Concerns about the use of non-HDL cholesterol as a lipid predictor

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Introduction: Non-high-density lipoprotein (non-HDL) cholesterol is the sum of low-density lipoprotein (LDL) cholesterol and very-low-density lipoprotein (VLDL) cholesterol, and is usually approximated by the total cholesterol minus HDL-cholesterol. The National Lipid Association (NLA) has advocated the use of non-HDL cholesterol as its favored lipid predictor. Cut-off points are based on LDL cholesterol values, with a lower end at 100 mg/dL (2.50 mmol/L) and a higher end at 190 mg/dL (4.75 mmol/L), adding 30 mg/dL (0.75 mmol/L) to keep triglyceride (TG) levels <150 mg/dL (1.70 mmol/L).

Objectives: The author will demonstrate that the use of non-HDL cholesterol has not been fully considered.

Methods: The author will examine a general population lipid database to demonstrate the frequency of distribution of non-HDL cholesterol in the part of the population that was known to have developed a form of atherothrombotic disease (ATD) and in the part that was not known to have done so. The effect of stratifying each non-HDL cholesterol quintile in terms of another lipid predictor that does not involve VLDL-cholesterol or TG will be demonstrated. The other risk predictor is the cholesterol retention fraction (CRF) defined as (LDL-HDL)/LDL.

Findings: All non-HDL cholesterol quintiles above the lowest quintile had higher frequencies in the ATD population than in the non-ATD population. The highest two quintiles had frequencies in the ATD population that are 2.5-times as high as those in the non-ATD population, whereas in the middle two quintiles, the frequency in the ATD population was minimally higher than in the non-ATD population. In the lowest quintile, the frequency is much higher in the non-ATD population than in the ATD population. At any nonHDL cholesterol quintile, the average age of ATD onset depends on cigarette smoking (not discussed here) and the CRF. Higher CRF levels equate to an earlier average age of ATD onset and lower levels of CRF equate to a later onset. A 75-year-old male who was a hypertensive diabetic and a former smoker was not on statins because of low lipid levels, had clean arteries on angiography, whereas a 45-year-old normotensive, non-smoking patient with severe dyslipidemia (obtained at first encounter) had a massive stroke due to carotid stenosis. Both had non-HDL cholesterol levels in the intermediate ATD risk quintiles.

Conclusions: Non-HDL cholesterol is not the optimal predictor of the population at risk of atherothrombotic disease and its use should be reconsidered.

Speaker Biography

William E Feeman is a Physician on staff at Wood County Hospital, and in private practice, both in Bowling Green, Ohio. He has attended Undergraduate school at Ohio State University (1961-1966) and became interested in a career in Medicine during that time; prior to his decision to enter Medicine, he planned to have a career in Astronomy. He has earned his Bachelor of Science in Physiology (1961-1966). Over the last 26 plus years, he has spent his professional life in medicine perfecting a tool to predict the population at risk of atherothrombotic disease e and to guide therapy to maximally stabilize/reverse that disease if extant. He has six major articles published in various science/medical journal. He has numerous letters to the editor published in various medical journals. All publications relate to the primary and second prevention of atherothrombotic disease. He has presented data at many annual scientific assemblies of the American Academy of Family Physicians and at several national and international symposia in atherothrombotic disease. He is the founder of the Association for the Prevention of Atherothrombotic Disease in Northwest Ohio to facilitate the spread of knowledge about this disease.

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