PatientLevelPrediction Tutorial

TRIPOD Exercise

Please review the CHADS2 paper and determine what TRIPOD reporting suggestions are done well by the paper and what suggestions are not included in the paper.

* Do you think this paper’s model is reproducible based on the information in the paper?
* Do you have suggestions to improve the model development?
* What could have been added to improve the model reporting?
* Pay particular attention to the highlighted statements and whether you think the paper met these criteria.

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| **Section/Topic** | **Item** | **Development or Validation** | **Checklist Item** | **Comments** |
| **Title** | **1** | **D,V** | **Identify the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted** |  |
| Abstract | 2 | D,V | Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions |  |
| **Introduction** |  |  |  |  |
| **Background and objectives** | **3a.** | **D,V** | **Explain the medical context (including whether diagnostic or prognostic) and rationale for developing or validating the multivariable prediction model, including references to existing models.** |  |
| 3b | D,V | Specify the objectives, including whether the study describes the development or validation of the model, or both. |  |
| **Methods** |  |  |  |  |
| Source of data | 4a | D,V | Describe the study design or source of data (e.g., randomized trial, cohort, or registry data), separately for the development and validation datasets, if applicable. |  |
| 4b | D,V | Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up. |  |
| **Participants** | 5a | D,V | Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres. |  |
| **5b** | **D,V** | **Describe eligibility criteria for participants** |  |
| 5c | D,V | Given details of treatments received, if relevant. |  |
| Outcome | 6a | D,V | Clearly define the outcome that is predicted by the prediction model, including how and when assessed. |  |
| 6b | D,V | Report any actions to blind assessment of the outcome to be predicted |  |
| Predictors | 7a | D,V | Clearly define all predictors used in developing the multivariable prediction model, including how and when they were measured. |  |
| 7b | D,V | Report and actions to blind assessment of predictors for the outcome and other predictors |  |
| **Sample Size** | **8** | **D,V** | **Explain how the study size was arrived at.** |  |
| Missing data | 9 | D,V | Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method. |  |
| **Statistical analysis methods** | 10a | D | Describe how predictors were handled in the analyses |  |
| **10b** | **D** | **Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.** |  |
| 10c | V | For validation, describe how the predictors were calculated. |  |
| **10d** | **D,V** | **Specify all measures used to assess model performance and, if relevant, to compare multiple models.** |  |
| 10e | V | Describe any model updating (e.g., recalibration) arising from the validation, if done. |  |
| Risk groups | 11 | D,V | Provide details on how risk groups were created, if done. |  |
| Development vs validation | 12 | V | For validation, identify differences from the development data in setting, eligibility criteria, outcome, and predictors. |  |
| **Results** |  |  |  |  |
| Participants | 13a | D,V | 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 | D,V | Describe the characteristics of the participants (basic demographics, clinical features, available predictors), including the number of participants with missing data for predictors and outcome |  |
| 13c | V | For validation, show a comparison with the development data of the distribution of important variables (demographics, predictors, and outcome) |  |
| **Model development** | **14a** | **D** | **Specify the number of participants and outcome events in each analysis.** |  |
| 14b | D | If done, report the unadjusted association between each candidate predictor and outcome. |  |
| **Model specification** | **15a** | **D** | **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** | **D** | **Explain how to use the prediction model.** |  |
| Model performance | 16 | D,V | Report performance measure (with Cis) for the prediction model. |  |
| Model updating | 17 | V | If done, report the results from any model updating (i.e., model specification, model performance). |  |
| **Discussion** |  |  |  |  |
| Limitations | 18 | D,V | Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data). |  |
| **Interpretation** | 19a | V | For validation, discuss the results with reference to performance in the development data, and any other validation data. |  |
| **19b** | **D,V** | **Give an overall interpretation of the results, considering objectives, limitations, results from similar studies, and other relevant evidence.** |  |
| Implications | 20 | D,V | Discuss the potential clinical use of the model and implications for future research. |  |
| **Other information** |  |  |  |  |
| Supplementary information | 21 | D,V | Provide information about the availability of the supplementary resources such as study protocol, Web calculator, and datasets. |  |
| Funding | 22 | D,V | Give the source of funding and the role of funders for the present study. |  |