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Target Trial Emulation: Impact of C-Section on Birth Outcomes for Spontaneous Preterm Breech Presentations

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Breech presentation is a risk factor for poor birth outcomes. Guidance for safest mode of delivery in breech presenting full term pregnancies is available but there is a lack of evidence on the optimal mode of delivery in breech presenting preterm spontaneous births. The aim of this study is to evaluate the causal effect of mode of delivery on extended perinatal death (EPD) in this population using a trial emulation.

Randomized experiments are the gold standard for estimating causal effects; however, previous attempts to conduct them in this context has resulted in recruitment challenges. Causal inference methods provide a framework for drawing causal conclusions from observational data.

A trial emulation aims to overcome limitations common to observational studies by specifying core components of a randomized trial using observational data. Our trial emulation uses national Scottish health data to identify an eligible study sample and adjust for confounding characteristics between groups undergoing caesarean and vaginal deliveries to simulate randomized assignment of mode of delivery. We were able to estimate the per-protocol impact of caesarean delivery on EPD.

Our data, containing all recorded potentially eligible births in Scotland between 1997 and 2019, was provided by eDRIS in a trusted research environment. After applying our eligibility criteria, our data contained 3,457 birth records, (2,361 c-section and 1,096 vaginal deliveries). There were 212 EPDs (1.7% (39) of c-sections and 16% (173) of vaginal deliveries).

Our preliminary results suggest that caesarean delivery reduces the odds of EPD by 73% among breech presenting spontaneous preterm births.

