STROBE Statement—checklist of items that should be included in reports of observational studies

Section/item	Item No	Recommendation	Reported on Page Number/Line Number	Reported on Section/Paragraph
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Page1	Title
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page2/line 30-55	Abstract/Paragraph 1-4
Introduction				
Background/ rationale	2	Explain the scientific background and rationale for the investigation being reported	Page3-4/Line 59-86	Introduction/Paragraph 1-2
Objectives	3	State specific objectives, including any prespecified hypotheses	Page4/Line 87-93	Introduction/Paragraph 3
Methods				
Study design	4	Present key elements of study design early in the paper	Page4/Line 97-113	Patients /Paragraph 1
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page4/Line 97-113	Patients /Paragraph 1
Participants	6	(a) ***Cohort study***—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up ***Case-control study***—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls ***Cross-sectional study***—Give the eligibility criteria, and the sources and methods of selection of participants	Page4/Line 97-113	Patients /Paragraph 1
		(b) ***Cohort study***—For matched studies, give matching criteria and number of exposed and unexposed ***Case-control study***—For matched studies, give matching criteria and the number of controls per case	N/A: not a matched study.	N/A: not a matched study.
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page4/Line 97-113	Patients /Paragraph1
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comParagraphbility of assessment methods if there is more than one group	Page4/Line 97-113	Patients /Paragraph 1
Bias	9	Describe any efforts to address potential sources of bias	N/A	N/A
Study size	10	Explain how the study size was arrived at	N/A	N/A
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	N/A	N/A

Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page5-6/Line 116-153	Statistical Analysis/ Paragraph 1-4
		(b) Describe any methods used to examine subgroups and interactions	Page5-6/Line 116-153	Statistical Analysis/ Paragraph 1-4
		(c) Explain how missing data were addressed	N/A: no missing data	N/A: no missing data
		(d) ***Cohort study***—If applicable, explain how loss to follow-up was addressed ***Case-control study***—If applicable, explain how matching of cases and controls was addressed ***Cross-sectional study***—If applicable, describe analytical methods taking account of sampling strategy	N/A	N/A
		(e) Describe any sensitivity analyses	Page5/Line 135-140	Statistical Analysis/ Paragraph 2
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined foreligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Table1	Table1
		(b) Give reasons for non-participation at each stage	Figure1	Figure1
		(c) Consider use of a flow diagram	Figure1	Figure1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 6/ Line 157-169	Table1/Table s1
		(b) Indicate number of participants with missing data for each variable of interest	N/A: no missing data	N/A: no missing data
		(c) ***Cohort study***—Summarise follow-up time (eg, average and total amount)	N/A: no follow-up time	N/A: no follow-up time
Outcome data	15*	***Cohort study***—Report numbers of outcome events or summary measures over time	Page 6/Line 159-161	Results/Paragraph1
		Case-control study—Report numbers in each exposure category, or summary measures ofexposure	N/A	N/A
		Cross-sectional study—Report numbers of outcome events or summary measures	N/A	N/A
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg,95% confidence interval). Make clear which confounders were adjusted for and why they were included	Page 7/Line 172-194	Results/Paragraph 2
		(b) Report category boundaries when continuous variables were categorized	Table1	Table1
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Page7-8/Line 197-222	Results/Paragraph 3-5
Discussion				
Key results	18	Summarise key results with reference to study objectives	Page8-11/Line 225-295	Discussion/Paragraph 1-6

Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page11/Line 296-309	Discussion/Paragraph 7

Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page12/Line 312-318	Conclusion/Paragraph 1
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page12/Line 312-318	Conclusion/Paragraph 1
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page12/Line 321-323	Acknowledgements /Funding

*Give information seParagraphtely for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www. annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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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.

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/Lines 1-2	Title
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Page 2/Lines 30-53	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/Lines 59-83	Background/Paragraph 1-2
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 3/Lines 84-85 and Page 4/Lines 86-88	Background/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/Lines92-107	Patients /Paragraph 1
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 4/ Lines 94/100	Patients/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.	Page4/Lines 92-106	Patients/Paragraph 1
	5b	Describe eligibility criteria for participants.	Pages 4/ Lines 93-96	Patients/Paragraph 1
	5c	Give details of treatments received, if relevant.	NA	NA
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Pages 5/ Lines 117-122	Statistical Analysis / Paragraph 1
	6b	Report any actions to blind assessment of the outcome to be predicted.	Pages 4/ Lines 95	Methods/Paragraph 1
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Pages 5/ Lines 113-117	Statistical Analysis / Paragraph 1
	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.	NA	NA

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, no missing data	NA, no missing data
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Pages 5/ Lines 113-117	Statistical Analysis/ Paragraph 1
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 5/ Lines 117-119 and Lines 131-133	Statistical Analysis/ Paragraph 2/3
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 5/Lines 123-131	Statistical Analysis/ Paragraph 3
Risk groups	11	Provide details on how risk groups were created, if done.	Page 5/Lines 134-137	Statistical Analysis/ 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 6/Lines 144-154	Results/Paragraph 1/ Figure1
	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 6/Lines 144-154	Table 1 and Table s1
Model development	14a	Specify the number of participants and outcome events in each analysis.	Page 6/Lines 144-154	Results/Paragraph 1
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	Page 6-7/Lines 157-159	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 7/Lines 179-184	Results/Paragraph 3
	15b	Explain how to the use the prediction model.	Page 7-8/Lines 183-184 and Lines 197-201	Results/Paragraph 3/ 5
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page 7/Lines 187-193	Results/Paragraph 4
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	Page 9Lines 267-278	Discussion/Paragraph 7
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Page 8/Lines 204-224 Page9/Lines 225-252 Page10/Lines 253-266	Discussion/Paragraph 1-6
6Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 10-11/Lines 281-286	Conclusion
Other information				

Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	NA	NA
Funding	22	Give the source of funding and the role of the funders for the present study.	Page 10/Lines 289-291	Funding

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