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Improving epilepsy and pregnancy care

Submission date
24/06/2025

Recruitment status
Recruiting

Registration date
27/06/2025

Overall study status
Ongoing

Last Edited
04/09/2025

Condition category
Pregnancy and Childbirth

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Every year in the UK, around 2,500 women with epilepsy get pregnant. Epilepsy is one of the leading causes of maternal death and women with epilepsy face higher risks during pregnancy such as miscarriage, high blood pressure, early birth, and problems with the baby's growth. During pregnancy, changes in the body can affect seizure patterns and how medicines which help control epilepsy are processed in the body. Some women stop taking their medication on their own because they worry it may harm their baby. These factors can increase the risk of seizures which is why specialist epilepsy care is recommended during pregnancy. However, in practice, many don't receive specialist care or early enough. For this study, a new programme (the EpiSafe bundle) has been developed, which aims to support more women accessing specialist care during pregnancy and to improve overall health outcomes.

Who can participate?
The study will take place at NHS Maternity Units across the UK. The study design (cluster randomised controlled trial) means that all pregnant women aged 18 years and over with epilepsy who attend the antenatal clinics at participating maternity units will automatically be part of the study if they meet the study inclusion criteria. While pregnant women with epilepsy will not be approached to consent to take part in the study, they will be made aware of its existence and the use of their data through a study poster and dedicated website. Women will have the option to opt out of data collection via the national NHS digital data opt-out system.

What does the study involve?
Midwives in the maternity units randomly allocated to the 'EpiSafe bundle' will apply the 'EpiSafe bundle' at the first antenatal appointment. It includes a short risk assessment to identify pregnant women with epilepsy at increased risk and refer them early to an epilepsy specialist. If a maternity unit is allocated to EpiSafe, all eligible women with epilepsy attending that unit will automatically receive the EpiSafe intervention as part of their standard care during their antenatal booking visit. In the units allocated to usual care (the control group), women will be booked according to the standard guidelines according to the National Institute for Health and Care Excellence (NICE) and the Royal College of Obstetricians and Gynaecologists guidelines. The study will also involve interviews with two different groups: 25 – 30 healthcare professionals and 18 – 24 women with epilepsy at maternity sites allocated to the EpiSafe bundle. These interviews will explore what poses barriers to and what helps health professionals use the EpiSafe bundle and pregnant women's experiences of being exposed to it.

What are the possible benefits and risks of participating?
The EpiSafe bundle has the potential to increase access to specialist epilepsy care in the first 14 weeks for women at high risk due to their epilepsy. The study primarily uses data collected as part of routine care and therefore minimises disruption to the lifestyle and care of women with epilepsy. There are no anticipated risks to pregnant women with epilepsy cared for in the maternity units in the intervention arm. This is because their care and their care pathways remain the same. The intervention will only aid in the systematic assessment of the high-risk women and early referral to specialist epilepsy teams.

Where is the study run from?
The project is being sponsored by the University of Liverpool and is being conducted in collaboration with Anglia Ruskin University and Birmingham City University (UK)

When is the study starting and how long is it expected to run for?
April 2015 to June 2027

Who is funding the study?
National Institute for Health and Care Research (UK)

Who is the main contact?
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Contact information

Type(s)
Public

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Type(s)
Scientific

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

Integrated Research Application System (IRAS)
353310

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
CPMS 68695; Grant Code: NIHR204156

Study information

Scientific Title
Evaluating the impact of the EpiSafe bundle on care and clinical outcomes for pregnant women with epilepsy and their babies: a cluster randomised hybrid implementation-effectiveness trial, process evaluation and qualitative study with economic evaluation

Acronym
EpiSafe

Study objectives
The implementation of the EpiSafe bundle at antenatal booking will increase the proportion of high-risk pregnant women with epilepsy accessing specialist epilepsy care before 14 weeks' gestation and improve maternal and perinatal outcomes.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 03/07/2025, West Midlands - Black Country Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, UK; +44 (0)207 104 8010; blackcountry.rec@hra.nhs.uk), ref: 25/WM/0109

Study design
Randomized; Both; Design type: Screening, Prevention, Process of Care, Management of Care, Qualitative

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Pregnant women with epilepsy

Interventions
Maternity units will be randomised to either an intervention or control arm in a 1:1 ratio. All women receiving antenatal care in a specific maternity unit (cluster) will receive the same care according to the allocation of the cluster.

Intervention arm: EpiSafe bundle
The EpiSafe bundle incorporates a structured risk assessment and implementation strategies to facilitate identification and referral of high-risk pregnant women with epilepsy for early specialist epilepsy care. Booking midwives will use the EpiSafe bundle during the antenatal booking visit (first antenatal appointment) of pregnant women with epilepsy.

Control arm: Usual care
Pregnant women will be booked for their usual care according to existing National Institute for Health and Care Excellence (NICE) and Royal College of Obstetricians and Gynaecologists guidelines.

In both arms, women will be followed up until the end of pregnancy.

Intervention Type
Other

Phase
Not Specified

Primary outcome(s)
Proportion of high-risk pregnant women with epilepsy accessing specialist epilepsy care in first 14 weeks of gestation, calculated as a percentage of all those considered to be at high risk ; Timepoint(s): At 14 weeks of gestation

Key secondary outcome(s))
1. The occurrence of any type of seizure, obtained directly from patient records and clinical notes (key secondary outcome); Timepoint(s): During pregnancy
2. Increase in the frequency or severity of seizures, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
3. Prolonged epileptic seizures lasting 30 minutes or a series of seizures with incomplete return of consciousness (status epilepticus), obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
4. Death of pregnant women, obtained directly from patient records and clinical notes;

Timepoint(s): During pregnancy or within 42 days of termination of pregnancy
5. Occurrence of epileptic seizures that result in altered consciousness, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
6. Accidents or injuries directly resulting from seizure activities, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
7. Any hospital admissions resulting from seizure activity during pregnancy, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
8. Admission to high dependency or intensive care unit for any reason, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
9. Anti-seizure medication adherence during pregnancy, obtained from care provider log; Timepoint(s): During pregnancy
10. Development of new-onset hypertension and proteinuria after 20 weeks of gestation (pre-eclampsia), obtained directly from patient records and clinical notes; Timepoint(s): After 20 weeks of gestation
11. Method of delivery (vaginal or caesarean), obtained directly from patient records and clinical notes; Timepoint(s): At time of delivery of baby
12. Onset of labour before 37 weeks of gestation, obtained directly from patient records and clinical notes; Timepoint(s): At 37 weeks of pregnancy
13. Rupture of membranes before the onset of labour, obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
14. Premature separation of the placenta from the uterine wall (placental abruption), obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
15. Blood loss of 500 ml or more from the genital tract within 24 hours of birth (peripartum haemorrhage), obtained directly from patient records and clinical notes; Timepoint(s): Within 24 hours of birth
16. Spontaneous loss of pregnancy before 24 weeks of gestation (miscarriage), obtained directly from patient records and clinical notes; Timepoint(s): At 24 weeks of gestation
17. Implantation of fertilised egg outside the uterus (ectopic pregnancy), obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
18. Intentional ending of pregnancy (termination of pregnancy), obtained directly from patient records and clinical notes; Timepoint(s): During pregnancy
19. Initiation of breastfeeding within the first 48 hours postpartum, obtained directly from patient records and clinical notes; Timepoint(s): At 48 hours postpartum
20. Fetal death occurring at or after 24 weeks gestation (stillbirth), obtained directly from patient records and clinical notes; Timepoint(s): End of pregnancy
21. Death of a live-born infant within the first 28 days of life (neonatal death), obtained directly from patient records and clinical notes; Timepoint(s): Within the first 28 days of the infant's life
22. Presence of major structural or genetic abnormalities (congenital abnormalities), obtained directly from patient records and clinical notes; Timepoint(s): At birth
23. Birth occurring before 37 completed weeks of gestation (pre-term birth), obtained directly from patient records and clinical notes; Timepoint(s): At 37 weeks of gestation
24. Weight below the 10th percentile for gestational age at birth, obtained directly from patient records and clinical notes; Timepoint(s): At birth
25. APGAR score <7 at 1 and 5 minutes after birth, obtained directly from patient records and clinical notes; Timepoint(s): At 1 and 5 minutes after birth
26. Neonatal intensive care unit admission for any reason, obtained directly from patient records and clinical notes; Timepoint(s): At birth
27. Blood glucose level 5 mg/dL (2.5 mmol/L) in the first 24 hours of life (hypoglycaemia) obtained directly from patient records and clinical notes; Timepoint(s): In the first 24 hours of the infant’s life
28. Need for neonatal resuscitation measures at birth, obtained directly from patient records and clinical notes; Timepoint(s): At birth

29. Brain injury due to oxygen deprivation around the time of birth (hypoxic-ischemic encephalopathy), obtained directly from patient records and clinical notes; Timepoint(s): At birth
30 Percentage of all women with epilepsy in the intervention arm who receive EpiSafe intervention (REACH), obtained from medical records; Timepoint(s): End of intervention delivery
31. Percentage of booking midwives who complete the EpiSafe training (ADOPTION), obtained from training logs; Timepoint(s): End of intervention delivery
32. Percentage of the components of the EpiSafe bundle delivered according to the protocol (FIDELITY), obtained from medical records; Timepoint(s): Over the duration of a maternity unit's involvement in the study
33. Number of components of the EpiSafe bundle adapted (ADAPTION), obtained from medical notes; Timepoint(s): Over the duration of a maternity unit's involvement in the study
34. Percentage of EpiSafe intervention components delivered (DOSE); Timepoint(s): Over the duration of a maternity unit's involvement in the study
35. Patient and healthcare professional rating of EpiSafe bundle’s suitability for individual sites (APPROPRIATENESS); Timepoint(s): End of intervention delivery
36. Written protocol for management of (i) status epilepticus, (ii) epilepsy in pregnancy obtained from hospital documents; Timepoint(s): End of intervention delivery
37. Percentage of healthcare professionals caring for pregnant women with epilepsy trained in EpiSafe bundle, obtained from training log; Timepoint(s): End of intervention delivery
38. Number of multi-disciplinary team meetings discussing the high-risk women management, obtained from medical records; Timepoint(s): End of pregnancy
39. Implementation of regular audit and feedback cycles for care of epilepsy in pregnancy, obtained from quality improvement report; Timepoint(s): End of intervention delivery
40. Acceptability of the EpiSafe bundle to women, families, healthcare professionals measured via interviews; Timepoint(s): End of intervention delivery
Assessment of the EpiSafe bundle’s adaptability, feasibility and impact on health equity measured via interviews; Timepoint(s): End of intervention delivery
41. Identification of implementation barriers to intervention delivery and study conduct measured via interviews; Timepoint(s): End of intervention delivery
42. Patient reported experience measures (PREMs) on process of care: dignity, information, trust, positive birth experience measured via interviews; Timepoint(s): End of intervention delivery
43. Total cost associated with implementing the EpiSafe bundle measured via an economic evaluation; Timepoint(s): During pregnancy
44. Percentage of pregnant women with epilepsy who undergo a formal assessment of seizure risk and current anti-seizure medication during pregnancy, obtained from medical records; Timepoint(s): During pregnancy
45. Percentage of high-risk pregnant women on anti-seizure medication accessing specialist care within 2 weeks from referral, obtained from medical records; Timepoint(s): During pregnancy
46. Proportion of all women with epilepsy in whom discussion on risk-benefit of seizures and anti-seizure medications recorded during pregnancy, obtained from medical records; Timepoint (s): During pregnancy
47. Percentage of all pregnant women with epilepsy on anti-seizure medication who had a medication review in their first visit with the epilepsy specialist, obtained from medical records; Timepoint(s): At the first visit with an epilepsy specialist
48. Percentage of pregnant women with epilepsy who receive information on epilepsy in pregnancy; Timepoint(s): During pregnancy

Completion date
30/06/2027

Eligibility

Key inclusion criteria
Unit-level inclusion criteria:
NHS maternity units providing antenatal care for pregnant women with epilepsy, with a pathway to access specialist antenatal epilepsy care

Individual level inclusion criteria:
All pregnant women >=18 years of age with a confirmed diagnosis of epilepsy, attending antenatal booking visit at participating maternity units in their first trimester

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
Female

Key exclusion criteria
Unit-level exclusion criteria, maternity units:
1. Where there is no access to dedicated epilepsy specialists (either obstetric or neurological)
2. That lack the resources to implement the EpiSafe bundle
3. Where procedures are already in place for all women with epilepsy to access specialist epilepsy care <14 weeks' gestation

Individual level exclusion criteria, pregnant women:
1. With non-epileptic attack disorder (NEAD)
2. Whose epilepsy diagnosis was not confirmed before pregnancy
3. Who had already seen or are planning to see an epilepsy specialist in the first trimester
4. Less than 18 years of age
5. Withdrawal of consent to use data, through the NHS data opt-out

Date of first enrolment
15/09/2025

Date of final enrolment
31/12/2026

Locations

Countries of recruitment
United Kingdom

England

Scotland

Study participating centre
Mid Cheshire Hospitals NHS Foundation Trust
Leighton Hospital
Leighton
Crewe
United Kingdom
CW1 4QJ

Study participating centre
Wirral University Teaching Hospital NHS Foundation Trust
Arrowe Park Hospital
Arrowe Park Road
Upton
Wirral
United Kingdom
CH49 5PE

Study participating centre
Bradford Teaching Hospitals NHS Foundation Trust
Bradford Royal Infirmary
Duckworth Lane
Bradford
United Kingdom
BD9 6RJ

Study participating centre
Barts Health NHS Trust
The Royal London Hospital
80 Newark Street
London
United Kingdom
E1 2ES

Study participating centre
Northumbria Healthcare NHS Foundation Trust
North Tyneside General Hospital
Rake Lane

North Shields
United Kingdom
NE29 8NH

Study participating centre
Queen Elizabeth Hospital Kings Lynn
Gayton Road
Queen Elizabeth Hospital Site
King's Lynn
United Kingdom
PE30 4ET

Study participating centre
York and Scarborough Teaching Hospitals NHS Foundation Trust
York Hospital
Wigginton Road
York
United Kingdom
YO31 8HE

Study participating centre
Blackpool Teaching Hospitals NHS Foundation Trust
Victoria Hospital
Whinney Heys Road
Blackpool
United Kingdom
FY3 8NR

Study participating centre
North Cumbria Integrated Care NHS Foundation Trust
Pillars Building
Cumberland Infirmary
Infirmary Street
Carlisle
United Kingdom
CA2 7HY

Study participating centre
University Hospitals of Leicester NHS Trust
Leicester Royal Infirmary
Infirmary Square

Leicester
United Kingdom
LE1 5WW

Study participating centre
Royal Surrey County Hospital NHS Foundation Trust
Egerton Road
Guildford
United Kingdom
GU2 7XX

Study participating centre
Sandwell and West Birmingham Hospitals NHS Trust
Midland Metropolitan University Hos
Grove Lane
Smethwick
United Kingdom
B66 2QT

Study participating centre
Worcestershire Acute Hospitals NHS Trust
Worcestershire Royal Hospital
Charles Hastings Way
Worcester
United Kingdom
WR5 1DD

Study participating centre
Liverpool Women's NHS Foundation Trust
Liverpool Womens Hospital
Crown Street
Liverpool
United Kingdom
L8 7SS

Study participating centre
Grampian
Summerfield House
2 Eday Road

Aberdeen
United Kingdom
AB15 6RE

Study participating centre
Ailsa Hospital
Dalmellington Road
Ayr
United Kingdom
KA6 6AB

Study participating centre
Birmingham Women's and Children's NHS Foundation Trust
Steelhouse Lane
Birmingham
United Kingdom
B4 6NH

Study participating centre
Royal Victoria Infirmary
Claremont Wing Eye Dept
Royal Victoria Infirmary
Queen Victoria Road
Newcastle upon Tyne
United Kingdom
NE1 4LP

Study participating centre
Warrington and Halton Teaching Hospitals NHS Foundation Trust
Warrington Hospital
Lovely Lane
Warrington
United Kingdom
WA5 1QG

Study participating centre
Walsall Healthcare NHS Trust
Manor Hospital
Moat Road

Walsall
United Kingdom
WS2 9PS

Study participating centre
Ashford & St Peters Hospital
Guildford Road
Chertsey
United Kingdom
KT16 0PZ

Study participating centre
Mid Cheshire Hospitals NHS Foundation Trust
Leighton Hospital
Leighton
Crewe
United Kingdom
CW1 4QJ

Study participating centre
East Sussex Healthcare NHS Trust Hq
St. Annes House
729 the Ridge
St. Leonards-on-sea
United Kingdom
TN37 7PT

Study participating centre
Frimley Health NHS Foundation Trust
Portsmouth Road
Frimley
Camberley
United Kingdom
GU16 7UJ

Study participating centre
Guy's & St Thomas Hospital
Westminster Bridge Road
London
United Kingdom
SE1 7EH

Study participating centre
King's College Hospital
Denmark Hill
London
United Kingdom
SE5 9RS

Study participating centre
Manchester University NHS Foundation Trust
Cobbett House
Oxford Road
Manchester
United Kingdom
M13 9WL

Study participating centre
Mid Yorkshire Teaching NHS Trust
Pinderfields Hospital
Aberford Road
Wakefield
United Kingdom
WF1 4DG

Study participating centre
Oxford University Hospitals NHS Foundation Trust
John Radcliffe Hospital
Headley Way
Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre
South Tees Hospitals NHS Foundation Trust
James Cook University Hospital
Marton Road
Middlesbrough
United Kingdom
TS4 3BW

Study participating centre
South Tyneside and Sunderland NHS Foundation Trust
Sunderland Royal Hospital
Kayll Road
Sunderland
United Kingdom
SR4 7TP

Study participating centre
The Shrewsbury and Telford Hospital NHS Trust
Mytton Oak Road
Shrewsbury
United Kingdom
SY3 8XQ

Study participating centre
University Hospitals Sussex NHS Foundation Trust
Worthing Hospital
Lyndhurst Road
Worthing
United Kingdom
BN11 2DH

Study participating centre
University Hospitals Birmingham NHS Foundation Trust
Queen Elizabeth Hospital
Mindelsohn Way
Edgbaston
Birmingham
United Kingdom
B15 2GW

Study participating centre
Epsom and St Helier University Hospitals NHS Trust
St Helier Hospital
Wrythe Lane
Carshalton
United Kingdom
SM5 1AA

Study participating centre
Hull University Teaching Hospitals NHS Trust
Hull Royal Infirmary
Anlaby Road
Hull
United Kingdom
HU3 2JZ

Sponsor information

Organisation
University of Liverpool

ROR
https://ror.org/04xs57h96

Funder(s)

Funder type
Government

Funder Name
National Institute for Health and Care 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
Anonymised data generated during the trial may be shared with a qualified third party upon request. Data requests will be considered by the CI (Prof Shakila Thangaratinam; s.

thangaratinam@liverpool.ac.uk) and the sponsor (sponsor@liverpool.ac.uk). For approved requests, the dataset will be prepared by the coordinating centre and will be provided as a summary at a cluster and study level only. A data-sharing agreement will be required between the sponsor and the external party.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes