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Validation of the SCORE O.P. for prediction of cardiovascular disease mortality in a large population of elderly individuals

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Background: Estimation of absolute cardiovascular risk in apparently healthy individuals, using SCORE (Systematic COronary Risk Evaluation) is recommended by the ESC guidelines on cardiovascular disease (CVD) prevention in clinical practice. Recently, the SCORE system has been extended by the SCORE O.P. aiming to improve estimates of cardiovascular risk specifically in older persons (65 years and older).

Purpose: The aim of this study was to validate the SCORE O.P. in an Austrian population of 34,909 healthy individuals aged between 65 and 80 years which were prospectively followed for a minimum of 10 years.

Methods: Predicted fatal CVD and coronary heart disease (CHD) event rates within 10 years were calculated using the "SCORE O.P. risk function for low risk regions" and compared to the actually observed rates, thereby assessing calibration. In addition, predicted probabilities were plotted against observed mortality by deciles of predicted risk. Regarding discrimination, receiver operating characteristics (ROC) analysis and corresponding c-statistics were used.

Results: In 14,586 males, 1,509 deaths from CVD (10.4%) and 847 deaths from CHD (5.8%) occurred within 10 years of follow-up. SCORE O.P. predicted 1,699 fatal CVD (11.7%) and 872 CHD (6.0%) events. In male high risk individuals (10th decile), SCORE O.P. overestimated mortality from CVD and CHD. C-statistics were 0.68 (95% CI 0.67–0.70) for CVD and 0.67 (0.65–0.69) for CHD.

In 20,323 females, 1,340 deaths from CVD (6.6%) and 672 deaths from CHD (3.3%) were observed. SCORE O.P. predicted 1,232 fatal CVD (6.1%) and 539 CHD events (2.7%). In female high risk individuals (8–10th deciles), SCORE O.P. underestimated mortality from CVD and CHD. C-statistics were 0.77 (0.75–0.78) for CVD and 0.77 (0.75–0.79) for CHD.

Conclusion: With regard to overall accuracy, the SCORE O.P. performed considerably well in this elderly Austrian population. However, in high-risk individuals, cardiovascular risk was overestimated for males and underestimated for females. SCORE O.P. was able to discriminate high-risk from low-risk individuals, better in women than in men.