ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #474

1. Title: Alcohol Consumption as a Risk Factor for Non-Insulin Dependent Diabetes Mellitus

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3. Timeline:

Begin February 1997, complete September l997

4. Rationale:

The status of alcohol consumption as a risk factor for non-insulin dependent diabetes mellitus remains controversial. The acute intake of alcohol is associated with decreased insulin sensitivity and editorial review of the relationship between alcohol and diabetes has highlighted the frequent clinical scenario of high blood glucose levels in heavy drinkers which resolve with abstinence, with the often inappropriate diagnosis of diabetes rather than alcohol abuse. These observations contrast with reports in large-scale prospective population studies of a decrease in incident non-insulin dependent diabetes mellitus among people consuming 1-3 alcohol containing drinks a day. Such prospective observations have not been consistent, however, and in cross-sectional studies there are equal numbers of reports claiming an increase, a decrease or no effect of alcohol on fasting and post-prandial glucose and insulin levels. Important confounders that may have accounted, at least in part, for the inconsistencies in the relationships between alcohol intake, insulin resistance and diabetes may have been cigarette smoking, level of physical activity, obesity and body fat distribution and differences in energy and nutrient intakes. The pattern of drinking and type of alcoholic beverage consumed may also be relevant. The other unknown quantity is the relative impact of concurrent pre-clinical or overt alcohol-related liver disease, cirrhosis being associated hyperglycemia and insulin resistance. Further clarification of the role of alcohol as a risk factor for NIDDM is essential if appropriate and balanced public health advice is to be formulated.

5. Hypothesis:

There is a U- or J-shaped association between alcohol consumption and incidence of diabetes, with a decrease in risk at low to moderate consumption and an increase in risk with high alcohol intake. The U- or J-shape is due to confounding by differences in age, race, gender, education, physical activity indices, dietary energy intake, smoking, body mass index, and waist to hip ratio according to level of alcohol intake.

6. Design:

Six-year prospective cohort study of ARIC participants who were non-diabetic at baseline and were followed for at least 3 years.

7. Data:

Exposure:
Alcohol intake data at Visit 1 and 2

Outcome:
Incident NIDDM after Visit 1
1) Fasting blood glucose > 140 mg/dl or
2) Non-fasting blood glucose > 200 mg/dl or
3) Use of insulin or oral hypoglycemic agents or
4) Report of physician-diagnosed diabetes

Covariates:
Age, race, gender, education, physical activity indices, dietary energy intake, parental history of diabetes, smoking, body mass index, waist to hip ratio, diuretic use, fasting insulin, calcium, albumin, magnesium, potassium, creatine, type of alcoholic beverage consumed.

8. Analysis:

Time-to-event and/or person-years approach