Maternal Smoking and Childhood Asthma

Michael Weitzman, MD; Steven Gortmaker, PhD; Deborah Klein Walker, EdD; and Arthur Sobol, MA

From the Department of Pediatrics, Boston City Hospital and Boston University School of Medicine, the Boston University School of Public Health, and the Harvard School of Public Health, Boston, Massachusetts

ABSTRACT. According to a substantial literature, passive smoking by children is associated with an increased incidence of lower respiratory illness and diminished pulmonary function. The relationship between passive smoking and childhood asthma, however, is not clear. Data from the Child Health Supplement to the 1981 National Health Interview Survey were analyzed with information about 4331 children aged 0 to 5 years to study the relationship between maternal smoking and (1) the prevalence of childhood asthma, (2) the likelihood of taking asthma medication, (3) the age of onset of children's asthma, and (4) the number of hospitalizations among children with and without asthma. An odds ratio for asthma (of 2.1) was shown by multivariate logistic regressions among children whose mothers smoke ≥0.5 packs of cigarettes or more per day compared with children of nonsmokers ($p < .001$). In similar analyses, maternal smoking of ≥0.5 packs per day was identified as an independent risk for children's use of asthma medication (odds ratio 1.6; $p = .0006$) and for asthma developing in the first year of life (odds ratio 2.6; $p = .0006$). Maternal smoking is also associated with increased numbers of hospitalizations, both its association with an increased risk of asthma as well as by contributing to hospitalizations independently of a child having asthma. Among children with asthma, however, maternal smoking is not associated with increased numbers of hospitalizations. It was concluded that maternal smoking is associated with higher rates of asthma, an increased likelihood of using asthma medications, and an earlier onset of the disease. These findings have implications for renewed efforts to discourage smoking in families, especially during pregnancy and the first 5 years of children's lives. *Pediatrics* 1990;85:505–511; *maternal smoking, asthma, passive smoking.*

The contribution of cigarette smoke to indoor air pollution[1] and the adverse health consequences of passive smoking[2–5] have recently come to be recognized as major public health problems. Estimates vary, but children living in temperate climates spend 60% to 80% of their time indoors[6] and approximately 70% of all children in the United States live in homes where there is at least one adult smoker.[3,7] According to a growing literature, increased childhood respiratory symptoms and altered respiratory function are associated with parental smoking. In general, it has been found in these studies that maternal smoking is more strongly correlated with children's respiratory dysfunction than is paternal smoking.[8–13] The most frequently offered explanations for this finding are that fathers spend less time at home than do mothers and that children spend more time with their mothers than their fathers. Hence, children are more likely to be exposed to passive smoke if their mothers smoke than if their fathers smoke. In at least two recent articles, however, it was suggested that maternal smoking during pregnancy may have independent effects on children's pulmonary structure and function.[14,15]

Among preschool children, the finding most frequently documented to date is an increased rate of lower respiratory infection and respiratory symptoms in children less than 2 years of age whose mothers smoke.[12,13,16–18] In most studies this association was shown to weaken or disappear as children grow older.[12,16–18] It was demonstrated in a further series of studies that maternal smoking is associated with diminished lung size[19] and decreased pulmonary function as measured by forced expiratory volume in 1 second, forced vital capacity, or forced expiratory flow, mid-expiratory phase among older children, thus suggesting long-term negative effects on children's pulmonary function.[8–11,20–26]

Although the consensus of the literature is that passive smoking is harmful to children, the rela-

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Reprint requests to (M.W.) HOB 421, Boston City Hospital, 818 Harrison Ave, Boston, MA 02118.