

Effect of fractional exhaled nitric oxide (F_{ENO})-based asthma management during pregnancy versus usual care on infant development, temperament, sensory function and autism signs

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October 21, 2023

Abstract

Background Asthma during pregnancy is associated with a range of adverse perinatal outcomes. It is also linked to increased rates of neurodevelopmental conditions the offspring. We aimed to assess whether fractional exhaled nitric oxide (F_{ENO})-based asthma management during pregnancy improves child developmental and behavioural outcomes compared to usual care. **Methods** The Breathing for Life Trial was a randomised controlled trial that compared F_{ENO} -based asthma management during pregnancy to usual care. Participants were invited to the developmental follow-up, the Breathing for Life Trial – Infant Development study, which followed up infants at 6 weeks, 6 months, and 12 months. The primary outcomes were measured in infants at 12-months using the Bayley-III: Cognitive, Language, and Motor composite scores. Secondary outcomes included Bayley-III social-emotional and adaptive behaviour scores, autism likelihood, and sensory and temperament outcomes. The exposure of interest was the randomised intervention group. **Results** 220 infants and their 217 participating mothers were recruited to the follow-up; 107 mothers were in the intervention group and 113 were in the control group. There was no evidence of an intervention effect for the primary outcomes: Bayley-III cognitive (Mean=108.9 control, 108.5 intervention, $p=0.93$), language (Mean=95.9 control, 95.6 intervention, $p=0.87$) and motor composite scores (Mean=97.2 control, 97.9 intervention, $p=0.25$). Mean scores for secondary outcomes were also similar among infants born to control and F_{ENO} group mothers, with few results reaching $p<0.05$. **Conclusion** In this sample, F_{ENO} -guided asthma treatment during pregnancy did not improve infant developmental outcomes in the first year of life.

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