

# Screening programme for pre-eclampsia

<b>Submission date</b> 23/05/2016	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 06/07/2016	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 18/08/2023	<b>Condition category</b> Pregnancy and Childbirth	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Pre-eclampsia (PE) is a medical condition which can develop during pregnancy, and can affect both the mother and unborn baby. In PE, it is thought that the blood supply to the placenta (organ which connects the mother and child's blood supply) is reduced, which can mean the unborn baby does not get enough nutrients to develop properly. The key indicators of PE are high blood pressure and protein in the mother's urine. The National Institute for Health and Clinical Excellence (NICE) recommends that the way to determine whether a woman is at high-risk of developing pre-eclampsia should depend on maternal risk factors. However, this method of screening only identifies about 40% of the women that develop pre-eclampsia requiring delivery before 37 weeks and 35% of all cases of pre-eclampsia. This study uses a new method of screening called the Bayes method that combines maternal risk factors with the results from various tests to calculate the individual risk for developing pre-eclampsia. Extensive research in the last decade has led to the identification of four potentially useful tests: measurements of blood pressure, blood flow in the maternal blood vessels that supply the womb and the levels of two placental hormones in the mother's blood. There is some evidence that the new test used in this study is superior to that of NICE method. The aim of the study is to evaluate the effectiveness of this new method of screening for pre-eclampsia against that currently recommended by NICE.

### Who can participate?

Pregnant women aged 18 years or over with a live fetus at 11-13 weeks pregnancy.

### What does the study involve?

Women attend two study visits, one when they are 11-13 weeks pregnant and one when they are 19-24 weeks pregnant. At the first study visit, women have their weight and height recorded as well as their medical history. They then have a special ultrasound scan to measure the blood flow in the vessels that supply the womb and have samples of blood taken which are tested for placental hormones. At the second study visit, routine data is collected during the participants scan. The information collected at these visits is then used to make predictions about whether the women will develop pre-eclampsia. Women then have their medical records reviewed up to one month after they have had their baby to find out which screening method is most accurate.

### What are the possible benefits and risks of participating?

There are no direct benefits or risks involved with participating in this study.

Where is the study run from?

King's College Hospital (lead centre) and six other hospitals in England (UK)

When is the study starting and how long is it expected to run for?

October 2015 to July 2018

Who is funding the study?

National Institute for Health Research (UK)

Who is the main contact?

Dr Kate Maclagan

k.maclagan@ucl.ac.uk

## Contact information

### Type(s)

Scientific

### Contact name

Dr Kate Maclagan

### Contact details

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## Additional identifiers

### Protocol serial number

20412

## Study information

### Scientific Title

The diagnostic accuracy of pregnant women screened for pre-eclampsia using Bayes theorem based and screening according to NICE guidelines

### Acronym

SPREE

### Study objectives

The aim of this study is to compare screening for pre-eclampsia (PE) using a Bayes theorem based method with screening using current NICE guidelines.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

London- Surrey Borders Research Ethics Committee, 22/12/2015, ref: 15/LO/2161

**Study design**

Observational diagnostic accuracy cohort study

**Primary study design**

Observational

**Study type(s)**

Other

**Health condition(s) or problem(s) studied**

Specialty: Reproductive health and childbirth, Primary sub-specialty: Reproductive and sexual medicine

**Interventions**

All participants to attend the 2 study visits (at 11-13 weeks gestation and 19-24 weeks gestation). The final, pregnancy outcome data is retrieved from patient notes so no participant visit is required.

At the first study visit women will give informed consent, and data will be collected on patient demographics, height and weight, maternal medical and obstetric history, family history, drug history including aspirin intake, routine first-trimester scan, mean arterial pressure, uterine artery blood flow( pulsatility index) via transabdominal colour Doppler ultrasound. Blood samples will also be collected to measure for biomarkers serum placental growth factor (PlGF) and serum pregnancy associated plasma protein-A (PAPP-A). All these data will then be used for the risk calculation to determine the risk of preeclampsia using the Bayes theorem method.

At the second study visit at 19-24 weeks a routine anomaly scan will be carried out and routine data associated with this scan will be collected.

The incidence of pre-eclampsia is ascertained via data collected at 11-13 weeks gestation and 19-24 weeks gestation at routine visits and from pregnancy outcome data in patient notes collected within one month of giving birth.

Of these data, only data from all participants that developed pre-eclampsia (PE) will be analysed to test the diagnostic accuracy of both the Bayes theorem method (mini combined and combined) prediction compared to the NICE guidelines prediction (retrospectively).

The Bayes theorem combined test requires the following data: combination of maternal characteristics and medical history together with the measurements of the mean arterial pressure (MAP), uterine artery pulsatility index (PI), serum placental growth factor (PlGF) and serum pregnancy associated plasma protein-A (PAPP-A) at 11-13 weeks' gestation.

The Bayes theorem mini combined test requires the following data: A combination of maternal characteristics and medical history, MAP and PAPP-A

The NICE Guidelines for diagnosis of risk of PE requires review of the data which will be retrieved from patient notes collected at 11-13 weeks.

### **Intervention Type**

Other

### **Primary outcome(s)**

Diagnostic accuracy (false positive and true positive frequencies) of screening for pre-eclampsia using the Bayes theorem based method is measured as the rate of pre-eclampsia, determined using medical note review within one month of birth.

### **Key secondary outcome(s)**

Detection rate of pre-eclampsia is measured through medical note review within one month of birth.

### **Completion date**

31/07/2018

## **Eligibility**

### **Key inclusion criteria**

1. Aged 18 years or over
2. Singleton pregnancy
3. Live fetus at 11-13 weeks' gestation
4. Informed and written consent

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Adult

### **Lower age limit**

18 years

### **Sex**

Female

### **Total final enrolment**

16747

### **Key exclusion criteria**

1. Women who are severely ill
2. Those with learning difficulties
3. Those with a serious mental illness
4. Pregnancies complicated by major fetal abnormality identified at 11-13 weeks of gestation

**Date of first enrolment**

12/04/2016

**Date of final enrolment**

31/01/2017

## Locations

**Countries of recruitment**

United Kingdom

England

**Study participating centre****King's College Hospital**

Harris Birthright Centre

Fetal Medicine Research Institute

16-20 Windsor Walk

London

United Kingdom

SE5 8BB

**Study participating centre****Medway Maritime Hospital**

Fetal Medicine Unit

Windmill Road

Gillingham

United Kingdom

ME7 5NY

**Study participating centre****North Middlesex Hospital**

Gynaecology, Maternity Building

Level 1

North Middlesex University Hospital NHS Trust

Sterling Way

London

United Kingdom

N18 1QX

**Study participating centre****Homerton University Hospital**

Fetal Medicine Unit

2nd floor Antenatal Clinic  
Homerton Row  
London  
United Kingdom  
E9 6SR

**Study participating centre**  
**Southend University Hospital**  
Southend University Hospital NHS Foundation Trust  
Kypros Nicolaides Fetal Medicine Centre  
2nd Floor Cardigan Building  
Prittlewell Chase  
Westcliff on sea  
United Kingdom  
SS0 0RY

**Study participating centre**  
**University Hospital Lewisham**  
Ultrasound Room 5  
Ground Floor  
Women's Health  
Green Zone  
Lewisham High Street  
Lewisham  
London  
United Kingdom  
SE13 6LH

**Study participating centre**  
**The Royal London Hospital**  
The Fetal Medicine Centre  
Ward 8E, 8th floor, South Tower  
Whitechapel road  
London  
United Kingdom  
E1 1BB

## **Sponsor information**

### **Organisation**

Delegated to University College London Comprehensive Clinical Trials Unit (UCL CCTU) by Kings College London

ROR

<https://ror.org/02jx3x895>

## Funder(s)

### Funder type

Government

### Funder Name

National Institute for Health Research

### Alternative Name(s)

National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

### Funding Body Type

Government organisation

### Funding Body Subtype

National government

### Location

United Kingdom

## Results and Publications

### Individual participant data (IPD) sharing plan

#### IPD sharing plan summary

Data sharing statement to be made available at a later date

#### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	01/06/2018		Yes	No
<a href="#">Results article</a>		01/11/2020	18/08/2023	Yes	No
<a href="#">Protocol article</a>	protocol	01/08/2017		Yes	No
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes