Exposures to Molds in School Classrooms of Children With Asthma


PURPOSE OF THE STUDY. The goal of this study was to examine the diversity and concentrations of molds in inner-city schools and to describe differences between classrooms within the same school.

STUDY POPULATION. Four hundred students with physician-diagnosed asthma attending inner-city elementary schools are currently being recruited from screening surveys collected during the spring and phenotypically characterized at baseline in the summer in an ongoing longitudinal study (SICAS [School Inner-City Asthma Study]). The primary purpose of the study is to evaluate the role of indoor allergens specific to the inner-city classroom environment and asthma morbidity.

METHODS. Classroom airborne mold spores, collected over a 2-day period, were measured twice during the school year by using direct microscopy. Only classrooms of asthmatic children who were part of this study were sampled.

RESULTS. There were 180 classroom air samples collected from 12 schools. Mold was present in all classrooms analyzed, and there was a high degree of variability in the quantity and diversity of molds between classrooms, even within the same school. The classroom accounted for the majority of variance (62%) in the total mold count and for the majority of variance (56%) for the mold diversity score versus the school. The most prevalent spores were Cladosporium, basidiospores, Penicillium/Aspergillus, and smut spores, which are species generally known to cause symptoms in sensitized individuals. The study also found that visualized mildew was a predictor of increased mold spore levels, which was more commonly reported in classrooms compared with homes. Finally, there was a seasonal relationship as mold spore concentrations were higher earlier in the academic school year during the fall.

CONCLUSIONS. This study found that the school is a source of mold exposure, but the classroom microenvironment particularly varies in quantity of spores and species among classrooms within the same school. In addition, the study also confirms that the presence of visible mold may be a predictor for high mold spore counts.

REVIEWER COMMENTS. Many studies have suggested that mold exposure is associated with asthma development and morbidity, but most studies on mold have focused on home environments. This study demonstrates the role of classrooms and schools as being an important source of mold allergen exposure, especially because children spend the majority of their day in schools/classrooms when not at home. Further studies are needed to determine the clinical significance of mold exposure relative to asthma morbidity in sensitized and nonsensitized asthmatic children.
Exposures to Molds in School Classrooms of Children With Asthma
Uyenphuong Le and A. Wesley Burks
*Pediatrics* 2014;134;S144
DOI: 10.1542/peds.2014-1817T

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://pediatrics.aappublications.org/content/134/Supplement_3/S144.1