Background: Mouse sensitization is assessed by using skin testing and serum levels of mouse allergen-specific IgE (m-IgE). However, it is unknown whether a positive skin test response or m-IgE result accurately identifies those with clinically relevant mouse sensitization.

Objective: We sought to compare skin testing and m-IgE measurement in the diagnosis of mouse allergy.

Methods: Sixty-nine mouse laboratory workers underwent skin prick tests (SPTs), intradermal tests (IDTs), and serum IgE measurements to mouse allergen, followed by nasal challenge to increasing concentrations of mouse allergen. Challenge response was assessed by nasal symptom score.

Results: Thirty-eight women and 31 men with a mean age of 30 years were studied. Forty-nine workers reported mouse-related symptoms, of whom 10 had positive m-IgE results and 12 had positive SPT responses. Fifty had negative SPT responses but positive IDT responses. Positive nasal challenges were observed in 70% of workers with positive m-IgE results, 83% of workers with positive SPT responses, 33% of workers with negative SPT responses/positive IDT responses, and 0% of workers with negative IDT responses. SPTs performed best, having the highest positive and negative predictive values. Among participants with a positive challenge result, those with a positive SPT response or m-IgE result had a significantly lower challenge threshold than those with a positive IDT response (P = .01). Workers with a positive challenge result were more likely to have an increase in nasal eosinophilia after the challenge compared with those with a negative challenge result (P = .03).

Conclusions: SPTs perform best in discriminating patients with and without mouse allergy. Mouse-specific IgE and IDTs appear to be less useful than SPTs in the diagnosis of mouse allergy. Laboratory animal allergy is an important occupational illness affecting 15% to 27% of laboratory workers. Among workers exposed to mouse allergen, occupational rhinitis and asthma are significant health problems and can threaten the livelihood of laboratory workers. There is also growing evidence that mouse allergen exposure might play an important role in inner-city asthma morbidity. Therefore accurate diagnosis of mouse allergy is critical, both in the occupational setting and in the evaluation of inner-city patients with asthma.

Currently available diagnostic tests for mouse sensitization include skin testing and measurement of mouse allergen-specific IgE (m-IgE). These tests are used in both occupational and community settings to determine whether asthma or rhinoconjunctivitis symptoms are likely due to mouse allergy. In the occupational setting accurate diagnosis of mouse allergy is critical for appropriate medical management and for ensuring that worker’s compensation benefits are allocated appropriately. In the community setting accurate identification of mouse allergy aids the physician in determining the clinical relevance of mouse infestation in a patient’s home. Nasal challenge testing can also be used as a diagnostic test but is inefficient and cumbersome compared with skin testing or IgE testing, which often precludes its use as a routine clinical test. A better understanding of how skin testing and IgE testing relate to nasal challenge responses would help clinicians interpret these commonly used diagnostic tests for mouse allergy.

To assess the performance of these tests in predicting clinical responses to mouse allergen, we performed skin prick tests (SPTs) and intradermal tests (IDTs), m-IgE tests, and nasal challenges in a group of laboratory mouse workers. We stratified laboratory mouse workers by their diagnostic test results and assessed nasal challenge responses across these groups to determine the likelihood that a positive test result for allergic sensitization indicates clinical reactivity to mouse allergen.

METHODS

Study population and design

Individuals who work with laboratory mice were recruited from all campuses of Johns Hopkins University and the University of Maryland School of Medicine by means of advertisement and word of mouth. Recruitment occurred between May 2006 and July 2007. A questionnaire was administered to assess mouse-related allergic symptoms. A participant was considered to have mouse-associated symptoms if he or she reported nasal, ocular, chest, or skin (hives) symptoms associated with either handling mice or being near mice. Screening study procedures included a questionnaire to...
assess mouse exposure and related allergic symptoms, SPTs, end point titration IDTs, and measurement of serum m-IgE. Participants were screened for symptoms and sensitization with the goal of identifying a maximum of 22 patients for each of the following categories: (1) symptomatic with a positive SPT response; (2) symptomatic with a negative SPT response and a positive IDT response; (3) symptomatic with a negative SPT response and a negative IDT response; and (4) asymptomatic with a negative SPT response and a negative IDT response. The study was approved by the Johns Hopkins School of Medicine Institutional Review Board, and written informed consent was obtained.

Skin testing

SPTs were performed with the MultiTest II device (Lincoln Diagnostics, Decatur, Ill) to 14 allergens, including mouse epithelia, rat epithelia, cat, dog, Dermatophagoides pteronyssinus, Dermatophagoides farinae, German cockroach, American cockroach, oak, grass mix, Alternaria species, Aspergillus species, common ragweed, and Cladosporium species. Histamine and glycerinated saline controls were also applied. A skin test panel was considered valid if the histamine wheel was at least 3 mm larger than the saline wheel, and a skin test response was considered positive if the net orthogonal wheel diameter was at least 3 mm larger than that elicited by the saline control.

IDTs were performed with increasing concentrations of mouse epithelial extract, as well as positive histamine (1:100) and negative saline controls. For participants with a negative SPT response to mouse, intradermal skin tests with mouse epithelial extract were applied, first with a 1:100 dilution and then, if that IDT response was negative, a 1:10 dilution. For participants with a positive SPT response to mouse, serial end point titration testing was performed, starting with a 1:1000 dilution of mouse epithelial extract and then 1/2-log increasing concentrations every 15 minutes until a positive response was achieved. The specific dilutions used for end point titration were 1:1000, 1:300, 1:100, 1:30, and 1:10. The concentration resulting in a positive response, referred to as Dose X, was used to determine the starting dose for the nasal challenge, which was one tenth the concentration of Dose X. A positive IDT response was defined as a greater than 6-mm wheal at a dose for the nasal challenge, which was one tenth the concentration of Dose X, referred to as Dose X, was used to determine the starting dose for the nasal challenge, which was one tenth the concentration of Dose X.

Mouse epithelia extract

The mouse extract that was used for all skin testing and nasal challenge procedures came from the same manufacturer and lot number. Aqueous mouse epithelia extract (1:10 wt/vol) was obtained from Greer Laboratories (Lenoir, NC), all of a single lot (Mus m 1 concentration = 2369 ng/mL; endotoxin concentration = 9 ng/mL). Mus m 1 was assayed in other commercially available extracts (Allermed, San Diego, Calif; ALK-Abelló, Round Rock, Tex) by means of ELISA with immunosorbent purified sheep anti-Mus m 1 (supplied by Dr. J. Olham). The Mus m 1 concentrations (in nanograms per milliliter) differed substantially by manufacturer and extract type (Greer glycinated 1:20 wt/vol extract = 8270 ng/mL; Altered glycinated 1:10 wt/vol extract = 3185 ng/mL; ALK-Abelló glycinated 1:20 wt/vol extract = 546 ng/mL).

IgE antibody to mouse allergen

m-IgE was quantified by using the ImmunoCap System (Phadia, Uppsala, Sweden) and the mouse urine CAP-RAST. A level of 0.35 kU/L or greater was considered positive.

Nasal challenge

The mouse allergen nasal challenge was performed 3 days to 3 months after the above study procedures. Those participants with a positive SPT response to a pet living in the home were excluded. Participants with a positive SPT response to a pollen underwent nasal challenge after the conclusion of the relevant pollen season. In the case of participants with significant nasal symptoms on the day of challenge, nasal challenge was delayed until after the resolution of nasal symptoms, specifically 4 weeks after an upper respiratory tract infection. Before the nasal challenge, oral or nasal antihistamines were withheld for 5 days, oral or nasal corticosteroids for 2 weeks, and vasoconstricting nasal sprays for 24 hours.

The nasal challenge consisted of the intranasal delivery of diluent control and mouse allergen by means of 2-metered-dose sprays per nostril, 0.1 mL per spray (VP3 metered-dose spray device; Valois of America, Congers, NY). Diluent control sprays (normal saline) were delivered first, followed by the prechallenge nasal lavage. The first mouse allergen sprays were then delivered. After the starting dose, participants were then exposed every 15 minutes to 2-fold increasing extract concentrations until either a positive challenge or the maximum dose (full-strength extract) was reached. Participants were blinded to the content of nasal sprays. Every 15 minutes, before each subsequent challenge dose, spirometry was performed, and nasal symptoms were monitored by symptom score. A positive challenge result was defined by a 2-point increase in the nasal symptom score above the postdiluent score (total score = 5). The postdiluent score was obtained after delivery of diluent control sprays and after the prechallenge nasal lavage. Therefore use of this postdiluent score as the baseline accounted for any symptoms attributable to diluent sprays, nasal lavage, or both. Nasal symptoms were also assessed on a visual analog scale. A positive challenge result was defined by a 20-mm increase above the postdiluent value (total scale = 100 mm).

Participants returned 3 to 6 hours after the conclusion of the nasal challenge, at which time the postchallenge lavage series was performed.

Nasal lavage and analysis of allergic markers

Nasal lavage was performed by using a standard procedure with lactated Ringer’s solution warmed to body temperature. The lavage return fluids were centrifuged, and the cell pellet was resuspended in lactated Ringer’s solution to yield a concentration of 100,000 cells/200 μL. One hundred microliters of the suspension was spun onto slides that were stained with a Diff-Quick Stain Set (Dade Behring, Inc, Newark, Del). The percentage of eosinophils in 100 cells was assessed by a blinded examiner.

Statistical analysis

Participants were stratified by symptom report and skin test results into one of 4 groups: (1) positive symptoms and positive SPT response; (2) positive symptoms, negative SPT response, and positive IDT response; (3) positive symptoms, negative SPT response, and negative IDT response; and (4) negative symptoms, negative SPT response, and negative IDT response. The primary outcome variable, nasal challenge outcome, was compared between groups by using cross-tabulation and the χ² test. A positive nasal challenge result was defined by using either a symptom score or a visual analog scale. All analyses use the symptom score criteria for a positive challenge unless otherwise stated. Because the primary aim of the study was to evaluate the performance of various diagnostic tests among symptomatic participants, these analyses were restricted to the symptomatic groups (groups 1, 2, and 3). The negative control group was included as an internal control for the challenge model. Specifically, we selected a group of workers who should be least likely to have a positive challenge result (workers who were both asymptomatic and nonsensitized) so that we could gauge whether our challenge model resulted in false-positive reactions. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated for each diagnostic test for the symptomatic worker groups. Receiver operator curve analysis was used to analyze cutoff points for m-IgE levels. The cumulative mouse allergen dose required to elicit a positive nasal challenge result was compared between groups by using the Mann-Whitney U test. The percentage of eosinophils in nasal lavage samples was calculated for postchallenge and prechallenge time points. The outcome of interest, increased nasal eosinophilia (defined as an increase in the percentage of eosinophils from the baseline level), was compared between positive and negative challenge results by using cross-tabulation and the χ² test. The absolute change in percentage of eosinophils was also compared between positive and negative challenge results by using the Mann-Whitney U test. All analyses were performed with StataSE 8.0 (College Station, Tex), and a 2-tailed P value of less than .05 was considered statistically significant.
RESULTS

Study population

The study population of 69 laboratory mouse workers had a mean age of 30 years and consisted of slightly more women (55%) than men (45%; Table I). Among the workers who reported mouse-associated allergic symptoms, nasal (86%) and ocular (76%) symptoms were reported most commonly. Forty-nine symptomatic workers underwent nasal challenges: 12 had a positive SPT response, 15 had a positive response only on IDTs, and 22 had negative SPT and IDT responses. Ten (20%) of the symptomatic workers had a positive m-IgE result. Of the 10 participants with a positive m-IgE result, the majority (8/10) also had a positive SPT response, and the remaining 2 had a negative SPT response but a positive IDT response. None of the asymptomatic workers in the negative control group had a positive m-IgE, SPT, or IDT result. It should be noted that of 25 asymptomatic workers screened, 2 were excluded from the negative control group because of a positive SPT response and 2 because of a positive IDT response at 1:100.

Nasal challenge outcomes

Fifteen (31%) symptomatic workers had a positive nasal challenge result by using symptom score criteria, and 17 (35%) had a positive challenge result by using the visual analog scale criteria. All workers who denied mouse-associated allergic symptoms and had a negative SPT and IDT response at 1:100 had negative nasal challenge results. Symptoms elicited during positive challenge results included nasal and ocular symptoms. No lower respiratory tract or other systemic allergic symptoms were observed. No participants experienced a decrease in FEV\(_1\) of 15% or greater at any point throughout the challenge. The median increase in nasal symptom score among those with a positive challenge result was 2.2, with a range from 2 to 2.7 (challenges were stopped once a participant exhibited at least a 2-point score increase). The median change in symptom score among negative challenges was 0. When nasal challenge outcome was defined as a 20-mm increase in the visual analog scale, the median scale increase was 42 mm for positive challenge results and 0 mm for negative challenge results.

SPTs and IDTs

When nasal challenge outcome was defined by using symptom scores, 83% of symptomatic laboratory workers who had positive SPT responses had a positive nasal challenge result (Fig 1). Symptomatic workers with a negative SPT response but a positive IDT response had a significantly lower rate of positive challenge results (33%, \(P < .01\)), and none of the symptomatic workers with a negative IDT response had a positive nasal challenge result. None of the workers in the negative control group (asymptomatic, negative SPT response, and negative IDT response) had a positive nasal challenge result by using visual analog scale criteria.

Mouse-specific IgE testing

Seventy percent of symptomatic workers who had positive m-IgE results had a positive challenge result, and 21% of those who had negative m-IgE results had a positive challenge result (\(P < .01\), Fig 2). All workers who denied mouse-associated allergic symptoms and had negative m-IgE results had negative nasal challenge results.

Comparison of diagnostic tests for mouse allergy among symptomatic workers

Among the workers with self-reported symptoms, we evaluated the performance of these various diagnostic tests in predicting nasal challenge outcome (Table II). The measurement of m-IgE for the diagnosis of mouse allergy had excellent specificity but inadequate sensitivity. Receiver operating curve analysis showed that the m-IgE threshold of greater than 0.35 kU/L maximized sensitivity (47%) and specificity (91%) and was therefore the most appropriate cutoff level (data not shown). However, this low sensitivity indicates that m-IgE testing can correctly identify only less than half of workers with true mouse allergy, resulting in a substantial false-negative rate.

In contrast, SPTs resulted in fewer false-negative results. SPTs had higher sensitivity (67%) than m-IgE testing, as well as excellent specificity (94%). Use of a positive SPT response or positive m-IgE result for the diagnosis of mouse allergy

<table>
<thead>
<tr>
<th>TABLE I. Study population (n = 69)</th>
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<tbody>
<tr>
<td>Demographic characteristics</td>
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<td>Age at initial visit (y), mean (range)</td>
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<tr>
<td>Sex</td>
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<tr>
<td>Male</td>
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<tr>
<td>Female</td>
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<tr>
<td>Report of mouse-related symptoms</td>
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<tr>
<td>No</td>
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<tr>
<td>Type of mouse-related symptoms</td>
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<tr>
<td>Nasal</td>
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<td>Ocular</td>
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<tr>
<td>Lower respiratory tract</td>
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<tr>
<td>Dermatologic</td>
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<tr>
<td>Skin test and specific IgE status</td>
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<tr>
<td>Symptom and skin test status</td>
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<tr>
<td>Sx+, SPT+</td>
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<tr>
<td>Sx+, SPT−, IDT+</td>
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<td>Sx+, SPT−, IDT−</td>
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<td>Sx−, SPT−, IDT−</td>
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<tr>
<td>Symptom and m-IgE status</td>
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<tr>
<td>Sx+, m-IgE+</td>
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<td>Sx+, m-IgE−</td>
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<td>Sx−, m-IgE+</td>
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<td>Sx−, m-IgE−</td>
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<tr>
<td>Mouse IgE and skin test status</td>
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<td>m-IgE+, SPT−, IDT+</td>
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<td>m-IgE+, SPT−, IDT−</td>
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Sx+, Symptom.
performed only slightly better than SPT alone (sensitivity = 73%; specificity = 91%).

A positive IDT response at 1:100 had excellent sensitivity (100%) but poor specificity (65%), leading to a high false-positive rate. IDTs at 1:10 had even poorer specificity (35%).

Positive and negative predictive values were calculated for each of the diagnostic tests, and these values are applicable to populations with a similar prevalence of mouse allergy as the prevalence observed in our study population (Table II). Comparison of the positive likelihood ratios of these various diagnostic tests indicated that the SPT was the test of choice for diagnosis of mouse allergy. SPTs had the highest positive likelihood ratio (11.2), followed by measurement of m-IgE (positive likelihood ratio = 5.2). As an example of the utility of SPTs, if a laboratory mouse worker presents with a history of mouse-related symptoms suggestive of a 25% pretest probability of mouse allergy, a positive SPT response would increase the posttest probability that the worker actually has mouse allergy to 78%. In comparison, a positive m-IgE result yield a posttest probability of 63% and a positive IDT response at 1:100 of 49%.

Threshold allergen dose

The threshold allergen dose resulting in a positive nasal challenge result in workers with a positive SPT response or m-IgE result was compared with the threshold dose among workers with a positive IDT response. Among laboratory workers who had a positive challenge result, those with a positive SPT response or m-IgE result reacted at a 100-fold lower dose of mouse allergen than those who had positive results on IDT only (6 vs 756 ng, respectively; \( P = .01 \); Fig 3).

Nasal eosinophilia

The absolute change in nasal eosinophils was calculated as follows:

\[
(\% \text{Eosinophils after challenge}) - (\% \text{Eosinophils before challenge})
\]

Sixty-seven percent of laboratory workers who had a positive challenge result exhibited an increase in nasal eosinophilia compared with 35% of those with a negative challenge result (\( P = .03 \)). For those with positive nasal challenge results, the percentage of eosinophils increased by a median of 3.7% compared with a decrease of 0.2% among those with negative challenge results (\( P = .12 \)).

DISCUSSION

In this study we used a nasal challenge model to compare the performance of SPTs, IDTs, and m-IgE measurement in the diagnosis of mouse allergy. Our findings indicate that SPTs
perform best, having the highest positive and negative predictive values. In addition, a positive m-IgE result is strongly suggestive of mouse allergy among symptomatic workers, but a negative m-IgE result cannot be relied on to exclude mouse allergy. A positive IDT response has limited value in identifying workers with mouse allergy, but a negative IDT response might help to exclude mouse allergy. Taken together, these findings suggest that the SPT is the test of choice when evaluating patients with suspected mouse allergy.

Several studies have reached similar conclusions regarding the role of IDTs for other aeroallergens, concluding that a positive IDT response does not identify clinically significant respiratory allergy.9,12-15 Aeroallergens that have been evaluated include dust mite, Alternaria species, cat, tree, grass, and ragweed but not mouse.9 Our study extends this body of literature to include mouse allergen, an important allergen in the occupational setting, as well as an increasingly recognized factor in inner-city asthma.

The lack of diagnostic utility of IDTs in the setting of negative SPT responses and m-IgE results is due to its high false-positive rate. False-positive IDT responses are often explained as an irritant effect because of a nonspecific inflammatory response. Glycerin, a stabilizing component of some allergen extracts, has previously been identified as a potential irritant.16 However, in our study we used aqueous extracts for all skin testing and nasal challenge procedures, so that any irritant effect of the extract could not have resulted from glycerin. It is possible, however, that other extract components might be responsible for causing positive IDT responses through irritant or other non–IgE-mediated mechanisms. The possibility of irritant IDT responses cannot be excluded.
This apparent discrepancy between symptom reporting and exposure in environmental allergen challenge rooms. However, supraphysiologic in comparison with both natural exposures and produce local IgE.

challenge results, raising the possibility that these individuals tive SPT responses, and negative IDT responses had positive scale criteria, 9% of participants with positive symptoms, nega-

responses who had mouse allergy were substantially less sensitive suggesting that the minority of workers with positive IDT the groups with positive SPT responses or positive m-IgE results, nasal responses in this group with positive IDT responses than in zation. However, it took much higher doses of Mus m 1 to elicit accurately identified a clinically relevant level of mouse sensiti-

response did have a positive nasal challenge result, suggesting that the positive IDT responses in these workers might have

because 2 of 25 asymptomatic workers screened had a positive IDT response at 1:100.

Even though IDTs performed poorly overall as a diagnostic test for mouse allergy, a small minority of workers with a positive IDT response did have a positive nasal challenge result, suggesting that the positive IDT responses in these workers might have accurately identified a clinically relevant level of mouse sensitization. However, it took much higher doses of Mus m 1 to elicit nasal responses in this group with positive IDT responses than in the groups with positive SPT responses or positive m-IgE results, suggesting that the minority of workers with positive IDT responses who had mouse allergy were substantially less sensitive than workers with positive SPT responses or m-IgE results. In addition, when challenge outcome was defined by using symptom scale criteria, 9% of participants with positive symptoms, negative SPT responses, and negative IDT responses had positive challenge results, raising the possibility that these individuals produce local IgE.

We used a nasal challenge model as a surrogate for mouse allergy, and some have suggested that this model might be supraphysiologic in comparison with both natural exposures and exposure in environmental allergen challenge rooms. However, several studies have shown that allergic responses to nasal challenge correlate well with responses in natural settings, indicating that the nasal challenge model can be an appropriate surrogate for clinical allergy. In addition, the finding that workers with a positive challenge result exhibited a median increase in nasal eosinophils, a hallmark of the allergic late-phase response, whereas those with a negative challenge result exhibited a median decrease further supports the validity of our nasal challenge model.

We did not find an association between report of mouse-related symptoms and either sensitization or positive nasal challenge results. Specifically, only 29% of symptomatic workers had a positive SPT response or m-IgE result, and only 31% had a positive nasal challenge result. These findings are consistent with other studies. In occupational settings between 38% and 67% of symptomatic laboratory workers do not show evidence of laboratory animal sensitization by means of SPTs or IgE tests. This apparent discrepancy between symptom reporting and allergenic sensitization might be a result of diagnostic tests that lack sensitivity to detect sensitization among all truly allergic symptomatic individuals. Alternatively, diagnostic tests might be sufficiently sensitive, and workers’ symptoms might be due to environmental factors aside from allergen, such as endotoxin or other pollutants. In fact, one study has shown that endotoxin exposure strongly predicts mouse-related symptoms in non–mouse-sensitized workers. For these reasons, symptom report might not be an appropriate standard by which to assess diagnostic tests for occupational mouse allergy.

Because endotoxin has been shown to be associated with allergic-type symptoms in laboratory animal workers, it is possible that endotoxin in the extract used in our study might have elicited nasal symptoms, resulting in positive nasal challenge results that were not due to an allergic mechanism. However, none of the negative control workers (asymptomatic and nonsensitized) had a positive nasal challenge result, suggesting that there was little, if any, effect of irritants or innate immune stimulants on nasal challenge responses. In addition, the endotoxin concentration of the allergen lot was quantified and found to be quite low at 9 ng/mL. This concentration resulted in a total delivered dose of endotoxin (3.6 ng in a total of 0.4 mL) that is approximately 200-fold lower than doses found in other studies to elicit or augment nasal responses.

Another issue that merits discussion is the variability in Mus m 1 content of commercially available mouse epithelial extracts. For the purposes of this study, extracts from the same manufacturer and lot were used for all skin testing and nasal challenge procedures, thereby allowing direct comparison of skin test results with challenge results. As a result, our study evaluated the performance of this particular extract, and the findings might not be applicable to extracts from other manufacturers or lots. For example, it is conceivable that extracts with lower Mus m 1 concentrations might have lower potency and sensitivity than the extract used in this study. In this circumstance IDTs might prove to have greater diagnostic value. In addition, Mus m 1 is not the only component of mouse epithelial extracts; they also contain mouse albumin, as well as other less well-characterized mouse urinary proteins. Ultimately, standardization of mouse allergen extracts is needed to ensure that diagnostic test performance is similar across extracts. Another important caveat is that the commercially available assay for m-IgE testing used a different substrate than that found in the lot of extract used for skin tests and challenges. It is possible that this accounts for some of the difference in diagnostic test performance between m-IgE measurement and skin testing.

It is also important to note that the positive and negative predictive values calculated in this study are applicable to populations with the same underlying prevalence of mouse allergy. Because a clinical history of mouse-associated symptoms is difficult to elicit in patients exposed to mouse allergen at home, the underlying prevalence rate of true mouse allergy might be lower in community populations of asthmatic patients than in a population of symptomatic laboratory mouse workers. As a result, the positive and negative predictive values of skin testing and m-IgE testing in inner-city patients with asthma might differ from that observed in symptomatic laboratory workers. On the other hand, the sensitivity and specificity of these diagnostic tests should remain constant across different populations, so that SPTs should correctly identify clinically relevant mouse sensitization 80% of the time in inner-city populations with asthma. An important
caveat is that occupational rhinitis, and not asthma, was studied; however, the literature suggests that diagnostic tests behave the same for both upper and lower respiratory tract disease.  

In summary, patients with suspected mouse allergy should be evaluated for mouse allergy with SPTs. Although a positive m-IgE test result might be highly suspicious for mouse allergy among symptomatic workers, a negative m-IgE result does not exclude mouse allergy. In addition, the diagnostic role of IDTs might be limited to excluding a diagnosis of mouse allergy. Further studies are required to determine the positive and negative predictive values of skin testing and m-IgE measurement in the inner-city asthmatic population.

We thank Robert Esch, PhD, and Greer Laboratories (Lenoir, NC) for help with identifying a lot of mouse epithelial extract and for quantifying the endotoxin content of the extract lot.

Clinical implications: Patients with suspected mouse allergy should be evaluated with SPTs. Mouse-specific IgE measurement and IDTs appear to be less useful than SPTs in the diagnosis of mouse allergy.

REFERENCES