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Titel des Beitrags:
Prediction model to estimate presence of coronary artery disease: retrospective pooled analysis of existing cohorts.

Abstract:
To develop prediction models that better estimate the pretest probability of coronary artery disease in low prevalence populations. Retrospective pooled analysis of individual patient data. 18 hospitals in Europe and the United States. Patients with stable chest pain without evidence for previous coronary artery disease, if they were referred for computed tomography (CT) based coronary angiography or catheter based coronary angiography (indicated as low and high prevalence settings, respectively). Obstructive coronary artery disease (>= 50% diameter stenosis in at least one vessel found on catheter based coronary angiography). Multiple imputation accounted for missing predictors and outcomes, exploiting strong correlation between the two angiography
procedures. Predictive models included a basic model (age, sex, symptoms, and setting), clinical model (basic model factors and diabetes, hypertension, dyslipidaemia, and smoking), and extended model (clinical model factors and use of the CT based coronary calcium score). We assessed discrimination (c statistic), calibration, and continuous net reclassification improvement by cross validation for the four largest low prevalence datasets separately and the smaller remaining low prevalence datasets combined. We included 5677 patients (3283 men, 2394 women), of whom 1634 had obstructive coronary artery disease found on catheter based coronary angiography. All potential predictors were significantly associated with the presence of disease in univariable and multivariable analyses. The clinical model improved the prediction, compared with the basic model (cross validated c statistic improvement from 0.77 to 0.79, net reclassification improvement 35%); the coronary calcium score in the extended model was a major predictor (0.79 to 0.88, 102%). Calibration for low prevalence datasets was satisfactory. Updated prediction models including age, sex, symptoms, and cardiovascular risk factors allow for accurate estimation of the pretest probability of coronary artery disease in low prevalence populations. Addition of coronary calcium scores to the prediction models improves the estimates.