TRIPOD Checklist: Prediction Model Development

Section	Item	Checklist description	Reported on Page Number/Line Number	Reported on Section/Paragraph
Title and abstract				
Title	1	Identify the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted.	1/2-3	1
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	3/53-75	1
Introduction				
Background and objectives	3a	Explain the medical context (including whether diagnostic or prognostic) and rationale for developing or validating the multivariable prediction model, including references to existing models.	4/92-101	3
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	4-6/106--109,130-140, 157-160	4
Methods				
Source of data	4a	Describe the study design or source of data (e.g., randomized trial, cohort, or registry data), separately for the development and validation data sets, ifapplicable.	4-5/106-112	1
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	4-5/106-109	1
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	4,6,7/106,167,174	1
	5b	Describe eligibility criteria for participants.	5/113-118	2
	5c	Give details of treatments received, if relevant.	4/106	4
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	5/127-129	3
	6b	Report any actions to blind assessment of the outcome to be predicted.	6/155-160	3
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	6/154-157	3
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	6/155-160	3
Sample size	8	Explain how the study size was arrived at.	6,7/167,174	1

Missing data	9	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.	5/115	2
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	6/142-153	2
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	6/155-160	3
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	6/161-163	4
Risk groups	11	Provide details on how risk groups were created, if done.	6/155-160	3
Results				
Participants	13a	Describe 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.	6/167	5
	13b	Describe the characteristics of the participants (basic demographics, clinical features, available predictors), including the number of participants with missing data for predictors and outcome.	6-7/167-185	1
Model development	14a	Specify the number of participants and outcome events in each analysis.	6-7/167,174	5
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	7/187-197	3
Model specification	15a	Present 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).	8,9/208-221,228-235	2-3,1
	15b	Explain how to the use the prediction model.	9/237-239	2
Model performance	16	Report performance measures (with CIs) for the prediction model.	8/222-227	4
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	11/309-315	3
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	9-11/242-308	1
Implications	20	Discuss the potential clinical use of the model and implications for future research.	12/317-322	1
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	9/239	2
Funding	22	Give the source of funding and the role of the funders for the present study.	2/28-32	2

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*As the checklist was provided upon initial submission, the page number/line number reported may be changed due to copyediting and may not be referable in the published version. In this case, the section/paragraph may be used as an alternative reference.