LECTURE

Application of cardiovascular risk scores

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Abstract

There are a number of scoring systems used to determine an individual's risk of cardiovascular disease. Apart from giving an estimate of the risk of having a cardiovascular event or dying from a cardiovascular cause within, in general, ten years, they also indicate who is most likely to benefit from prevention. Therefore, these risk scoring systems are useful for the patient and for the clinician in deciding preventive medical treatment. The Framingham Risk Score, the first scoring system, estimates the cardiovascular risk of having an event at 10 years. Individuals with low risk have 10% or less coronary heart disease (CHD) risk at 10 years, with intermediate risk the value is 10-20%, and with high risk it is 20% or more. The vast majority of younger adults are considered to be at "low risk" because of the weight of age and of the 10-year risk window, and thus the importance of addressing multiple moderate or single elevated risk factors for long-term CHD prevention. With these tools, we must recognize that age is the strongest predictor of cardiovascular risk. Almost all persons aged 70 and over are at >20% ten year cardiovascular risk and almost nobody aged under 40 is at >20% ten year cardiovascular risk. In the situation of young individuals with an extremely elevated risk factor, as is the case of cholesterol in familial hypercholesterolemia, the scoring system postpones treatment inadequately. Another problem with the majority of risk scoring systems is that they do not take into account factors like family history of cardiovascular disease, poverty and ethnicity. To measure the performance of a scoring risk system we should use: sensitivity/specificity/predictive value, discrimination, area under the Receiver Operating Characteristic (ROC) curve and the C statistic, calibration, positive and negative likelihood ratios and reclassification – the Net Reclassification Index (NRI) and the Integrated Discrimination Improvement (IDI).

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