changes in subjects with left ventricular hypertension. *Circulation*.

1994; 90(4): 1786-93.

2. Nicolino A. Left ventricular diastolic filling in diabetes mellitus with and without hypertension. *Am J Hypertension*. 1995; 8:382-89.

3. Hara-Nakamura N. Glucose intolerance exaggerates left ventricular hypertrophy and dysfunction in essential hypertension. *Am J Hyperten*.

1994;7(12):1110-4.

4. Lee M. Diabetes Mellitus and echocardiographic left ventricular function in free-

living elderly men and women: The Cardiovascular Health Study. Am Heart J 1997;133:36-43.

5. Main Hypothesis:

Ventricular structure and function, measured by M-mode, bidimensional and Doppler Echocardiography will differ in diabetic from non-diabetic individuals

Echocardiographic modifications in patients with diabetes occur independently of obesity, dyslipidemia, smoking, alcohol consumption, and hypertension.

Ventricular dysfunction in diabetes is independent to the degree of cardiac hypertrophy and risk factors for the latter.

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

ARIC subjects (Jackson) with echocardiographic data obtained at V3 or V4.

Data: Diabetes defined by patient report of a physician diagnosis, anti-diabetes medication use, glucose ≥ 200 mg/dl or fasting glucose ≥ 126 .

Echo data

Covariates: Gender, age, family history of diabetes, height, weight, waist and hip circumferences, blood pressure, smoking, lipids, triglycerides, alcohol, physical activity, carotid IMT, prevalent CHD.

Note: preliminary calculations on only individuals submitted to the echo exam at V3 suggest that there are 585 (24%) of the 1455 individuals studied with diabetes. As outcomes can all be evaluated in a continuous mode, and as several hundred additional subjects were studied at V4, sample size should be adequate for these analyses.