1. Title: ST-T CHARACTERISTICS AND CHD RISK

2. Writing group:
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3. Timeline:
Analysis: Autumn 1995, manuscript Spring 1996

4. Rationale:
In two Dutch population studies normal variations of repolarisation were observed to be predictive of future heart disease. Men and women with slight ST-elevation (0.025 mV) in lead I of the standard 12-lead electrocardiogram experienced half the risk of coronary heart disease (CHD) mortality as subjects with isoelectric ST. Men with greater T-waves (> or = 0.15 mV) compared to men with less positive T-waves (0.05-0.15 mV) had lower CHD mortality risk. The most likely explanation is an imbalance between the sympathetic and parasympathetic divisions of the autonomic nervous system.

Transient ST-deviations and T-alterations have been documented among healthy subjects during ambulatory electrocardiographic monitoring. T-wave inversions or ST-depression occurred most often during periods of emotional or physical stress, whereas ST-elevation occurred during sleep at low heart rates and relatively high parasympathetic activity.

In the ARIC study extensive information has been collected on risk factors for coronary heart disease, including a 12-lead electrocardiogram in which T-wave amplitude and J-point level have been computer measured. In a sample of the cohort, spectral analysis of heart rate variability has been carried out, providing information on autonomic nervous system function.

5. Main hypothesis:
J-point elevation and positive T-wave amplitude are associated with reduced risk of coronary heart disease and sudden death. This relationship can (partly) be explained by autonomic nervous system function as expressed in measures of heart rate variability. People with J-point elevation and positive T-wave amplitude have higher values of high frequency spectral measures of heart rate variability (index of parasympathetic activity).

6. Data (variables, time window, source, inclusions/exclusions):
Design: follow-up study
Variables: machine-coded ECG-derived T-wave amplitude and J-point level
Analysis: The predictive value for coronary heart disease mortality and sudden death will be studied by multivariate survival analysis using Cox’ proportional hazards model.
Other covariates: (Visit 1 data) age, measures of heart rate variability, Minnesota Codes, race, systolic and diastolic blood pressure, Body Mass Index, height, weight, cholesterol subfractions, smoking, physical
activity, triglycerides, waist-hip ratio, insulin, glucose, use of medication (β-blockers), carotid artery wall thickness, prevalent disease variables
* Incidence data won't be published until released.