to mothers with asthma ($COPSAC_{2000}$) and 700 unselected children ($COPSAC_{2010}$) were analyzed.

METHODS. AD was diagnosed according to the Hanifin and Rajka criteria. Exposure to dogs was determined by interviews during clinical visits and was defined as a dog living in the home at birth. The number of dogs was divided into the following 3 groups: no dog, 1 dog, or ≥2 dogs. Parental atopic history was determined by self-report of physician-diagnosed asthma, eczema, or allergic rhinitis. ImmunoCAP and skin prick testing of selected inhalant and food allergens was measured at 6 and 18 months.

RESULTS. In the $COPSAC_{2000}$ and $COPSAC_{2010}$ cohorts, children who had domestic dog exposure had a significantly lower risk of AD (adjusted hazard ratio [aHR] = 0.46 [95% confidence interval (CI) 0.25–0.87], $P = .02$; and aHR = 0.58 [95% CI 0.36–0.93], $P = .03$, respectively). In the unselected $COPSAC_{2010}$ cohort, the protective effect was only seen in children born to mothers with atopic disease (aHR = 0.39 [95% CI 0.19–0.82], $P = .01$). Paternal atopic status did not impact the risk of AD. The risk of AD decreased in a dose-dependent manner with increasing number of dogs (aHR = 0.58 [95% CI 0.38–0.89], $P = .01$) in the $COPSAC_{2010}$ cohort. Dog exposure did not impact the development of AD in children with filaggrin mutations. No significant interaction was found between domestic dog exposure and the cluster of differentiation 14 T/T genotype.

CONCLUSIONS. Domestic dog exposure at birth significantly reduced the risk of AD in children born to mothers with a history of atopic disease. This effect was dose dependent.

REVIEWER COMMENTS. Although researchers in some previous studies have suggested that domestic dog exposure might protect against the development of allergic disease, the effects of neonatal dog exposure on the risk of AD is unresolved. The authors of this study help to clarify this question and further emphasize the importance of the perinatal environment on the risk of atopic disease. Further studies are needed to elucidate the mechanisms underlying these effects, with prime hypotheses focused on the microbiome of the mother and infant.

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Association of Changes in Air Quality With Bronchitic Symptoms in Children in California, 1993-2012

Berhane K, Chang ML, McConnell R, et al. *JAMA*. 2017;315(14):1491–1501

PURPOSE OF THE STUDY. Exposure to elevated concentrations of ambient air pollutants is associated with increases in the prevalence of bronchitic symptoms in children. The authors hypothesized that reductions in measured air pollutants over the periods studied would be associated with an improvement in respiratory symptoms in children with or without asthma.

STUDY POPULATION. Data were collected from 3 successively recruited cohorts involving 4602 children (48% female subjects, age range of 5–18 years, mean age of 8 years, 45% Hispanic) from 8 Southern California communities during the years 1993 to 2001, 1996 to 2004, and 2003 to 2012.

METHODS. This was a longitudinal study with data from the 3 separate but overlapping cohorts. Regional levels of air pollution (measuring average concentrations of nitrogen dioxide, ozone, and particulate matter with an aerodynamic diameter of <10 μm [PM_{10}] and <2.5 μm [$PM_{2.5}$]) were collected with consistent methods over the study periods. Bronchitic symptoms were assessed by using a baseline and annual questionnaires evaluating symptom recall over the previous 12 months. Bronchitic symptoms were defined as parental or child report of "daily cough for 3 months in a row, congestion or phlegm other than when accompanied by a cold or bronchitis." The subjects were categorized as having asthma or not on the basis of a questionnaire. Air pollution exposure levels were lagged by 12 months for alignment with bronchitic outcomes data. Additional covariates from questionnaires included annual information on tobacco smoke exposure or pets in the home, sex, race and/or ethnicity, and housing conditions. A multilevel logistic model was used to estimate the association of changes in pollution levels with bronchitic symptoms.

RESULTS. Overall, air pollution levels declined (especially after 2001) across the 3 cohorts. For nitrogen dioxide, the odds ratio (OR) for bronchitic symptoms among children with asthma at age 10 years ($n = 892$, 19.4%) was 0.79 (95% confidence interval [CI], 0.67–0.94) for a median reduction of 4.9 ppb, with an absolute decrease in prevalence of 10.1%. For ozone, the OR was 0.66 (95% CI, 0.50–0.86) for a median reduction of 3.6 ppb, with an absolute decrease in prevalence of 16.3%. For PM_{10}, the OR was 0.61 (95% CI, 0.48–0.78) for a median reduction of 5.8 $\mu g/m^3$, with an absolute decrease in prevalence of 18.7%. For $PM_{2.5}$, the OR was 0.68 (95% CI, 0.53–0.86) for a median reduction of 6.8 $\mu g/m^3$, with an absolute decrease in prevalence of 15.4%. Among children without asthma ($n = 3710$), there was an absolute decrease in the prevalence of bronchitis symptoms of 1.8% for nitrogen dioxide, 1.7% for ozone, 2.2% for PM_{10}, and 2.3% for $PM_{2.5}$.

CONCLUSIONS. Decreases in ambient pollution levels were associated with statistically significant decreases in bronchitic symptoms in children with and without asthma. Although the authors do not establish causality with their

study design, their findings support the potential benefit of air pollution reduction for asthma control.

REVIEWER COMMENTS. With this study, the authors confirm the association of air pollution with impaired respiratory health in children, both with and without asthma. Regulations for clean air are good policy for children's health.

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The Independent Role of Prenatal and Postnatal Exposure to Active and Passive Smoking on the Development of Early Wheeze in Children

Vardavas CI, Hohmann C, Patelarou E, et al. *Eur Respir J*. 2016;48(1):115–124

PURPOSE OF THE STUDY. To examine the association of maternal passive smoking during pregnancy and wheezing in children up to 2 years.

STUDY POPULATION. The authors of this study included 15 cohorts in the European project Environmental Health Risks in European Birth Cohorts. The cohorts were recruited from 1990 to 2008. A total of 37 459 mother-child pairs were available, and 27 993 had complete data on secondhand smoke exposure and wheeze.

METHODS. Active and passive smoke exposure was obtained from questionnaire data submitted by each cohort. Four exposure definitions were created: prenatal active smoking, prenatal passive smoking, postnatal passive smoking, and unexposed. Eight exclusive exposure groups were created from these definitions. The primary outcome variable was any wheezing during the first 2 years of life by parental self-report. Other variables assessed included sex, family history of atopy, birth weight, gestational age, siblings, and parental education. Multilevel mixed-effects logistic regression was used to examine the effect of exposure to tobacco smoke on the development of wheeze. The model was adjusted for sex, family history of atopy, parental education, birth weight, gestational age, and siblings. Stratified analyses were performed for sex, family history of atopy, and geographic location of the cohorts. A meta-analysis was performed to take into account the heterogeneity between the cohorts.

RESULTS. Compared with the unexposed children, children with maternal prenatal passive exposure to smoking had an 11% increased risk of wheezing up to the age of 2 years (odds ratio [OR] 1.11; 95% confidence interval [CI] 1.03–1.20). Children with maternal prenatal passive smoking and postnatal passive smoking had a 29% increased risk of wheezing compared with unexposed children (OR 1.29; 95% CI 1.19–1.40). The most significant risk was found in children with active prenatal maternal smoking, passive prenatal maternal smoking, and postnatal passive smoking (OR 1.73; 95% CI 1.59–1.88). The risk of wheezing with smoke exposure was higher among children with a parental history of allergy.

CONCLUSIONS. Maternal passive prenatal smoke exposure is an independent risk factor for the development of wheeze in children up to the age of 2 years. The association was stronger in children with a family history of atopy.

REVIEWER COMMENTS. The authors of this study expand our current understanding of exposure to tobacco smoke and the associated risk of wheeze in children. The authors assessed the type (active versus passive) and time frame (prenatal versus postnatal) of smoke exposure and evaluated the independent and combined effects of these variables. The risk of developing wheezing was highest in children exposed to active and passive smoking both prenatally and postnatally. These findings support the need to protect pregnant women and young children from passive smoke exposure and to further focus efforts on smoking cessation interventions for pregnant women and their partners.

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Perceptions of e-Cigarettes and Noncigarette Tobacco Products Among US Youth

Amrock SM, Lee L, Weitzman M. *Pediatrics*. 2016;138(5): e20154306

PURPOSE OF THE STUDY. Electronic cigarettes are the most commonly used tobacco product among youth in the United States, and the authors of this study sought to determine the perception of youth regarding their harm and addictiveness versus other tobacco products.

STUDY POPULATION. A cross-sectional survey of students in grades 6 to 12 was performed.

METHODS. Data from the 2012 and 2014 National Youth Tobacco Survey were analyzed to describe correlates of perceptions of harm and addictiveness of e-cigarettes, cigars, and smokeless tobacco compared with cigarettes and to assess trends in perceptions of e-cigarettes' harm among different demographic groups.

RESULTS. In 2014, the majority of students (73%) believed that e-cigarettes were less harmful than cigarettes, compared with 20% for smokeless tobacco and 25.8% for cigars. In addition, 47% postulated that e-cigarettes were less addictive than cigarettes, compared with only 14% for smokeless tobacco and 31.5% for cigars. Factors associated with perception of decreased harm and addictiveness included the use of the product, being a boy, being non-Hispanic white, and having a household member who used the product. Between 2012 and 2014, youth increasingly believed that e-cigarettes were less harmful than cigarettes.

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