

Development and validation of Prediction models for Risks of complications in Early-onset Pre-eclampsia (PREP): a prospective cohort study

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Plain English summary

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Plain English summary

Pre-eclampsia is a disorder in pregnancy, characterised by raised blood pressure and protein in the urine. When it occurs before 34 weeks of pregnancy (early onset), it causes serious complications for the mother and baby. The only known cure for pre-eclampsia is delivery of the baby. There is a lack of sufficient evidence regarding the ability of tests to correctly predict complications to the mother or baby to inform management.

The PREP (Prediction of Risks in Early-onset Pre-eclampsia) study aims to provide estimates of risks faced by mothers, using tests that are routinely performed in the NHS.

We developed two models. The first model (PREP-L) provided overall individual risk estimates from diagnosis of early-onset pre-eclampsia until discharge. The second model (PREP-S) provided risk estimates at various time points from diagnosis until 34 weeks of pregnancy. The models' performance was assessed in populations outside the UK (Canada and the Netherlands).

A total of 946 women with early-onset pre-eclampsia from 53 hospitals in the UK participated in the study. For 82% of the women participating, the PREP-L model accurately predicted those mothers who will develop complications. The PREP-S model predicted accurately in 76% of women. The PREP-L model performed similarly in non-UK populations. Both models showed that the results could be generalised in an external population. Further studies are needed to assess the impact of the models' use in improving outcomes for the mother and baby.

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