ARIC Manuscript Proposal #815

PC Reviewed: 08/23/01	**Status: _A__**	**Priority: __2__**
SC Reviewed: 09/06/01	**Status: _A__**	**Priority: __2__**

1.a. Full Title: The associations between weight maintenance and metabolic risk factors for cardiovascular disease

b. Abbreviated Title (Length 26 characters): Benefits of weight stability

2. Writing Group (list individual with lead responsibility first): Kimberly P. Truesdale, June Stevens, Jianwen Cai and Pamela J. Schreiner

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3. Timeline: We plan to complete the analysis and manuscript in one year.

4. Rationale:

The prevalence of obesity increased dramatically from NHANES II (1976-1980) to NHANES III (1988 –1991)[1]. In NHANES III, 22.5% of the US adults ages 20 – 74 were classified as obese (BMI ≥ 30.0 kg/m^2) and an additional 32.0% were pre-obese (BMI 25.0 – 29.9 kg/m^2)[1]. African American women, at 37.4%, had the highest prevalence of obesity compared to white women, white men and African American men. The prevalence of obesity increased with age. In young adults (20 to 29 years of age), the obesity prevalence rates in men and women were 12.5% and 14.6% compared 28.9% and 35.6% in middle-aged adults (50 to 59 years of age)[2].

The prevalence of obesity is higher in this older age group because the majority of American adults gain weight throughout early and middle adulthood[3-4]. Stevens et al (1998) have shown that among African American men and white men and women in the ARIC cohort, average weight gain was approximately 8 pounds per decade over a period of 3 decades following age 25. For African American women, weight gain was approximately double that amount. There is some evidence to indicate that the rate of weight gain is highest in adults aged 25 to 34 years[3].

Obesity increases the risk of type II diabetes and cardiovascular disease. It is also associated with elevated blood pressure, serum lipids, glucose and insulin[5]. It is well documented in clinical studies that these metabolic risk factors improve with weight reduction[5].

In controlled weight loss programs, patients generally lost 10% of their body weight but after one year at least one third of the weight loss was regained and almost all by 5 years[6]. The impact of repeated weight loss and regain remain ill-defined and controversial[7].

Given the difficulty associated with losing weight and maintaining lost weight, and the tendency of most Americans to gain weight with age, perhaps a reasonable public health goal for many individuals would be to maintain their current weight. Although we know of no studies that have specifically focused on the effects of weight maintenance on metabolic risk factors, several studies have examined the effects of weight maintenance in the context of examining effects of weight change. We know of six studies[8-13] that have examined metabolic risk factors in weight change groups and included a stable weight group. The weight stable group was defined using a variety of definitions, 2 kg[8], 4.5 kg[9], 5lb[10-11], 2.4%[12], 10%[13]. These amounts were used referring to weight change over various time intervals ranging from 30 months[9] to 25 years[13]. The currently published studies have several limitations including small sample size[8-11], men only[12], young and middle-aged adults[8-12], short follow-up time[8-9] or only overweight adults[9]. Another limitation is that all of these studies examined predominantly white cohorts, and no estimates have been produced for African Americans. In addition, we know of only one study[11] that examined the interaction between weight change groups and weight status. That study had limited power to detect an interaction between with weight status and weight maintenance due to a small sample size (n = 205 men and 180 women), and the study investigators did not focus their attention on the weight maintainers.

It is reasonable to assume that weight loss would have more benefits for obese than for normal weight individuals, but little is know about the comparative benefits of weight stability for normal weight, overweight and obese individuals. The study proposed here would examine this issue in detail. Information is needed on the benefits of maintaining a stable weight, overall, and within weight status groups, particularly in African Americans. The study proposed here will help to fill this gap and contribute useful insights into controlling the impact of obesity on health.

5. Main Hypothesis/Study Questions:

This study will examine associations between weight maintenance and changes in metabolic risk factors for cardiovascular disease and diabetes. The outcomes are fasting serum glucose, fasting serum insulin, triglycerides, low-density and high-density cholesterol, and systolic and diastolic blood pressure. The primary aims of this study are to:

1. estimate the prevalence and describe the characteristics of weight maintainers in middle-aged, African American and white adults
2. determine the effects of weight maintenance on changes in metabolic risk factors over a 3 year period in middle-aged, African American and white adults
3. examine if the benefits of weight maintenance over 3 year period are the different in normal weight, overweight and obese, African American and white adults.
4. determine long term (9-year) associations between weight maintenance and changes in metabolic risk factors in middle-aged, African American and white adults.
5. examine if the long term benefits of weight maintenance are different in normal weight, overweight and obese, African American and white adults.

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

We will use data from the ARIC visits 1 - 4

Identification information:
Patient ID
Date of Visit
Field Center

Demographics:
Gender
Ethnicity
Age

Anthropometrics:
Weight
Weight at age 25
Height
Waist Circumference
Hip Circumference

Medical History:
CHD
Diabetes
Hypertension
Stroke
Cancer
Lipid Lowering Drugs
Hypertension Drugs

Metabolic Risk Factors:
Systolic blood Pressure
Diastolic blood Pressure
Fasting Insulin
Fasting Glucose
Triglyceride
HDL Cholesterol
LDL Cholesterol

Other:
Education level
Smoking status
Alcohol status
Physical activity
Dieting status
Dietary intakes

Exclusions:
Ethnicity other than white or African-American
African-Americans in Minnesota or Maryland
Diabetic at baseline
Missing weight at baseline

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 ICTDER01 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 ICTDER01 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**

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