# 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. | Page1/line1-2 | Title/- |
| Abstract | 2 | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions. | Page1/line7-24 | Abstract/Paragraph1 |
| **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. | Page1/line27-38;40-43 | Introduction/paragraph1-2 |
| | 3b | Specify the objectives, including whether the study describes the development or validation of the model or both. | Page1-2/line42-43 | Introduction/paragraph2 |
| **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. | Paga2/line47-49 | Materials and Methods/paragraph1 |
| | 4b | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up. | Page2/line48 | Materials and Methods/paragraph1 |
| Participants | 5a | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres. | Page2/line47-48 | Materials and Methods/paragraph1 |
| | 5b | Describe eligibility criteria for participants. | Page2/line49-55 | Materials and Methods/paragraph1 |
| | 5c | Give details of treatments received, if relevant. | Page2/line55-56 | Materials and Methods/paragraph1 |
| Outcome | 6a | Clearly define the outcome that is predicted by the prediction model, including how and when assessed. | Page2/line64-68;83-84 | Materials and Methods/paragraph3;6 |
| | 6b | Report any actions to blind assessment of the outcome to be predicted. | No | |
| Predictors | 7a | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured. | Page2/line69-73;75-82 | Materials and Methods/paragraph4-6 |
| | 7b | Report any actions to blind assessment of predictors for the outcome and other predictors. | No | |
| Sample size | 8 | Explain how the study size was arrived at. | Page2/line47 | Materials and Methods/paragraph1 |

| | | | | | |
|---|---|---|---|---|---|
| Missing data | 9 | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. | Page2/line52 | Materials and Methods/paragraph1 |
| Statistical analysis methods | 10a | Describe how predictors were handled in the analyses. | Page2-3/line86-89 | Materials and Methods/paragraph7 |
| | 10b | Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation. | Page3/line89-94 | Materials and Methods/paragraph7 |
| | 10d | Specify all measures used to assess model performance and, if relevant, to compare multiple models. | Page3/line93-94ZHPR | Materials and Methods/paragraph7 |
| Risk groups | 11 | Provide details on how risk groups were created, if done. | NA | NA |
| **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. | Page3/line106 | Results/ table1 |
| | 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. | Page3-4/line99-105;119 | Results/ paragraph1; table2 |
| Model development | 14a | Specify the number of participants and outcome events in each analysis. | Page3/line97-100 | Results/ paragraph1 |
| | 14b | If done, report the unadjusted association between each candidate predictor and outcome. | Page6/line126 | Results/ table4 |
| 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). | Page6/line126;137 | Results/ table4; figure1 |
| | 15b | Explain how to the use the prediction model. | Page6/line129-132 | Results/ paragraph4 |
| Model performance | 16 | Report performance measures (with CIs) for the prediction model. | Page6/line132-135 | Results/ paragraph4 |
| **Discussion** | | | | |
| Limitations | 18 | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). | Page10/line267-274 | Discussion/ paragraph10 |
| Interpretation | 19b | Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | Page7-8/line148-156;173-180 | Discussion/ paragraph1;3 |
| Implications | 20 | Discuss the potential clinical use of the model and implications for future research. | Page7-8/line166-172 | Discussion/ paragraph2 |
| **Other information** | | | | |
| Supplementary information | 21 | Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | Page10/line281 | Data availability/ paragraph1 |
| Funding | 22 | Give the source of funding and the role of the funders for the present study. | Page10/line284 | Conflict of interest/ paragraph1 |

Updated on June 1, 2020