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Comments on the section "Cardiovascular risk estimation" in the 2021 European Society of Cardiology guidelines on cardiovascular disease prevention in clinical practice

Shalnova S. A.

National Research Center for Therapy and Preventive Medicine. Moscow, Russia

The article discusses a new approach to assessing cardiovascular risk in clinical practice, presented in the European guidelines 2021. Two novel risk charts (SCORE2 and SCORE2-OP) have been proposed that have undergone significant revision and require significant changes in primary care practice. It has been suggested that in modern conditions their practical introduction is premature, since the healthcare system is not ready for renewal. Therefore, time is needed to adapt it to the practical healthcare conditions and to revise the medical screening protocols, which will require financial costs. The implementation of these recommendations should be taken responsibly so as not to harm the existing system of preventive care.

Keywords: SCORE 2, SCORE2-OP, non-HDL cholesterol, cardiovascular risk.

Relationships and Activities: none.

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Shalnova S. A. ORCID: 0000-0003-2087-6483.

Corresponding author:
svetlanashalnova@yandex.ru

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One of the most important advances in cardiovascular disease (CVD) epidemiology is the discovery of their multifactorial nature and presentation of a multivariable general risk model [1]. In apparently healthy people, cardiovascular risk (CVR) is seen as the result of multiple interactions of risk factors (RFs), and this "multifactoriality" is the basis of CVD prevention. General risk assessment has occupied a key place in the European guidelines since 2003, when the prognostic model Systematic COronary Risk Evaluation (SCORE) [2] was first presented, developed for European countries of different risk levels and created on the basis of endpoints — fatal CVDs, which included all known CVDs of atherosclerotic nature, including abdominal aortic aneurysm.

The SCORE charts are adaptable general risk assessment system that has become familiar to every physician. This is convenient because if one risk factor cannot be improved, other factors can be affected, which can also lead to a decrease in the general risk. For example, it is essential to remember that quitting smoking reduces the risk by 50%.

In 2021, updated European Society of Cardiology guidelines on CVD prevention in clinical practice was presented, which recommends new approaches to assessing general risk in people of different ages: SCORE2 for people aged 40-69 years and Systematic COronary Risk Evaluation-Older Persons (SCORE2-OP) for people ⩾70 years [3]. Such a significant update of the main risk assessment tool is of great interest to many specialists.

We would like to make a few comments on this.

Firstly, it is recommended to use non-high-density lipoprotein (HDL) cholesterol (non-HDL-C) instead of total cholesterol. It is difficult to object to this, since the use of non-HDL-C is so modern and more accurate, especially in metabolic disorders. However, it should be noted that in Russia, the determination of HDL-C level is not included in the protocol of medical screening and preventive programs. Therefore, it is first necessary to receive additional funding for this test. In addition, one should keep in mind the accuracy of HDL-C quantification away from the regional center and how then to calculate non-HDL-C.

Secondly, the endpoints that were the basis for the risk assessment were changed. Now it is not only cardiovascular (CV) death, but also non-fatal myocardial infarction (MI) and stroke. In the previous version of guidelines (2016), the experts recommended the use of only fatal endpoints, since "non-fatal event

rates are critically dependent upon definitions and the methods used in their ascertainment. [4] Critically, the use of mortality allows recalibration to allow for time trends in CV mortality. Any risk estimation system will overpredict in countries in which mortality has fallen and underpredict in those in which it has risen. Data quality does not permit this for non-fatal events". It is for this reason that European countries have created their own models that calculate the risk of CV mortality (SCORE), due to the many differences in the healthcare systems of the European.

Naturally, the risk of total fatal and non-fatal events is higher than when only fatalities are considered. "The SCORE data indicate that the total CV event risk is about three times higher than the risk of fatal CVD for men, so that a SCORE risk of fatal CVD of 5% translates into a fatal plus non-fatal CV risk of 15%; the multiplier is about four in women and somewhat lower than three in older persons, in whom a first event is more likely to be fatal" [4].

Of course, adding MI and stroke to the number of endpoints increases the cohort size and, accordingly, the accuracy of risk assessment. Therefore, thirdly, in the new guidelines, using both fatal CVDs and the most dramatic non-fatal events as endpoints is proposed, such as MI and stroke. This made it possible to divide European Society of Cardiology member countries into low-, moderate, high- and very-high-risk groups. Apparently, over the past 5 years, the heterogeneity of the European countries in terms of mortality has grown significantly, since in the previous guidelines version there were only two gradations as follows: low- and high-risk countries. Perhaps this is due to an increase in the number of endpoints due to the difference in CV mortality and incidence of MI and/or stroke. According to these criteria, the Russian Federation, of course, is among the very-high-risk countries, which can lead to new problems.

We would like to add one more practical circumstance that raises concern: there is "reddening" of SCORE charts, which means that almost all patients are in the very-high-risk category. In this case, it is not clear what to do, for example, for fifty-year-old patients, if they have a normal lipid profile, do not smoke, and the only risk factor is age. Apparently, therefore, data on cardiovascular age or age-related risk has disappeared. For Europe, this is not so important, since CV mortality and the incidence of MI and stroke in the European Union is significantly lower compared to Russia, and most countries are classified as low- and moderate-risk. But what should be the physician's strategy in high- and very-high-risk countries?

The same applies to the SCORE2-OP charts for the elderly population, where the absolute risk age values are continued up to 90 years, which raises some doubts from a practical point of view. All of our elderly patients who can be assessed by SCORE2-OP risk charts should not, by default, have atherosclerotic CVDs, diabetes and chronic kidney disease of varying severity, and risk should be determined by systolic blood pressure (SBP), non-HDL-C levels, smoking status, sex and age included in the model. On the supposition that there is a certain number of such a population. But regardless of these characteristics, all of Russian practically healthy patients will have a very high CVR (Figure 1). For example, in the 70-74 age group, non-smoking women with the lowest non-HDL-C and SBP levels had a total risk of 26%, and men with identical characteristics — 25%. What should be the physician's in these conditions? The 2021 guidelines indicate that in older people aged >70 years, a very high risk starts as early as 15%. In our example, the lowest risk starts at 25% for men and 26% for women. Obviously, direct impact on risk levels is not possible. So, we need to take into account some other circumstances, such as competing risks or other behavioral risk factors besides smoking. In other words, look for other factors that affect risk. At the same time, according to the SCORE2-OP charts, at present, determining the absolute risk in people aged ⩾70 years is not so important, since they are all at very high risk, even if they do not have risk factors that contribute to CVD development. Dare I ask how important it is to know that a 70-year-old non-smoker with normal non-HDL-C and SBP levels has a CV risk of 25%, while an 80-year-old man with an identical profile has a CV risk of 38%? Of course, 25% is ~1,5 times less than 38%, but both cases are very high risk. Therefore, what should be the physician's recommendations? Is it possible to reduce this level of CVR and how?

Of course, it is necessary to increase physical activity, treat obesity and depression, regulate nutrition, increase the value of a healthy lifestyle, assess the vascular wall state, etc. However, changes in individual risk in a patient from our example can only be detected if the average population risk should be reduced by decreasing the endpoints and RFs at the population level. And this algorithm, in our opinion, has not yet been sufficiently developed, although approaches to population prevention are reflected in the new guidelines.

In the 2021 guidelines, quite a lot of attention is paid to residual and lifetime risk. These concepts are familiar to us from previous guidelines. At the same time, the calculation of both risks has not yet been adapted to Russian conditions.

It should be noted that an informed discussion of CV risk and treatment benefits based on patient needs is self-explanatory and should be used rigorously in practice (Class 1, Level C).

It should also be noted that the protocols for medical screening and prevention include the risk determination according to the previous version. Preventive interventions, prescription of drugs and many other

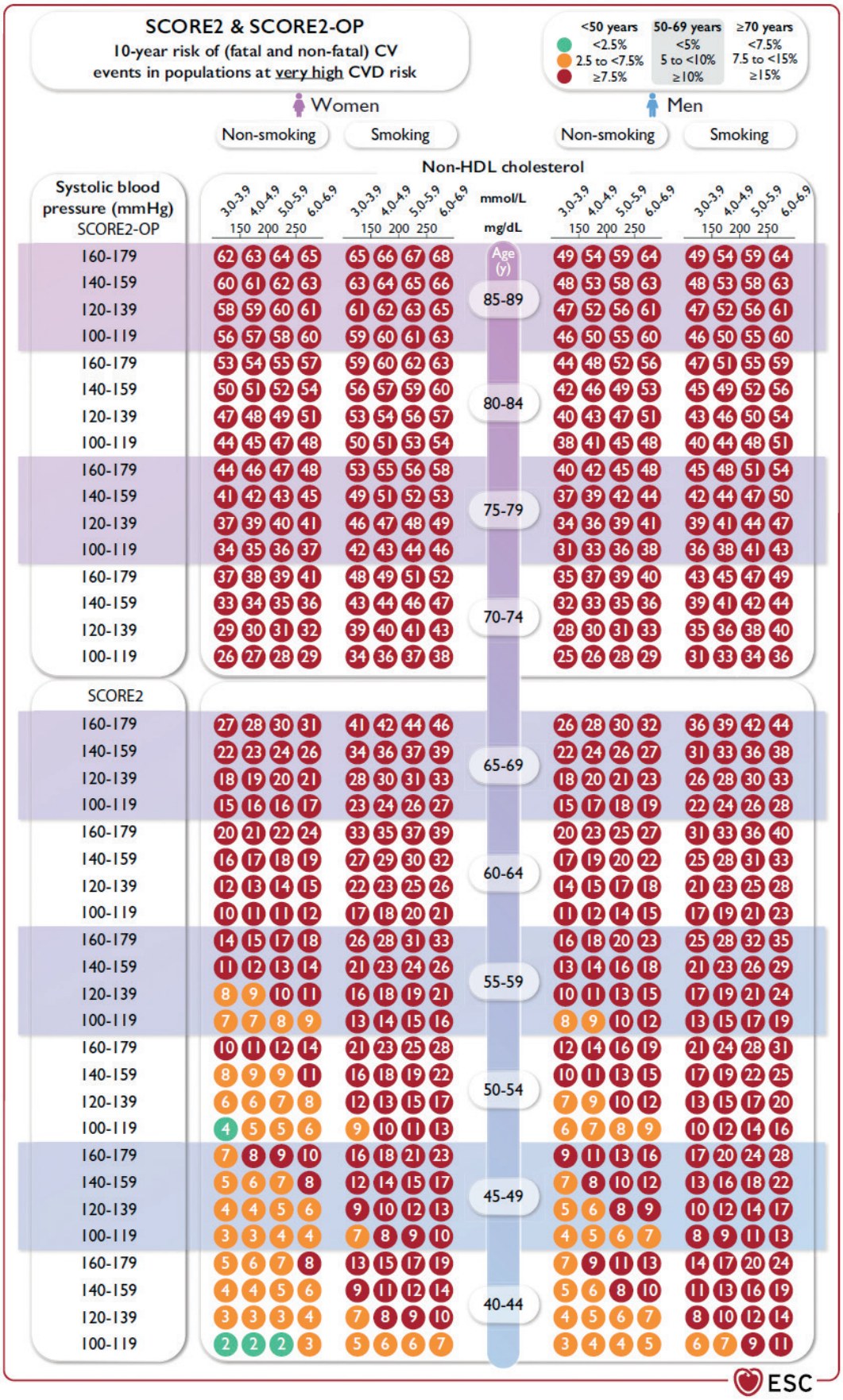

Figure 1 SCORE2 и SCORE2-OP [3].

healthcare aspects depend on the risk level calculated according to prior SCORE charts. It is not yet clear how much the improvement in risk assessment accuracy outweighs the cost of changes in clinical practice. But it is precisely these circumstances that require attention when implementing guidelines into clinical practice.

Currently, CVR assessment using a new tool, in our opinion, is only of academic interest. Much needs explanation. Nevertheless, the opinion of Kemerovo authors that the SCORE2 can already be used now, along with prior SCORE charts, as an additional tool for primary CVR assessment [5], is attractive, but not in the general practitioner practice, but in a research center in order to form an action plan for the study and implementation of SCORE2 in routine practice.

The presented facts should not be regarded as indisputable and impassable barriers to the implementation of new guidelines. They are intended only to warn against hasty and ill-considered decisions. Expert consensus (cardiologists and internists, public health and healthcare professionals, epidemiologists and statisticians, perhaps geneticists and other stakeholders) would be very appropriate.

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Relationships and Activities: none.

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