### 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, the target population, and the outcome to be predicted. | Page 1/line 3-5 | Title |
| Abstract | 2 | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions. | Page 2/line 42-66 | 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 3-4/line 76-103 | Introduction/paragraph 1-2 |
| | 3b | Specify the objectives, including whether the study describes the development or validation of the model or both. | Page 4/line 104-114 | Introduction/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 4-5/line 117-149 | Methods/paragraph 1-2 |
| | 4b | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up. | N/A (all the data were collected at the same time) | N/A (all the data were collected at the same time) |
| Participants | 5a | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres. | Page 4-5, page 8/line 117-149, line 247-266 | Methods/paragraph 1-2, paragraph 8 |
| | 5b | Describe eligibility criteria for participants. | Page 4-5, page 8/line 247-266 | Methods/paragraph 1-2, paragraph 8 |
| | 5c | Give details of treatments received, if relevant. | N/A (no treatment information) | N/A (no treatment information) |
| Outcome | 6a | Clearly define the outcome that is predicted by the prediction model, including how and when assessed. | Page 11-12/line 358-373 | Results/paragraph 7 |
| | 6b | Report any actions to blind assessment of the outcome to be predicted. | N/A (all the data were collected at the same time) | N/A (all the data were collected at the same time) |
| Predictors | 7a | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured. | Page 8/line 247-262 | Methods/paragraph 8 |
| | 7b | Report any actions to blind assessment of predictors for the outcome and other predictors. | N/A (all the data were collected at the same time) | N/A (all the data were collected at the same time) |
| Sample size | 8 | Explain how the study size was arrived at. | Page 4-5, page 8/line 247-262 | Methods/paragraph 8 |
| Section                          | Code   | Description                                                                 | Page/Line | Location       |
|---------------------------------|--------|------------------------------------------------------------------------------|-----------|----------------|
| Missing data                    | 9      | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. | 8/line247-252 | Methods/paragraph 8 |
| Statistical analysis methods    | 10a    | Describe how predictors were handled in the analyses.                       | 8/line117-149, line 247-252 | Methods/paragraph 8, paragraph 8 |
|                                 | 10b    | Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation. | 8/line256-262, line 358-369 | Methods/paragraph 7 |
|                                 | 10d    | Specify all measures used to assess model performance and, if relevant, to compare multiple models. | 8/line387-393 | Results/paragraph 8 |
| Risk groups                     | 11     | Provide details on how risk groups were created, if done.                    | 8/line259-260 | Methods/paragraph 8 |
| 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. | 4-5, page 8/line 117-149, line 247-252 | Methods/paragraph 1-2, paragraph 8 |
|                                 | 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. | 33-34 | Table S1 |
| Model development               | 14a    | Specify the number of participants and outcome events in each analysis.      | 12/line 369-371 | Results/paragraph 7 |
|                                 | 14b    | If done, report the unadjusted association between each candidate predictor and outcome. | N/A | N/A |
| 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/line 387-393 | Results/paragraph 8 |
|                                 | 15b    | Explain how to the use the prediction model.                               | 11-12/line 364-369, line 387-393 | Results/paragraph 7-8 |
| Model performance               | 16     | Report performance measures (with CIs) for the prediction model.             | 11-12/line 378-384, line 397-402 | Results/paragraph 7-8 |
| Discussion                      | 18     | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). | 15/line 486-495 | Discussion/paragraph 6 |
| Interpretation                  | 19b    | Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | 13-15/line 416-485 | Discussion/paragraph 2-5 |
| Implications                    | 20     | Discuss the potential clinical use of the model and implications for future research. | 13-15/line 416-485 | Discussion/paragraph 2-5 |
| Other information               |        |                                                                              |           |                |
| Supplementary information       | 21     | Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | 8/line247-252 | Methods/paragraph 8 |
| Funding                         | 22     | Give the source of funding and the role of the funders for the present study. | 16/line 510-512 | Funding |
