| 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/Line50–52                    | Title                       |
| Abstract| 2    | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.                                                                                   | Page1/Line30–52                    | 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.                                             | Page2/Line50–69                    | Introduction/Paragraph1     |
|         | 3b   | Specify the objectives, including whether the study describes the development or validation of the model or both.                                                                                                            | Page2/Line90–93                    | Introduction/Paragraph1     |
|         |      | **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.                                                            | Page4/Line97–107                   | Methods/Paragraph1          |
|         | 4b   | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.                                                                                                               | Page4/Line97–99                    | 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.                                                                                     | Page4/Line97–99                    | Methods/Paragraph1          |
|         | 5b   | Describe eligibility criteria for participants.                                                                                                                                                                              | N/A                                | N/A                         |
|         | 5c   | Give details of treatments received, if relevant.                                                                                                                                                                             | N/A                                | N/A                         |
| Outcome | 6a   | Clearly define the outcome that is predicted by the prediction model, including how and when assessed.                                                                                                                     | Page6/Line189–199                  | Methods/Paragraph10         |
|         | 6b   | Report any actions to blind assessment of the outcome to be predicted.                                                                                                                                                     | Page8/Line189–199                  | Methods/Paragraph10         |
| Predictors | 7a  | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.                                                                                | Page6–7/Line189–186                | Methods/Paragraph9          |
|         | 7b   | Report any actions to blind assessment of predictors for the outcome and other predictors.                                                                                                                                   | Page6/Line189–199                  | Methods/Paragraph5–7        |
| Sample size | 8   | Explain how the study size was arrived at.                                                                                                                                                                                  | Page4/Line97–107                   | Methods/Paragraph1          |
| Section          | Number | Description                                                                                     | Source                                                                 | Method/Paragraph |
|------------------|--------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------|
| Missing data     | 9      | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. | Page3/Line99–101                                                   | Methods/Paragraph1 |
| Statistical analysis methods | 10a    | Describe how predictors were handled in the analyses.                                           | Page3/Line 96–108                                                  | Methods/Paragraph5–6 |
|                  | 10b    | Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation. | Page6/Line181–187                                                 | Methods/Paragraph9 |
|                  | 10d    | Specify all measures used to assess model performance and, if relevant, to compare multiple models. | Page6/Line181–187                                                 | Methods/Paragraph9 |
| Risk groups      | 11     | Provide details on how risk groups were created, if done.                                       | Page4/Line120–133                                                | Methods/Paragraph3 |
| 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. | Page4/Line119–136                                                | Methods/Paragraph1 |
|                  | 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. | Page4/Line119–136                                                | Methods/Paragraph1 |
| Model development| 14a    | Specify the number of participants and outcome events in each analysis.                         | Page8/Line234–255                                               | Result/Paragraph4 |
|                  | 14b    | If done, report the unadjusted association between each candidate predictor and outcome.          | Page8/Line257–271                                               | Result/Paragraph5 |
| 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). | Page10/Line309–334                                           | Result/Paragraph9–10 |
|                  | 15b    | Explain how to use the prediction model.                                                         | Page10/Line309–334                                           | Result/Paragraph9–10 |
| Model performance| 16     | Report performance measures (with CIs) for the prediction model.                                 | Page10/Line309–334                                           | Result/Paragraph9–10 |
| Discussion       | 18     | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). | Page13/Line425–431                                               | Discussion/Paragraph8 |
| Interpretation   | 19b    | Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | Page14/Line439–447                                             | Conclusion/Paragraph1 |
| Implications     | 20     | Discuss the potential clinical use of the model and implications for future research.            | Page13/Line432–437                                             | Discussion/Paragraph9 |
| Other information|        |                                                                                                  |                                                                      |                  |
| Supplementary information | 21   | Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | N/A                                                                 | N/A               |
| Funding          | 22     | Give the source of funding and the role of the funders for the present study.                    | Page14/Line454–456                                             | Funding          |
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.