# Screening programme for pre-eclampsia

Submission date	Recruitment status	<ul><li>Prospectively registered</li><li>Protocol</li></ul>		
23/05/2016	No longer recruiting			
Registration date	Overall study status	Statistical analysis plan		
06/07/2016	Completed	[X] Results		
Last Edited	Condition category	[] Individual participant data		
18/08/2023	Pregnancy and Childbirth			

#### 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 highrisk 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

Comprehensive Clinical Trials Unit University College London Gower Street London United Kingdom WC1E 6BT +44 (0)20 3549 5015 k.maclagan@ucl.ac.uk

# Additional identifiers

**EudraCT/CTIS** number

**IRAS** number

ClinicalTrials.gov number

Secondary identifying numbers 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

#### Secondary study design

Cohort study

#### Study setting(s)

Hospital

#### Study type(s)

Other

## Participant information sheet

Not available in web format, please use the contact details to request a patient information sheet

# 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 (PIGF) 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 (PIGF) 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 measure

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.

#### Secondary outcome measures

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

# Overall study start date

04/10/2015

#### 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

#### Age group

Adult

#### Lower age limit

18 Years

#### Sex

**Female** 

## Target number of participants

Planned Sample Size: 16850; UK Sample Size: 16850

#### 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

England

**United Kingdom** 

# 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 SSO ORY

# 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

#### Sponsor details

Comprehensive Clinical Trials Unit Gower Street London England United Kingdom WC1E 6BT

#### Sponsor type

Hospital/treatment centre

#### **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**

## Publication and dissemination plan

Planned publication in peer reviewed journals an presentation at relevant meetings.

# Intention to publish date

11/07/2018

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?
<u>Protocol article</u>	protocol	01/08/2017		Yes	No
Results article	results	01/06/2018		Yes	No
HRA research summary			28/06/2023	No	No
Results article		01/11/2020	18/08/2023	Yes	No