# Patterns and predictors of daily asthma-like symptoms during early childhood

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# Abstract

### Background

Episodes of asthma-like symptoms in young children are common, but little is known about predictors and patterns of the daily symptom burden. We investigated a multitude of possible pre- and postnatal predictors and their temporal impact on the number of asthma-like episodes at age 0-3 years.

### Methods

The study population included 700 children from the COPSAC2010 mother-child cohort followed prospectively from birth regarding asthma-like symptoms recorded in daily diaries by the parent(s) until age 3. Three days of symptoms defined an asthma-like episode. Predictors were analyzed by quasi-Poisson regressions exploring interaction with age.

### Findings

662 children had available diary data with a median (interquartile range) of 5 (2-10) asthma-like episodes during the first 3 years of life. Maternal asthma, maternal antibiotic use, low birth weight, male gender, asthma polygenic risk score, and 1-month asthma airway immune mediator score predicted a higher number of episodes in a multivariable analysis. We found a 34% increased number of episodes per additional clinical predictor a child had (incidence rate ratio 1.34, 95% CI 1.21-1.48, p<0.001). Maternal asthma, preterm birth, caesarean delivery, low birth weight and sibling(s) at birth significantly interacted with age, showing increasing number of episodes through year 1, 2 and 3 for all of these except siblings, where the symptom burden decreased with age (p-interactions<0.05).

### Interpretation

Using unique day-to-day diary recordings of asthma-like symptoms at age 0-3 years we identified predictors and patterns of symptom burden, which could aid the clinician for personalized prognostics.