



Title	Methods of Prediction and Prevention of Pre-Eclampsia: Systematic Reviews of Accuracy and Effectiveness Literature with Economic Modeling
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Aim

To identify combinations of test and treatments that would predict and prevent pre-eclampsia.

Conclusions and results

This health technology assessment addressed the aim in 3 ways: i) a series of systematic reviews of test accuracy in predicting pre-eclampsia; ii) a series of systematic reviews of effectiveness of interventions with potential to reduce cases of pre-eclampsia; iii) health economic evaluation, including an economic model, of the combined effect of tests and treatments and their cost effectiveness.

Main findings of test accuracy reviews: The quality of studies and test accuracy was generally poor in the 27 tests reviewed. Some tests achieved high specificity, but at the expense of compromised sensitivity. Only a few tests reached specificity above 90%. These were body mass index >34, alphafoetoprotein, fibronectin, kallikrein, and uterine artery Doppler (bilateral notching). Only kallikrein had a sensitivity of over 80%. A few tests not commonly found in routine practice, eg, kallikreinuria, seemed to offer the promise of high sensitivity, without compromising specificity, but this would require further investigation.

Main findings of effectiveness reviews: This report presents 16 systematic reviews of interventions, of which 15 provide estimates of effectiveness in pre-eclampsia.

Recommendations

In the authors' opinion, none of the tests evaluated are sufficiently accurate to recommend for routine use in clinical practice. Calcium and antiplatelet agents, primarily low-dose aspirin, are the interventions shown to prevent pre-eclampsia. The most cost-effective approach to reducing pre-eclampsia is likely to be an effective, affordable, and safe intervention applied to all mothers without prior testing to assess levels of risk. However, we believe it is premature on cost-effectiveness grounds to suggest the implementation of a *treat all* intervention strategy, eg, advice to rest or pharmacological

interventions such as low-dose aspirin or calcium supplementation.

Methods

See Executive Summary link at www.nchta.org/execsumm/summ1206.shtml.

Further research/reviews required

Rigorous evaluation is needed of tests with modest cost whose initial assessments suggest that they may have high levels of both sensitivity and specificity. Similarly, high-quality, adequately powered randomized controlled trials need to investigate whether interventions such as advice to rest are effective in reducing pre-eclampsia. An economic model should be developed. It should consider not just pre-eclampsia, but other related outcomes, particularly those relevant to the infant, eg, perinatal death, preterm birth, and small for gestational age. Such a modeling project should provide for primary data collection on the safety of interventions and their associated costs.