

## Babies born at 22-24 weeks gestation in England and Wales 2017-2021

**Investigators:** Cheryl Battersby, Grenville Fox, Lucy Smith, Mario Martinez-Jimenez, Emily van Blankenstein, Marian Knight, Stavros Petrou, Sarah Seaton, Brad Manktelow, Elizabeth Draper, Jenny Kurinczuk,

### Background

The updated 2019 British Association of Perinatal Medicine (BAPM) framework for perinatal management of infants born extremely preterm recommends a risk-based approach. Under this framework, potentially more infants born at 22+0 to 23+6 weeks will meet the risk-threshold for active (survival focused) care, with implications for resources and service planning. We aim to use routine data to examine whether the initial management of babies born extremely preterm has changed over time, and if so, what the implications on neonatal service capacity are.

### Aims and Objectives

1. To describe the initial management at birth and outcomes for babies born 22+0–24+6 weeks gestation
  - i) To report neonatal unit admissions as a proportion of the total infants alive at onset of labour
  - ii) To describe this geographically across operational delivery networks and over time
2. To determine the impact on neonatal service capacity

**Data sources:** Descriptive retrospective cohort study using two databases i) National Neonatal Research Database (NNRD) ii) Mothers and Babies: Reducing Risk through Audit and Confidential Enquiries (MBRRACE-UK).

**Inclusion criteria:** Infants born between 1<sup>st</sup> January 2017 and 31<sup>st</sup> December 2021 with a recorded gestational age at birth of 22, 23 or 24 weeks, who were born and received all neonatal inpatient care in England and/ or Wales

**Exclusion criteria:** Infants with missing data: gestational age at birth, sex, and place of birth

**Background variables:** demographic details, pregnancy and labour characteristics, labour ward stabilisation/resuscitation events

**Outcome measures:** Survival: i) to admission to neonatal care ii) to discharge from neonatal care without major morbidities (including brain injury, necrotising enterocolitis, bronchopulmonary dysplasia, retinopathy of prematurity, surgical procedures); breast milk at discharge; total length of stay and number of days at intensive, high dependency and special care; two-year neurodevelopmental outcome data (where applicable)

**Analysis plan:** Babies alive at onset of labour, admissions to a neonatal unit and deaths on labour ward will be examined over time and by Operation Delivery Network. For deaths prior to neonatal admission, the characteristics of those who did or not receive any resuscitation will be examined. Practices before and after introduction of the BAPM framework will be examined using a regression discontinuity design. Health economic costs of neonatal admission will be estimated using level of care days. For continuous and categorical variables, results will be presented using medians (interquartile ranges) and proportions, respectively.

### Regulatory approvals & confidentiality

No patient identifiable information will be used in this study; only existing pseudo-anonymised data held in the NNRD will be used. This study of outcomes of very preterm babies has the neoWONDER study-specific approval REC reference 21/EM/0130 and IRAS 293603.

### Funding

This study is funded through personal NIHR advanced fellowships awarded to Cheryl Battersby (NIHR300617) and Lucy Smith (NIHR301421)