

Risks for the development of outcomes related to occupational allergies: an application of the asthma-specific job exposure matrix compared with self-reports and investigator scores on job-training-related exposure

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Background and aim: Risks for development of occupational sensitisation, bronchial hyper-responsiveness, rhinoconjunctival and chest symptoms at work associated with continued exposure to high molecular weight (HMW) allergens were estimated with three exposure assessment methods.

Methods: A Cox regression analysis with adjustment for atopy and smoking habit was carried out in 408 apprentices in animal health technology, pastry making, and dental hygiene technology with an 8-year follow-up after training. The risk of continued exposure after training, estimated by the asthma-specific job exposure matrix (JEM), was compared with self-reports and investigator scores on job-training-related exposure. Associations between outcomes and work duration in job(s) related to training were also evaluated.

Results: Exposure to animal-derived HMW allergens, subsequent to the apprenticeship period, as estimated by the JEM, was associated with a significantly increased risk for occupational sensitisation (hazard ratio (HR) 6.4; 95% CI 2.3 to 18.2) and rhinoconjunctival symptoms at work (HR 2.6; 95% CI 1.1 to 6.2). Exposure to low molecular weight (LMW) agents significantly increased the risk of developing bronchial hyper-responsiveness (HR 2.3; 95% CI 1.1 to 5.4). Exposure verification appeared to be important to optimise the sensitivity and the specificity, as well as HRs produced by the JEM. Self-reports and investigator scores also indicated that further exposure to HMW allergens increased the risk of developing occupational allergies. The agreement between self-reports, investigator scores, and the JEM were moderate to good. There was no significant association between respiratory outcomes and work duration in jobs related to training.

Conclusion: The asthma-specific JEM could estimate the risk of various outcomes of occupational allergies associated with exposure to HMW and LMW allergens, but it is relatively labour intensive. Exposure verification is an important integrated step in the JEM that optimised the performance of the matrix.

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