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Title: Is prematurity a risk factor for more severe childhood asthma?

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Body: Background Prematurity is a recognised risk factor for the development of asthma. Our hypothesis was that individuals born prematurely who develop asthma will have worse asthma outcomes compared to those born at term who develop asthma. Methods Children with asthma were recruited as part of a cross sectional study. Questionnaires were completed and some attended for spirometry. In a subset, reported gestation was validated against neonatal records. Outcomes of interest were Paediatric Asthma Quality of Life Questionnaire (PAQLQ) score, British Thoracic Society (BTS) treatment step, recent asthma exacerbation and spirometry. Results 895 children were recruited, mean age 9.5 years, of whom 135 (15%) were premature (ie born before 37 weeks gestation). All premature deliveries (median gestation 34 weeks, range 27-36) were accurately reported and 10% of children born prematurely were actually born at 37-38 weeks. Premature infants were at reduced risk of having parental asthma (odds ratio 0.58 [95% CI 0.36, 0.96]) but not at altered risk for other factors associated with asthma severity. Compared to those born at term, children born prematurely were at increased risk for recent asthma exacerbation (OR 1.57 [95% CI 1.06, 2.31]), requiring BTS step 3-5 asthma treatment (OR 2.08 [95% CI 1.38, 3.13]) and attending secondary care (OR 2.30 [95% CI 1.33, 3.99]). There were no differences in PAQLQ (n=551) score or spirometry (n=169) between children born prematurely and at term. Conclusion Late-premature delivery is associated with increased severity of asthma and exacerbations but not with altered quality of life. The mechanism for this is not clear but an arrest in airway development in the perinatal period may be relevant.