

CONCLUSIONS. Extreme preterm birth (23–27 weeks' gestation) but not later preterm birth is associated with an increased risk of asthma, at least in young adulthood.

REVIEWER COMMENTS. This is the first study with adequate statistical power to evaluate the risk of asthma beyond adolescence in people who were born extremely prematurely. A meta-analysis of 19 previous studies revealed an overall odds ratio of 1.07 for risk of asthma when comparing people born at gestational ages of <37 weeks to those born at ≥37 weeks (*J Allergy Clin Immunol.* 2006;118[4]:823–830), but this study did not disclose specific data for extremely preterm children. One possible explanation for the findings in the Crump et al study is that preterm birth and asthma might share common genetic determinants. The results of at least 2 previous studies suggest that maternal asthma might be associated with preterm delivery (*Thorax.* 1995;50[5]:525–530 and *Am J Obstet Gynecol.* 2001;184[2]:90–96). Other studies reported that maternal asthma is associated with an increased risk of asthma in their children (*Am J Respir Crit Care Med.* 1998;157[4 pt 1]:1073–1078 and *Environ Health Perspect.* 2001;109[6]:579–582).

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Lung Function and Respiratory Symptoms at 11 Years in Children Born Extremely Preterm: The Epicure Study

Fawke J, Lum S, Kirkby J, et al. *Am J Respir Crit Care Med.* 2010;182(2):237–245

PURPOSE OF THE STUDY. More extremely preterm (EP) infants (≤25 weeks' gestational age) are surviving. What becomes of these children in terms of lung function?

METHODS. This was a national cohort study that involved all infants born at ≤25 completed weeks' gestation in the United Kingdom and Ireland between March and December 1995 (*N* = 182). At the age of 11 years, parents completed a questionnaire and the children performed spirometry. Schoolmates born at term matched for age, gender, and ethnic origin served as controls. Current asthma was defined as "use of asthma medication or wheeze in the past 12 months by children with a doctor diagnosis of asthma, or use of asthma medication and wheeze in the past 12 months even if no prior diagnosis of asthma."

RESULTS. Twice as many EP-born children (25% vs 13%; *P* < .01) had current asthma. Baseline spirometry was reduced (forced expiratory volume in 1 second [FEV₁] 83% vs 100% of predicted; *P* < .001) and bronchodilator responsiveness (>12% increase in FEV₁) was increased (27% vs 8%; *P* < .001) in EP-born children. These changes

were most marked in those with previous bronchopulmonary dysplasia. Fifty-six percent of EP-born children had abnormal baseline spirometry results, but fewer than half of them were receiving any medication.

CONCLUSIONS. After extremely preterm birth, impaired lung function and increased respiratory morbidity persist into middle childhood, especially among those with bronchopulmonary dysplasia. Many of these children might not be receiving appropriate treatment.

REVIEWER COMMENTS. A large percentage of children who survive being born extremely prematurely go on to have persistent asthma in childhood. An even higher percentage of them have abnormal spirometry results, and many show reversibility with bronchodilator; however, only half of them are on asthma medication, which indicates that they are receiving inadequate treatment. These children deserve close monitoring through history and spirometry to diagnose and treat asthma.

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DIAGNOSIS AND MANAGEMENT

Changing Trends in Asthma in 9–12 Year Olds Between 1964 and 2009

Malik G, Tagiyeva N, Aucott L, McNeill G, Turner SW. *Arch Dis Child.* 2011;96(3):227–321

PURPOSE OF THE STUDY. This study is a continuation of the Aberdeen Schools Asthma Survey; the first survey was completed in 1964. Subsequent surveys were repeated in 1989, 1994, 1999, and 2004. This survey reports lifetime prevalence of asthma, eczema, hay fever, and wheeze in the previous 3 years. Trends over a 10-year period (1999, 2004, and 2009) were analyzed.

STUDY POPULATION. Children aged 9 to 12 years in Aberdeen, United Kingdom, were invited to participate in this study.

METHODS. Questionnaires were distributed to children by school staff, completed by parents at home, returned to school staff, and then collected by the research team. The same questionnaire that was used in 2004 was used for this study. In addition, International Study of Allergy and Asthma in Children (ISAAC) questions were included.

RESULTS. A total of 2253 children were eligible for the study, and 1196 (53%) of the surveys were returned. The average age of the children was 10.8 years, and 588 (49%) of them were male. Of 31 eligible primary schools, 26 participated in the study. The number of schools that participated was similar to the number that participated

in the surveys in 2004. The lifetime prevalence of asthma rose from 24.3% in 1999 to 28.4% in 2004 but decreased to 22.1% in 2009 ($P < .001$). The prevalence of wheeze in the previous 3 years decreased from 27.9% in 1999 to 25.2% in 2004 and 22.2% in 2009 ($P < .001$). The lifetime prevalence of eczema rose between 1999 and 2004 (21.4%–34.1%), and there was a small decline in 2009 (33.5%) ($P < .001$). Similar trends were seen for hay-fever prevalence. There was a significant change in prevalence for girls compared with boys for asthma, eczema, and wheeze in the previous 3 years.

CONCLUSIONS. Asthma, eczema, and hay fever remain common health conditions for children in the United Kingdom, but after many years of increasing prevalence, the number of affected children seems to finally be decreasing.

REVIEWER COMMENTS. From 1964 to 2004, the prevalence of asthma, eczema, hay fever, and wheeze in the previous 3 years had increased in the United Kingdom. Since 2004, there has been a decline in the prevalence of these health conditions. A similar trend has also been reported in other countries, and we hope that rates will continue to decline worldwide. Although this study was not designed to explain why asthma prevalence has decreased, the authors did comment on reasons that might account for the decline, including revised guidelines for diagnosing and managing asthma and bans on smoking in public places.

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Predictive Factors for Airway Hyperresponsiveness in Children With Respiratory Symptoms

Yavuz ST, Civelek E, Tuncer A, Sahiner U, Sekerel BE. *Ann Allergy Asthma Immunol.* 2011;106(5):365–370

PURPOSE OF THE STUDY. Asthma diagnosis can be challenging to make in children without persistent symptoms. Factors that contribute to this challenge include poor perception of dyspnea by children with asthma and their families and a lack of objective findings of reversible airway obstruction.

STUDY POPULATION. This study was a retrospective analysis of Turkish children aged 6 to 18 years with suspected asthma whose spirometry results had not met standard criteria for obstructive physiology and who completed a methacholine challenge (MCC).

METHODS. Parents completed a standardized questionnaire regarding symptoms before the MCC. Investigated

symptoms included wheezing, daytime cough, nocturnal cough, exercise-induced cough, dyspnea, and exercise-induced dyspnea. Patients with a decrease in forced expiratory volume in 1 second (FEV_1) of 20% after exposure to a concentration of ≤ 8 mg/mL of methacholine were considered positive for airway hyperresponsiveness (AHR). Statistical analysis was used to analyze the association between demographic, symptomatic, and spirometric parameters with AHR on MCC.

RESULTS. The study included 111 children who ranged in age from 6 to 18 years (median: 10.2 years), and 53% of them were male. AHR was detected in 67 patients (60.3%). Patients with AHR were younger than those without AHR (9.9 vs 12.1 years). They tended to have both nocturnal and exercise-induced cough (26.9% vs 6.8%; $P = .008$; positive predictive value [PPV]: 85.7%; negative predictive value [NPV]: 45.5%). The combination of nocturnal and exercise-induced cough along with borderline bronchodilator response (change in FEV_1 of 7%–11%) was highly predictive of AHR (11.7% vs 0%; PPV: 100%; NPV: 44.2%). Peripheral blood eosinophilia ($\geq 500/\mu\text{L}$) was found in 23.4% of the patients with AHR and in 4.7% of those without AHR ($P = .009$; PPV: 88.2%; NPV: 45.5%). The combination of eosinophilia and borderline bronchodilator response was more frequent in patients with AHR in comparison with those without AHR (10.3% vs 0%; PPV: 100%; NPV: 44.1%). In contrast, those with AHR were less likely to report dyspnea (20.9% vs 38.6%) or exercise-induced dyspnea (26.9% vs 47.7%) than those without AHR.

CONCLUSIONS. These data are useful when applied to a selected population of diagnostically challenging patients for whom MCC is not practical or feasible.

REVIEWER COMMENTS. The results of this study, similar to others, confirm that there is no one symptom, demographic variable, or diagnostic test that reliably predicts AHR and asthma but, rather, a combination of them that can be helpful. It should be noted that patients with AHR had increased levels of eosinophilia, which has been reported in adult populations too. It is interesting to note that these data failed to detect an association between wheezing and AHR, which was seen in previous studies. The authors attributed this result to the lack of a correlate for wheezing in Turkish, which is useful to consider in an increasingly international world in which physicians commonly see patients who do not speak the same language and might not be familiar with this concept either.

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Changing Trends in Asthma in 9–12 Year Olds Between 1964 and 2009

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