| 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. | Page 1/Line 3-4                     | Title                        |
| Abstract                      | 2    | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions. | Page 4/Line 18-21 to Page 5/Line 1-20 | Abstract/Paragraph 1-4       |
| 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 6/Line 2-22 to Page 7/Line 1-17 | Introduction/Paragraph 1-3   |
|                               | 3b   | Specify the objectives, including whether the study describes the development or validation of the model or both.                          | Page 7/Line 12-17                   | 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 7/Line 21-22 to Page 8/Line 1-13 | Methods/Paragraph 1          |
|                               | 4b   | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.                          | Page 8/Line 4-5                     | Methods/Paragraph 1          |
| Participants                  | 5a   | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres. | Page 8/Line 1-5                     | Methods/Paragraph 1          |
|                               | 5b   | Describe eligibility criteria for participants.                                        | Page 8/Line 5-13                    | Methods/Paragraph 1          |
|                               | 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.                               | Page 13/Line 4-22                   | Results/Paragraph 4-6        |
|                               | 6b   | Report any actions to blind assessment of the outcome to be predicted.                   | Page 11/Line 3-14                   | Methods/Paragraph 6-7        |
| Predictors                    | 7a   | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured. | Page 9/Line 12-20                   | Methods/Paragraph 4          |
|                               | 7b   | Report any actions to blind assessment of predictors for the outcome and other predictors.                                          | Page 10/Line 11-22                  | Methods/Paragraph 6          |
| Sample size                   | 8    | Explain how the study size was arrived at.                                              | Page 8/Line 1-13                    | Methods/Paragraph 1          |
| Section                  | Instruction                                                                 | Page/Line | Method/Paragraph |
|--------------------------|-----------------------------------------------------------------------------|-----------|------------------|
| Missing data             | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. | N/A       | N/A              |
| Statistical analysis     | 10a Describe how predictors were handled in the analyses.                    | Page10/Line 11-22 | Methods/Paragraph 6 |
| methods                  | 10b Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation. | Page10/Line 19-22 to Page11/Line 1-14 | Methods/Paragraph 6-7 |
|                          | 10d Specify all measures used to assess model performance and, if relevant, to compare multiple models. | Page11/Line 1-14 | Methods/Paragraph 6-7 |
| Risk groups              | 11 Provide details on how risk groups were created, if done.                 | N/A We don't create risk | N/A We don't create risk |
| 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. | Figure1 | Figure1 |
|                          | 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. | Page11/Line 17-22 to Page12/Line 1-8 and table1 | Results/Paragraph 1 and Paragraph 4 |
| Model development        | 14a Specify the number of participants and outcome events in each analysis.  | Page13/Line 4-19 | Results/Paragraph 4 |
|                          | 14b If done, report the unadjusted association between each candidate predictor and outcome. | Page13/Line 16-19 | Results/Paragraph 4 |
| 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). | Page14/Line 13-15 | Results/Paragraph 6 |
|                          | 15b Explain how to use the prediction model.                                | Page13/Line 20-22 to Result/Paragraph 5 |
| Model performance        | 16 Report performance measures (with CIs) for the prediction model.          | Page14/Line 6-16 | Results/Paragraph 6 |
| Discussion               | Limitations 18 Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). | Page17/Line 15-22 | Discussion/Paragraph 5 |
|                          | Interpretation 19b Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence. | Page14/Line 19-22 to Page17/Line 1-22 | Discussion/Paragraph 1-5 |
|                          | Implications 20 Discuss the potential clinical use of the model and implications for future research. | Page 18/Line 1-6 | Conclusion/Paragraph 1 |
| Other information        | Supplementary information 21 Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets. | N/A We don't provided any supplementary | N/A We don't provided any supplementary |
|                          | Funding 22 Give the source of funding and the role of the funders for the present study. | Page18/Line 11-16 | Acknowledgments/Paragraph 1 |
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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.