## TRIPOD Checklist: Prediction Model Development

| Section                  | Item | Checklist description                                                                 | Reported on Page Number/Line | Reported on Section/Paragraph |
|--------------------------|------|---------------------------------------------------------------------------------------|------------------------------|------------------------------|
| **Title and abstract**   |      |                                                                                       |                              |                              |
| Title                    | 1    | Identify the study as developing and/or validating a multivariable prediction model, and the outcome to be predicted. | Page2/line2-18               | Abstract/Para1-3              |
| Abstract                 | 2    | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions. | Page2/line19-21              | Abstract/Para4                |
| **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. | Page3/line2-21               | Introduction/Para1-2          |
|                          | 3b   | Specify the objectives, including whether the study describes the development or validation of the model or both. | Page3/line21-27              | Introduction/Para2            |
| **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. | Page3/line30-32 to Page4/line1-7 | Methods/Para1                |
|                          | 4b   | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up. | Page3/line30-32 to Page4/line1-7 | Methods/Para1                |
| Participants             | 5a   | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres. | Page3/line30-32 to Page4/line1-7 | Methods/Para1                |
|                          | 5b   | Describe eligibility criteria for participants.                                      | Page3/line30-32              | Methods/Para1                |
|                          | 5c   | Give details of treatments received, if relevant.                                     | Page3/line30-32              | Methods/Para1                |
| Outcome                  | 6a   | Clearly define the outcome that is predicted by the prediction model, including how and when assessed. | Page4/line9-20               | Methods/Para2-3              |
|                          | 6b   | Report any actions to blind assessment of the outcome to be predicted.                 | Page3/line30-32              | Methods/Para2-3              |
| Predictors               | 7a   | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured. | Page4/line9-20               | Methods/Para2-3              |
|                          | 7b   | Report any actions to blind assessment of predictors for the outcome and other predictors. | Page3/line30-32              | Methods/Para1                |
| Sample size             | 8    | Explain how the study size was arrived at.                                             | Page3/line30-32              | Methods/Para1                |
| Section                          | Page/line | Notes          |
|----------------------------------|-----------|----------------|
| Missing data                     |           | Methods/Para1  |
| 9 Describe how missing data were |           |                |
| handled (e.g., complete-case    |           |                |
| analysis, single imputation,     |           |                |
| multiple imputation) with       |           |                |
| details of any imputation method.|           |                |
| Statistical analysis methods     |           | Methods/Para4  |
| 10a Describe how predictors      |           |                |
| were handled in the analyses.    |           |                |
| 10b Specify type of model, all   |           |                |
| model-building procedures        |           |                |
| (including any predictor         |           |                |
| selection), and method for       |           |                |
| internal validation.             |           |                |
| 10d Specify all measures used    |           |                |
| to assess model performance and, |           |                |
| if relevant, to compare multiple |           |                |
| models.                          |           |                |
| Risk groups                      |           | Methods/Para4  |
| 11 Provide details on how risk   |           |                |
| groups were created, if done.     |           |                |
| Results                          |           |                |
| Participants                     |           | Methods/Para1  |
| 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.        |           |                |
| 13b Describe the characteristics  |           | Results/Para1  |
| of the participants (basic       |           |                |
| demographics, clinical features,  |           |                |
| available predictors), including |           |                |
| the number of participants with   |           |                |
| missing data for predictors and  |           |                |
| outcome.                         |           |                |
| Model development                |           | Methods/Para1  |
| 14a Specify the number of        |           |                |
| participants and outcome events   |           |                |
| in each analysis.                |           |                |
| 14b If done, report the         |           | Methods/Para1  |
| unadjusted association between    |           |                |
| each candidate predictor and     |           |                |
| outcome.                         |           |                |
| Model specification              |           | Methods/Para1  |
| 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). |           |                |
| 15b Explain how to the use the   |           | Methods/Para1  |
| prediction model.                |           |                |
| Model performance                |           | Methods/Para1  |
| 16 Report performance measures   |           |                |
| (with CIs) for the prediction    |           |                |
| model.                           |           |                |
| Discussion                       |           | Discussion/Para3|
| Limitations                      |           |                |
| 18 Discuss any limitations of    |           |                |
| the study (such as nonrepresentative sample, few events per predictor, missing data). | Page 7/line 27-31 | Discussion/Para 3 |
| Interpretation                   |           | Discussion/Para 1-3 |
| 19b Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | Page 6-7 | |
| Implications                     |           | Abstract/Para 4 |
| 20 Discuss the potential clinical use of the model and implications for future research. | Page 2/line 19-21 | |
| Other information                |           |                |
| Supplementary information        |           | Footnote       |
| 21 Provide information about     |           |                |
| the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | Page 8/line 21-28 | |
| Funding                          |           | Acknowledgements|
| 22 Give the source of funding and the role of the funders for the present study. | Page 8/line 15-19 | |
