

What was studied?

The study explored best place of birth for babies born very preterm between 27+0 and 31+6 weeks (27-31 weeks) gestation in England.

Why?

Very preterm babies are at risk of death and serious long-term problems. For those preterm babies born at <26 weeks, outcomes are better with birth and care in tertiary maternity and neonatal units (Neonatal intensive care units; NICU). But it is not known whether this is true for the next most vulnerable group, born between 27-31 weeks gestation. In England, these babies are born and cared for in either NICU or in local neonatal units (LNU; non-tertiary). Both types of units are currently able to care for these babies but are skilled to different degrees.

The study: The OPTI-PREM study was a mixed methods study. It explored whether core neonatal outcomes (death, serious brain injury, chronic lung disease/bronchopulmonary dysplasia, retinopathy of prematurity, necrotising enterocolitis, and receipt of breast milk feeds on discharge from neonatal care) for babies born between 27-31 weeks differed based on where they were born and initially cared for. It studied national neonatal data on 18,847 very preterm babies, costs of care, staff and parents' perspectives, quality of care and outcomes. It utilised national data from the National Neonatal Research Database (NNRD) with linkage to NHS Digital. Parents from the national charity for babies born premature or ill, BLISS were actively engaged in all stages of the project and in the Study Steering Committee.

What did the team find?

Risk of deaths: There was no difference in risk of death up to 1 year of life based on place of birth (LNU/non-tertiary vs NICU/tertiary) and early care for very preterm babies born between 27+0 and 31+6 in England.

Risk of serious brain injury: For births at 27 weeks of gestation, there was a higher risk of severe brain injury (SBI) when born into maternity services co-located with LNU compared with NICU, and when born into maternity services co-located with low volume (providing <1614 intensive care days/year) compared with high-volume neonatal units (providing >1614 intensive care days/year). This risk of SBI existed in those transferred out in the first 72 hours after birth.

Costs of care: There was no difference in NHS neonatal costs for babies born at 27 weeks (~£76 000) between NICU and LNU. £0.26 billion per year was spent on NHS neonatal care for babies born between 27-31 weeks in England.

Parent and staff perspectives: Staff managed decision-making, to ensure space for babies. Parents valued their baby's development, homecoming, continuity of care, being included, and having their emotional and physical wellbeing supported.

Overall conclusion: OPTI-PREM findings suggest babies between 28+0 and 31+6 weeks can safely be born and cared for in either LNU or NICU. However, to minimise risk of brain injury, births at 27 weeks should preferentially be in maternity units co-located with NICU. If born at 27 weeks gestation in a maternity service co-located with a LNU, transfers should be risk assessed especially in the first 72 hours after birth.