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.	1/1	Title
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	1-3/18-45	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.	3-4/47-86	Introduction/1-3
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	4/74-86	Introduction/2-3
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, ifapplicable.	7-10/133-217	Development, validation, and performance of
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	N/A. This is a	N/A. This is a
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	5/90-93	Patient selection and study parameters/1
	5b	Describe eligibility criteria for participants.	5/97-107	Patient selection and study
	5c	Give details of treatments received, if relevant.	5/96-97	Patient selection and study
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	6/125-131	Confirmation of calculous
	6b	Report any actions to blind assessment of the outcome to be predicted.	N/A. Our research did not	N/A. Our research did not
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	5-6/109-123	Patient selection and study parameters/2
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	N/A. Our research did not	N/A. Our research did not
Sample size	8	Explain how the study size was arrived at.	5/90-93	Patient selection and study

Missing data	9	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.	5/93	Patient selection and study parameters/1
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	7-11/134-229	Development, validation,
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	7-11/134-229	Development, validation, and performance of
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	10/206-218	Development, validation,
Risk groups	11	Provide details on how risk groups were created, if done.	10-11/222-226	Statistical analysis/1
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.	N/A. We think that the process of participants	N/A. We think that the process of participants
	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.	11-12/233-252	Baseline clinical characteristics and
Model development	14a	Specify the number of participants and outcome events in each analysis.	11-12/233-252	Baseline clinical
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	12-14/254-307	ML-assisted models/1-5
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).	12-14/254-307	ML-assisted models/1-5
	15b	Explain how to the use the prediction model.	12-14/254-307	ML-assisted models/1-5
Model performance	16	Report performance measures (with CIs) for the prediction model.	15/309-327	Comparison between
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	20/425-432	Discussion/9
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	15-20/330-432	Discussion/1-9
Implications	20	Discuss the potential clinical use of the model and implications for future research.	19-20/418-423	Discussion/8
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	12/251	Baseline clinical characteristics and
Funding	22	Give the source of funding and the role of the funders for the present study.	21/446	Acknowledgments

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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.