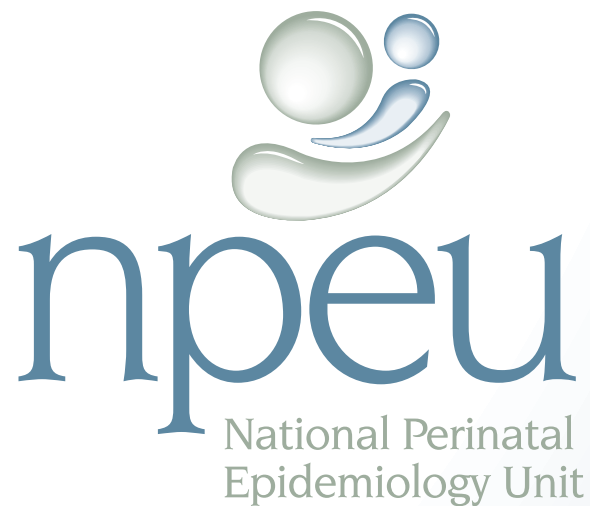




Annual Report 2009

National Perinatal Epidemiology Unit

Annual Report 2009



Front Cover

This six week old Ghanian baby was born to a mother participating in the international CORONIS Trial of caesarean section surgical techniques. The trial is co-ordinated by the NPEU Clinical Trials Unit.

For more information about CORONIS see: www.npeu.ox.ac.uk/coronis

Citation for this report:

National Perinatal Epidemiology Unit, Annual Report 2009. Oxford: NPEU, 2010

© National Perinatal Epidemiology Unit 2010

ISSN 1757-5907

Produced by: Lynne Roberts and Jenny Kurinczuk

Design and layout by: Andy Kirk

Cover design by: Sarah Chamberlain

Printed by: The Holywell Press Ltd

Contents

Introduction.....	1
Contact Details.....	2
NPEU Staff.....	3
Website.....	4
Programme of Work	5
Introduction	5
Programme of Work – Ongoing Studies	6
Programme of Work – Studies Completed in 2008-09	11
Projects started in 2009	14
Stream 1: The compromised fetus and baby	14
Stream 2: Care of the healthy woman and baby	21
Stream 3: Maternal morbidity	24
Publications 2008 – 2010.....	29
NPEU Advisory Committee 2009	39
Sources of funding.....	41

Introduction

Welcome to the 2009 Annual Report from the National Perinatal Epidemiology Unit. This year has been another good year for the NPEU with a number of important publications, new grants and continued growth of the Unit.

One of the highlights of 2009 was the publication of the results of the TOBY Trial in the New England Journal of Medicine. The TOBY Trial was a randomised controlled trial of whole body cooling for babies born with evidence of moderate or severe encephalopathy. The trial demonstrated benefit of cooling for these babies in terms of their disability-free survival up to the age of eighteen months. When the results from TOBY were combined with the results of existing randomised controlled trials (published in the BMJ), it is clear that whole body hypothermia is an effective intervention in this group of babies and for the first time neonatologists have something helpful to offer this group of severely ill babies. What has also been gratifying is that the MRC, who funded the trial, have agreed to fund a follow-up study of babies born in the TOBY Trial who have survived to the age of 5-7 years. Follow-up is very important following interventions in the perinatal period because short-term outcomes may not predict long-term outcomes. We look forward to starting this important follow-up project in 2010.

We have also conducted focused work on alcohol drinking in pregnancy with four publications of analyses trying to find a link between low or moderate alcohol use in pregnancy and adverse outcomes for the children. We found none.

Other notable publications from the Unit in 2009 include a number of new papers arising from the UK Obstetric Surveillance System (UKOSS). These includes the reports of studies on TB in pregnancy in the UK, an analysis of ethnic variations in severe morbidity looking across of range of the conditions studies in UKOSS to date, and the Annual Report, which contains a summary of all the on-going and planned studies. Marian Knight, who runs UKOSS, was also awarded a NIHR Programme Grant entitled Beyond maternal mortality: improving the quality of maternity care

through national studies of "near miss" maternal morbidity This programme of research (called UKNeS) will run from January 2010 until the end of December 2014.

A number of health economic papers were also published in 2009, including economic evaluations alongside clinical trials, methodological papers and papers which discuss approaches to valuing health utilities in children, which remains a challenging issue with respect to economic evaluations of childhood diseases and treatments.

As always, if you have any questions about any of the planned or on-going topics in our work programme, please get in touch with either myself or the contact person.



NPEU Director:
Professor Peter Brocklehurst

Contact Details

Telephone numbers:

General	+ 44 (0) 1865 289700
Peter Brocklehurst (Director)	+ 44 (0) 1865 289719
Lynne Roberts (PA to the Director)	+ 44 (0) 1865 289719
Jenny Kurinczuk (Deputy Director)	+ 44 (0) 1865 289717
Sue Bellenger (Administrator)	+ 44 (0) 1865 289706
Karen Lindsay (Deputy Administrator - Personnel)	+ 44 (0) 1865 289705
Luke Blount (Deputy Administrator - Grants)	+ 44 (0) 1865 617933

Fax numbers:

General	+ 44 (0) 1865 289701
Confidential	+ 44 (0) 1865 289720

Address

National Perinatal Epidemiology Unit
University of Oxford
Old Road Campus
Headington
Oxford
OX3 7LF

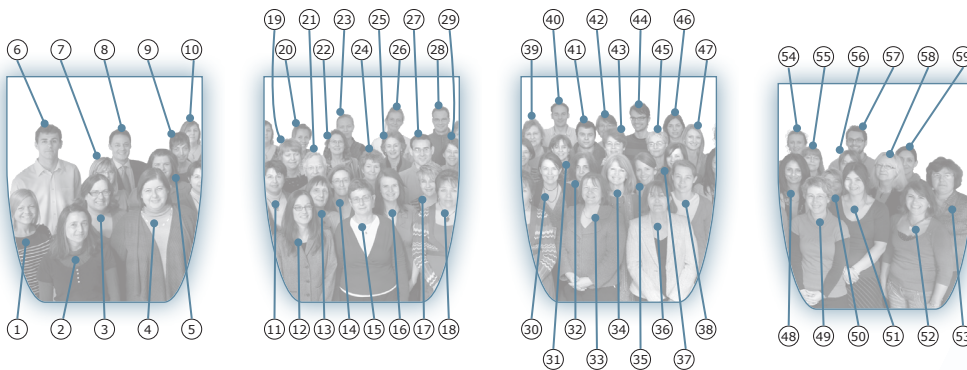
For individual staff contact details
and email addresses, please go to:
www.npeu.ox.ac.uk/staff

NPEU Staff



Missing

Tricia Boyd
 Claire Carson
 Sarah Chamberlain
 Sara Edwards
 Kate Fitzpatrick
 Edward Gosden
 Ron Gray
 Pollyanna Hardy
 Denise Jennings
 Ed Juszcak
 Gwyneth Lewis
 Lynn Lynch
 Dominika Misztela
 Marta Nowicki
 Laura Oakley
 Stavros Petrou
 Maria Quigley
 Shan Rich
 Dimitrios Rovithis
 Lizzy Schroeder
 Rui Zhao



- | | | | |
|-----------------------|---------------------------|------------------------|------------------------|
| 1. Clare Shakeshaft | 16. Shannon Armstrong | 30. Catherine Rounding | 45. Jennifer Hollowell |
| 2. Ann Kennedy | 17. Karen Lindsay | 31. Sarah Lawson | 46. Helen Davenport |
| 3. Clara Bowyer | 18. Angela Garrett | 32. Stella Khenia | 47. Anna Hobson |
| 4. Lydia Saroglou | 19. Geraldine Surman | 33. Jenny Kurinczuk | 48. Nishma Patel |
| 5. Rachel Roberts | 20. Katriina Heikkila | 34. Brenda Strohm | 49. Katie Lean |
| 6. David Puddicombe | 21. Bob Gatten | 35. Kayleigh Morgan | 50. Louise Linsell |
| 7. Lyn Pilcher | 22. Jane Forrester-Barker | 36. Barbara Farrell | 51. Amy Crane |
| 8. Peter Brocklehurst | 23. Gry Poulsen | 37. Sophie Wragg | 52. Madalena Gallagher |
| 9. Suzanne Williams | 24. Anne Smith | 38. Alex Bellenger | 53. Lynne Roberts |
| 10. Vicki Barber | 25. Helen Newdick | 39. Sue Bellenger | 54. Mary Logan |
| 11. Mara Violato | 26. Åse Silvertson | 40. Paul Heal | 55. Pauline Rushby |
| 12. Nina Armstrong | 27. Andy King | 41. Gilles Kayem | 56. Jenny Bulstrode |
| 13. Carole Harris | 28. Andy Kirk | 42. Mary Stewart | 57. Luke Blount |
| 14. Rachel Rowe | 29. Marian Knight | 43. Ursula Bowler | 58. Maggie Redshaw |
| 15. Patsy Spark | | 44. Matthias Pierce | 59. Oya Eddama |

Website

www.npeu.ox.ac.uk

The website continues to grow ever more popular with tens of thousands of requests each month. Behind the scenes the website continues to be developed, improving the experience for all our visitors.

Website Statistics

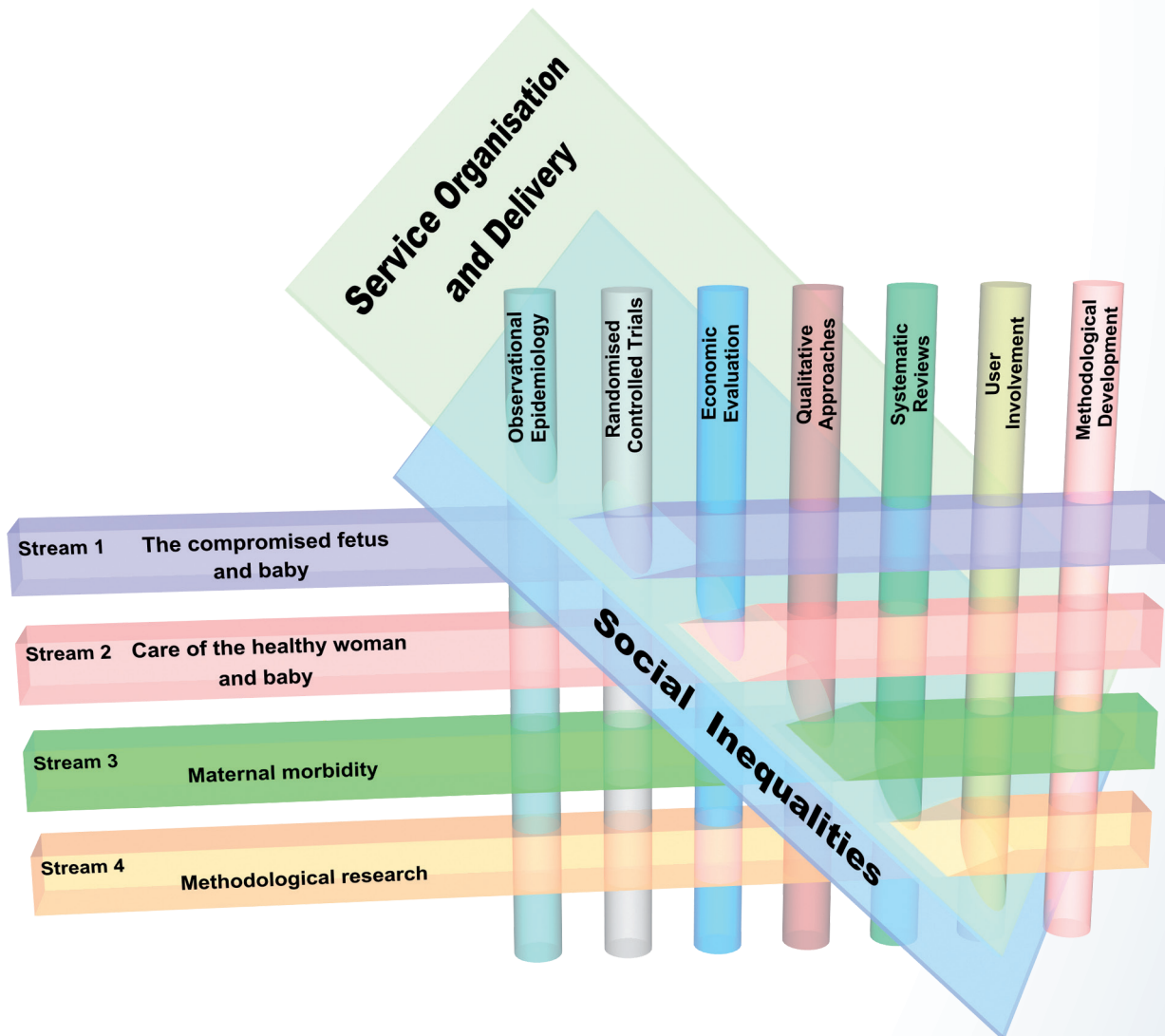
- The website currently still receives a steady average of over 1000 page requests per day.
- Currently, the top 3 most frequently visited areas of the website, in order, are:
 1. Jobs:
www.npeu.ox.ac.uk/jobs
 2. UKOSS:
www.npeu.ox.ac.uk/ukoss
 3. TOBY:
www.npeu.ox.ac.uk/toby

- The top three most popular pdf's downloaded are:
 1. Recorded delivery: a national survey of women's experience of maternity care 2006:
www.npeu.ox.ac.uk/recorded-delivery
 2. Review of the Fetal Effects of Prenatal Alcohol Exposure:
www.npeu.ox.ac.uk/downloads/reports/alcohol-report.pdf
 3. UKOSS Annual Report 2009
www.npeu.ox.ac.uk/ukoss/annual-reports
- The top three most popular search terms which lead people to our site are:
 1. "npeu"
 2. "ukoss"
 3. "toby trial"

The screenshot shows the homepage for the INFANT trial. At the top, there is a navigation bar with links for Home, Sitemap, Accessibility & Help, Contact NPEU, Find Us, and Jobs. A search bar is also present. The main content area features a large banner for the 'Intelligent Fetal Monitoring Study' with the headline 'INFANT has recruited and randomised 469 women.' Below the banner are two buttons: 'Information for Clinicians' and 'Study Information for Pregnant Women'. A 'General Summary' section follows, detailing the study's funding by NIHR HTA and its purpose to compare a computer-based 'intelligent' system with clinician review. It also states the primary outcome (mortality and morbidity) and secondary outcomes (length of labour, hospital stays, etc.). A 'Contact details' section provides the address of the INFANT Co-ordinating Office at NPEU, University of Oxford, and lists contact information including email (Infant@npeu.ox.ac.uk) and phone numbers (01865 617925 and 01865 289701). The footer contains a copyright notice for ©2010 NPEU and a date of 21 Apr 2010 13:53.

The homepage for the INFANT trial

Programme of Work



Introduction

The NPEU programme of work for the period 2008 to 2010 is described in this section of the report. The programme of work is conceptualised and illustrated above using the framework of four streams of work with two cross-cutting themes and the rods denoting the different research methodologies used. A summary of all the work in progress and work completed during 2008 and 2009 is given in the

following two tables which separate work in progress, listed in the first table, from completed studies which are given in the second table. Following the summary tables and to avoid the repetition from year to year we have included the full details of only new projects which started in 2009. These are described after the summary table under the headings of the four streams of work.

Programme of Work – Ongoing Studies

NPEU Table of Work Key

NPEU contact: Most projects involve an NPEU team and often outside collaborators. The postscript (a) means that the grant holder or chief investigator for the project is from outside the NPEU.

The initials of the NPEU researchers are used in the table for brevity and represent the chief investigator or the researcher who is taking the lead for the project at the NPEU:

PB Peter Brocklehurst	MK Marian Knight	RR Rachel Rowe
TB Tricia Boyd	JK Jenny Kurinczuk	GS Geraldine Surman
RG Ron Gray	SP Stavros Petrou	LS Liz Schroeder
JH Jennifer Hollowell	MQ Maria Quigley	MV Mara Violato
EJ Ed Juszcak	MR Maggie Redshaw	

Stream 1: The compromised fetus and baby	Duration	NPEU Contact
1.1 Neonatal encephalopathy, cerebral palsy and other childhood impairments		
Reaching consensus on the definition of neonatal encephalopathy for surveillance purposes	2005-11	JK
Secondary analysis of Western Australian case control data to further investigate the relationship between intrapartum events, neonatal encephalopathy and cerebral palsy	2005-12	JK
NEST trial - Whole body cooling for neonates undergoing extracorporeal membrane oxygenation (ECMO)	2005-12	PB
INFANT trial - A multi-centre randomised controlled trial of an intelligent system to support decision making in the management of labour using the cardiotocogram	2009-14	PB
4Child - Monitoring rates of cerebral palsy, particularly in high risk subgroups	2003-10	JK
4Child - Monitoring rates of vision loss and hearing loss in children	2003-10	JK
Economic evaluation alongside INFANT trial - Cost-effectiveness of an intelligent decision support system	2009-14	PB
Economic evaluation alongside TOBY trial - Cost-effectiveness of total body cooling	2006-13	SP
UK TOBY Cooling Register - Register of the use of moderate hypothermia in neonates	2007-10	PB(a)
TOBY Children Study - School age outcomes following a newborn cooling trial	2009-13	PB(a)
TOBY Xenon - Neuroprotective effects of hypothermia combined with inhaled xenon following perinatal asphyxia	2009-12	EJ

Stream 1: The compromised fetus and baby	Duration	NPEU Contact
1.2 Child health outcomes following assisted reproductive technologies (ART) and related fertility issues		
International collaborative work using record linkage methods to investigate the risks of cerebral palsy, intellectual disability, hospitalisation and congenital anomalies associated with ART	2003-10	JK(a)
A comparison of the early parenting experience of parents of multiples and singletons arising from natural conception and infertility treatment	2006-10	MR
A population-based study of the effect of infertility and its treatment on child health and development	2008-11	MQ
1.3 Congenital anomalies		
CAROBB - Monitoring rates of congenital anomalies for surveillance purposes	2003-11	TB
FOCaL - Feasibility of investigating the long-term outcomes of specific congenital anomalies using congenital diaphragmatic hernia as the exemplar	2006-10	JK
EUROCAT - European Surveillance of Congenital Anomalies - Survey of prenatal diagnosis screening methods across Europe Perinatal screening for birth defects in Europe - a EUROCAT study of the impact of different national policies	2005-10	TB
1.4 Preterm birth		
Parents' experience of care following admission of their infant to a neonatal unit	2006-10	MR
INIS trial - International Neonatal Immunotherapy Study - intravenous immunoglobulin for babies with sepsis	2000-10	PB
PROGRAMS trial - GM-CSF for sepsis prophylaxis in preterm growth-restricted babies	2001-12	PB(a)
BOOST-II UK trial - Targeting oxygen saturation levels in preterm babies	2006-12	PB
PiPS - Probiotics in preterm babies study	2009-13	PB
I2S2 - Iodine supplementation trial - iodine supplementation for premature babies	2009-14	PB
Economic evaluation alongside PROGRAMS trial - the cost-effectiveness of GM-CSF for sepsis prophylaxis in preterm growth-restricted babies	2001-10	SP
A population-based study of the health and developmental consequences of preterm birth	2009-11	MQ
ePRIME - Evaluation of MR imaging to predict neurodevelopmental impairment in preterm infants	2009-14	MR

Stream 1: The compromised fetus and baby	Duration	NPEU Contact
1.5 Fetal and infant effects of rare disorders of pregnancy (see Stream 3)		
Development of the British Association of Paediatric Surgeons Congenital Anomalies Surveillance System (BAPS-CASS)	2006-12	MK
BAPS-CASS - A population-based national study of surgical outcomes of infants born with oesophageal atresia	2008-10	MK
BAPS-CASS - Before, during and after birth - how does care affect the future health prospects of infants with congenital diaphragmatic hernia?	2009-12	JK
1.6 Infant mortality		
Inequalities in Infant Mortality work programme	2007-10	RG
Inequalities in Infant Mortality work programme – follow-on study	2010-11	JH
Stream 2: Care of the healthy woman and baby		
Duration		
NPEU Contact		
2.1 Attitudes towards pregnancy and childbirth		
Nothing currently in progress under this heading - see table of completed studies for work in this area		
2.2 Recent users' views and experience of maternity care		
Analysis of trust-based data from National Maternity Surveys on women's experience of care	2009-10	MR
National Maternity Survey 2010: Women's Experience of Maternity Care	2009-10	MR
Women's experience of support for breastfeeding	2009-10	MR
Multiple births and women's experience of maternity care	2010	MR
2.3 Antenatal screening		
Nothing currently in progress under this heading - see table of completed studies for work in this area		
2.4 Minor problems in pregnancy		
Nothing currently in progress under this heading - see table of completed studies for work in this area		
2.5 Care in labour and delivery		
CORONIS Trial - Fractional factorial trial of caesarean section surgical techniques in developing countries	2006-11	PB
Changes in maternity care over time	2007-11	MR

Stream 2: Care of the healthy woman and baby	Duration	NPEU Contact
An international comparison of maternity care	2007-11	MR
Women's worries about labour and birth - Social and ethnic differences	2007-10	MR
Women's perceptions of maternity care	2007-10	MR
BUMPES - Upright maternal position in second stage labour in women with epidural analgesia; a randomised controlled trial	2009-13	PB
Cochrane review - Psychosocial and educational interventions in latent phase or early labour for improving birth outcomes	2009-11	MQ(a)
2.6 Postnatal health and care		
Feeding twins, triplets and higher order multiples: a systematic review, secondary data analysis and development of evidence-based guidelines	2007-10	MQ
The impact of family income on child cognitive and behavioural outcomes in the United Kingdom	2007-10	SP
The effect of breastfeeding on child development	2009-10	MQ
Maternal health and wellbeing in the perinatal period	2010-11	MR
Cost analysis of breastfeeding outcomes in the UK	2010-12	MQ(a)
2.7 Organisation of maternity care		
Birthplace in England Research Programme (incorporating the Evaluation of Maternity Units in England (EMU) research programme)	2006-11	PB
Birth at Home Study	2006-11	PB
Modelling efficiency and cost-effectiveness in maternity care in the UK	2007-11	SP
Transfer from midwifery unit to obstetric unit during labour: rates, process, outcomes and women's experience	2007-11	JK
Stream 3: Maternal morbidity	Duration	NPEU Contact
3.1 Maternal mental illness		

Stream 3: Maternal morbidity**Duration****NPEU
Contact**

Nothing currently in progress under this heading - see table of completed studies for work in this area

3.2 Obesity and outcome of pregnancy

Nothing currently in progress under this heading - see table of completed studies for work in this area

3.3 Smoking, alcohol and drug misuse in pregnancy

Effects of prenatal alcohol consumption and alcohol metabolising genes on child growth and neurodevelopment in the ALSPAC study

2008-10

RG

3.4 Surveillance of rare disorders of pregnancy

Continued development of the UK Obstetric Surveillance System (UKOSS)

2005-14

MK

Surveillance of amniotic fluid embolism

2005-12

MK

Surveillance of pulmonary vascular disease

2006-12

MK

Surveillance of myocardial infarction in pregnancy

2006-11

MK

Surveillance of pregnancy in women following non-renal solid organ transplant

2007-12

MK

Surveillance of uterine rupture

2009-11

MK

Surveillance of failed intubation

2008-11

MK(a)

Surveillance of multiple repeat caesarean section

2009-10

MK(a)

Surveillance of aortic dissection/dissecting aortic aneurysm in pregnancy

2009-12

MK

Surveillance of pituitary tumours in pregnancy

2009-12

MK

Surveillance of myeloproliferative disorders in pregnancy

2010-13

MK(a)

Before, during and after birth - how does care affect the future health prospects of infants with congenital diaphragmatic hernia? (UKOSS study)

2009-12

MK

Surveillance of sickle cell disease in pregnancy

2010-12

MK

Surveillance of placenta accreta

2010-11

MK

3.5 Pregnancy complications

UKNeS - Beyond maternal death: Improving the quality of maternity care through national studies of "near-miss" maternal morbidity

2010-14

MK

Methodology	Duration	NPEU Contact
4.1 Methodological developments		
Comparison of different sources of incidence data for rare disorders of pregnancy	2007-10	MK
INLET trial - Cluster trial of newsletters and educational supplements to centres participating in INIS trial	2006-10	PB
Dealing with childhood deaths in randomised trials (BRACELET)	2008-12	PB(a)
Programme of methodological research on economic aspects of perinatal and paediatric health care	2006-11	SP
Health, medicines and self-care choices made by children, young people and their families - Information to support decision making	2006-10	PB(a)
Evidence into practice - Evaluating a child-centred intervention for diabetes medicine management	2008-11	PB(a)
Development and validation of instrument measuring aspects of the working environment in maternity and healthcare	2008-10	MR

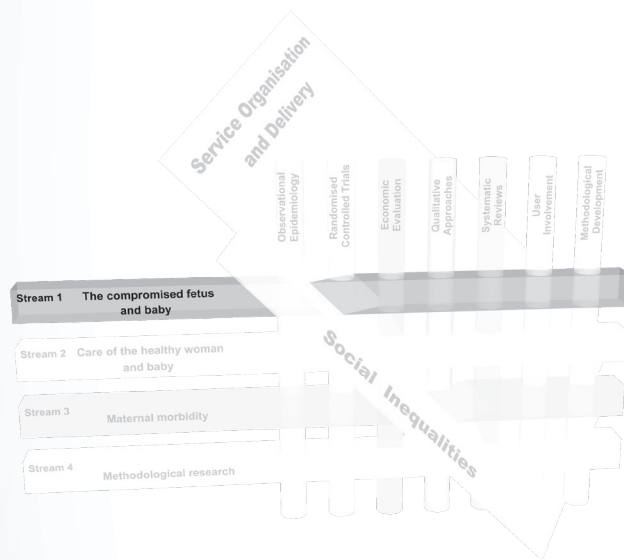
Programme of Work – Studies Completed in 2008-09

Stream 1: The compromised fetus and baby	Duration	NPEU Contact
TOBY trial - Whole body cooling for babies born with neonatal encephalopathy	2002-09	PB
UKCP Collaboration - Regional variations in the relationship between cerebral palsy and socio-economic deprivation	2005-08	JK
Economic evaluation of progesterone for the prevention of preterm birth in twins	2005-09	SP
Economic evaluation of outpatient cervical ripening prior to induction of labour	2005-09	SP
Survey of fertility, reproductive choices and future plans (FINE study)	2006-08	JK(a)
The effects of psychosocial stress on time to conception	2005-09	RG(a)
Congenital hydrocephalus - A population based study on prevalence and outcome	2005-08	TB
Cognitive and behavioural outcomes of children with an extra sex chromosome	2006-09	TB
Prenatal diagnosis and outcome of pregnancy of sex chromosome trisomies in Europe	2007-09	TB

Stream 1: The compromised fetus and baby	Duration	NPEU Contact
Terminations of pregnancy at ≥ 24 weeks of gestation after prenatal diagnosis of fetal abnormality in Europe	2007-09	TB
Economic impact of preterm birth	2005-09	SP
ADEPT trial - Early versus delayed enteral feeding for babies born with absent or reversed end-diastolic flow and growth restriction	2005-09	PB
Economic impact of preterm birth (II)	2006-09	SP
Neonatal unit survey of communication, facilities and support for parents of preterm babies	2007-09	MR
Neonatal Taskforce Workforce - Neonatal staff survey analysis	2008-09	MR
Stream 2: Care of the healthy woman and baby	Duration	NPEU Contact
The Oxford Worries about Labour Scale - Maternal concerns about labour and birth	2008	MR
Cost-effectiveness of alternative prevention and treatment strategies for GBS	2005-09	SP
Offer and uptake of antenatal screening for Downs syndrome in women from different social and ethnic backgrounds using national maternity survey data	2007-08	MR
Health and wellbeing in pregnancy	2008-09	MR
ELSA trial of home versus hospital support in early labour	2004-09	PB(a)
EUPHRATES trial - Trial of blood collector bag in third stage of labour	2001-09	PB
CAESAR trial - Factorial trial of caesarean section surgical techniques	2001-09	PB
Women's experience of caesarean section A qualitative study	2007-09	MR
The protective effects of breastfeeding in a national UK survey	2005-09	MQ
Relationship between family income and child asthma - An econometric perspective	2006-09	SP
Birth and beyond: antenatal education and preparation for parenthood - a review of the literature and current service provision	2009	MR
Having a baby in rural areas in England	2009	MR

Stream 3: Maternal morbidity	Duration	NPEU Contact
Systematic review of the use of the EPDS in screening for postnatal depression	2005-08	RG
The association between alcohol consumption in pregnancy and emotional and behavioural problems in childhood	2007-09	MQ(a)
Effect of maternal alcohol consumption on fetal growth, preterm birth, birth defects and child behaviour problems	2007-09	JK
Surveillance of fetomaternal alloimmune thrombocytopenia	2006-09	MK
Surveillance of gastroschisis	2006-09	MK
Surveillance of different methods of treating obstetric haemorrhage	2007-09	MK
Antenatal detection of shoulder dystocia	2007-09	MQ(a)
Methodology	Duration	NPEU Contact
Investigation of the completeness of case ascertainment by UKOSS using FMAIT as one of the candidate conditions	2006-09	MK
Investigation of the completeness of case ascertainment by UKOSS using gastroschisis as one of the candidate conditions	2006-09	MK
Study of women's preferences for alternative management methods for first trimester miscarriage (MIST)	2006-09	SP
Using verbal autopsy to assign stillbirths and neonatal causes of death	2006-08	MQ(a)
Social capital and its relationship with preference-based measures of health status	2006-08	SP
Valuation of prenatal life in economic evaluations of perinatal interventions	2006-08	SP
Validation of a perceptions of care adjective check list for labour and birth	2007-09	MR
Preference-based Health Utilities Index scores for childhood conditions	2007-09	SP

Projects started in 2009



Stream 1: The compromised fetus and baby

1.1 Neonatal encephalopathy, cerebral palsy and other childhood impairments

INFANT trial - A multi-centre randomised controlled trial of an intelligent system to support decision making in the management of labour using the cardiotocogram

Chief investigator:

NPEU:

Peter Brocklehurst.

Other investigators:

(Listed alphabetically)

External:

David Field (*University of Leicester*), Keith Greene (*University of Plymouth*), Sara Kenyon (*University of Birmingham*), Mary Newburn (*NCT*), Rachel Plachinski (*NCT*), Phillip Steer (*Chelsea and Westminster Hospital, London*), David Wright (*University of Plymouth*).

NPEU:

Ed Juszcak, Stavros Petrou, Maria Quigley.

Other NPEU staff involved:

(Listed alphabetically)

Vicki Barber, Bob Gatten, Katie Lean, Louise Linsell, Clare Shakeshaft.

Babies continue to die in labour or be born with brain injury due to lack of oxygen during their birth. One way of trying to prevent babies suffering due to a lack of oxygen during birth is to monitor the baby's heart rate. This monitoring is not always easy to interpret. Some patterns are the baby's normal response to the stress of labour whilst others indicate a lack of oxygen. Expertise and experience are essential for accurate interpretation and mistakes are common.

This randomised controlled trial will test whether an intelligent computer program can help midwives and doctors improve the care they give in response to abnormalities of the baby's heart rate and whether this will lead to fewer babies being harmed because of a lack of oxygen. 46,000 women who are having continuous monitoring of their baby's heart rate in labour will take part in the study. The study will take place in at least 10 hospitals in the UK and Ireland and will last for at least 5 years.

Contact person: Peter Brocklehurst

Funding: NIHR HTA

Status of project: In progress



INFANT STUDY

Economic evaluation alongside INFANT trial - cost-effectiveness of an intelligent decision support system

Chief investigator:

NPEU:

Peter Brocklehurst.

Other investigators:

(Listed alphabetically)

External:

David Field (*University of Leicester*), Keith Greene (*University of Plymouth*), Sara Kenyon (*University of Birmingham*), Mary Newburn (*NCT*), Rachel Plachinski (*NCT*), Phillip Steer (*Chelsea and Westminster Hospital, London*), David Wright (*University of Plymouth*).

NPEU:

Ed Juszcak, Stavros Petrou.

Other NPEU staff involved:

(Listed alphabetically)

Vicki Barber, Ursula Bowler, Bob Gatten, Katie Lean, Dean Regier, Clare Shakeshaft.

A prospective economic evaluation will be conducted alongside the INFANT trial with the aim of estimating the cost-effectiveness of the intelligent decision support system. The cost differences between the two groups, the expert system and conventional CTG groups, will be measured, valued and combined with the clinical-effectiveness data from the trial. The economic evaluation will be conducted from a health service perspective and will incorporate data from all subjects recruited into the trial.

Contact person: Peter Brocklehurst

Funding: NIHR HTA

Status of project: In progress

TOBY Children Study - School age outcomes following a newborn cooling trial

Chief investigator:

External:

Denis Azzopardi (*Hammersmith Hospital, Imperial College, London*).

Other investigators:

(Listed alphabetically)

External:

David Edwards (*Imperial College, London*), Henry Halliday (*Queen's University of Belfast*), Malcolm Levene (*University of*

Leeds), Neil Marlow (*University College London*), Marianne Thoresen (*St Michael's Hospital, Bristol*), Andrew Whitelaw (*University of Bristol*).

NPEU:

Peter Brocklehurst, Ed Juszcak.

Other NPEU staff involved:

(Listed alphabetically)

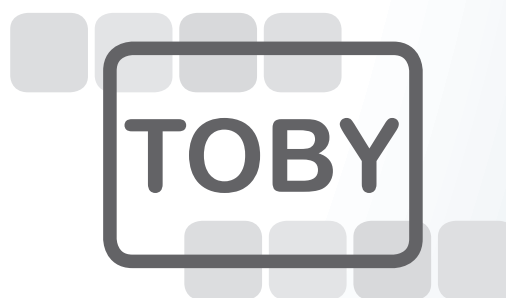
Ursula Bowler, Oya Eddama, Louise Linsell, Stavros Petrou, Brenda Strohm.

The aim of this study is to determine the effects of therapeutic hypothermia following perinatal asphyxia on neurological and neuropsychological outcomes at age 6-7 years and also to assess academic attainment and any additional health, societal or educational costs associated with changes in outcome as a result of the intervention. This study will determine whether the apparent initial benefits of cooling are maintained in the longer term.

Contact person: Peter Brocklehurst

Funding: MRC

Status of project: In progress



TOBY Xenon: Neuroprotective effects of hypothermia combined with inhaled xenon following perinatal asphyxia

Chief investigators:

(Listed alphabetically)

External:

Denis Azzopardi (*Hammersmith Hospital, Imperial College, London*), David Edwards (*Imperial College, London*).

Other investigators:

(Listed alphabetically)

External:

Ernest Cady (*University College London*), Nicholas Franks (*Imperial College, London*), Joseph Hajnal (*Imperial College,*

London), Mervyn Maze (*Imperial College, London*), Nicola Robertson (*University College London*).

NPEU:

Peter Brocklehurst, Ed Juszcak.

Other NPEU staff involved:

(Listed alphabetically)

Ursula Bowler, Louise Linsell, Brenda Strohm.

This proof-of-concept study will test the hypothesis that following perinatal asphyxia treatment with a combination of hypothermia and inhaled xenon reduces cerebral biochemical abnormality, assessed by Magnetic Resonance Spectroscopy, preserves cerebral structures, assessed by visual and computational analysis of MRI, and leads to improved clinical outcomes at hospital discharge.

Contact person: Ed Juszcak

Funding: MRC

Status of project: In progress

1.2 Child health outcomes following assisted reproductive technologies (ART) and related fertility issues

HFEA data: Analysis of long-term trends and outcomes following ART treatment in 2006

Chief investigator:

NPEU:

Jenny Kurinczuk.

Other investigator:

NPEU:

Chris Hockley.

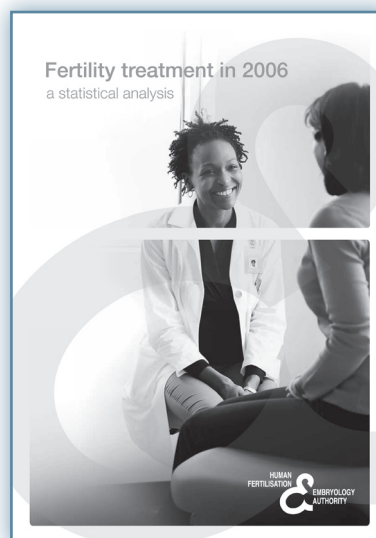
We were commissioned by the Human Fertilisation and Embryology Authority (HFEA) to analyse and present the long-term trends in outcomes following assisted reproductive technology (ART) treatment using the data the HFEA have been collecting since the inception of the HFEA register. The outputs from the analysis of long-term trends are available as web-pages at: <http://www.hfea.gov.uk/fertility-treatment-trends.html>. We also undertook an indepth analysis of the data relating to treatment cycles started in 2006 presenting the data in a form suitable for

public presentation. A full report of the analysis of treatment cycles started in 2006 is available at: <http://www.hfea.gov.uk/5777.html>

Contact person: Jenny Kurinczuk

Funding: HFEA

Status of project: Completed



1.3 Congenital anomalies

To assess information availability on prevalence and prenatal detection rates of congenital anomalies in the South East Region to allow the monitoring of screening programmes

Chief investigator:

External:

Diana Wellesley (*University of Southampton Hospitals NHS Trust*).

Other investigators:

(Listed alphabetically)

External:

Val Armstrong (*Imperial College Healthcare NHS Trust, London*).

NPEU:

Patricia Boyd.

The aim of this project was to find out what information on congenital anomalies is held, by whom and in what format, throughout the South East Region of the UK in order to inform antenatal and neonatal screening programmes. Part of the South East Region is covered by South Central Strategic Health Authority

(SHA) which is served by two congenital anomalies registers (CAROBB and the WESSEX Register); the rest of the South East Region is not covered by a congenital anomalies register.

All 23 antenatal screening co-ordinators across the South East Region responded and provided data.

A paper is currently in preparation to report the findings.

Contact person: Jenny Kurinczuk
Funding: DH Registers and South Central SHA
Status of project: Completed

Evaluation of prenatal diagnosis rates for major structural congenital anomalies across areas covered by BINOCAR register 2005-2006

Chief investigator:
NPEU: Patricia Boyd.

Other investigators:
(Listed alphabetically)

External:
Elizabeth Draper (*University of Leicester*), Judith Rankin (*University of Newcastle*), Ann Tonks (*West Midlands Perinatal Institute*), Diana Wellesley (*University of Southampton Hospitals NHS Trust*).

NPEU:
Catherine Rounding.

This is a collaborative project across the congenital anomalies registers which are members of the British Isles Network of Congenital Anomalies Registers (BINOCAR). BINOCAR was approached by the National Screening Committee (NSC) Fetal Anomaly Screening Programme (FASP) to assess the feasibility of providing prevalence and prenatal detection rates for specific major structural congenital anomalies which are amenable to prenatal detection by ultrasound to enable monitoring of the NSC FASP. This project has recently been completed and a paper has been submitted for publication.

Contact person: Jenny Kurinczuk
Status of project: Completed

1.4 Preterm birth

PiPS - Probiotics in preterm babies study

Chief investigator:

External:
Kate Costeloe (*Homerton Hospital, London*).

Other investigators:
(Listed alphabetically)

External:
Michael Miller (*Homerton Hospital, London*), Mark Wilks (*Homerton Hospital, London*).

NPEU:
Peter Brocklehurst.

Other NPEU staff involved:
(Listed alphabetically)

Ursula Bowler, Bob Gatten, Paul Heal, Ed Juszczak, Ann Kennedy, Andy King.

Preterm babies are at increased risk of episodes of bacterial infection which may be fatal and are associated with chronic complications in survivors. This is largely because preterm babies have immature defences against infection. An important way in which the body is protected is through the 'friendly bacteria' that normally live in the gut. At birth there are no organisms in the gut but healthy babies who are nursed with their mothers quickly become colonised with their 'friendly' bacteria. Preterm babies who are separated from their mother at birth are more likely to become colonised with bacteria in the environment of the Neonatal Unit that may cause disease. It is possible that if these babies are given 'friendly bacteria' (probiotic), these will multiply in the gut, improve the general health of the intestine and reduce the chance of potentially pathogenic organisms becoming established; this should reduce infection.

There is some evidence of the beneficial effects of probiotics in the published literature but they have not been adequately tested in a study involving more than one hospital and including the babies at greatest risk. Probiotics do seem to be safe, but again more data are needed. This randomised trial will test whether giving preterm babies a single probiotic bacterium will improve their health and decrease their risk of infection.

The main outcomes that will be measured are episodes of infection, episodes of necrotising enterocolitis, death, growth, use of antibiotics and length of stay.

Contact person: Peter Brocklehurst

Funding: NIHR HTA

Status of project: In progress



Probiotic in Preterm babies Study

I2S2 - Iodine supplementation trial - iodine supplementation for premature babies

Chief investigator:

NPEU:

Peter Brocklehurst.

Other investigators:

(Listed alphabetically)

External:

Robert Hume (*University of Dundee*), Simon Ogston (*University of Dundee*), Theo Visser (*Erasmus University, Brussels, Belgium*), Peter Willatts (*University of Dundee*), Fiona Williams (*University of Dundee*).

NPEU:

Peter Brocklehurst.

Other NPEU staff involved:

(Listed alphabetically)

Ursula Bowler, Ed Juszcak, Stella Khenia, Andy King, Kayleigh Morgan.

Cerebral damage and neurodisability are common among extremely preterm infants who survive and there are about 7000 such infants born each year in the UK. The aetiology of this cerebral damage and neurodisability is multifactorial, and is associated with a number of factors including hypothyroxinaemia. Thyroid hormone is essential for normal development of the human brain in utero and for the first two years after birth. Damage through deficiency of thyroxine is irreversible.

Transient hypothyroxinaemia in preterm infants is common and studies have linked low plasma T4 in preterm infants with later neurodevelopmental deficits in motor and cognitive function. Iodine is essential for the synthesis of T4. Mild and moderate deficiencies of iodine are associated with neuropsychointellectual deficits in infants and children. This randomised trial will test the hypothesis that iodine supplementation of extremely preterm infants improves neurodevelopmental outcome at 2.5 years of age.

Contact person: Peter Brocklehurst

Funding: MRC

Status of project: In progress



A population-based study of the health and developmental consequences of preterm birth

Chief investigator:

NPEU:

Maria Quigley.

Other investigators:

(Listed alphabetically)

External:

Zarko Alfirovic (*University of Liverpool*), Elaine Boyle (*University of Leicester*), David Field (*University of Leicester*), Dieter Wolke (*University of Warwick*).

NPEU:

Jenny Kurinczuk.

Other NPEU staff involved:

Gry Poulsen.

While there is a growing body of literature describing health outcomes in very preterm babies, few studies have focused on outcomes in moderately preterm babies that is, those born at gestations of 32-36 weeks. This group of babies represents a relatively large proportion of births, and therefore, even modest increases

in health problems may have important implications for public health and for the allocation of health and educational resources. The aim of this study is to describe gestation-specific effects on a range of child health and, cognitive and developmental outcomes measured at age 3 and 5 years in a national cohort study (the Millennium Cohort Study). Babies born at all gestations will be included, and the analysis will describe effects according to gestation in weeks, gestation in broader groups (23-31, 32-33, 34-36, 37+ weeks), birth weight and "small for gestational age".

Contact person: Maria Quigley
Funding: BUPA Foundation
Status of project: In progress

ePRIME - Evaluation of MR imaging to predict neurodevelopmental impairment in preterm infants

Chief investigator:

External:

David Edwards (*Imperial College, London*).

Other investigators:

(Listed alphabetically)

External:

Denis Azzopardi (*Hammersmith Hospital, Imperial College, London*), James Boardman (*Imperial College, London*), Serena Counsell (*Imperial College, London*), Frances Cowan (*Hammersmith Hospital, London*), Ian de Vega (*Lambeth PCT*), Nigel Kennea (*Imperial College, London*), Mary Rutherford (*Imperial College, London*), Merran Thomson (*Imperial College, London*).

NPEU:

Peter Brocklehurst, Oya Eddama, Maggie Redshaw.

Other NPEU staff involved:

(Listed alphabetically)

Ursula Bowler, Ed Juszcak.

Preterm birth is the leading cause of perinatal mortality and morbidity in developed countries, and leads to neurological impairment in a significant proportion of survivors. Targeting follow-on services to children who need them is difficult, particularly with inaccurate early diagnosis of neurodevelopmental impairment. In a research environment magnetic resonance imaging (MR) is

more accurate at detecting cerebral abnormalities than standard care cranial ultrasonography and might provide a more accurate neurological prognosis and improve overall care. The aim of the research programme will be to provide the evidence-base for NHS policy on the use of MR of the brain for preterm infants.

The component project objectives are: to determine with high precision the sensitivity and specificity of cerebral MR imaging for predicting neurodevelopmental impairment in the context of the NHS; to use a randomised design to compare the effect of MR and ultrasound imaging on total healthcare usage and costs, and assess its effect on unplanned and planned care; to compare the influence of MR- and ultrasound-based information on parental perceptions, stress and coping using qualitative and quantitative research methods and to compare routine local bedside imaging with specialist centralised ultrasound imaging; and to survey current MR use and capacity in the NHS.

Preliminary qualitative work has been carried out with parents whose babies have been cared for in a neonatal intensive care unit to support the development of appropriate data collection instruments for use with parents in the main study. Analysis of these qualitative data are being used in preparing a paper for publication on communication and information-giving in a neonatal unit.

Contact person: Maggie Redshaw
Funding: NIHR
Status of project: In progress

1.5 Fetal and infant effects of rare disorders of pregnancy (see Stream 3)

BAPS-CASS - Before, during and after birth - how does care affect the future health prospects of infants with congenital diaphragmatic hernia?

Chief investigator:

NPEU:

Jenny Kurinczuk.

Other investigators:

(Listed alphabetically)

External:

Elizabeth Draper (*University of Leicester*), David Howe (*University of Southampton Hospitals NHS Trust*), Paul Johnson (*Oxford Children's Hospital*), Paul Losty (*University of Liverpool*), Sean Marven (*Sheffield Children's Hospital*), Judith Rankin (*University of Newcastle*).

NPEU:

Peter Brocklehurst, Marian Knight.

Other NPEU staff involved:

(Listed alphabetically)

Alex Bellenger, Carole Harris, Patsy Spark.

Congenital diaphragmatic hernia (CDH) is a musculoskeletal defect of the diaphragm which occurs during fetal development affecting between 1 in 2,000 and 1 in 4,000 births. During fetal development the defect allows the abdominal contents to move into the chest and impedes cardiac and lung development. CDH can be diagnosed prenatally on ultrasound.

At present we have incomplete information about the incidence, optimal pregnancy management, survival to delivery, optimal surgical management, survival to discharge and longer term outcomes. Given the rarity of CDH available data mainly come from major referral centres and may be biased in favour of better outcomes; available survival data following surgery are thus contentious. Nevertheless, current data suggest that a significant proportion of infants experience substantial ongoing problems of respiratory, neurological, growth and GI function, and life-long disability.

This project is a UK-wide study of a 1-year birth cohort of all cases of CDH using three related tried and tested data collection systems: the UK Obstetric Surveillance System (UKOSS) to collect antenatal and perinatal information; and BAPS-CASS to collect neonatal and surgical information, and outcomes at both discharge and age one year. Cross validation of cases with the British Isles Network of Congenital Anomalies Registers (BINOCAR) will ensure we have identified all cases to provide a total population picture not subject to referral bias.

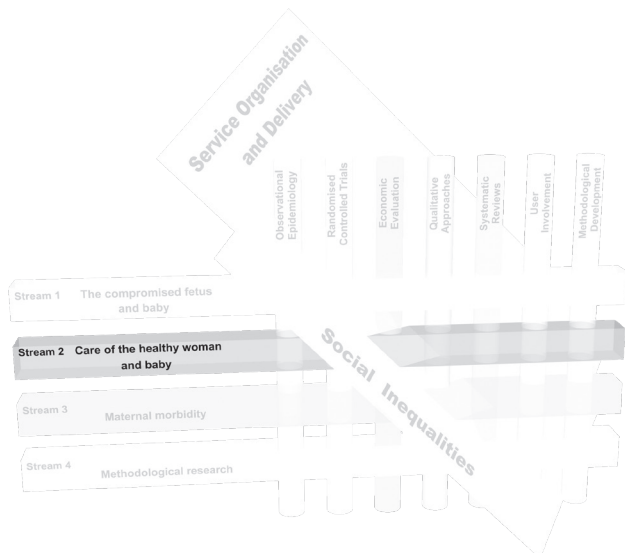
These data will contribute to improvements in counselling for parents, contribute to the management evidence base and support the development of new management strategies and services for long-term care. Ascertainment of cases is now completed, and data collection for the final few cases is underway; one year follow-up data collection is also now underway.

Contact person: Jenny Kurinczuk

Funding: AMR

Status of project: In progress





Stream 2: Care of the healthy woman and baby

2.2 Recent users' views and experience of maternity care

Analysis of trust-based data from National Maternity Surveys on women's experience of care

Chief investigator:

NPEU:

Maggie Redshaw.

Other investigator:

NPEU:

Katriina Heikkila.

Data collected by Hospital Trusts in the course of the 2007 Healthcare Commission review of maternity care are being analysed to explore variations in the type and quality of maternity care provided and in women's views of that care. The initial focus is on inequalities, access to and engagement with antenatal care and the experience of women from disadvantaged and Black and Minority Ethnic Groups. A paper is in preparation, presenting data on timing of initial antenatal contact with health professionals and at booking and the type of health professional involved, numbers of checks and take-up of antenatal dating and anomaly scans, as well as offers of antenatal education classes, using an eight-way classification of ethnicity.

Contact person: Maggie Redshaw

Status of project: In progress

National Maternity Survey 2010: Women's Experience of Maternity Care

Chief investigator:

NPEU:

Maggie Redshaw.

Other investigator:

NPEU:

Katriina Heikkila.

A new national maternity survey has been undertaken by the NPEU using the same methods as were employed in 2006, the results of which were reported as 'Recorded Delivery' (2007). Compare with the survey in 2006, the target sample size was increased to 10,000 and additional sections on fathers' involvement and on women whose babies were admitted to neonatal care were included.

Mailings of questionnaires went out to women at three months after the birth in January 2010 and an online questionnaire option was made available. The aim of the survey is to provide updated information about choice and information, care and services from the perspective of women who have recently given birth, looking at the experience of different groups of women, to be able to make comparisons across time and between women receiving care in different Strategic Health Authorities.

Contact person: Maggie Redshaw

Funding: DH

Status of project: In progress

Women's experience of support for breastfeeding

Chief investigator:

NPEU:

Jane Henderson.

Other investigator:

NPEU:

Maggie Redshaw.

Up-to-date information about the support and care available for women wishing to breastfeed is needed. Secondary analysis of data from the large-scale national survey of women's experience of maternity

care carried out by NPEU in 2006 and published as 'Recorded Delivery' (2007) has been used to explore the factors that contribute to successful breastfeeding and to investigate the midwifery role in supporting initiation and continued breastfeeding. A quantitative paper has been submitted for publication and a qualitative paper is currently in preparation.

Contact person: Maggie Redshaw

Status of project: In progress

2.5 Care in labour and delivery

BUMPES - Upright maternal position in second stage labour in women with epidural analgesia; a randomised controlled trial

Chief investigators:

(Listed alphabetically)

External:

Christine MacArthur (*University of Birmingham*).

NPEU:

Peter Brocklehurst.

Other investigators:

(Listed alphabetically)

External:

Debra Bick (*Thames Valley University*), Janesh Gupta (*Birmingham Women's Hospital*), Philip Moore (*Queen Elizabeth Hospital, Birmingham*), Mary Nolan (*NCT*), Geraldine O'Sullivan (*Guy's and St Thomas' Hospital, London*), Julia Sanders (*Cardiff and Vale NHS Trust*), Andy Shennan (*King's College, London*), Matt Wilson (*Sheffield Teaching Hospitals NHS Trust*).

NPEU:

Ursula Bowler, Ed Juszczak, Lynn Lynch, Rachel Roberts.

Other NPEU staff involved:

(Listed alphabetically)

Rachel Roberts, Lydia Saroglou.

As the most effective form of pain relief in labour, epidural analgesia is chosen by up to 30% of women. Previous randomised controlled trials have shown that epidural analgesia is associated with increased risk of instrumental vaginal delivery

(IVD), prolonged labour and oxytocic augmentation. These effects have been attributed to dense epidural motor block.

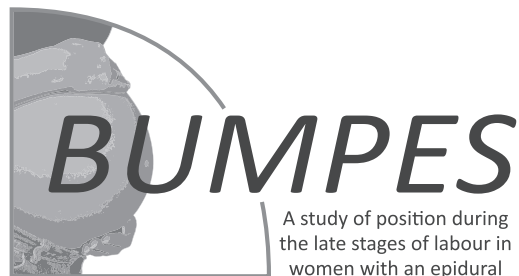
'Mobile epidurals' which use low-dose local anaesthetic in combination with opioids (Fentanyl) are now routine practice and have been shown to result in a lower risk of IVD. However risk of IVD is still higher compared with women with no epidural. Although mobile epidurals preserve motor function, allowing greater mobility throughout labour and can enable women to adopt upright positions, there is controversy about whether an upright posture in second stage increases the spontaneous vaginal delivery (SVD) rate.

This pragmatic randomised controlled trial will recruit 3,000 women to evaluate whether a policy of enabling upright position increases the incidence of SVD and decreases the incidence of IVD compared to a policy of lying down amongst women in first time labour with a mobile epidural who enter second stage.

Contact person: Peter Brocklehurst

Funding: NIHR HTA

Status of project: In progress



Cochrane review: Psychosocial and educational interventions in latent phase or early labour for improving birth outcomes

Chief investigator:

External:

Helen Spiby (*University of York*).

Other investigators:

(Listed alphabetically)

External:

Ellen Hodnett (*Lawrence S. Bloomberg Faculty of Nursing, Toronto, Canada*), Patricia Janssen (*UBC School of Health and Population, Vancouver, Canada*).

NPEU:

Maria Quigley.

In western settings, the majority of women give birth in hospitals or birth centres. Admission often occurs early in labour in order that women can receive confirmation that labour has commenced, to access advice and support from birth attendants and to relieve anxiety about birth occurring unplanned at home or in transit to hospital. However, early admission to maternity units has been associated with repeated admissions to hospital (if labour is found not to be established) and has the potential for increased interventions if women remain in hospital prior to established labour.

The objective of this review is to assess the effects of early labour interventions that aim to promote normal childbirth for women labouring at term on the following outcomes: maternal and neonatal health and wellbeing; interventions during labour; and women's experiences of care. This review will focus on the time prior to admission, in contrast with the existing review of continuous support during labour following admission to delivery suites.

Contact person: Maria Quigley
Status of project: In progress

2.6 Postnatal health and care

The effect of breastfeeding on child development

Chief investigator:
NPEU:
Maria Quigley.

Other investigators:
(Listed alphabetically)
External:
Yvonne Kelly (*University College London*),
Mary Renfrew (*University of York*),
Amanda Sacker (*University College London*).

NPEU:
Claire Carson, Katriina Heikkila, Christine Hockley.

The literature to date gives conflicting findings as to the effect of breastfeeding on child cognitive development and behaviour. The objective of this study is to assess the relationship between breastfeeding and child cognitive development and behaviour in a large

population-based UK cohort, and to assess whether these relationships vary according to prematurity.

We are using data from Sweeps 1 and 3 of the UK Millennium Cohort Study. Children are grouped according to their breastfeeding status (ever versus never; and duration of any and exclusive breastfeeding). Results will be stratified according to gestational age at birth. The main outcome measures are the British Ability Scales tests and the Strengths and Difficulties Questionnaire which were administered when the children were aged 5 years. In the analysis, we will take account of potential confounders and mediators of the effect of breastfeeding on child development and behaviour.

Contact person: Maria Quigley
Status of project: In progress

2.7 Organisation of maternity care

Birth and beyond: antenatal education and preparation for parenthood - a review of the literature and current service provision

Chief investigator:
External:
Jane Barlow (*University of Warwick*).

Other investigators:
(Listed alphabetically)
External:
Christine Coe (*School of Health and Social Studies, University of Warwick, Coventry*), Angela Underdown (*University of Warwick*).

NPEU:
Maggie Redshaw.

The aim of the project was to contribute to the promotion of universal access to high quality evidence-based antenatal education and preparation for parenthood. It did so by producing a review of the published literature on this topic and an overview of the range and diversity of provision available.

The first objective was to identify from existing databases published evidence concerning the following: the effectiveness of antenatal education/preparation for

parenthood for mothers and fathers, with a range of outcomes including antenatal health, childbirth, child health and well-being, adjustment to becoming a parent and child care; the evidence relating to the benefits of antenatal education, the cost-benefits of preparation for parenthood across a range of outcomes, the effectiveness of different models of provision and learning methods. The second objective was to conduct case studies in different regions in order to obtain an overview of provision across England in NHS and the 3rd sector with some examples of innovative practice. A report has been completed and papers submitted for publication.

Contact person: Maggie Redshaw
Funding: DH
Status of project: Completed

Having a baby in rural areas in England

Chief investigator:
NPEU:
 Maggie Redshaw.

Other investigators:
 (Listed alphabetically)

External:
 Vanita Bhavnani (*King's College, London*),
 Mary Newburn (*NCT*).

The birth of a baby for individual women, their families and their communities is a significant and life-changing event. This work was part of a larger Commission for Rural Communities (CRC) project looking at major life events of different kinds taking place in rural areas of England, with a specific focus on needs and provision relating to pregnancy and childbirth.

Key aspects of published guidelines relating to maternity care were described and a review undertaken of what is known of the organisation of care in rural areas and the experience of women living in those areas. Issues that may particularly impact on services for pregnant and new mothers and their families in rural areas were explored.

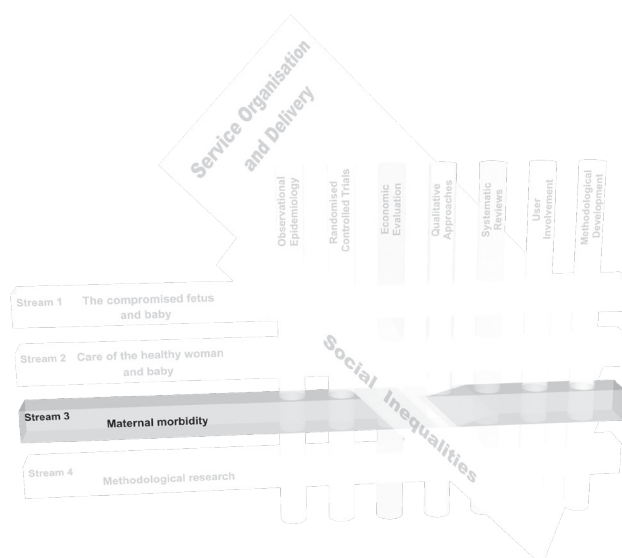
Providing maternity services in rural areas presents many challenges. Significant issues in delivering care to women and families in rural areas are location and accessibility, the range of services provided and staff able to provide the care, distance from parents' homes to services vary and

travel time to the nearest obstetric unit. Travel difficulties are exacerbated by poor road quality, transportation services and weather.

Poor accessibility impacts most on those with high risk pregnancies, young parents and low income families. Long distances from regional centres and other resources, the unpredictable nature of childbirth and possible distress associated with transfer to regional centres may result in further difficulties. The practical problems associated with midwifery staffing levels and distance to travel between homes and hospital are also important factors in planning and providing perinatal care.

The report is due to be published on the CRC website.

Contact person: Maggie Redshaw
Funding: CRC
Status of project: Completed



Stream 3: Maternal morbidity

3.4 Surveillance of rare disorders of pregnancy



Surveillance of uterine rupture

Chief investigator:

NPEU:

Marian Knight.

Other investigators:

(Listed alphabetically)

External:

Zarko Alfirevic (*University of Liverpool*).

NPEU:

Peter Brocklehurst, Jenny Kurinczuk.

Other NPEU staff involved:

(Listed alphabetically)

Carole Harris, Patsy Spark.

True uterine rupture is a catastrophic event with significant associated maternal and fetal morbidity and mortality. In the developed world it most commonly occurs in women who have previously delivered by caesarean section. This observation has led to debate about the optimal management of labour and delivery in women who have delivered by caesarean section in previous pregnancies.

Women with a previous caesarean delivery have generally been encouraged to attempt a trial of labour in subsequent pregnancies, but recent reports of an increased risk of morbidity, particularly due to uterine rupture, are thought to have contributed to a marked decrease in the number of women attempting vaginal birth after caesarean section.

The rate of caesarean section delivery in the UK is increasing, with previous caesarean section being the most common primary obstetric indication for repeat caesarean.

Two recent systematic reviews have attempted to quantify the incidence of uterine rupture. Both these reviews identified a number of deficiencies in the few existing studies in developed countries and suggested that a prospective national study of uterine rupture would offer the best opportunity to guide preventive strategies. They identified only one previous UK population-based study, which reported 12 ruptures in 48,865 deliveries, a rate of approximately 1 in 4,000 deliveries.

In addition to difficulties in quantifying the incidence of uterine rupture, it has been noted that existing observational

studies are insufficient to answer additional questions about the risks of rupture associated with induction and augmentation of labour. This prospective, descriptive study using the UK Obstetric Surveillance System will address these questions and quantify the national incidence of uterine rupture.

Contact person: Marian Knight

Funding: Wellbeing of Women

Status of project: In progress

Surveillance of multiple repeat caesarean section

Chief investigator:

External:

Joanna Cook (*St Mary's Hospital, London*).

Other investigators:

(Listed alphabetically)

External:

Mandish Dhanjal (*Queen Charlotte's and Chelsea Hospital, London*).

NPEU:

Marian Knight.

Other NPEU staff involved:

(Listed alphabetically)

Carole Harris, Patsy Spark.

The incidence of primary caesarean section is rising throughout the world and the UK also demonstrates this trend. This is thought to be due to fetal monitoring in labour, maternal preference, maternal obesity, and possibly defensive obstetric practice.

After having three lower segment caesareans women are advised to undergo repeat elective caesarean in any subsequent pregnancies, rather than attempt a vaginal delivery. This practice is thought to reduce the risk of uterine rupture which can be life-threatening for both mother and baby. All caesarean procedures however, have associated risks: venous thromboembolism and haemorrhage - which are leading causes of maternal mortality, infection, and damage to the viscera. Repeated caesareans are also associated with placental invasion into the myometrium and peripartum hysterectomy. Babies born via caesarean are more likely to experience breathing difficulties and require admission to a specialist unit.

Current knowledge concerning the maternal-fetal outcomes and management of multiple repeat caesarean is limited and mainly derived from hospital-based retrospective case analysis outside of the UK. No population-wide studies of incidence or complications have been undertaken.

This study will determine the national incidence of multiple repeat caesarean section in the UK and identify the accompanying complications and their respective rates. It will allow comparison between the risks associated with multiple repeat caesarean and those described in fewer repeat procedures. It will also ascertain the current UK practice in such cases with regards to timing of elective caesarean and postnatal counselling for future pregnancies.

Contact person: Marian Knight
Funding: RCOG
Status of project: In progress

Surveillance of aortic dissection/dissecting aortic aneurysm in pregnancy

Chief investigator:

External:

Sheba Jarvis (*Queen Charlotte's and Chelsea Hospital, London*).

Other investigators:

(Listed alphabetically)

External:

Mandish Dhanjal (*Queen Charlotte's and Chelsea Hospital, London*).

NPEU:

Marian Knight.

Other NPEU staff involved:

(Listed alphabetically)

Carole Harris, Patsy Spark.

Aortic dissection is a potentially life threatening condition that requires rapid identification and immediate medical treatment. The exact cause of aortic dissection remains unknown, but risk factors may include inherited weak blood vessels walls (connective tissue diseases), atherosclerosis (fat deposition in arteries causing them to narrow and become weak), congenital heart disease and high blood pressure.

Aortic dissection in pregnancy is a life-threatening event to both mother and baby and accounts for 14% of maternal cardiac deaths. Although rare, an association between pregnancy and aortic dissection has been reported and its incidence in pregnancy is rising. Approximately 50% of aortic dissection cases in women under the age of 40 occur whilst they are pregnant.

Between 2002-2005, there were 9 reported deaths from aortic dissection from a total of 248 maternal deaths (3.6%) in the UK. Worryingly, analysis of these cases has indicated that the care provided was deemed sub-standard in 44%. These highly publicised findings prompt an urgent approach to improve our understanding of this condition with early identification of pregnant patients at risk of this disease.

This study, using the UK Obstetric Surveillance System (UKOSS) will estimate disease incidence, describe risk factors, management and outcomes with the aim of informing guidelines for the prevention and treatment of the condition

Contact person: Marian Knight
Funding: Heart UK
Status of project: In progress

Surveillance of pituitary tumours in pregnancy

Chief investigator:

External:

Kimberley Lambert (*Imperial College, London*).

Other investigators:

(Listed alphabetically)

External:

Mandish Dhanjal (*Queen Charlotte's and Chelsea Hospital, London*), David McCance (*Royal Victoria Hospital, Belfast*), Catherine Williamson (*Imperial College, London*).

NPEU:

Marian Knight.

Other NPEU staff involved:

(Listed alphabetically)

Carole Harris, Patsy Spark.

Women with functioning anterior pituitary disease are often anovulatory. Once the condition is treated with medication or surgery, women are able to ovulate and conceive. This can occur before their first

normal menstruation, so unless adequate contraception is used, they will conceive whilst still on medical treatment. Therefore the fetus may be exposed to dopamine agonists at an early stage in development.

With the exception of macroprolactinoma there is limited knowledge about the maternal and fetal consequences of pituitary tumours and the drugs used to treat them in pregnancy. The pituitary increases in size in all pregnancies, if there is an underlying adenoma, the normal growth in addition to an abnormal pituitary can have serious consequences if not diagnosed early and treated appropriately. As the disease is rare the only information we have so far is based on case studies.

UKOSS provides the opportunity to collect some much needed data on these conditions in pregnancy and the effect on the mother and fetus. We know from case reports that Cushing's disease and acromegaly can have devastating consequences including fetal and maternal mortality and serious morbidity. Macroprolactinomas and non-functioning tumours may enlarge, thereby threatening vision and necessitating surgery.

We will use the information gathered through UKOSS to write guidelines for the management of these conditions. The data obtained will help us in advising patients on the safety regarding established medication, and will also give limited insights into new treatments such as pegvisomont and somatostatin analogues.

Contact person: Marian Knight

Funding: SPARKS

Status of project: In progress

Before, during and after birth - how does care affect the future health prospects of infants with congenital diaphragmatic hernia? (UKOSS study)

Chief investigator:

NPEU:

Marian Knight.

Other investigators:

(Listed alphabetically)

External:

Elizabeth Draper (*University of Leicester*), David Howe (*University of Southampton Hospitals NHS Trust*), Paul Johnson (*Oxford Children's Hospital*), Paul Losty

(*University of Liverpool*), Sean Marven (*Sheffield Children's Hospital*), Judith Rankin (*University of Newcastle*).

NPEU:

Peter Brocklehurst, Jenny Kurinczuk.

Other NPEU staff involved:

(Listed alphabetically)

Alex Bellenger, Carole Harris, Patsy Spark.

Congenital diaphragmatic hernia (CDH) is a musculoskeletal defect of the diaphragm which occurs during fetal development affecting between 1 in 2,000 and 1 in 4,000 births. During fetal development the defect allows the abdominal contents to move into the chest and impedes cardiac and lung development. CDH can be diagnosed prenatally on ultrasound.

At present we have incomplete information about the incidence, optimal pregnancy management, survival to delivery, optimal surgical management, survival to discharge and longer term outcomes. Given the rarity of CDH available data mainly come from major referral centres and may be biased in favour of better outcomes; available survival data following surgery are thus contentious. Nevertheless, available data suggest that a significant proportion of infants experience substantial ongoing problems of respiratory, neurological, growth and GI function, and life-long disability.

This project is a UK-wide study of a 1-year birth cohort of all cases of CDH using three related tried and tested data collection systems: the UK Obstetric Surveillance System (UKOSS) to collect antenatal and perinatal information; and BAPS-CASS to collect neonatal and surgical information, and outcomes at both discharge and age one year. Cross validation of cases with the British Isles Network of Congenital Anomalies Registers (BINOCAR) will ensure we have identified all cases to provide a total population picture not subject to referral bias.

These data will contribute to improvements in counselling for parents, contribute to the management evidence base and support the development of new management strategies and services for long-term care.

Contact person: Marian Knight

Funding: AMR

Status of project: In progress

Surveillance of A/H1N1v influenza in pregnancy

Chief investigator:

NPEU:

Marian Knight.

Other investigators:

(Listed alphabetically)

External:

Simon Thomas (*University of Newcastle*),
Laura Yates (*University of Newcastle*).

NPEU:

Peter Brocklehurst, Jenny Kurinczuk.

Other NPEU staff involved:

(Listed alphabetically)

Carole Harris, Patsy Spark.

This research identified through UKOSS, all pregnant women hospitalised with confirmed influenza A/H1N1v in the UK between September 2009 and January 2010.

A total of 241 pregnant women were admitted to hospital with laboratory confirmed A/H1N1v infection. Eighty-three percent of women hospitalised with A/H1N1v influenza were treated with antiviral agents, but only 6% received antiviral treatment before hospital admission.

Women hospitalised with A/H1N1v in pregnancy more likely to be overweight (aOR 1.7, 95% CI 1.2-2.4) or obese (aOR 2.0, 95% CI 1.3-3.0) than the comparison cohort. They were also more likely to have asthma requiring inhaled or oral steroids (aOR 2.3, 95% CI 1.4-3.9), to be multiparous (aOR 1.6, 95% CI 1.1-2.2), to have a multiple pregnancy (aOR 5.2, 95% CI 1.9-13.8) and to be from a black or other minority ethnic group (aOR 1.6, 95% CI 1.1-2.3).

Younger smokers had a raised odds of admission with confirmed A/H1N1v influenza (aOR 4.2, 95%CI 2.0-8.9) when compared with older non-smokers. Treatment within two days of symptom onset was associated with an 84% reduction in the odds of admission to ITU (OR 0.16, 95%CI 0.08-0.34); women admitted to ITU were three times more likely to be obese (aOR 3.4, 95%CI 1.2-9.2) than women not admitted to an ITU.

Sixty-three percent of hospitalised women had completed their pregnancies at the time of reporting. Women admitted

to hospital with A/H1N1v infection are more likely to deliver preterm; a conservative estimate accounting for the high proportion of women who were undelivered suggests a three fold increased risk compared to an uninfected population cohort (OR 3.1; 95% CI 2.1, 4.5).

Conclusions: Earlier treatment with antiviral agents is associated with improved outcomes for pregnant women and further actions are needed in future pandemics to ensure that antiviral agents and vaccines are provided promptly to pregnant women, particularly in the primary care setting.

Contact person: Marian Knight

Funding: NIHR HTA

Status of project: Completed



UKOSS Steering Group.

Publications 2008 – 2010

2008

- 2008-01 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. United Kingdom Obstetric Surveillance System Steering Committee. Cesarean delivery and peripartum hysterectomy. *Obstet Gynecol* 2008; 111:97-105.
- 2008-02 Gray R, Bonellie SR, Chalmers J, Greer I, Jarvis S, Williams C. Social inequalities in preterm birth in Scotland 1980-2003: findings from an area-based measure of deprivation. *Br J Obstet Gynaecol* 2008; 115:82-90.
- 2008-03 Alderdice F, McNeill J, Rowe R, Martin D, Dornan J. Inequalities in the reported offer and uptake of antenatal screening. *Public Health* 2008; 122:42-52.
- 2008-04 Hemming K, Hutton JL, Bonellie S, Kurinczuk JJ. Intrauterine growth and survival in cerebral palsy. *Arch Dis Child Fetal Neonatal Ed* 2008; 93:F121-6.
- 2008-05 Draper ES, Rankin J, Tonks AM, Abrams KR, Field DJ, Clarke M, Kurinczuk JJ. Recreational drug use: a major risk factor for gastroschisis? *Am J Epidemiol* 2008; 167:485-91.
- 2008-06 Nieuwenhuijsen MJ, Toledano MB, Bennett J, Best N, Hambly P, de Hoogh C, Wellesley D, Boyd PA, Abramsky L, Dattani N, Fawell J, Briggs D, Jarup L, Elliott P. Chlorination disinfection by-products and risk of congenital anomalies in England and Wales. *Environ Health Perspect* 2008; 116:216-22.
- 2008-07 Knight M, Nelson-Piercy C, Kurinczuk JJ, Spark P, Brocklehurst P. A prospective national study of acute fatty liver of pregnancy in the UK. *J Obstet Anaesth* 2008; 17(suppl 1):S58.
- 2008-08 Petrou S, McIntosh E. Measuring the benefits of growth hormone therapy in children: A role for preference-based approaches? *Arch Dis Child* 2008; 93:95-7.
- 2008-09 Knight M on behalf of UKOSS. Antenatal Pulmonary Embolism: risk factors, management and outcomes. *Br J Obstet Gynaecol* 2008; 115:453-61.
- 2008-10 Hockley C, Quigley MA, Hughes G, Calderwood L, Joshi H, Davidson LL. Linking Millennium Cohort data to birth registration and hospital episode records. *Paediatr Perinat Epidemiol* 2008; 22:99-109.
- 2008-11 Eddama O, Coast J. A systematic review of the use of economic evaluation in local decision-making. *Health Policy* 2008; 86:129-41.
- 2008-12 Petrou S, Kupek E. Social capital and its relationship with measures of health status: evidence from the Health Survey for England 2003. *Health Econ* 2008; 17:127-43.
- 2008-13 Redshaw M, Van den Akker O. Understanding factors which can influence the experience of pregnancy and childbirth (Editorial). *J Reprod Infant Psychol* 2008; 26:71-3.
- 2008-14 Birthplace. Research set to reveal birthplace safety. *Midwives: The Magazine of the Royal College of Midwives* 2008:34.
- 2008-15 Birthplace in England Research Programme Co-investigator Group, McCandlish R, Brocklehurst P, Campbell R, Logan M, Macfarlane AJ, McCourt C, Miller A, Murphy D, Newburn M, Petrou S, Puddicombe D, Redshaw M,

- Rowe R, Schroeder E, Sandall J, Silverton L, Stewart M, Marlow N. National evaluation safety and cost-effectiveness of planned place of birth. [Letter]. *Br J Obstet Gynaecol* 2008; 115:1063-4.
- 2008-16 Rowe RE, Stewart M, Puddicombe D. Perinatal outcomes in birth centres. [Letter]. *Birth* 2008; 35:85.
- 2008-17 Azzopardi D, Brocklehurst P, Edwards D, Halliday H, Levene M, Thoresen M, Whitelaw A; TOBY Study Group. The TOBY Study. Whole body hypothermia for the treatment of perinatal asphyxial encephalopathy: a randomised controlled trial. [Protocol]. *BMC Pediatr* 2008; 8:17.
- 2008-18 Henderson J, Petrou S. Economic implications of home births and birth centres: a structured review. *Birth* 2008; 35:136-46.
- 2008-19 Edmond KM, Quigley MA, Zandoh C, Danso S, Hurt C, Owusu Agyei S, Kirkwood BR. Diagnostic accuracy of verbal autopsies in ascertaining the causes of stillbirths and neonatal deaths in rural Ghana. *Paediatr Perinat Epidemiol* 2008; 22:417-29.
- 2008-20 Edmond KM, Quigley MA, Zandoh C, Danso S, Hurt C, Owusu Agyei S, Kirkwood BR. Aetiology of stillbirths and neonatal deaths in rural Ghana: implications for health programming in developing countries. *Paediatr Perinat Epidemiol* 2008; 22:430-7.
- 2008-21 Rowe RE, Magee H, Quigley MA, Heron P, Askham J, Brocklehurst P. Social and ethnic differences in attendance for antenatal care in England. *Public Health* 2008; 122:1363-72.
- 2008-22 Boyd PA, DeVigan C, Khoshnood B, Loane M, Garne E, Dolk H, EUROCAT Working Group. Survey of prenatal screening policies in Europe for structural malformations and chromosome anomalies, and their impact on detection and termination rates for neural tube defects and Down's syndrome. *Br J Obstet Gynaecol*. 2008; 115:689-96.
- 2008-23 Knight M, Nelson-Piercy C, Kurinczuk JJ, Spark P, Brocklehurst P. A prospective national study of acute fatty liver of pregnancy in the UK. *Gut* 2008; 57:951-6.
- 2008-24 Beardsall K, Brocklehurst P, Ahluwalia J. Should newborn infants be excluded from multiple research studies? *Lancet* 2008; 372:503-5.
- 2008-25 Kenyon S, Pike K, Jones DR, Brocklehurst P, Marlow N, Salt A, Taylor DJ. Childhood outcomes after prescription of antibiotics to pregnant women with preterm rupture of the membranes: 7-year follow-up of the ORACLE I trial. *Lancet* 2008; 372:1310-8.
- 2008-26 Kenyon S, Pike K, Jones DR, Brocklehurst P, Marlow N, Salt A, Taylor DJ. Childhood outcomes after prescription of antibiotics to pregnant women with spontaneous preterm labour: 7-year follow-up of the ORACLE II trial. *Lancet* 2008; 372:1319-27.
- 2008-27 Gainsborough M, Surman G, Maestri G, Colver A, Cans C. Validity and reliability of the guidelines of the surveillance of cerebral palsy in Europe for the classification of cerebral palsy. *Dev Med Child Neurol* 2008; 50:828-31.
- 2008-28 Hemming K, Colver A, Hutton JL, Kurinczuk JJ, Pharoah PO. The influence of gestational age on severity of impairment in spastic cerebral palsy. *J Pediatr* 2008; 153:203-8.
- 2008-29 Hansen M, Colvin L, Petterson B, Kurinczuk JJ, de Klerk N, Bower C. Admission to hospital of singleton children born following assisted reproductive technology (ART). *Hum Reprod* 2008; 23:1297-305.

- 2008-30 Bastos MH, Bick D, Rowan CJ, Small R, McKenzie-McHarg K. Debriefing for the prevention of psychological trauma in women following childbirth [Protocol]. The Cochrane Library (Cochrane Database of Systematic Reviews 2008) 2008:1-9.
- 2008-31 Ayers S, Joseph S, McKenzie-McHarg K, Slade P, Wijma K. Post- traumatic stress disorder following childbirth: current issues and recommendations for future research. *J Psychosom Obstet Gynaecol* 2008; 29:240-50.
- 2008-32 Rowe R, Puddicombe D, Hockley C, Redshaw M. Offer and uptake of antenatal screening for Down's syndrome in women from different social and ethnic backgrounds. *Prenat Diagn* 2008; 28:1245-50.
- 2008-33 Kimber L, McNabb M, McCourt C, Haines A, Brocklehurst P. Massage or music for pain relief in labour: a pilot randomised placebo controlled trial. *Eur J Pain* 2008; 12:961-9.
- 2008-34 Pyper C, Knight J. Fertility awareness methods of family planning for achieving or avoiding pregnancy. *Glob libr women's med* (ISSN: 1756-2228) 2008; DOI 10.3843/GLOWM.10384.
- 2008-35 Bonellie S, Chalmers J, Gray R, Greer I, Jarvis S, Williams C. Centile charts for birthweight and gestational age for Scottish singleton births. *BMC Pregnancy Childbirth* 2008; 8:5.
- 2008-36 INIS Study Collaborative Group. The INIS Study. International Neonatal Immunotherapy Study: non-specific intravenous immunoglobulin therapy for suspected or proven neonatal sepsis: an international, placebo controlled, multicentre randomised trial. [Protocol]. *BMC Pregnancy Childbirth* 2008; 8:52.
- 2008-37 Knight M. Pre-eclampsia: Increasing incidence but improved outcome? *Am J Hypertens* 2008; 21:491.
- 2008-38 Kenyon S, Brocklehurst P, Jones D, Marlow N, Salt A, Taylor D. MRC ORACLE Children Study. Long term outcomes following prescription of antibiotics to pregnant women with either spontaneous preterm labour or preterm rupture of the membranes. *BMC Pregnancy and Childbirth*. [Study Protocol] 2008; 8:14.
- 2008-39 Redshaw M. Women as Consumers of Maternity Care: Measuring "Satisfaction" or "Dissatisfaction". *Birth* 2008; 35:73-6.
- 2008-40 Petrou S. Economics of newborn care. In: N McIntosh PH, R Smyth, S Logan, editors. *Forfar and Arneil's Textbook of Pediatrics*. 7th ed. Churchill Livingstone Elsevier UK, printed in China; 2008. p. 192-5.
- 2008-41 Bodeau-Livinec F, Marlow N, Ancel PY, Kurinczuk JJ, Costeloe K, Kaminski M. Impact of intensive care practices on short-term and long-term outcomes for extremely preterm infants: comparison between the British Isles and France. *Pediatrics* 2008; 122:e1014-21.

2009

- 2009-01 Carr R, Brocklehurst P, Doré CJ, Modi N. Granulocyte-macrophage colony stimulating factor administered as prophylaxis for reduction of sepsis in extremely preterm, small for gestational age neonates (the PROGRAMS trial): a single-blind, multicentre, randomised controlled trial. *Lancet* 2009; 373:226-33.
- 2009-02 Quigley MA, Kelly YJ, Sacker A. Infant feeding, solid foods and hospitalisation in the first 8 months after birth. *Arch Dis Child* 2009; 94:148-50.

- 2009-03 Henderson G, Craig S, Baier RJ, Helps N, Brocklehurst P, McGuire W. Cytokine gene polymorphisms in preterm infants with necrotising enterocolitis: genetic association study. *Arch of Dis Child Fetal Neonatal Ed* 2009; 94:F124-8.
- 2009-04 Henderson G, Craig S, Brocklehurst P, McGuire W. Enteral feeding regimens and necrotising enterocolitis in preterm infants: a multicentre case-control study. *Arch Dis Child Fetal Neonatal Ed* 2009; 94:F120-3.
- 2009-05 Redshaw M, Martin CR. Validation of a perceptions of care adjective checklist. *J Eval Clin Pract* 2009; 15:281-8.
- 2009-06 Brocklehurst P, Nwandison M. Routine care and screening in pregnancy. In: Sarris I, Bewley S, Agnihotri S, editors. *Training in Obstetrics and Gynaecology*. Oxford: Oxford University Press; 2009. p. 109-36.
- 2009-07 Eddama O, Coast J. Use of economic evaluation in local health care decision-making in England: a qualitative investigation. *Health Policy* 2009; 89:261-70.
- 2009-08 Simon J, Petrou S, Gray A. The valuation of prenatal life in economic evaluations of perinatal interventions. *Health Econ* 2009; 18:487-94.
- 2009-09 McCann DC, Worsfold S, Law CM, Mullee M, Petrou S, Stevenson J, Yuen HM, Kennedy CR. Reading and communication skills after universal newborn screening for permanent childhood hearing impairment. *Arch Dis Child* 2009; 94:293-7.
- 2009-10 Mangham LJ, Petrou S, Doyle LW, Draper ES, Marlow N. The cost of preterm birth throughout childhood in England and Wales. *Pediatrics* 2009; 123:e312-27.
- 2009-11 Petrou S. Should health gains by children be given the same value as health gains by adults in an economic evaluation framework? In: Ungar WJ, editor. *Economic Evaluation in Child Health*. Oxford: Oxford University Press; 2009. p. 271-87.
- 2009-12 Sung L, Petrou S, Ungar WJ. Measurement of health utilities in children. In: Ungar WJ, editor. *Economic Evaluation in Child Health*. Oxford: Oxford University Press; 2009. p. 77-90.
- 2009-13 Petrou S, Morrell J, Spiby H. Assessing the empirical validity of alternative multi-attribute utility measures in the maternity context. *Health Qual Life Outcomes* 2009; 7:40.
- 2009-14 Redshaw M, Martin C, Rowe R, Hockley C. The Oxford Worries about Labour Scale: women's experience and measurement characteristics of a measure of maternal concern about labour and birth. *Psychol Health Med* 2009; 14:354-66.
- 2009-15 Kelly Y, Sacker A, Gray R, Kelly J, Wolke D, Quigley MA. Light drinking in pregnancy, a risk for behavioural problems and cognitive deficits at 3 years of age? *Int J Epidemiol* 2009; 38:129-40.
- 2009-16 Sayal K, Heron J, Golding J, Alati R, Davey Smith G, Gray R, Emond A. Binge pattern of alcohol consumption during pregnancy and childhood mental health outcomes: longitudinal population-based study. *Pediatrics* 2009; 123:e289-96.
- 2009-17 Gibson J, McKenzie-McHarg K, Shakespeare J, Price J, Gray R. A systematic review of studies validating the Edinburgh Postnatal Depression Scale in antepartum and postpartum women. *Acta Psychiatr Scand* 2009; 119:350-64.

- 2009-18 Knight M, Kurinczuk JJ, Nelson-Piercy C, Spark P, Brocklehurst P, on behalf of UKOSS. Tuberculosis in pregnancy in the UK. *Br J Obstet Gynaecol* 2009; 116:584-8.
- 2009-19 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P, on behalf of UKOSS. Inequalities in maternal health: national cohort study of ethnic variation in severe maternal morbidities. *Br Med J* 2009; 338: b542. doi: 10.1136/bmj.b542.
- 2009-20 Knight M, Nelson-Piercy C, Kurinczuk JJ, Spark P, Brocklehurst P, on behalf of UKOSS. Acute fatty liver of pregnancy; authors' response. *Gut* 2009; 58:467-8.
- 2009-21 Azzopardi D, Strohm B, Edwards AD, Halliday H, Juszczak E, Levene M, Thoresen M, Whitelaw A, Brocklehurst P, on behalf of Steering Group and TOBY Cooling Register Participants. Treatment of asphyxiated newborns with moderate hypothermia in routine clinical practice: how cooling is managed in the UK outside a clinical trial. *Arch Dis Child Fetal Neonatal Ed* 2009;94:F260-4.
- 2009-22 Dixon G, Badawi N, French D, Kurinczuk JJ. Can parents accurately screen children at risk of developmental delay? *J Paediatr Child Health* 2009; 45:268-73.
- 2009-23 Marston L, Peacock JL, Yu K, Brocklehurst P, Calvert SA, Greenough A, Marlow N. Comparing methods of analysing datasets with small clusters: case studies using four paediatric datasets. *Paediatr Perinat Epidemiol* 2009; 23:380-92.
- 2009-24 O'Leary CM, Nassar N, Kurinczuk JJ, Bower C. The effect of maternal alcohol consumption on fetal growth and preterm birth. *Br J Obstet Gynaecol* 2009; 116:390-400.
- 2009-25 Gray R, Mukherjee RAS, Rutter M. For Debate: Alcohol consumption during pregnancy and its effects on neurodevelopment: what is known and what remains uncertain. *Addiction* 2009; 104:1270-3.
- 2009-26 Sabet F, Richter LM, Ramchandani PG, Stein A, Quigley MA, Norris SA. Low birthweight and subsequent emotional and behavioural outcomes in 12-year-old children in Soweto, South Africa: findings from Birth to Twenty. *Int J Epidemiol* 2009; 38:944-54.
- 2009-27 Choudhry MS, Rahman N, Boyd P, Lakhoo K. Duodenal atresia: associated anomalies, prenatal diagnosis and outcome. *Pediatr Surg Int* 2009; 25:727-30.
- 2009-28 Turner MA, Lewis S, Hawcutt DB, Field D. Prioritising neonatal medicines research: UK Medicines for Children Research Network scoping survey. *BMC Pediatr* 2009; 9:50
- 2009-29 McNeill J, Alderdice F, Rowe R, Martin D, Dornan JC. Down's syndrome screening in Northern Ireland: women's reasons for accepting or declining serum testing. *Evidence Based Midwifery* 2009; 7:76-83.
- 2009-30 Azzopardi DV, Strohm B, Edwards AD, Dyet L, Halliday HL, Juszczak E, Kapellou O, Levene M, Marlow N, Porter E, Thoresen M, Whitelaw A, Brocklehurst P, for the TOBY study group. Moderate Hypothermia to Treat Perinatal Asphyxial Encephalopathy. *N Engl J Med* 2009; 361:1349-58.
- 2009-31 Leaf A, Dorling J, Kempley S, McCormick K, Mannix P, Brocklehurst P. ADEPT - abnormal doppler enteral prescription trial (Study Protocol). *BMC Pediatr* 2009; 9:63.

- 2009-32 Gray R, Bonellie SR, Chalmers J, Greer I, Jarvis S, Kurinczuk JJ, Williams C. Contribution of smoking during pregnancy to inequalities in stillbirth and infant death in Scotland 1994-2003: retrospective population based study using hospital maternity records. *Br Med J* 2009; 339:b3754.
- 2009-33 Zuccolo L, Fitz-Simon N, Gray R, Ring SM, Sayal K, Davey Smith G, Lewis SJ. A non-synonymous variant in ADH1B is strongly associated with prenatal alcohol use in a European sample of pregnant women. *Hum Mol Genet* 2009; 18:4457-66.
- 2009-34 Gray R, McCormick MC. Socioeconomic inequalities in neonatal survival (editorial). *Br Med J* 2009; 339:b5041
- 2009-35 Violato M, Petrou S, Gray R. The relationship between household income and childhood respiratory health in the United Kingdom. *Soc Sci Med* 2009; 69:955-63.
- 2009-36 Hamilton KS, Redshaw ME. Developmental care in the UK: A developing initiative. *Acta Paediatr* 2009; 98:1738-43.
- 2009-37 Bollopragada SS, MacKenzie F, Norrie JD, Eddama O, Petrou S, Reid M, Norman JE. Randomised placebo controlled trial of outpatient (at home) cervical ripening with isosorbide mononitrate (IMN) prior to induction of labour - clinical trial with analyses of efficacy and acceptability. The IMOP Study. *Br J Obstet Gynaecol* 2009; 116:1185-95.
- 2009-38 Eddama O, Petrou S, Schroeder E, Bollapragada S, MacKenzie F, Norrie J, Reid R, Norman JE. The cost-effectiveness of outpatient (at home) cervical ripening with isosorbide mononitrate prior to induction of labour. *Br J Obstet Gynaecol* 2009; 116:1196-203.
- 2009-39 Petrou S, Abangma G, Johnson S, Wolke D, Marlow N. Costs and health utilities associated with extremely preterm birth: evidence from the EPICure study. *Value Health* 2009; 12:1124-34.
- 2009-40 Williamson I, Bengé S, Barton S, Petrou S, Letley L, Fasey N, Abangma G, Dakin H, Little P. A double-blind randomised placebo controlled trial of topical intra-nasal corticosteroids in 4-11 year old children with persistent bilateral otitis media with effusion in primary care. *Health Technol Assess* 2009; 13:1-144.
- 2009-41 Petrou S, Kupek E. Estimating preference-based Health Utilities Index Mark 3 utility scores for childhood conditions in England and Scotland. *Med Decis Making* 2009; 29:291-303.
- 2009-42 Schroeder E-A, Petrou S, Balfour G, Eddama O, Heath PT on behalf of the Health Protection Agency Group B Streptococcus Working Group. The Economic costs of Group B streptococcus disease (GBS): prospective cohort study of infants with GBS disease in England. *Eur J Health Econ* 2009; 10:275-85.
- 2009-43 Petrou S, McIntosh E. Women's preferences for attributes of first- trimester miscarriage management: a stated preference discrete-choice experiment. *Value Health* 2009; 12:551-9.
- 2009-44 Surman G, Hemming K, Platt MJ, Parkes J, Green A, Hutton J, Kurinczuk JJ. Children with cerebral palsy: severity and trends over time. *Paediatr Perinat Epidemiol* 2009; 23:513-21.
- 2009-45 Bhattacharya S, Porter M, Amalraj E, Templeton A, Hamilton M, Lee AJ, Kurinczuk JJ. The epidemiology of infertility in the North East of Scotland. *Hum Reprod* 2009; 24:3096-107.

- 2009-46 Hansen M, Colvin L, Petterson B, Kurinczuk JJ, de Klerk N, Bower C. Twins born following assisted reproductive technology: perinatal outcome and admission to hospital. *Hum Reprod* 2009; 24:2321-31.
- 2009-47 Cans C, Kurinczuk JJ, Mermet M-A, Rey S, Surman G, Vik T on behalf of the SCPE collaborative group. 'Cerebral palsy, SCPE Network'. In the European Perinatal Health Report, ed Zeitlin J. EuroPeristat 2009. Available at www.europeristat.com.

2010

- 2010-01 O'Leary CM, Nassar N, Zubrick SR, Kurinczuk JJ, Stanley F, Bower C. Evidence of a complex association between dose, pattern and timing of prenatal alcohol exposure and child behaviour problems. *Addiction* 2010; 105:74-86.
- 2010-02 Dolk H, Armstrong B, Lachowycz K, Vrijheid M, Rankin J, Abramsky J, Boyd PA, Wellesley D. Ambient air pollution and risk of congenital anomalies in England, 1991-99. *Occup Environ Med* 2010; 67:223-7.
- 2010-03 Edwards AD, Brocklehurst P, Gunn AJ, Halliday H, Juszczak E, Levene M, Strohm B, Thoresen M, Whitelaw A, Azzopardi D. Neurological outcomes at 18 months of age after moderate hypothermia for perinatal hypoxic ischaemic encephalopathy: synthesis and meta-analysis of trial data. *Br Med J* 2010; 340:c363.
- 2010-04 Burns E, Gray R, Smith LA. Brief screening questionnaires to identify problem drinking during pregnancy: a systematic review. *Addiction* 2010; 105:601-14.
- 2010-05 Field DJ, Firmin R, Azzopardi DV, Cowan F, Juszczak E, Brocklehurst P; NEST study group. Neonatal ECMO study of temperature (NEST) - a randomised controlled trial. *BMC Pediatr*. 2010; 10:24.
- 2010-06 Stivanello E, Knight M, Dallolio L, Frammartino B, Rizzo N, Fantini NP. Peripartum hysterectomy and cesarean delivery: a population-based study. *Acta Obstet Gynecol Scand* 2010; 89:321-7.
- 2010-07 Garne E, Loane M, Addor M-C, Boyd PA, Barisic I, Dolk H. Congenital hydrocephalus - prevalence, prenatal diagnosis and outcome of pregnancy in four European regions. *Eur J Paediatr Neurol* 2010; 14:150-5.
- 2010-08 Pilkington H, Blondel B, Papiernik E, Cuttini M, Charreire H, Maier RF, Petrou S, Combier E, Kunzel W, Bréart G, Zeitlin J for the MOSAIC group. Distribution of maternity units and spatial access to specialised care for women delivering before 32 weeks of gestation in Europe. *Health & Place* 2010; 16:531-8.
- 2010-09 Papiernik E, Zeitlin J, Delmas D, Blondel B, Kunzel W, Cuttini M, Weber T, Petrou S, Gortner L, Kollee L, Draper ES and on behalf of the MOSAIC Group. Differences in outcome between twins and singletons born very preterm: results from a population-based European cohort. *Hum Reprod* 2010; 25:1035-43.
- 2010-10 Dolk H, Pattenden S, Bonellie S, Colver A, King A, Kurinczuk JJ, Parkes J, Platt MJ, Surman G. Socio-economic inequalities in cerebral palsy prevalence in the United Kingdom: a register-based study. *Paediatr Perinat Epidemiol* 2010; 24:149-55.
- 2010-11 Rowe RE. Local guidelines for the transfer of women from midwifery unit to obstetric unit during labour in England: a systematic appraisal of their quality. *Qual Saf Health Care*. 2010; 19:90-4.
- 2010-12 Knight M, Tuffnell D, Brocklehurst P, Spark P, Kurinczuk JJ; UK Obstetric Surveillance System. Incidence and risk factors for amniotic- fluid embolism. *Obstetrics & Gynecol* 2010; 115:910-7.

- 2010-13 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P; UK Obstetric Surveillance System. Extreme obesity in pregnancy in the United Kingdom. *Obstetrics & Gynecol* 2010; 115:989-97.
- 2010-14 Eddama O, Petrou S, Regier D, Norrie J, MacLennan G, McKenzie F, Norman JE. Study of progesterone for the prevention of preterm birth in twins (STOPPIT): Findings from a trial-based cost-effectiveness analysis. *International Journal of Technology Assessment in Health Care*. 2010; 26(2):141-48.
- 2010-15 Redshaw M, Hockley C. Institutional Processes and Individual Responses: Women's Experiences of Care in Relation to Cesarean Birth. *Birth*. 2010; 37:150-9.
- 2010-16 Carson C, Kurinczuk JJ, Sacker A, Kelly Y, Klemetti R, Redshaw M, Quigley MA. Cognitive development following ART: effect of choice of comparison group, confounding and mediating factors. *Hum Reprod*. 2010; 25:244-52.
- 2010-17 Dakin H, Petrou S, Haggard M, Bengé S, Williamson I. Mapping analyses to estimate health utilities based on responses to the OM8-30 otitis media questionnaire. *Qual Life Res* 2010; 19:65-80
- 2010-18 Zhang W-H, Deneux-Tharoux C, Brocklehurst P, Juszcak E, Joslin M, Alexander S on behalf of the EUPHRATES Group. Effect of a collector bag for measurement of postpartum blood loss after vaginal delivery: cluster randomised trial in 13 European countries. *Br Med J* 2010; 340:c293.
- 2010-19 Williamson I, Bengé S, Barton S, Petrou S, Letley L, Fasey N, Haggard M, Little P. Topical intranasal corticosteroids in 4-11 year old children with persistent bilateral otitis media with effusion in primary care: double blind randomised placebo controlled trial. *Br Med J* 2010; 340:b4984.
- 2010-20 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review [letter]. *Obstet Gynecol* 2010; 115:1306-7
- 2010-21 Rutherford M, Ramenghi LA, Edwards AD, Brocklehurst P, Halliday H, Levene M, Strohm B, Thoresen M, Whitelaw A, Azzopardi D. Assessment of brain tissue injury after moderate hypothermia in neonates with hypoxic-ischaemic encephalopathy: a nested substudy of a randomised controlled trial. *Lancet Neurol* 2010; 9:39-45.
- 2010-22 Snowdon C, Harvey SE, Brocklehurst P, Tasker RC, Platt MPW, Allen E, Elbourne D. BRACELET Study: surveys of mortality in UK neonatal and paediatric intensive care trials. *Trials* 2010; 11:65.

Unit Reports 2008-2010

- NPEU 94 National Perinatal Epidemiology Unit, Annual Report 2007. Oxford: NPEU; 2008.
- NPEU 95 Boyd PA, Rounding C, Kurinczuk JJ. First Report of the Congenital Anomaly Register for Oxfordshire, Berkshire and Buckinghamshire (CAROBB) Births 2005-2006. Oxford: NPEU; 2008
- NPEU 96 Antenatal screening for Group B Streptococcus colonisation – Protocol Development for a randomised controlled trial GBS. 2 April 2007 Report to the Health Technology Assessment Programme from the GBS Protocol Development Group.
- NPEU 97 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. UKOSS Annual Report 2008. Oxford: NPEU; 2008.

- NPEU 98 Surman G, Newdick H, King A, Gallagher M, Kurinczuk JJ. 4Child: Four Counties Database of Cerebral Palsy, Vision Loss and Hearing Loss in Children. Annual Report 2008. Oxford: NPEU; 2008.
- NPEU 99 Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. UKOSS Annual Report 2009. Oxford: NPEU; 2009.
- NPEU 100 Kurinczuk JJ, Hollowell J, Brocklehurst P, Gray R. Infant mortality: overview and context. Inequalities in Infant Mortality Project Briefing Paper 1. Oxford: NPEU; 2009.
- NPEU 101 Gray R, Hollowell J, Brocklehurst P, Graham H, Kurinczuk JJ. Health inequalities infant mortality target: technical background. Inequalities in Infant Mortality Project Briefing Paper 2. Oxford: NPEU; 2009.
- NPEU 102 Hollowell J, Allen F, Gray R, Oakley L, Kurinczuk JJ, Brocklehurst P. The effectiveness of interventions targeting infant mortality: a user's guide to the systematic review evidence. Inequalities in Infant Mortality Project Evidence Map Report 1. Oxford: NPEU; 2009.
- NPEU 103 Allen F, Gray R, Oakley L, Kurinczuk JJ, Brocklehurst P, Hollowell J. Technical guide to the infant mortality evidence map: systematic reviews of interventions targeting infant mortality. Inequalities in Infant Mortality Project Evidence Map Report 2. Oxford: NPEU; 2009.
- NPEU 104 Gray R, Headley J, Oakley L, Kurinczuk JJ, Brocklehurst P, Hollowell J. Towards an understanding of variations in infant mortality rates between different ethnic groups in England and Wales. Inequalities in Infant Mortality Project Briefing Paper 3. Oxford: NPEU; 2009.
- NPEU 105 Allen F, Gray R, Oakley L, Kurinczuk JJ, Brocklehurst P, Hollowell J. The effectiveness of interventions targeting major potentially modifiable risk factors for infant mortality: a user's guide to the systematic review evidence. Inequalities in Infant Mortality Project Evidence Map Report 3. Oxford: NPEU; 2009.
- NPEU 106 Allen F, Gray R, Oakley L, Kurinczuk JJ, Brocklehurst P, Hollowell J. Technical guide to the infant mortality evidence map: systematic reviews of interventions targeting major potentially modifiable risk factors for infant mortality. Inequalities in Infant Mortality Project Evidence Map Report 4. Oxford: NPEU; 2009.
- NPEU 107 Hollowell J, Kurinczuk JJ, Oakley L, Brocklehurst P, Gray R. A systematic review of the effectiveness of antenatal care programmes to reduce infant mortality and its major causes in socially disadvantaged and vulnerable women - Final Report. Oxford: NPEU; 2009.
- NPEU 108 Oakley L, Gray R, Kurinczuk JJ, Brocklehurst P, Hollowell J. A systematic review of the effectiveness of interventions to increase the early initiation of antenatal care in socially disadvantaged and vulnerable women - Final Report. Oxford: NPEU; 2009.
- NPEU 109 Surman G, Newdick H, King A, Gallagher M, Kurinczuk JJ. 4Child: Four Counties Database of Cerebral Palsy, Vision Loss and Hearing Loss in Children, including data for birth 1984 to 2003. Annual Report 2009. Oxford: NPEU; 2009.

Forthcoming

- 1* Petrou S, Eddama O, Mangham L. A structured review of the recent literature on the economic consequences of preterm birth. Arch Dis Child Fetal Neonatal Ed.

- 2* Azzopardi D, Strohm B. Temperature control during therapeutic moderate whole body hypothermia for neonatal encephalopathy. Arch Dis Child Fetal Neonatal Ed.
- 3* O'Leary CM, Bower C, Zubrick SR, Geelhoed E, Kurinczuk JJ, Nassar N. A new method of prenatal alcohol classification accounting for dose, pattern, and timing of exposure: improving our ability to examine fetal effects from low to moderate alcohol. J Epidemiol Community Health.
- 4* Owen A, Marven S, Johnson P, Kurinczuk JJ, Spark P, Draper ES, Brocklehurst P, Knight M, on behalf of BAPS-CASS. Gastroschisis: A national cohort study to describe contemporary surgical strategies and outcomes. J Paediatr Surg.
- 5* Petrou S, Dakin H, Abangma G, Benge S, Williamson I. Cost-utility analysis of topical intranasal steroids for otitis media with effusion based on evidence from the GNOME trial. Value Health.
- 6* Regier DA, Petrou S, Henderson J, Eddama O, Patel N, Strohm B, Brocklehurst P, Edwards AD, Azzopardi D on behalf of the TOBY Study Group. Cost-effectiveness of therapeutic hypothermia to treat neonatal encephalopathy: Results from the TOBY trial. Value Health.
- 7* Jayaweera H, Quigley MA. Health status, health behaviour and healthcare use among migrants in the UK: evidence from mothers in the Millennium Cohort Study. Social Science and Medicine.
- 8* Gupta M, Hockley C, Quigley MA, Yeh P, Impey L. Antenatal and intrapartum prediction of shoulder dystocia. Eur J Obstet Gynecol Reprod Biol.
- 9* Brenda S. Cooling for neonatal encephalopathy in 2010. Infant. 2010;6; 168-72.
- 10* Sellier E, Surman G, Himmelmann K, Andersen G, Colver A, Krägeloh-Mann I, De-la-Cruz J, Cans C. Trends in prevalence of cerebral palsy in children born with a birthweight of 2,500g or over in Europe from 1980 to 1998. Eur J Epidemiol.
- 11* Redshaw ME, Hamilton KES. Family centred care? Facilities, information and support for parents in UK neonatal units. Arch Dis Child Fetal Neonatal Ed.

NPEU Advisory Committee 2009

Department of Health Liaison Officer

Zoltan Bozoky Senior Principal Research Officer, Maternal, Child, Adolescent and Family Health Policy Research Programme, Research and Development Directorate, Department of Health

Royal College and Faculty Representatives

Sabaratnam Arulkumaran President, Royal College of Obstetricians and Gynaecologists
Royal College of Obstetricians and Gynaecologists Representative

David James Emeritus Professor of Fetomaternal Medicine
University of Nottingham
Royal College of Obstetricians and Gynaecologists Representative (alternate)

Liz Stephens President, Royal College of Midwives
Head of Midwifery, Ealing Hospital Trust
Royal College of Midwives Representative

Mervi Jokinen Practice and Standards Development Adviser
Royal College of Midwives
Royal College of Midwives Representative (alternate)

Andrew R Wilkinson Professor of Paediatrics and Perinatal Medicine
University of Oxford, Honorary Consultant Paediatrician, John Radcliffe Hospital, Oxford
Royal College of Paediatrics and Child Health Representative

Sandra Calvert Consultant Neonatologist, Department of Child Health
St George's Hospital, London
Royal College of Paediatrics and Child Health Representative (alternate)

Nicholas Hicks (Chairman) Chief Executive, Milton Keynes Primary Care Trust and Director of Public Health Milton Keynes Primary Care Trust and Milton Keynes Council
Faculty of Public Health Representative

Jean Chapple Consultant in Perinatal Epidemiology/Public Health
NHS Westminster
Faculty of Public Health Representative (alternate)

Sarah Purdy Consultant Senior Lecturer/MRC Clinician Scientist
Academic Unit of Primary Health Care, University of Bristol
*Royal College of General Practitioners Representative
Alternate Representative of Royal College of General Practitioners (vacant)*


General Advisory Group Members

Jane Abbott	Head of Programmes, Bliss, the special care baby charity
John Cairns	Professor of Health Economics London School of Hygiene and Tropical Medicine
David Dunn	Senior Statistician, HIV and Infections Group MRC Clinical Trials Unit, London
Pat Doyle	Professor, Non-communicable Disease Epidemiology Unit, Department of Epidemiology and Population Health London School of Hygiene and Tropical Medicine.
Hilary Graham	Director, Department of Health Public Health Research Consortium and Professor of Health Sciences, Department of Health Sciences, University of York
Jenny Hewison	Professor of the Psychology of Healthcare Leeds Institute of Health Sciences, School of Medicine, University of Leeds
Stuart Logan	Cerebra Professor of Paediatric Epidemiology and Director, Institute of Health Service Research Director, NIHR PenCLAHRC, Peninsula College of Medicine and Dentistry, Peninsula Medical School, Exeter
Mary Newburn	Head of Research and Information, NCT (National Childbirth Trust) and Honorary Professor, Thames Valley University
Lynne Paterson	Nurse Consultant, Neonatal Unit James Cook University Hospital, Middlesbrough
Alan Stein	Professor of Child and Adolescent Psychiatry University of Oxford, Warneford Hospital, Oxford
David J Taylor	Director of The FIGO-Gates Initiative in Maternal & Newborn Health, London

Sources of funding

Summary of Income in 2009

Funder	Total (£)
Action Medical Research	61,232
BDF Newlife	4,897
British Association of Paediatric Surgeons	4,117
British Heart Foundation	25,288
BUPA	31,617
Commission for Rural Communities	4,053
Department of Health	2,428,317
European Commission	8,243
Heart UK	138
Human Fertilisation & Embryology Authority	25,132
Medical Research Council	1,252,728
Multiple Births Foundation	14,783
National Institute for Health Research HTA Programme	456,164
Obstetric Anaesthetists Association	9,309
Royal College of Obstetrics and Gynaecologists	12,000
Tracheo-oesophageal Fistula Support	5,000
Wellbeing of Women	25,899
Wellcome Trust	78,098
World Health Organisation	4,558
Grand Total	4,451,573



National Perinatal Epidemiology Unit
University of Oxford
Old Road Campus
Headington
Oxford OX3 7LF
Tel: + 44 (0) 1865 289700
Fax: + 44 (0) 1865 289701
general@npeu.ox.ac.uk
www.npeu.ox.ac.uk

