A COMPARISON OF THE PREDICTIVE ABILITY OF POOLED COHORT EQUATION, SCORE EQUATION AND D:A:D STUDY EQUATION IN PEOPLE LIVING WITH HIV

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BACKGROUND AND AIMS

The aim of the study is to compare the predictive ability of the American College of Cardiology/American Heart Association Pooled Cohort equations, the European Society of Cardiology Systematic Coronary Risk Evaluation (SCORE) equation and the Data Collection on Adverse Effects of Anti-HIV Drugs (D:A:D) study equation in persons living with human immunodeficiency virus (HIV).

METHODS

We retrospectively studied all patients with HIV infection who had at least one clinical encounter in 2008 and at that time were 40-65 years-old and did not have established cardiovascular disease or diabetes. The cardiovascular risk was estimated with the Pooled Cohort equations, the SCORE equation and the D:A:D study equation. Patients were followed-up for 10 years.

RESULTS

In 2008, 232 patients aged 40-65 years old, without diabetes or prior cardiovascular disease were enrolled in our study (76.3% males, mean age 47.1±6.6 years). The predicted 10-year risk for total CV events with the Pooled Cohort equation was 6.5±4.6% whereas the observed risk was 7.8%. The predicted 10-year risk for fatal CV events with the SCORE equation was 2.5±2.5% whereas the observed risk was 0.9%. The predicted 5-year risk for total CV events was 3.5±3.0% with the D:A:D study equation whereas the observed 5-year risk was 6.5%.

	Patients who suffered a CV event (n=18)	Patients who did not suffer a CV event (n=214)	P-value
Age (y)	49.4±9.3	40.1±10.0	<0.001
HTN (%)	45.5	15.6	<0.001
GFR (ml/min/1.73m2)	96±25	109±25	<0.05
NRTIs exposure (y)	14,75±6,1	8,58±5,58	<0.001

y: years, HTN: Hypertension, GFR: Glomerular filtration rate, CV: Cardiovascular

Patients Characteristics	
Age (years)	47.1±6.6
Males (%)	76.3
Intravenous drug use (%)	8.6
Family history of CVD (%)	4.7
Hypertension (%)	25.9
Package-years	20.5±17.8
Body mass index (kg/m ²)	25.4±3.9
Total cholesterol (mg/dl)	210±49
LDL cholesterol (mg/dl)	126±41
HDL cholesterol (mg/dl)	46±16
Triglycerides (mg/dl)	194±120
Glomerular filtration rate (ml/min/1.73m ²)	105±25
Chronic kidney disease (%)	2.6
Systolic blood pressure (mmHg)	126±14
Diastolic blood pressure (mmHg)	81±10
Duration of HIV infection (years)	7.2±5.6
Antiretroviral treatment (%)	80.2

CONCLUSIONS

The SCORE showed excellent discrimination whereas the Pooled and the D:A:D study equation showed acceptable discrimination (C-statistic 0.85, 0.75 and 0.76, respectively; Table 3). The Pooled and the D:A:D study equation also showed good calibration (Hosmer-Lemeshow χ^2 value 3.26 and 10.52, respectively (on 8 degrees of freedom); p = 0.92 and p = 0.23, respectively). In contrast, the SCORE was not well calibrated (Hosmer-Lemeshow χ^2 value 13.60 (on 4 degrees of freedom), p = 0.009). Overall, 3.0, 33.2 and 3.9% of the study population was classified as very high cardiovascular risk according to the SCORE, the Pooled and the D:A:D study equation. The Pooled showed poor agreement with both the SCORE and the D:A:D study equation (Cohen’s kappa coefficient 0.118 and 0.125, respectively). In contrast, the SCORE showed better agreement with the D:A:D study equation (Cohen’s kappa coefficient 0.353).

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