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 1-2	Title
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Page 3/Line 37-58	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 4-5/Line 63-87	Introduction/Para 1-3
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 6/Line 87-90	Introduction/Para 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 5/Line 98-101	Materials and methods/Para 2
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 5/Line 98-101	Materials and methods/Para 2
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	Page 5/Line 98-104	Materials and methods/Para 2
	5b	Describe eligibility criteria for participants.	Page 5-6/Line 104-116	Materials and methods/Para 2-3
	5c	Give details of treatments received, if relevant.	Page 6/Line 125-128	Materials and methods/Para 4
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Page 6/Line 129-132	Materials and methods/Para 5
	6b	Report any actions to blind assessment of the outcome to be predicted.	NA	NA

Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Page 6/Line 118-128	Materials and methods/Para 4
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	NA	NA
Sample size	8	Explain how the study size was arrived at.	Page 5/Line 98-104	Materials and methods/Para 2
Missing data	9	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.	NA	NA
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Page 6-7/Line 134-145	Materials and methods/Para 6
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 6-7/Line 134-145	Materials and methods//Para 6
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 7/Line 142-145	Materials and methods//Para 6
Risk groups	11	Provide details on how risk groups were created, if done.	Page 5/Line 101-103	Materials and methods/Para 2
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 7/Line 150-151	Results/Para 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 7/Line 151-159	Results/Para 1
Model development	14a	Specify the number of participants and outcome events in each analysis.	Page 7/Line 151-157	Results/Para 1
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	NA	NA
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 7-8/Line 160-169	Results/Para 2
	15b	Explain how to the use the prediction model.	Page 18/Line 379-384	Figure legends
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page 8/Line 170-187	Results/Para 3-5

Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	Page 11/Line 258-261	Discussion/Para 6
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Page 9-11/Line 190-249	Discussion/Para 1-4
Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 9,11-12/Line 190-204,256-263	Discussion/Para 1,6
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Page 13/Line 279	Footnote/para 2
Funding	22	Give the source of funding and the role of the funders for the present study.	Page 13/Line 271-274	Acknowledgments/para 1-2

Blind assessment is not available, because our study is retrospective. Missing data is not available, because the patients whose medical data was not complete are excluded.

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

Please leave this space alone as it will be supplemented by the editorial office when needed.