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EXPLORING RACIAL DIFFERENCES IN ASTHMA INCIDENCE AND AGE AT DIAGNOSIS . CL Joseph*, EL Peterson, CC Johnson, DR Ownby and SL Havstad (Henry Ford Health System, Detroit, MI 48202)

Researchers strive to identify reasons for racial disparities in asthma. It is unclear when the disparity begins, as few studies have explored a racial divergence in asthma incidence. We examined racial differences in the incidence and age of onset of asthma among children with similar health care access. We obtained all inpatient/outpatient visits for 3562 children born 1992-93 and continuously enrolled in a managed care organization from birth through 12/31/98. Asthma was defined as a visit assigned the ICD-9 code 493. The sample was 30% African American (AA), and 48% female. Overall cumulative incidence of asthma by 8 years (yrs) of age, was 18.4% (95% Confidence Interval (CI)=17.1-19.7), with an overall mean age of diagnosis=2.7 yrs (std. dev.=1.7). Cumulative incidence of asthma for AA children was 22.9% (95%CI=20.4-25.4) vs 16.5% (95%CI=15.0-17.9) for European American (EA) children. A proportional hazards model revealed that AA were over 30% more likely to have an asthma visit by age 7, when compared to EA children, hazard ratio=1.36 (95%CI=1.16-1.60); $p < 0.001$. Adjusting for gender did not change the results; adjusted hazard ratio=1.37 (95%CI=1.17-1.61); $p=0.0014$. Age at onset of asthma appeared similar by race; mean age for AA and EA=2.8 yrs and 2.7 yrs, respectively. In summary, incidence of asthma by age 7 was higher for AA children vs EA children. Results suggest racial differences in asthma may begin very early in childhood. Racially diverse birth-cohort studies are needed to determine if differences observed in infancy drive the racial disparities in asthma prevalence and morbidity seen later in childhood and adolescence.

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PREVALENCE AND CONSEQUENCES OF DIAGNOSED ASTHMA AND UNDIAGNOSED WHEEZING AMONG ADOLESCENTS. KB Yeatts*, CM Shy, M Sotir and V Rhodes (University of North Carolina School of Public Health, Chapel Hill, NC 27599-7400)

The prevalence of physician-diagnosed asthma is substantially lower than the prevalence of asthma-like symptoms. Nearly two-thirds of children with wheezing are not diagnosed as asthmatic. Little population-based research has been done on the functional consequences and healthcare use related to asthma-like symptoms in children, particularly in symptomatic children without a diagnosis. A population-based survey of children ages 12-14 years was conducted in North Carolina public middle schools. The International Study of Asthma and Allergies in Childhood was adapted to include questions on functional consequences and healthcare utilization related to diagnosed asthma and asthma-like symptoms. Children responded to video scenes of adolescents experiencing asthma-like symptoms. Eighty-eight percent of the 565 schools (128,568 children) participated in the survey. Eleven percent of the children reported physician-diagnosed asthma with current symptoms (in the last 12 months), and an additional 17% reported wheezing with no asthma diagnosis. Children with undiagnosed wheezing had functional consequences (missing school and sleep disturbances), comparable to diagnosed asthmatic children and 10 to 20 times more than asymptomatic children with no physician-diagnosed asthma or asthma-like symptoms ever. Children with undiagnosed current asthma-like symptoms were under-recognized and under-treated. The burden of illness of diagnosed asthma and undiagnosed wheezing is substantial. Functional consequences of asthma are considerable; both in diagnosed asthmatics, and in children with current undiagnosed wheezing.

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EXPOSURE TO PAPER DUST AND THE ONSET OF ASTHMA AND CHRONIC BRONCHITIS. C Hoffman*, K Toren, G Sallsten and PK Henneberger (NIOSH, Morgantown, WV 26505)

This study looked to re-analyze data from a cohort of paper mill workers and unexposed residents from the same town, investigating whether asthma and chronic bronchitis are associated with current or cumulative dust exposure. The study was conducted among 972 paper mill workers who worked in the mill for at least 1 year between 1960 and 1987 and 781 non-mill worker town residents. Self-reported information was gathered via questionnaire. Measurements of dust in the mill were combined with self-reported work histories to arrive at estimates of exposure. Subjects began follow-up at the later of age 18 or 1960 and were followed until onset of illness for cases and 1987 for non-cases. Proportional hazards regression was used employing time-dependant outcome and predictor variables, including confounders. From self report, 44 people had onset of asthma and 119 had onset of chronic bronchitis during follow-up. The crude incidence of asthma differed little between mill workers (1.4 cases/ 10^3 person-years) and the referents (1.2 cases/ 10^3 p-yr). Asthma was not associated with dust exposure. The crude incidence of chronic bronchitis was greater for mill workers than referents (5.1 vs 2.1 cases/ 10^3 p-yr). An increased hazard ratio for chronic bronchitis was found for current mill work (1.9, 95% CI 1.2, 2.9). An elevated relative risk for chronic bronchitis was associated with current dust exposure of >1 mg/ m^3 . It appears that paper dust exposure increases the risk of chronic bronchitis but not asthma. Also, the current OSHA standard of 15 mg/ m^3 total dust for particles not otherwise regulated may not be protective against chronic bronchitis among workers exposed to paper dust.

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PREVALENCE OF ASTHMA AMONG ADULTS BY OCCUPATION AND INDUSTRY IN THE UNITED STATES. KM Bang* (National Institute for Occupational Safety and Health, CDC, Morgantown, WV 26505)

The purpose of this paper is to present the prevalence of asthma by occupation and industry in the United States. Self-reported asthma data from the third National Health and Nutrition Examination Survey, 1988-1994 were analyzed. The analysis was restricted to the nonsmoking interview respondents ($n=10,235$) aged 17 years and older. The sample data were weighted to reflect national estimates of asthma prevalence by age and race. Information on occupation and industry were coded using the 1990 United States Bureau of Census Occupational code. The software for Survey Data Analysis (SUDAAN) was used to estimate the standard errors of asthma prevalences by occupation and industry. The 95% confidence intervals for asthma prevalences were computed. The overall prevalence of self-reported asthma was 6.6% (95% confidence interval[CI]=5.8-7.4) for males and 6.8% (95% CI=5.9-7.7) for females. Among occupational groups, top five highest prevalences of asthma included 18.7% for protective service occupation, 13.7% for moving vehicle operators, 12.6% for teachers, 11.7% for technicians, and 10.2% for engineers and scientists. Among industrial groups, the highest prevalence was 14.4% for hospital industry workers. In contrast, the lowest prevalence was 0.3% for agriculture services, forestry, and fishing industries. These findings provide useful information for appropriate prevention and control strategies of asthma in the workplaces and for further epidemiologic study to investigate occupational risk factors of asthma in occupations or industries with high asthma prevalence.

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