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Biologic pollution in infant bedding in New Zealand: High allergen exposure during a vulnerable period

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Abstract
Background: High exposure to house dust mite and cat allergens in early life predisposes to allergic sensitization and to the development and persistence of asthma. Prevalence and severity of asthma are high in New Zealand. Objective: The objective of this study was to determine the concentrations of Der p 1 and Fel d 1 in infant bedding in Wellington, New Zealand. Methods: Infants were visited at home at a mean age of 11 weeks and again at 15 months. The concentration (μg/g fine dust) and content (μg/m2) of Der p 1 (154 infants) and Fel d 1 (75 infants) were measured in dust samples taken from each infant's bed. Results: At 11 weeks, geometric mean (95% confidence intervals) Der p 1 levels were 18.3 μg/g (13.8 to 24.1) and 3.51 μg/m2 (2.4 to 5.2). By 15 months, Der p 1 had risen significantly to 44.0 μg/g (35.0 to 55.3) and 49.0 μg/m2 (36.0 to 66.8). Bedding that included a sheepskin was used by a third of the infants and contained higher concentrations (μg/g) and content (μg/m2) of Der p 1 than beds without sheepskins. Cat ownership was the major determinant of Fel d 1 levels, with 48% of infants living with cats. At the first visit, the mean concentration of Fel d 1 in bedding was 44.6 μg/g (23.5 to 84.9) for houses with cats and 3.0 μg/g (2.1 to 4.3) for those without cats, remaining essentially unchanged at the second visit. When expressed as micrograms per square meter, there was a significant increase between visits, from 8.1 (3.9 to 16.6) to 39.6 (19.9 to 78.5) in the cat-inclusive households. Conclusions: Extremely high levels of house dust mite allergen have been found in these infants' environments, which, together with the high levels of cat allergen in almost half who kept cats, are likely to be a major determinant of asthma prevalence and severity in New Zealand. (J Allergy Clin Immunol 1998;102:765-70.)