

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.	Page 1, line 1	Title and abstract
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Page 2, line 24-51	Abstract
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.	Page 3-4, line 52-83	Introduction, Paragraph 1-2
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 4, line 79-83	Introduction, Paragraph 3
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, if applicable.	Page 4-5, line 85-109	Material and methods, paragraph 1
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 4, line 86-94	Material and methods, paragraph 1
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	Page 4-5, line 85-109	Material and methods, paragraph 1
	5b	Describe eligibility criteria for participants.	Page 4-5, line 85-109	Material and methods, paragraph 1
	5c	Give details of treatments received, if relevant.	Page 9, line 216-219	Discussion, paragraph 2
, ,	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Page 6-7, line 139-166	Result, paragraph 2-3
	6b	Report any actions to blind assessment of the outcome to be predicted.	Page 7-8, line 154-183	Result, paragraph 3-4
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Page 6-8, line 139-183	Result, paragraph 2-4
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	Page 8, line 167-183	Result, paragraph 4
Sample size	8	Explain how the study size was arrived at.	Page 5-6, line 116-129	Material and methods, paragraph 3

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 4-5, line 85-109 Page 5-6, line 116-129 Page 22, line 448-449	Material and methods, paragraph 1, paragraph 3, Figure 1
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Page 5-6, line 117-129	Material and methods, paragraph 3
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 5-6, line 117-129	Material and methods, paragraph 3
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 6-8, line 139-183	Result, paragraph 2-4
Risk groups	11	Provide details on how risk groups were created, if done.	Page 8, line 167-183	Result, paragraph 4
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.	Page 22, line 448-449	Figure 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 4, line 86-94	Material and methods, paragraph 1
Model development	14a	Specify the number of participants and outcome events in each analysis.	Page 5, line 131-138 Page 4-5, line 85-109	Result, paragraph 1; Material and methods, paragraph 1
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	Page 12, line 278-282	Conclusion, paragraph 1
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 6-8, line 139-183	Result, paragraph 2-4
	15b	Explain how to use the prediction model.	Page 8, line 167-183	Result, paragraph 4
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page 8, line 167-183, Page 12, line 278-292	Result, paragraph 3-4 Conclusion, paragraph 1
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	Page 12, line 278-292	Conclusion, paragraph 1-2
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Page 12, line 278-292	Conclusion, paragraph 1-2

Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 8-11, line 185-195 line 196-219, line 259-270	Discussion, paragraph 1, paragraph 2, paragraph 5
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Page 4-5, line 85-109	Material and methods, paragraph 1
Funding	22	Give the source of funding and the role of the funders for the present study.	Page 12, line 294-298	Acknowledgements

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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.