The Framingham scores overestimated the risk for coronary heart disease in Japanese, Hispanic, and native American cohorts

Design
Validation of the Framingham scores in 6 ethnically diverse cohorts.

Setting
USA.

Patients
The Framingham cohort included white participants without CHD. The validation cohorts included the Atherosclerosis Risk in Communities Study (white and black participants), the Physicians’ Health Study (white men), the Honolulu Heart Program (Japanese-American men), the Puerto Rico Heart Health Program (Hispanic men), the Strong Heart Study (Native American participants), and the Cardiovascular Health Study (white participants).

Description of prediction guide
The Framingham cohort was used to develop sex-specific Cox proportional-hazards regression functions relating CHD risk factors (age, blood pressure, cholesterol concentrations, current smoking, and presence of diabetes) to the occurrence of coronary death or myocardial infarction (CHD events). Functions relating the same CHD risk factors to CHD events were calculated by using each validation cohort’s own data.

Main outcome measures
The Framingham scores were compared with the scores of each validation cohort for accuracy in predicting relative risks (RRs) for CHD risk factors, ability to discriminate between those who have CHD events and those who do not, and ability to predict CHD events in each cohort.

Main results
The table shows the 5 year RRs for CHD risk factors from the Framingham cohort and the ranges of RRs from the validation cohorts. Discrimination was similar between the Framingham scores and the scores for each validation cohort. The Framingham scores predicted the 5 year CHD risk in white and black participants but overestimated CHD risk in Japanese-American and Hispanic men and native American women. After recalibration, which required data on each cohort’s CHD risk factor prevalence and CHD event rates, these overestimations were corrected.

Conclusion
The Framingham scores predicted the risk for coronary heart disease (CHD) in white and black populations, but they need recalibration for risk factor prevalence and CHD event rates before they can be used in other ethnic populations.