

Nonetheless, the results obtained by Collins and coworkers are quite promising. A larger trial of this strategy would seem to be a priority. Furthermore, pulmonary rehabilitation practitioners should, I think, start to consider incorporating selected strategies with the goal of boosting the effectiveness of this important therapy.

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To Be or Not to Be Light at the End of the Tunnel of Career Counseling for Atopics

Workers in the field of asthma and allergies are well aware that occupational asthma is the leading cause of occupational respiratory disease in industrialized countries; recent estimates indicate that 10–25% of adult asthma can be attributed to work-related factors (1). Among the more than 250 substances that may cause occupational and work-aggravated asthma animal allergens, flour and grain dust as well as latex are the high-molecular-weight agents with the highest relevance (2). At the same time, up to half of the adolescent population in high-income countries is atopic, with up to 30% reporting wheezing and up to 20% suffering from allergic rhinoconjunctivitis (3). What should the physician tell these individuals when it comes to career counseling? Should an atopic teenager be a baker or a laboratory animal worker?

Current guidelines state that the “positive predictive values of screening criteria are too poorly discriminating for screening out potentially susceptible individuals” (2). While it might be reasonable to prevent those with severe or moderately severe asthma from potential employment in jobs with exposure to asthmagens (4), the positive predictive value of atopy has been reported to be as low as 23% (laboratory animal workers) to 33% (bakers) (5, 6). In this context, the article by Gautrin and colleagues (7) in this issue of the *Journal* (pp. 871–879) might help to bring some light to the end of the tunnel. They have comprehensively followed almost 400 young adults from the start of apprenticeship for an average of 8 years after the end of training.

During apprenticeship, all participants were occupationally exposed to one of the high-molecular-weight agents known to be most relevant in the causation of occupational asthma (animals, flour, or latex) (2). From the end of training until follow-up, only 18% had changed their job.

The numbers lost to follow-up may give some indication about the effort Gautrin and colleagues had to put into this study: After thorough follow-up procedures, 50% of the original cohort (8) could not be studied because they had either moved or even left the country without letting the researchers know, cancelled their appointment more than once, or simply did not answer without telling why. All of us face this challenge if we want to do an epidemiologic study among young adults (9)—and the challenge is even greater in a prospective cohort study. Nevertheless, the findings by Gautrin and coworkers encourage us doing such surveys as they show that the effort is worth the trouble.

Several important public health messages can be deduced from the article (7). The majority of those who developed job-specific sensitization or rhinoconjunctivitis symptoms had already done so during training, and only a few developed sensitization or symptoms later on. The difference in the incidence of bronchial hyperresponsiveness (BHR) was not as impressive (6 per 100 person-years during training as compared with 2 per 100 person-years during follow-up). This finding is in accordance with other studies. For example, a recent population-based cohort study indicated that upper respiratory symptoms mainly develop

during the first 10 months of employment (10). Therefore, surveillance as well as thorough career counseling and instruction on personal protection during the first months of occupational exposure seem to be of uppermost importance to prevent occupational asthma. On the basis of the current results, surveillance might be done at 6-month intervals during the first year of employment/training and on an annual basis later on.

BHR at baseline was the strongest predictor of sensitization to work-related allergens and chest symptoms at follow-up. However, the positive predictive value (<25%) does not indicate that BHR is a useful marker for preemployment screening. Nevertheless, BHR, as well as sensitization to ubiquitous allergens, might pose selection criteria that help to decide which apprentices should be included in the surveillance program described above.

The good news from the study by Gautrin and colleagues (7) is that reducing or omitting exposure early on might result in a remission of symptoms. However, one has to bear in mind the low number of subjects who changed exposure after apprenticeship. The low power therefore does not allow drawing firm conclusions. As discussed by the authors, previous studies came to the assumption that occupational asthma and sensitization to workplace allergens generally persist (11). One explanation might be that the majority of subjects in the current study (7) did not present with severe asthma. They mainly reported upper respiratory symptoms only. Therefore, these symptoms might resolve if exposure is reduced or omitted early on. This would provide even more evidence for the usefulness of surveillance programs for apprentices occupationally exposed to high-molecular-weight agents. Nevertheless, larger studies are needed before initiating such programs.

As examination of the cohort studied by Gautrin and coworkers (7) did not start before the beginning of apprenticeship, nothing can be said about a potential healthy hire effect. Yet the results do not give strong evidence for a healthy worker survivor effect. This contradicts the recent review by Le Moual and colleagues (12). However, power and a possible selection bias potentially caused by a large number of subjects lost to follow-up are issues that need to be addressed in future studies.

In summary, according to the results by Gautrin and colleagues (7), an atopic adolescent might well become a baker or laboratory animal worker. However, he or she should be followed closely, especially at the beginning of apprenticeship. Having read these important implications, we are looking forward to seeing the results of further surveys backing up these findings. I personally also cannot wait to read the results of their ongoing long-term study among apprentices exposed to low-molecular-weight agents (13).

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