

Changes in Prevalence with Different Definitions of a “Positive” Skin Test

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Rationale: Although the American Academy of Allergy, Asthma and Immunology (AAAAI) and the American College of Allergy, Asthma and Immunology (ACAAI) suggest that a prick/puncture test with a response of at least 3 mm diameter more than diluent control indicates the presence of cutaneous allergen specific IgE, different definitions of a “positive” skin test are common.

Methods: Trained, certified coordinators collected skin test data from 1,889 participants (age 6 to 20 years) across 3 Inner-City Asthma Consortium (ICAC) studies, including 10 inner-city U.S. sites. We evaluated the prevalence of a positive skin test for 16 aeroallergens across a range of wheal size cut points (1mm – 10 mm), with and without subtracting the negative control wheal size.

Results: Across 16 allergens examined, 39.6% of the wheals were ≥ 3 mm before subtracting negative control and 34.4% were ≥ 3 mm after adjustment for negative control, a drop of 5.2%. Cladasporium showed the largest decrease after adjustment for negative control, dropping from 28% to 21% and Juniper showed the smallest decrease ($< 1\%$ difference). Without adjustment for negative control, 46.1% of the wheals were ≥ 1 mm and 23.1% were ≥ 5 mm.

Conclusions: The various definitions that exist for a positive skin test significantly influence observed prevalence. Consistent adjustment for negative control is of particular importance. Greater adherence to the AAAAI and ACAAI guidelines will allow for easier comparison among studies.