| 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/Line2-3                     | Title                       |
| Abstract                    | 2    | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.                                                           | Page2/Line1-28                    | Abstract/Paragraph1-4       |
| 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. | Page3/Line1-27                    | Introduction/Paragraph1-3   |
|                             | 3b   | Specify the objectives, including whether the study describes the development or validation of the model or both.                                                                                                      | Page3/Line28-30                   | Introduction/Paragraph3     |
| 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/Line3-6                     | Methods/Paragraph1          |
|                             | 4b   | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.                                                                                                         | Page4/Line7                       | Methods/Paragraph2          |
| Participants                | 5a   | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.                                                                           | Page4/Line7-8                     | Methods/Paragraph2          |
|                             | 5b   | Describe eligibility criteria for participants.                                                                                                                                                                        | Page4/Line9-22                    | Methods/Paragraph2-3        |
|                             | 5c   | Give details of treatments received, if relevant.                                                                                                                                                                      | N                                 | Presence of treatments: N   |
| Outcome                    | 6a   | Clearly define the outcome that is predicted by the prediction model, including how and when assessed.                                                                                                               | Page4/Line23-33                   | Methods/Paragraph4-5        |
|                             | 6b   | Report any actions to blind assessment of the outcome to be predicted.                                                                                                                                                | Page4/Line23-33                   | Methods/Paragraph4-5        |
| Predictors                  | 7a   | Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.                                                                     | Page5/Line1-3                      | Methods/Paragraph6-9        |
|                             | 7b   | Report any actions to blind assessment of predictors for the outcome and other predictors.                                                                                                                             | Page5/Line1-3                      | Methods/Paragraph6-9        |
| Sample size                 | 8    | Explain how the study size was arrived at.                                                                                                                                                                            | N                                 | Presence of sample size: N  |
| Section          | Page | Description                                                                                                                                                                                                 | Source                                                                 |
|------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Missing data     | 9    | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.                                                              | NA, there are no missing data                                         |
| Statistical      | 10a  | Describe how predictors were handled in the analyses.                                                                                                                                                        | Methods/ Paragraph 10                                                |
| methods          | 10b  | Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.                                                                               | Methods/ Paragraph 10                                                |
| 10d              |      | Specify all measures used to assess model performance and, if relevant, to compare multiple models.                                                                                                          | Methods/ Paragraph 10                                                |
| Risk groups      | 11   | Provide details on how risk groups were created, if done.                                                                                                                                                   | NA, there is no risk group                                           |
| Results          | 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.       | Results/ Paragraph 11                                                |
|                  | 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.           | Results/ Paragraph 11                                                |
| Model development| 14a  | Specify the number of participants and outcome events in each analysis.                                                                                                                                     | Results/ Paragraph 2-4                                               |
|                  | 14b  | If done, report the unadjusted association between each candidate predictor and outcome.                                                                                                                    | Results/ Paragraph 2-4                                               |
| 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).                                 | Results/ Paragraph 5                                                 |
|                  | 15b  | Explain how to use the prediction model.                                                                                                                                                                     | Results/ Paragraph 5                                                 |
| Model performance| 16   | Report performance measures (with CIs) for the prediction model.                                                                                                                                           | Results/ Paragraph 5                                                 |
| Discussion       | 18   | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).                                                                                             | Discussion/ Paragraph 5                                              |
| Limitations      |      |                                                                                                                                                                                                             | Discussion/ Paragraph 5                                              |
| Interpretation   | 19b  | Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.                                                            | Discussion/ Paragraph 3-4                                            |
| Implications     | 20   | Discuss the potential clinical use of the model and implications for future research.                                                                                                                       | Discussion/ Paragraph 6                                              |
| Other information| 21   | Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.                                                                               | NA, there is no supplementary information                            |
| Supplementary    | 22   | Give the source of funding and the role of the funders for the present study.                                                                                                                               | Acknowledgments/ Paragraph 1                                       |
| information      |      |                                                                                                                                                                                                             |                                                                        |

3-2
Article information: http://dx.doi.org/10.21037/atm-20-7975
*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.