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Simplified clinical tool affects treatment decisions for heart health

Millions of Americans potentially reclassified into high-risk or low-risk groups with different treatment as a result

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The widespread use of a simplified clinical tool to estimate future coronary risk could lead to the classification of millions of Americans into different risk groups than when using the original, "gold-standard" tool. Millions of patients may have been misclassified into higher-risk groups and therefore potentially over-treated, while others may have ended up in lower-risk groups and therefore potentially under-treated for heart disease. The study¹, led by William Gordon from Weill Cornell Medical College in the US and colleagues, is published in the Journal of General Internal Medicine², published by Springer.

American national cholesterol guidelines use the well-known Framingham model (a mathematical equation) to calculate a person's 10-year risk of heart attack and coronary death. Based on this risk, patients are categorized into different risk groups, which are used to guide treatment decisions.

Because the original Framingham model is very complex, the formula has been simplified into a point-based* clinical tool to make it available without calculators or computers. However, the rapid take-up and widespread use of computers and PDAs in clinical medicine has made it possible to implement the original, mathematically complex model at the point of care. Yet, the point-based system continues to be used widely in clinical practice.

"While the point-based system is a substantial improvement over having no standardized method for predicting risk, just about any computer or PDA in use today can calculate the original Framingham model," says principal investigator Michael Steinman, MD. "This means that your doctor can calculate your risk just as easily using the complex equation, which is likely to be more accurate than the point-based system. So there’s not much reason to use the point-based system anymore in most instances."

The authors looked at whether the simplified version might lead to different risk estimates and potentially different treatment recommendations as a consequence. The researchers used data for 2,543 people (representing 39 million adults) aged 20-79 years. For each individual, the authors calculated the 10-year risk of major coronary events using both the original and simplified point-based Framingham models. They looked at the differences in these risk estimates and whether these differences would place subjects into different risk categories.

Gordon and team found that the two estimates of coronary risk differed significantly. The simplified version reclassified 15 percent of adults into different risk groups, corresponding to 5.7 million people. Of those, 10 percent (3.9 million) were reclassified into higher-risk groups and 5 percent (1.8 million) into lower-risk groups. As a consequence, 25-45 percent of reclassified adults could have been treated differently i.e. either received more or less intensive therapy than would otherwise be recommended according to drug treatment guidelines.
The authors conclude: “Current guidelines should strongly consider endorsing the original model as the preferred method of risk calculation and as the sole appropriate option for computer or PDA-based risk calculators. Patients and clinicians who made treatment decisions based on the point-based system should also consider recalculating risk based on the original Framingham model and, where appropriate, adjust treatment plans accordingly.”

“The original Framingham model estimates risk based on the patient’s age, total and HDL cholesterol, systolic blood pressure, treatment for hypertension, and smoking status. The point-based system assigns each risk factor level a number. These risk factor values are then added up into a score; the risk for that score is then determined from a table.

References
2. The Journal of General Internal Medicine is the official journal of the Society of General Internal Medicine.

The full-text article is available to journalists on request.
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