Evaluating the Impact of Structural Repairs on Environmental Allergens in the Homes of Children with Asthma in West Philadelphia

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Abstract

The goal of this pilot project is to understand the impact a targeted home remediation intervention on the presence of environmental asthma triggers in the homes of children in West Philadelphia with persistent asthma. Families of children with asthma are frequently advised to modify their behavior to reduce the presence of environmental asthma triggers such as mouse, cockroach, or mold allergens. Structural deficiencies, however, frequently make it difficult to permanently correct the root causes of asthma triggers in the home, particularly for low-income families that may be unable to afford expensive repairs. In order to address this, CAPP+, a program of Children's Hospital of Philadelphia, will provide structural repairs to the homes of children with asthma in West Philadelphia. These home improvements, such as roof repairs or carpet removal, have been specifically selected to target the sources of environmental asthma triggers, including water leaks or holes in walls that prevent effective pest management. In order to assess the impact of this intervention on the presence of environmental allergens, we propose to collect dust samples from the homes of 30 CAPP+ participant families immediately prior to and one month following completion of home repairs. Using a rigorous sampling protocol, we will collect dust samples in each home from the kitchen, living room, and bedroom in which the child with asthma sleeps. Dust samples will be processed and analyzed at the Johns Hopkins DACI Laboratory for cockroach, mouse, mold, and dust mite allergen content. Our analyses will examine pre-post changes in allergen levels in the homes of study participants. The results of this community-based pilot project will not only inform programmatic changes to CAPP+ home remediation efforts, but are intended to provide early evidence to strategic partners eager to implement the CAPP+ model at a larger scale.