Enhanced prediction of the population at risk of atherothrombotic disease

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Background: There are many tools that attempt to predict the population at risk of atherothrombotic disease (ATD). These tools are not well accepted and are often not accurate; most are not used at all. The Framingham heart study pioneered the prediction of the population at risk of ATD and still remains the basis upon which the current predictive tools are based. The predictive tool to be discussed in this paper is based upon the original fundamental tenets devised by the Framingham study and is based upon the risk factor complex of 870 people who developed some clinical form of ATD in the Bowling Green Study during the 4 Nov' 1974-1 Jan' 2018 time frame.

Methods: The author has performed a chart review to collect a database of the ATD risk factors of the 870 people who developed some form of clinical ATD during the study timeframe. The ATD risk factors include dylsipidemia, cigarette smoking, and hypertension with some contribution by the very high blood sugar levels of uncontrolled diabetes. He has analyzed this risk factor data to create a tool that predicts the population at risk of ATD with high accuracy.

Findings: Using the cholesterol retention fraction (CRF) as a measure of dyslipidemia and systolic blood pressure (SBP) as measure of hypertension, the author created a graph with the CRF on the ordinate and SBP on the abscissa. A threshold line has been generated above which lie the vast majority of CRF-SBP plots of all of the ATD patients in the author's database. Once current cigarette smoking patients have been excluded, the CRF-SBP plots of the remaining ATD patients fall into a mainstream collection that lies above the CRF demarcation line at 0.70. (A few outliers exist, which is why the threshold line slopes). The average age of ATD onset is determined for each of 48 CRF-SBP cohorts and risk is assigned according to average age of ATD onset in each cohort. Highest risk is assigned to those people whose cohorts are characterized by an average age of ATD onset of 64 years or less; intermediate risk, by an average age of ATD onset of 65-74 years, and lowest risk, by an average age of ATD onset of 75 years and older. Patient outcomes are given.

Interpretation: Based of the characteristics of patients with own clinical ATD; the author has generated a graph that defines the ATD population with high accuracy. People whose CRF-SBP plots lie above the threshold line can be expected to develop clinical ATD at some point in their lives, depending upon the severity of their risk factors and the length of time those risk factors have been operative. People, whose CRF-SBP plots lie below the threshold line, in the absence of cigarette smoking, are at little risk of ATD events until very late in life.