Prescribe by risk: The utility of a biomarker-based risk calculation in disease management to prevent heart disease. *Disease Management*, 8:106-113 (2005).

ABSTRACT

Preventive treatment for those most at risk of heart disease rather than those with the highest blood pressure or cholesterol values may be a more efficacious strategy for disease management. This depends on accurate biomarker-based risk assessment tools. An evidence-based model of heart disease risk was developed using the Framingham model with an additional five risk factors, including three of the newer blood biomarkers. This was applied to the adult population of the 3rd National Health and Nutrition Examination Survey cohort. Additionally, the selection criteria for therapeutic intervention from the Adult Treatment Panel III guidelines (for hyperlipidemia) and the 7th Report of the Joint National Committee (for hypertension) were applied to the same subjects. Of this cohort 54% qualified for at least one of these medications while 18% qualified for both. Using this 18% cutoff, the 18% of the subjects with the highest calculated heart disease risk were also identified using the developed risk model. We applied established therapeutic reductions in heart disease probability to those identified by guidelines and to those identified by risk. Applying both drugs to the high-risk group (one third the size of the guidelines group) achieved the same reduction in population risk (about one fourth) as applying the drugs to the guideline groups and required only half as many prescriptions. Intermediate results were found when an intervention group was identified by a combination of both high risk and high levels of risk factors. In this simulation, identifying patients by heart disease risk level resulted in substantially fewer people being treated with fewer drugs and achieving a similar reduction in disease risk.