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Adapting UK maternity clinical information systems for observational research: The POOL cohort study

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Objectives

The POOL study was commissioned to evaluate the safety of waterbirth in the UK using routine maternity and neonatal clinical data. We will describe the design, set-up and pilot for this data linkage study, as well as sharing challenges and successes from the process, and headline results.

Methods

This study used the novel method of amending an existing clinical maternity database (Euroking® Maternity Information System) for the purpose of collecting additional research data fields. In combination with the extraction of existing data fields, this maximised the potential use of existing routinely collected clinical data for research purposes, whilst reducing NHS staff data collection burden. Extracted data from UK NHS sites were transferred for matching with the National Neonatal Research Database (NNRD) to ascertain outcomes for babies. Non-inferiority regression analysis was used to establish whether waterbirth was as safe for mothers and babies as leaving the water before birth.

Results

A total of 869,744 birth records were received from 26 NHS sites in England and Wales, between January 2015 and June 2022. For the pilot, 24,000 records were extracted from one site. Data completeness for maternal and neonatal primary outcomes were acceptable. Neonatal identifiers flowed to the NNRD for successful matching, resulting in neonatal records for 6.5% of pool users. Rates of the maternal outcomes (ob-

stetric anal sphincter injury) and the composite adverse outcome among babies were no higher among waterbirths compared with births out of water (Nulliparous women: waterbirth 4.8% vs births out of water 5.3%; adjusted odds ratio 0.97, one-sided 95% confidence interval $-\infty$ to 1.08); Parous women: 1.1% vs 1.7%; 0.64, $-\infty$ to 0.78; Neonates: 2.7% vs 4.4%; 0.65, $-\infty$ to 0.79).

Conclusion

Amending existing NHS information systems and accessing data at scale is possible, but is time consuming and technically challenging. Among women using water immersion during labour, remaining in the pool and birthing in water was not associated with an increase in the incidence of adverse primary maternal or neonatal outcomes.



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