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Prediction Models for Successful External Cephalic Version: An Updated Systematic Review

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Abstract

Objective: To review the decision aids currently available or being developed to predict a patient's odds that their external cephalic version (ECV) will be successful.

Study design: We searched PubMed/MEDLINE, Cochrane Central, and ClinicalTrials.gov from 2015 to 2022. Articles from a pre-2015 systematic review were also included. We selected English-language articles describing or evaluating models (prediction rules) designed to predict an outcome of ECV for an individual patient. Acceptable model outcomes included cephalic presentation after the ECV attempt and whether the ECV ultimately resulted in a vaginal delivery. Two authors independently performed article selection following PRISMA 2020 guidelines. Since 2015, 380 unique records underwent title and abstract screening, and 49 reports underwent full-text review. Ultimately, 17 new articles and 8 from the prior review were included. Of the 25 articles, 22 proposed one to two models each for a total of 25 models, while the remaining 3 articles validated prior models without proposing new ones.

Results: Of the 17 new articles, 10 were low, 6 moderate, and 1 high risk of bias. Almost all articles were from Europe (11/25) or Asia (10/25); only one study in the last 20 years was from the United States. The models found had diverse presentations including score charts, decision trees (flowcharts), and equations. The majority (13/25) had no form of validation and only 5/25 reached external validation. Only the Newman-Peacock model (United States, 1993) was repeatedly externally validated (Pakistan, 2012 and Portugal, 2018). Most models (14/25) were published in the last 5 years. In general, newer models were designed more robustly, used larger sample sizes, and were more mathematically rigorous. Thus, although they await further validation, there is great potential for these models to be more predictive than the Newman-Peacock model.

Conclusion: Only the Newman-Peacock model is ready for regular clinical use. Many newer models are promising but require further validation.

Key points: · 25 ECV prediction models have been published; 14 were in the last 5 years.. · The Newman-Peacock model is currently the only one with sufficient validation for clinical use.. · Many newer models appear to perform better but await further validation..

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