Adapted TRIPOD Checklist for Prediction Model Development and Validation

Manuscript ID: D = Development; and V = Validation

Section/Topic		Checklist Item	Response
Title/Subtitle	D, V	Identifies the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted	
Background and Objectives	D, V	Explains the medical context (including whether diagnostic or prognostic) and rationale for developing or validating the multivariable prediction model, including references to existing models	
	D, V	Specifies the objectives, including whether the study describes the development or validation of the model or both	
Source of Data	D, V	Describes the study design or source of data (e.g., randomized trial, cohort, or registry data), separately for the development and validation data sets, if applicable	
	D, V	Specifies the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up	
Participants	D, V	Specifies key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres	
	D, V	Describes eligibility criteria for participants	
	D, V	Gives details of treatments received, if relevant	
Outcome	D, V	Clearly defines the outcome that is predicted by the prediction model, including how and when assessed	
	D, V	Reports any actions to blind assessment of the outcome to be predicted.	
Predictors	D, V	Clearly defines all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	
	D, V	Reports any actions to blind assessment of predictors for the outcome and other predictors	
Sample Size	D, V	Explains how the study size was arrived at	
Missing Data	D, V	Describes how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method	
Statistical Analysis Methods	D	Describes how predictors were handled in the analyses	
	D	Specifies type of model, all model-building procedures (including any predictor selection), and method for internal validation.	
	V	For validation, describes how the predictions were calculated.	
	D, V	Specifies all measures used to assess model performance and, if relevant, to compare multiple models	
	V	Describes any model updating (e.g., recalibration) arising from the validation, if done.	
Risk groups	D, V	Provides details on how risk groups were created, if done	
Development vs. Validation	V	For validation, identifies any differences from the development data in setting, eligibility criteria, outcome, and predictors	
Participants	D, V	Describes the flow of participants through the study, including the number of participants with and without the outcome and, if applicable, a summary of the follow-up time. A diagram may be helpful	
	D, V	Describes the characteristics of the participants (basic demographics, clinical features, available predictors), including the number of participants with missing data for predictors and outcome	
	V	For validation, shows a comparison with the development data of the distribution of important variables (demographics, predictors and outcome)	
Model Development	D	Specifies the number of participants and outcome events in each analysis.	
	D	If done, reports the unadjusted association between each candidate predictor and outcome	
Model Specification	D	Presents the full prediction model to allow predictions for individuals (*i.e., all regression coefficients, and model intercept or baseline survival at a given time point*)	
	D	Explains how to the use the prediction model	
Model Performance	D,V	Reports performance measures (with CIs) for the prediction model.	
Model-Updating	V	If done, reports the results from any model updating (*i.e., model specification, model performance*)	
Limitations	D, V	Discusses any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	
Interpretation	V	For validation, discusses the results with reference to performance in the development data, and any other validation data.	
	D, V	Gives an overall interpretation of the results, considering objectives, limitations, results from similar studies, and other relevant evidence.	
Implications	D, V	Discusses the potential clinical use of the model and implications for future research.	

Source: Collins GS, Reitsma JB, Altman DG, Moons KG. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): The TRIPOD statement Ann Inter Med 2015; 162: 55-63

*This checklist has been adapted by CJASN and JASN for author and editor usage.   *December 2017*