

The effects of interventions and glove changes in health care workers with latex allergy

Natural rubber latex (NRL) allergy and hypersensitivity is a relatively newly recognized disease reported upon in the past 15 years.¹ In certain high-risk groups including children with spina bifida and health care workers (HCWs), the number of NRL-allergic patients has reached epidemic proportions.

In HCWs the risk for development of allergy is related to occupational exposure with development of occupational asthma directly related to powdered NRL gloves.²⁻⁴

As addressed by Bernstein et al⁵ in this issue of the *Annals*, the important question to be answered is, "how much reduction to NRL is necessary in allergic patients?" Is it enough to have our NRL-allergic patients personally change to non-NRL gloves? What effect does having ongoing airborne exposure if their co-workers continue to use powdered NRL gloves?

Bernstein et al report that the majority of his NRL-allergic patients are continuing to work with minimal symptoms and disability despite seemingly only limited preventive accommodation actions. However, this fails to consider other important aspects. Severely allergic NRL patients may have already left their workplace environment. This "healthy survivor effect" would select individuals who had milder symptoms and were able to continue work. Would continued exposure to lower levels of NRL eventually cause symptoms or require more time to develop increased sensitivity in these patients?

The past 12 years have clearly defined the major factors responsible for NRL allergy with appropriate preventive measures taken at several levels, including the health care facility, industry, and government. Health care centers have developed NRL allergy educational initiatives with recognition and surveillance programs. Government agencies have published guidelines recommending the interventions necessary to deal with this growing problem.⁶ Implementation of these suggested policies included the change to lower-protein powder-free examination and sterile NRL gloves. There has been a decline in NRL allergy as documented by fewer NRL-induced disability claims reported to insurance boards⁴ and hospital occupational personnel.⁷

The German health care system⁸ instituted measures for the primary prevention using similar interventions, mandating all HCWs to use only low-protein, powder-free NRL gloves. This resulted directly in a dramatic lowering in the number of new cases of NRL occupational allergy and asthma.

However, this does still not completely explain why many HCWs are able to work despite continued NRL allergen exposure. This is probably related to additional preventive

measures. Industry has voluntarily lowered the allergenic protein levels during the past 10 years. Ninety percent of nonsterile gloves have 1,000-fold lower protein levels and sterile NRL gloves have also decreased by 100-fold (D. H. Beezhold, personal communication, 2002). The change to lower-protein NRL gloves may be enough to allow individuals with milder NRL allergy to continue to work with minimal reactions.

Despite this we must still evaluate whether we are optimally dealing with our NRL patients. How much accommodation is necessary? The exact threshold for sensitization is still unknown. It has been reported that the use of low-protein, powder-free NRL gloves in naïve subjects did not result in a skin test conversion to a positive skin test (sensitization) of dental or medical students in France and the United Kingdom.⁹ Other studies have documented NRL sensitization in a cross-sectional study of dental students using powdered NRL gloves from 0% reactivity in year 1 to a 10% prevalence by year 4.¹⁰

We still do not understand why a small percentage of patients have NRL-related disability despite elimination of the major exposures of NRL allergy.¹¹ It is possible that these patients have more severe NRL-induced allergy or other undiagnosed associated conditions. More studies are required in this patient population.

Our final recommendations to deal with NRL allergy are:

- 1) NRL gloves should be used only as mandated by standard universal precautions;
- 2) only non-powdered, low-protein, nonsterile NRL gloves should be used; and
- 3) low-protein, powder-free, sterile NRL gloves are preferred, but low-protein, powdered, sterile gloves may be used, but only with ongoing evaluation and monitoring for the possible development of NRL allergy.

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