

## TRIPOD Checklist: Prediction Model Development

Section	Item	Checklist description	Reported on Page Number/Line Number	Reported on Section/Paragraph
<b>Title and abstract</b>				
Title	1	Identify the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted.	Page 1/line 2-3	Title/Paragraph 1
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Page 2, Line 39-82	Abstract/Paragraph 1-4
<b>Introduction</b>				
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.	Page 4/line 90-107	Introduction/ Paragraph 1-3
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 4/line 108-112	Introduction/ Paragraph 4
<b>Methods</b>				
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, if applicable.	Page 6/line 115-129	Materials&Methods/ Paragraph 1-3
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 7/line 182-187	Materials&Methods/ Paragraph 5
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	Page 6/line 115-129	Materials&Methods/ Paragraph 1-3
	5b	Describe eligibility criteria for participants.	Page 6/line 116-128	Materials&Methods/ Paragraph 1-2
	5c	Give details of treatments received, if relevant.	Page 6/line 146-154	Materials&Methods/ Paragraph 3
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Page 6-7/line 156-173	Materials&Methods/ Paragraph 4
	6b	Report any actions to blind assessment of the outcome to be predicted.	Page 6-7/line 156-173	Materials&Methods/ Paragraph 4
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Page 7-8/line 156-180	Materials&Methods/ Paragraph 4-5
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	Page 7-8/line 156-180	Materials&Methods/ Paragraph 4-5
Sample size	8	Explain how the study size was arrived at.	Page 6/line 115-117	Materials&Methods/ Paragraph 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.	Page 6/line 115-117	Materials&Methods/ Paragraph 1
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Page 8-9/line 181-187	Materials&Methods/ Paragraph 6
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 8-9/line 181-187	Materials&Methods/ Paragraph 6
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 8-9/line 181-187	Materials&Methods/ Paragraph 6
Risk groups	11	Provide details on how risk groups were created, if done.	Page 8-9/line 181-187	Materials&Methods/ Paragraph 6
<b>Results</b>				
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.	Page 9/line 190-204	Results/Paragraph 1
	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.	Page 9/line 190-204	Results/Paragraph 1
Model development	14a	Specify the number of participants and outcome events in each analysis.	Page 9-10/line 206-215	Results/Paragraph 2
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	Page 9-10/line 206-215	Results/Paragraph 2
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).	Page 10-11/line 217-242	Results/Paragraph 3-4
	15b	Explain how to use the prediction model.	Page 10-11/line 217-242	Results/Paragraph 3-4
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page 11-12/line 245-267	Results/Paragraph 5-6
<b>Discussion</b>				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	Page 14/line 315-318	Discussion/Paragraph 5
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Page 12-14/line 270-314	Discussion/ Paragraph 1-4
Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 14/line 320-325	Discussion/Paragraph 6
<b>Other information</b>				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Page 14/line 328-330	Data access/Paragraph 1
Funding	22	Give the source of funding and the role of the funders for the present study.	Page 15/line 332-334	Acknowledgements/ Paragraph 1

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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.