

Estimating cardiovascular disease risk for individuals with Type 2 diabetes: the new UKPDS Risk Engine

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Recent clinical practice guidelines emphasise cardiovascular disease (CVD), rather than coronary heart disease (CHD). We have developed CVD-specific risk equations for Type 2 diabetes using UK Prospective Diabetes Study (UKPDS) endpoint data (first occurrence of fatal or non-fatal myocardial infarction, ischaemic heart disease, sudden coronary death, fatal or non-fatal stroke, coronary revascularization, death following peripheral vascular disease). Of 3475 UKPDS patients without prior CVD, 581 had a CVD event. Risk factors considered in a parametric survival model using stepwise selection were age, sex, ethnicity (White Caucasian/Afro Caribbean/Asian Indian), smoking status (current/ex/never), HbA1c, systolic blood pressure, total-to-HDL cholesterol ratio, atrial fibrillation and diabetes duration. All were significantly associated with CVD ($P < 0.01$) except Asian-Indian ethnicity ($P = 0.18$), ex-smoking ($P = 0.36$) and diabetes duration ($P = 0.79$). The model replicated observed UKPDS within-trial CVD event rates and those observed during 5-year post-study monitoring. Using a population simulation of the 1410 CARDS (Collaborative Atorvastatin Diabetes Study) patients allocated to placebo, the model estimated that CVD events would occur in 169, compared with 189 observed (95% confidence interval 164–214). Using these validated CVD risk equations, a new version of the UKPDS Risk Engine has been produced that estimates CVD risk, in addition to CHD and stroke risks, in people with Type 2 diabetes.