DEVELOPMENT AND VALIDATION OF PROGNOSTIC MODELS FOR MYOCARDIAL INFARCTION, STROKE AND CARDIOVASCULAR DEATH AND HOSPITALISED BLEEDING IN STABLE MYOCARDIAL INFARCTION SURVIVORS

Poster Contributions
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Background: The risk of recurrent cardiovascular (CV) events and bleeding remains high in stable myocardial infarction (MI) survivors in the US, England, Sweden and France [Rapsomaniki 2014]. However there are no prognostic models to support risk stratification of this population. The study aim was to develop and validate prognostic models for atherothrombotic events and bleeding in MI survivors in England.

Methods: We examined linked electronic health records (EHRs) [CALIBER 2000-2010] of patients who had survived 1 year after their last MI. Weibull parametric survival models including demographics, clinical history, clinical biomarkers and medications were used. Patients were grouped into risk strata for model calibration (see figure).

Results: 12,694 patients were in the development cohort from 159 general practices in South England and 5,613 in the validation cohort from 61 practices in the North. The 5-year Kaplan-Meier event estimates were 22.4% [95% CI: 21.4%-23.3%] for CV death/stroke/MI and 7.2% [6.6%-7.8%] for hospitalised bleeding. In validation the c-indexes of the models were 0.75 [0.74-0.77] and 0.66 [0.63-0.70] and the hazard ratios for the high: low risk contrast were 11.5 [8.4-15.5] and 6.0 [3.6-10.2], respectively. The models were well calibrated (figure).

Conclusion: Prognostic models derived from population based EHRs allow us to risk stratify patients and may aid balancing benefits and harms for care and enable effective long-term clinical management after the acute MI.