## TRIPOD Checklist: Prediction Model Development

| Section | Item | Checklist description                                                                                                                                                                                                 | Reported on Page Number/Line Number | Reported on Section/Paragraph |
|---------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|
| **Title and abstract** | 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 3-5 | Title |
|         | 2    | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.                                                             | Page 2-3[ ] Line 34-61 | Abstract |
| **Introduction** | 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 71-113 | Introduction, Para 1-4 |
|         | 3b   | Specify the objectives, including whether the study describes the development or validation of the model or both.                                                                                                     | Page 6[ ] Line 114-118 | Introduction, Para 5 |
| **Methods** | 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 6[ ] Line 126-127 | Methods- Data set, Para 6 |
|         | 4b   | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.                                                                                                         | Page 6[ ] Line 127-130 | Methods- Data set, Para 6 |
|         | 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 134-135 | Methods- Data set, Para 6 |
|         | 5b   | Describe eligibility criteria for participants.                                                                                                                                                                       | Page 5-6, Line 126-127 | Methods- Data set, Para 6 |
|         | 5c   | Give details of treatments received, if relevant.                                                                                                                                                                       | Page 6-8, Line 165-166 | Methods, Para 10-13 |
|         | 6a   | Clearly define the outcome that is predicted by the prediction model, including how and when assessed.                                                                                                                    | Page 10, Line 195-206 | Methods, Para 13 |
|         | 6b   | Report any actions to blind assessment of the outcome to be predicted.                                                                                                                                                | Page 8-10, Line 165-206 | Methods, Para 10-13 |
|         | 7a   | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.                                                                            | Page 8-10, Line 165-206 | Methods, Para 10-13 |
|         | 7b   | Report any actions to blind assessment of predictors for the outcome and other predictors.                                                                                                                               | Page 8-10, Line 165-206 | Methods, Para 10-13 |
|         | 8    | Explain how the study size was arrived at.                                                                                                                                                                             | Page 6-7, Line 123-151 | Methods- Data set, Para 6-8 |

3-1
3-2

| Missing data | 9 | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. | Page 7, Line 137-146 | Methods-Data set, Para 7 |
| Statistical analysis methods | 10a | Describe how predictors were handled in the analyses. | Page 7-8, Line 139-142 | Correlational analysis, Para 13-14 |
| | 10b | Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation. | Page 9-10, Line 195-206 | Methods, All model construction and testing, Para 13 |
| | 10d | Specify all measures used to assess model performance and, if relevant, to compare multiple models. | Page 7-9, Line 139-142 | Correlational method testing, Para 13 |
| Risk groups | 11 | Provide details on how risk groups were created, if done. | Page 7-9, Line 139-142 | Correlational method testing, Para 13 |

| 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 10, Line 216-217 | Results, Para 13-15, Figure 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 10-11, Line 216-226 | Results, Para 13-15, Figure 1, Table 1 |
| Model development | 14a | Specify the number of participants and outcome events in each analysis. | Page 10-11, Line 216-217 | Results, Para 15 |
| | 14b | If done, report the unadjusted association between each candidate predictor and outcome. | No | |
| 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 11, Line 236-242 | Results-All model prediction results, Para 17 |
| | 15b | Explain how to use the prediction model. | Page 11, Line 236-242 | Results-All model prediction results, Para 17 |
| Model performance | 16 | Report performance measures (with CIs) for the prediction model. | Page 11, Line 236-242 | Results-All model prediction results, Para 17 |

| Discussion |
| Limitations | 18 | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). | Page 15-16, Line 329-344 | Discussion-Limitations, Para 25 |
| Interpretation | 19b | Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | Page 12-15, Line 246-258 | Discussion, Para 18-24 |
| Implications | 20 | Discuss the potential clinical use of the model and implications for future research. | Page 16, Line 346-350 | Conclusion, Para 26 |

| Other information |
| Supplementary information | 21 | Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | Page 7-8, Line 152-164 | Methods-Supplementary information, Para 9 |
| Funding | 22 | Give the source of funding and the role of the funders for the present study. | Page 16, Line 352-355 | Methods-CT equipment and parameters, Para 9 |
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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.