Manuscript #080

1. Title (length 26):
Anal of Art Strain Wavefrm

2. Writing Group (list individual with lead first):
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3. Timeline:
Writing on description of methods can begin November 1, 1990. Analysis and classification of a random sample of 200 participants can be completed by February 1, 1991. A goal for forwarding a manuscript to the publications committee is March 1, 1991. The content is suitable for submission to Ultrasound in Medicine and Biology.

4. Rationale:
Currently, only systolic and diastolic arterial diameters and blood pressures are used in investigating the association of arterial stiffness with CVD risk factors. The details of the waveforms contain additional physiological data relating to cardiac performance, pulse wave velocity and pulse wave reflections within the larger arterial system. The approach to identifying subtle patterns in these waveforms described in this manuscript is suggested by chaos theory. Specifically, plotting the relative arterial wall velocity on the vertical axis and arterial diameter on the horizontal axis presents a two dimensional representation of the arterial strain. This is referred to as a phase plane plot. Characteristics of these plots associated with the participant characteristics will be examined as a basis for this manuscript.

5. Main Hypothesis:
Specific characteristics of phase plane plots of relative arterial wall velocity versus arterial diameter are associated with the participant risk factor profile independent of specific values of the conventional arterial distensibility parameters.

6. Data (variables, time window, source, inclusions/exclusions):
Computation will be made on a randomly selected subset of 200 Visit 01 participants. A larger sample will be analyzed if time permits. The waveforms are available at the URC. Analysis will proceed at the URC after receipt of all Visit 01 risk factor data at the URC.

Keywords: Artery, ultrasound