

TRIPOD Checklist: Prediction Model Development

Section	Item	Checklist description	Reported on Page Number/Line no. (by page)	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 / Lines 1-2	Title Page
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Pages 2-3 / Line 1 (page 2) - 5 (page 3)	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.	Pages 4-5 / Line 3 (page 4) - 8 (page 5)	Introduction
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 5 / Lines 6-8	Introduction
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 / Lines 18-21 Page 8 / Line 6	Methods, Data source and variables / Paragraph 1 Methods, Model Building and Selection / Paragraph 1
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 7 / Lines 2-3	Methods, Study population / 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 7 / Lines 3-4	Methods, Study population / Paragraph 1
	5b	Describe eligibility criteria for participants.	Page 7 / Lines 2-6	Methods, Study population / Paragraph 1
	5c	Give details of treatments received, if relevant.	Page 7 / Line 2	Methods, Study population / Paragraph 1
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Page 7 / Lines 23-24	Methods, Statistical analysis / Paragraph 2
	6b	Report any actions to blind assessment of the outcome to be predicted.	Page 6 / Lines 22-23	Methods, Data source and variables / Paragraph 4
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Pages 5-6 / Line 17 (page 5) - 19 (page 6)	Methods, Data source and variables / Paragraphs 1-3
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	Page 6 / Lines 22-23	Methods, Data source and variables / Paragraph 4
Sample size	8	Explain how the study size was arrived at.	Page 7 / Line 3 Page 9 / Lines 3-4	Methods, Study population / Paragraph 1 Results, Baseline Characteristics / 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 7 / Lines 12-24	Methods, Data preparation // Paragraph 1
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Page 8 / Lines 10-16	Methods, Model Building and Selection / Paragraph 1
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 8 / Lines 1-10	Methods, Data Analysis / Paragraph 1 Methods, Model Building and Selection / Paragraph 1
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 8 / Lines 18-22	Methods, Model Building and Selection / Paragraph 2
Risk groups	11	Provide details on how risk groups were created, if done.	Not applicable as risk groups were not created	Not applicable
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 9 / Lines 3-4	Results, Baseline Characteristics / 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 / Lines 4-21 Pages 28-29 / Table 1 Pages 33-38 / Supplementary Table 1	Results, Baseline Characteristics / Paragraphs 1-3 Table 1 Supplementary Table I
Model development	14a	Specify the number of participants and outcome events in each analysis.	Page 9 / Lines 3-4	Results, Baseline Characteristics / Paragraph 1
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	Page 10 / Lines 1-6 Page 39-41 / Supplementary Table II	Results 3.2 Supplementary Table II
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 / Lines 1-22 Page 30 / Table 2 Page 32 / Figure 2	Results, Univariate Cox Proportional Hazard analysis / Paragraph 1 Results, Final Model Results / Paragraphs 1-3 Table 2; Figure 2
	15b	Explain how to use the prediction model.	Page 10 / Lines 8-22 Page 15 / Lines 8-14 Page 30 / Table 2	Results, Final Model Results / Paragraphs 1-3; Discussion Paragraph 10
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page 10 / Lines 17-22 Page 31 / Table 3	Results, Final Model Paragraph 3 Table 3
Discussion				
Limitations	18	Discuss any limitations of the study (such as non-representative sample, few events per predictor, missing data).	Pages 15-17 / Lines 16 (page 15)-9 (page 17)	Discussion, Limitations / Paragraphs 1-4
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Pages 11-15 / Lines 1 (page 11)-14 (page 15)	Discussion / Paragraphs 1-10
Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 17 / Lines 9-14	Discussion, Limitations / Paragraph 4
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Page 19 / Lines 19-22	Data Sharing Statement / Paragraph 1

Funding	22	Give the source of funding and the role of the funders for the present study.	Page 19 / Lines 23-24	Funding Statement / Paragraph 1
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Article information: <https://dx.doi.org/10.21037/hbsn-21-453>.

*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.

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