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Applicability of the New American Heart Association Guidelines for Cardiovascular Risk Assessment, and its Implication on Statin Administration in an Argentine Population

Cardiovascular diseases (CVD) are the leading cause of early disability and death worldwide. According to the World Health Organization (WHO), a total of 17 million deaths occurred in the world during 2011 due to cardiovascular diseases. (1) In Argentina, 52% of deaths are due to cancer or cardiovascular diseases. (2) The magnitude of these figures reflects the impact of CVD on the population. Therefore, the epidemiological surveillance strategies proposed by national and international health organizations are focused on identifying cardiovascular risk factors (CRF). To assess the extent of the interaction among the various CRF, scientific societies have used the Global Cardiovascular Risk (GCR), a mathematical method that estimates the likelihood of a cardiovascular event in a given period of time. In the Cardiovascular Risk Guideline (CRG), the National Ministry of Health has proposed the use of the WHO score for Region B of the Americas (AMRB). (3) In turn, two important American organizations –the American College of Cardiology and the American Heart Association (ACC/AHA)– have published in November 2013 the latest guideline with a new score on CRF management. This guideline recommends establishing whether the patient belongs to any of the four high-risk groups before initiation of statin therapy. (4)

Shortly after its release, this guideline has been widely criticized by different associations and cardiovascular health care professionals, and some studies argue that it overestimates CRF and increasingly recommends statin therapy in the population. (5, 6)

In this context, the purpose was to assess CRF in a population-based cohort of Argentina using the WHO charts (AMRB) and the new ACC/AHA chart, analyzing the potential implications of the new recommendations in the indication of statin therapy in the local setting.

An observational, retrospective study was designed for that purpose, initially consisting of 870 men and women, aged between 17 and 65 years, who underwent the required tests to obtain the Work Health Card from the Department of Preventive Medicine at the Hospital Municipal Dr. Leónidas Lucero, in the city of Bahía Blanca, province of Buenos Aires, Argentina, between 2009 and 2011. Subjects whose required data for the study were not recorded and those aged < 40 years were excluded, the final sample consisting of 183 individuals.

Age, sex, and smoking habits were the data recorded from all subjects. Weight and height were

Table 1. Risk according to different scores

Risk	WHO n (%)	ACC/AHA n (%)
Low	158 (86.3)	135 (73.8)
Moderate or high	25 (13.7)	48 (26.3)

WHO: World Health Organization ACC/AHA ACC/AHA: American College of Cardiology/American Heart Association

Table 2. Classification of cardiovascular risk categories: moderate, high and low, according to WHO and ACC/AHA functions

	ACC/AHA Score < 7.5 % n (%)	ACC/AHA Score ≥ < 7.5 % n (%)
WHO Score < 10%	128 (69.9%)	30 (16.4%)
WHO Score > 10%	7 (3.8%)	18 (6.0%)

WHO: World Health Organization
ACC/AHA: American College of Cardiology/American Heart Association

measured, body mass index (BMI) was calculated, and blood pressure (BP) was monitored. Biochemical parameters measured were glucose, triglycerides, total cholesterol (TC), high-density (HDL-C) and low-density (LDL-C) lipoprotein cholesterol.

The scores chosen to calculate cardiovascular risk were the WHO score (AMRB) and the ACC/AHA score.

The variables included in each scale are the following:

- WHO score (AMRB): age, sex, TC, systolic blood pressure (SBP), (presence or absence of) diabetes, and smoking. (3)
- ACC/AHA score: age, sex, race, TC, HDL-C, (presence or absence of) diabetes, (treated or untreated) SBP, and smoking. (4)

Individuals with a CVR ≥ 10% for the WHO score, (3) and ≥ 7.5% for ACC/AHA score were classified as mild or high risk patients. (4)

Regarding medication, patients > 40 years with CVR between 20% and 30% and TC of 190 mg/dL, and those with CVR > 30% irrespective of TC value were candidates for statins according to the WHO recommendation; (3) and patients with CVR ≥ 7.5%, those with LDL-C ≥ 190 mg/dL, diabetic patients with LDL-C between 70 and 189 mg/dL, and those with established atherosclerotic CVD were candidates for statins according to the ACC/AHA guideline. (4)

The characteristics of the subjects studied and CVR levels were described using measures of central tendency and dispersion for quantitative variables and percentages for categorical variables. Mean values were compared with Student's t test for quantitative variables and the chi-square test for qualitative variables. The alpha level of statistical significance $p < 0.05$ was used in all cases.

Data were analyzed using the Statistical Package for the Social Sciences for Windows version 17.0 software.

Of the total study population (62% men and 38% women), mean age was 51 ± 8 years, and mean value of laboratory and anthropometric parameters were: glucose (mg/dL) 101 ± 29 , BMI (kg/m²) 29 ± 6 , TC (mg/dL) 204 ± 36 , HDL-C (mg/dL) 52 ± 15 , and SBP (mm Hg) 125 ± 19 . Thirty percent of the population smoked.

Table 1 shows that ACC/AHA included a greater number of subjects within the high-risk group ($p=0.000$). The greatest number of subjects belonged to the low-risk group in both tables.

Table 2 shows that both scores categorized 69.9% of the study population within the low-risk group. Conversely, the number of subjects in the high-risk group according to ACC/AHA and with low risk for WHO was significantly greater ($p = 0.000$) than the subjects in the high-risk group according to WHO with low risk for ACC/AHA.

Regarding statin therapy, 15 individuals (8.2% of the study population) would be treated according to the WHO guideline, whereas 50 subjects would receive statins following ACC/AHA recommendation (27.3% of the study population) ($p=0.000$).

Mean age was significantly higher in the ACC/AHA group than in the WHO group ($p=0.035$). The age group with increased indications for statins was between 50 and 60 years for both scores.

Based on these results, we can conclude that the ACC/AHA score categorizes a greater number of subjects with moderate-high risk than the WHO score. Furthermore, the ACC/AHA score significantly increases the recommendation for statin therapy in the study population when compared with a table vali-

dated for local application as is the case of the WHO chart.

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