Comment on "Comparison of the REGICOR and SCORE Function Charts…"

To the Editor:

We consider that the poor agreement (33.3%)in the high-risk estimations presented by Buitrago et al[1] with use of the SCORE (Systematic Coronary Risk Evaluation) and REGICOR (Registre Gironí del Cor, Heart Register of Girona) assessment systems is a call for caution: the SCORE Function Chart is recommended by European societies and the Comité Español Interdisciplinario para la Prevención Cardiovascular (Interdisciplinary Spanish Committee for Cardiovascular Prevention), whereas the REGICOR Function Chart has only been validated in Spain.[2]

These charts are difficult to compare, since SCORE predicts vascular mortality (coronary death caused by cerebrovascular disease, peripheral artery disease, heart failure, dissecting aneurysm of the aorta, and others) in subjects between 40 and 65 years of age, excluding diabetics (with an indication that these should be treated directly as patients in secondary prevention, although they were not excluded from the cohort when adjusting the function), and does not consider high-density lipoprotein (HDL) concentrations. REGICOR predicts coronary morbidity and mortality (angina, fatal and nonfatal acute myocardial infarction) in patients between 35 and 74 years of age and includes individuals with diabetes and HDL.[3]

Each assessment system has its pros and cons. Perhaps the most important criticism of REGICOR is that 68.4% of the validation sample was from Catalonia, a region that contains approximately 16% (see http://www.almendron.com/politica/ine/2006/np421.pdf) of the total population of Spain. It is worth noting, however, that the city and the state of Massachusetts where the Framingham study is being conducted

account for less than 0.03% and 3% of the United States' population, respectively. Moreover, only 6% of the population from which the baseline risk was obtained for "low-risk" areas and the distribution of population-based risk factors in the SCORE function were Spanish, whereas the other 93.9% were from France, Italy, and Belgium, countries with a baseline risk approximately 30% higher than in Spain.[3]

The idea of predicting general vascular mortality in SCORE is based on one of the principles advocated by European societies, that is, the need to shift from coronary prevention toward cardiovascular prevention; however, according to percentages inferred from Figure 3 in the study by Buitrago et al,[1] stratification based on high SCORE risk could exclude up to 28.2% of patients with an elevated probability of acute coronary syndrome (ACS), but would include up to 38.5% of subjects with "low" ACS risk according to REGICOR. The latter subgroup ("low" REGICOR risk and high SCORE) would theoretically be composed of individuals at high-risk of stroke who would benefit much more from treatment to reduce hypertension than from lipid-lowering therapies, unlike the "coronary" group.

Morbidity accounts for 75.1% of the morbidity and mortality in Spain, although the socioeconomic impact of morbidity is unquestionably greater. The mortality of coronary disease is, in fact, declining in most European countries, including Spain, even though its incidence remains stable. This fact indicates that mortality may be a poor indicator of morbidity.[3] It has recently been shown that this type of risk function cannot be validated and compared in small, biased samples with few fatal cardiovascular events.[4,5]

In view of these arguments as well as the limitations of risk functions,[5] we feel it is not necessary to wait for the complex validation of SCORE in Spain, which would require a cohort of more than 50 000 patients, to "tip the lead towards choosing one of them in the management of cardiovascular risk in Spain."[1]

Alberto Morales Salinas[a]
and Carlos Martínez Espinosa[b]

[a]Servicio de Cardiología, Cardiocentro, Ernesto Che Guevara, Santa Clara, Cuba
[b]Hospital Universitario Celestino Hernández Robau, Santa Clara, Cuba

REFERENCES

1. Buitrago F, Cañón-Barroso L, Díaz-Herrera N, Cruces-Muro E, Escobar-Fernández M, Serrano-Arias JM. Comparación de las tablas REGICOR y SCORE para la clasificación del riesgo cardiovascular y la identificación de pacientes candidatos a tratamiento hipolipemiante o antihipertensivo. Rev Esp Cardiol. 2007;60:139-47.
2. Marrugat J, Subirana I, Comín E, Cabezas C, Vila J, Elosúa R. Validity of an adaptation of the Framingham cardiovascular risk function: the VERIFICA study. J Epidemiol Community Health. 2007;61:4-47.
3. Ramos R, Marrugat J. Valoración del riesgo cardiovascular en la población. In: Alfonso del Río Ligorit, editor. Manual de cardiología preventiva. Madrid: SMC; 2005. p. 43-55.
4. Ramos R, Solanas P, Subirana I, Vila J. Comparación entre la tabla del SCORE y la función de Framingham-REGICOR en la estimación del riesgo cardiovascular. Med Clin (Barc). 2007;128:477.
5. Marrugat J, Sala J. Nuevos instrumentos, y los riesgos de siempre. Rev Esp Cardiol. 2007;60:464-7.

Response

To the Editor:

We would like to express our appreciation for the interesting comments made by Morales-Salinas et al in relation to the paper published in the *Revista Española de Cardiología*[1] and share most of their opinions. It is true that the REGICOR and SCORE function charts are hard to compare. Each one predicts a type of risk and considers different age brackets. However, many studies have compared the various function charts of Framingham and SCORE,[2,3] and some have analyzed the actual predictive capacity of these function charts in the health care center population followed up for 10 years.[4] The relevance of such comparisons is fully justifiable. Cardiovascular risk estimation is recommended by numerous scientific bodies and societies, as this strategy is considered to be the most cost-effective for primary cardiovascular prevention in asymptomatic individuals, identified as those with a higher probability of experiencing a cardiovascular event in upcoming years. However, cardiovascular risk is not a disease. No one is a "cardiovascular-risk patient" and, therefore, the charts are a screening, rather than diagnostic, tool for cardiovascular disease prevention. In their daily health care practice, many physicians, particularly primary-care physicians, encounter patients who present various cardiovascular risk factors, and they must decide whether or not continuous prescription of 1 or more drugs is indicated. In this situation, a cardiovascular risk chart will help identify patients at high cardiovascular risk who would benefit from ongoing use of cholesterol-lowering and/or antihypertensive drugs, as well as lifestyle modifications. The importance and practical implications of solving this dilemma are enormous.

Determination of the value of a chart as an aid for accurate decision-making requires validation studies. The REGICOR function chart has been validated in the Spanish population[5] and can be applied to a larger age bracket than SCORE. However, a comparison of the predictive capacity of REGICOR and SCORE in the population group shared by both function charts (40-65 years) favors SCORE and, therefore, research on these aspects should continue in Spain.

Despite the limitations of cardiovascular risk charts, they are currently the best tools available for screening and selecting high-cardiovascular-risk patients. Therefore, an agreement should be reached on the cut-off point for the risk at 10 years that would optimize the therapeutic effort, capacity for expenditure of the country, and optimal sensitivity and specificity, taking into account that both cannot be elevated at the same time. High sensitivity implies a low percentage of false negatives, ie, patients who developed a cardiovascular event, but had been previously categorized as not high risk. However, it tends to be accompanied by low specificity and a high percentage of false positives, ie, patients who would have been mistakenly categorized as high cardiovascular risk and who might unnecessarily be prescribed one or more drugs for a number of years. In this context, it is evident that to implement cardiovascular prevention strategies further investigation is required and broad consensus among scientific societies

and the health administration is needed on the ideal risk function chart for our population.

Francisco Buitrago,
Lourdes Cañón-Barroso,
Natalio Díaz-Herrera,
and Eloísa Cruces-Muro

Unidad Docente de Medicina Familiar y Comunitaria,
Centro de Salud Universitario La Paz, Badajoz, Spain

REFERENCES

1. Buitrago F, Cañón-Barroso L, Díaz-Herrera N, Cruces-Muro E, Escobar-Fernández M, Serrano-Arias JM. Comparación de las tablas REGICOR y SCORE para la clasificación del riesgo cardiovascular y la identificación de pacientes candidatos a tratamiento hipolipemiante o antihipertensivo. Rev Esp Cardiol. 2007;60:139-47.
2. Maiques A, Antón A, Franch M, Albert X, Aleixandre E, Collado A. Riesgo cardiovascular del SCORE comparado con el de Framingham. Consecuencias del cambio propuesto por las sociedades europeas. Med Clin (Barc). 2004;123:681-5.
3. Baena Díez JM, del Val García JL, Salas Gaetgens LH, Sánchez Pérez R, Altes Vaques E, Deixens Martínez B, et al. Comparación de los modelos SCORE y REGICOR para el cálculo del riesgo cardiovascular en sujetos sin enfermedad cardiovascular atendidos en un centro de salud de Barcelona. Rev Esp Salud Pública. 2005;79:453-64.
4. Buitrago F, Cañón L, Diaz N, Cruces E, Bravo B, Pérez I. Comparación entre la tabla del SCORE y la función de Framingham-REGICOR en la estimación del riesgo cardiovascular en una población urbana seguida durante 10 años. Med Clin (Barc). 2006;127:368-73.
5. Marrugat J, Subirana I, Comín E, Cabezas C, Vils J, Elosúa R, et al, for the VERIFICA Investigators. Validity of an adaptation of the Framingham cardiovascular risk function: the VERIFICA Study. J Epidemiol Community Health. 2007;61:40-7.