

# The diagnostic accuracy of the NICE risk-stratification algorithm in predicting pre-eclampsia: a systematic review with meta-analysis

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## Abstract

**Objectives:** Pre-eclampsia is a hypertensive disorder of pregnancy which, left untreated, can cause significant foeto-maternal morbidity. Accordingly, the National Institution for Health and Care Excellence (NICE) recommends that high-risk women be prescribed daily prophylaxis with 75-150mg aspirin from twelve weeks' gestation until delivery. NICE stratifies risk using eleven maternal risk factors; however, no secondary research has been published evaluating the diagnostic accuracy of this algorithm. This systematic review and meta-analysis evaluates the sensitivity and specificity of the NICE risk-stratification algorithm in predicting pre-eclampsia in pregnant women [?]<sup>16</sup> years. **Methods:** Systematic searches were conducted using PubMed, Cochrane Library and SCOPUS to identify relevant papers with a CBEM Level of Evidence [?]<sup>4</sup>. A total of twenty eligible studies and 892,061 pregnancies were included in our analyses. The logit-transformed sensitivities and specificities from each study were modelled as a bivariate distribution with random effects in order to generate maximum-likelihood estimates (MLEs) for the overall sensitivity and specificity of the algorithm in predicting pre-eclampsia. **Results:** MLEs for the NICE algorithm's sensitivity and specificity were 44.4% (95% CI 33.7-55.5) and 88.3% (95% CI 83.9-91.6), respectively. Significant heterogeneity was exhibited between the sensitivities ( $I^2=99.8\%$ , 95% CI = 99.54-99.65) and specificities ( $I^2=99.88\%$ , 95% CI = 99.87-99.89) calculated by each of the included studies. Consequently, there is a low degree of certainty in these estimates. **Conclusions:** The NICE risk-stratification algorithm performs remarkably poorly when used to predict pre-eclampsia in any of three gestational categories. Clinicians should advise women that around 1 in 5 high-risk patients and 1 in 25 low-risk patients go on to develop pre-eclampsia. However, future studies will likely alter the values of these statistics and the confidence therein. **Key Words:** Pre-eclampsia, High-risk Pregnancy, Sensitivity and Specificity, Predictive Value of Tests, Clinical Decision Rules.