

NIHR Greater Manchester PSTRC

Plain English Publication Summary

Publication: [Continual updating and monitoring of clinical prediction models: time for dynamic prediction systems?](#)

Publication details (Vancouver format)

Jenkins DA, Martin GP, Sperrin M, Riley RD, Debray TP, Collins GS, Peek N. Continual updating and monitoring of clinical prediction models: time for dynamic prediction systems? Diagnostic and Prognostic Research. 2021 Dec;5(1):1-7.

What are the most important findings/conclusions in this paper? Why are they important?

Clinical prediction models (CPMs) are electronic tools that work out how likely a particular health outcome is, when it is given a set of patient characteristics (“predictors”). CPMs are important because they can be used to help with diagnosis or prognosis in patients. We found that the current CPM pipeline (which includes the development, testing and use of CPMs) doesn’t work as well as it could, because the process is only usually done once, when the CPM is first created. Our findings suggest that clinical prediction can be improved if it becomes an ongoing process that updates itself, because this reduces the risk of incorrect results.

We discuss some potential solutions to the challenges in clinical prediction modelling and suggest that it would be helpful to research these further.

What did you do?

We discussed some of the current issues with clinical prediction modelling and proposed some solutions.

Why did you conduct this research?

The challenges of CPMs are well-known but there are currently no recommendations or solutions discussed in academic papers. So we chose to discuss some possible solutions that should be researched, in order to improve CPMs.

What was known before your paper was published?

CPMs are well-known tools used to help with decision-making in healthcare. However, over time they can become less accurate. Dynamic prediction models (prediction models that update as the information they are provided with changes) have been suggested as a way to make sure CPMs remain accurate over time. But we still need to find out if dynamic prediction models produce better results.

What is next? What is the potential impact of the work in this paper? What will change as a result of this paper (or the study it describes)?

Following on from this paper, we are working on a 'simulation study', which uses real-world health data to try out some of the ways that CPMs might be improved. This is then compared with the results that are produced by the current CPM methods.

This could have an impact on how researchers develop, test and use CPMs. Also, if they work, dynamic prediction models could make sure CPMs remain accurate over time, which will make healthcare safer for patients.

Does this paper link in to a particular study / project? If so, please summarise the study and explain how this paper has improved understanding, or will move the study forward.

This paper links to an ongoing project which is developing methods and tools for dynamic risk prediction models. In a previous study, we did a literature review ([Dynamic models to predict health outcomes: current status and methodological challenges](#)) that looked at the current methods that are available and their challenges.

Following on from the previous paper, this study discusses some of these challenges and suggests possible solutions that should be explored.