

## EP17.49 Machine learning models for predicting postpartum hemorrhage: A systematic review and meta-analysis

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### Objectives

- To evaluate the predictive performance of machine learning (ML) models for postpartum hemorrhage (PPH), focusing on their discrimination and calibration

### Methods

- Systematic review and meta-analysis of observational studies and clinical trials that developed or validated supervised ML models for predicting PPH in singleton or twin pregnancies
- Studies were included regardless of the PPH definition used
- We excluded articles that lacked original findings, did not report relevant outcomes, or provided insufficient data on model performance. Conference abstracts were also excluded
- Random-effect models were used to compute the pooled effect size for the area under the curve (AUC) values and reported using forest plots. The risk of bias was evaluated with PROBAST

### Results

- A total of 568 articles were identified
- After screening titles, abstracts, and full-text articles, 24 studies met the inclusion criteria
- The pooled AUC for ML models predicting PPH was 0.83 (95% CI: 0.78–0.88,  $I^2=99.8\%$ , Figure)
- Notably, 13 studies had a high risk of bias, and 5 had unclear bias ratings
- In terms of applicability, seven studies raised major concerns, while applicability was unclear in 6 others

### Conclusions

- Machine learning models exhibit good overall discriminative ability for predicting PPH
- Their clinical adoption remains limited due to high study heterogeneity and risk of bias, inconsistent PPH definitions, and a lack of reporting standardized calibration metrics
- Further research is needed to define the clinical usefulness of such algorithms

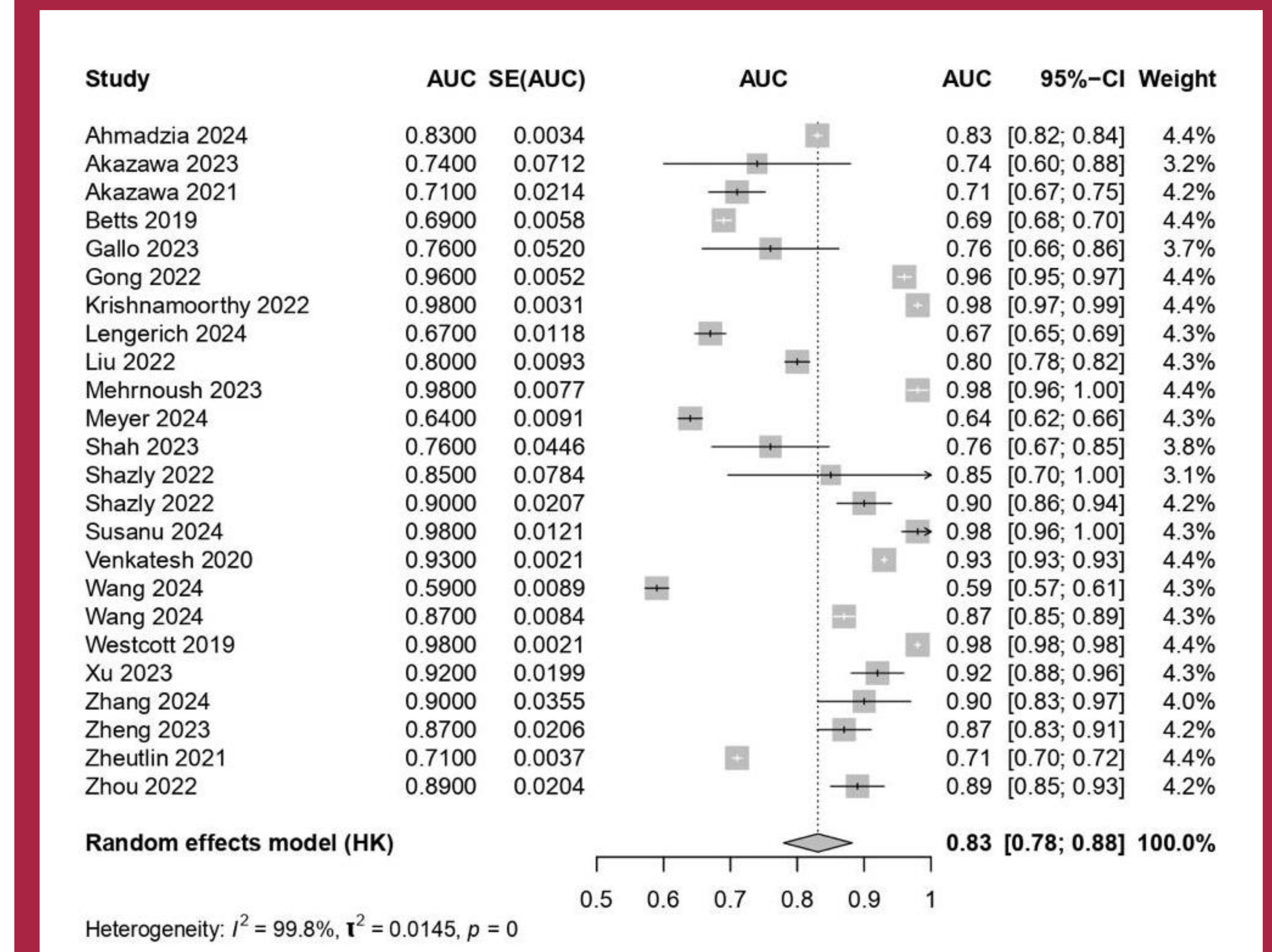


**Figure.** Pooled AUC for ML models predicting PPH