Developing and Evaluating Clinical Risk Prediction Models for Coronary Artery Bypass Graft Surgery

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Abstract : The ability to predict clinical outcomes is of great importance to physicians and clinicians. A number of different methods have been used in an effort to accurately predict these outcomes. These methods include the development of scoring systems based on multivariate statistical modelling, and models involving the use of classification and regression trees. The process usually consists of two consecutive phases, namely model development and external validation. The model development phase consists of building a multivariate model and evaluating its predictive performance by examining calibration and discrimination, and internal validation. External validation tests the predictive performance of a model by assessing its calibration and discrimination in different but plausibly related patients. A motivate example focuses on prediction modeling using a sample of patients undergone coronary artery bypass graft (CABG) has been used for illustrative purpose and a set of primary considerations for evaluating prediction model studies using specific quality indicators as criteria to help stakeholders evaluate the quality of a prediction model study has been proposed.

Keywords : clinical prediction models, clinical decision rule, prognosis, external validation, model calibration, biostatistics

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