

Effects of a Preventive Message in the Organizational Context: Occupational Latex Allergy in Hospitals

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KEY WORDS: latex allergy; organizational change; health communication; hospitals; evaluation; occupational health and safety; work environment

BACKGROUND

Frequent exposure to the proteins in natural rubber latex can result in latex allergy. Latex allergy can exhibit as mild dermatologic irritation or as a more severe but rare allergic reactions, including anaphylactic shock. Health care workers are at particularly high risk of latex allergy because of the frequency of exposure to latex products and gloves in particular. It has been estimated that 1% to 6% of the general population and about 8% to 12% of regularly exposed health care workers are sensitized to latex [Kelly et al., 1996; Liss et al., 1997; Ownby et al., 1996; Sussman and Beezhold, 1995].

To raise awareness of this growing problem, the National Institute for Occupational Safety and Health (NIOSH), published and disseminated the Alert on Preventing Allergic Reactions to Natural Rubber Latex in the Workplace [NIOSH, 1997]. The Alert cited research into the prevalence of latex allergy and used a set of case studies to illustrate the problem.

This study was conducted by the University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School (RWJMS) in conjunction with NIOSH. The impetus behind this study was twofold. First, the study was intended to identify, or at least clarify, what

hospitals are doing in terms of reducing the risks of latex allergy to employees. Second, the study was intended to determine whether the NIOSH Alert had any effects and under what conditions.

For hospitals, the most effective way to reduce the risk of latex allergy to workers lies in the adoption of particular administrative controls or policies. The Alert makes several recommendations, including that health care workers use powder-free reduced protein latex gloves rather than powdered latex gloves [Heilman et al., 1996].

Somewhat akin to the stages of change of individuals adopting behaviors [Prochaska and DiClemente, 1983], this study was based on an operating hypothesis that hospitals progress through stages in order to adopt new policies and practices, including the NIOSH recommendations. Four "stages of organizational change" are indicated in Table I.

Identifying the stages of organizational change could significantly aid NIOSH in effectively communicating the need for adopting health and safety policies or practices. This is particularly true if the stages suggest communications strategies to move organizations towards adoption of policies. Referring to Table I, for example, if an organization is largely inactive in a policy, an effective strategy may be to target individuals within the organization that might be possible advocates. This audience might have a formal or informal responsibility, or a professional interest, as far as the specific health and safety threat.

METHODS

Formative Interviews

Identifying individuals in an organization who are the best recipients for health and safety information is a critical

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TABLE I. Stages of Organizational Change

Stage 1: Inaction	This first stage is characterized by a lack of knowledge about the recommended policy, or a perception that the policy or practice is irrelevant to the organization or overly costly or problematic.
Stage 2: Advocacy	In this stage, individuals act as internal advocates for adopting the policy or practice. The effectiveness of their advocacy depends on the specific risk, the costs associated with adopting the policy or practice, and the influence or power of the advocate in the organization.
Stage 3: Consensus	When decision-makers in the organization have achieved a level of consensus on the issue, they will move to adopt a policy or practice. The consensus process can begin through formal (e.g., Employee Health and Safety Committees in hospitals) or informal channels (e.g., the CEO makes it a priority).
Stage 4: Maintenance	Once the policy or practice is in place, it has to be maintained. This stage is characterized by organizational systems for assigning personnel, continuing to allocate resources, or enforcing the policy.

first step. RWJMS conducted nearly 60 unstructured interviews with individuals in various positions in hospitals to identify key decision-makers. There were two key decision-making positions identified as “best audiences” for the Alert—the Director of Nursing or the Director of Infection Control. The formative research also identified the cost of eliminating powdered latex gloves as a barrier to the adoption of the recommendation.

Design and Sampling

Hospitals in the United States were randomly assigned to one of four treatment conditions or two comparison groups. In order to determine which position would respond most positively to the Alert, the addressee (Director of Infection Control or Director of Nursing) was included as an independent variable. Since the issue of cost was not addressed in the Alert, a persuasive cover letter was also incorporated as an independent variable.

This design enabled NIOSH to identify if there were any effects because of the Alert, if the letter had any additional effects, and whether the effects depended on the targeted recipient. Hospitals assigned to the comparison groups were sent the Alert when the study was completed.

Hospitals were randomly selected to be surveyed. Those selected were called by RWJMS 10 to 30 days or three months after the Alert was mailed. Only the results of the first survey are addressed here. There were 323 respondents, for a response rate of approximately 44%. Twenty-five cases were dropped from the data analysis, however, because of telephone interviewer error or problems with the original list.

Hypothesis

As far as the effects of the Alert on the stage of hospital change, it was hypothesized that more of the hospitals receiving the Alert would be in the advocacy stage than hospitals who did not receive the Alert. It was not expected that hospitals could reach “consensus” in 10 to 30 days.

RESULTS

Many of the respondents in hospitals assigned to the comparison conditions reported that they had procured or received the Alert (29%). This made it more difficult to detect real differences between conditions (Type II error), but it did not systematically increase the likelihood of finding effects where they did not exist (Type I error).

Despite this “noise,” the Alert had several statistically significant effects, including increasing the knowledge of recipients. Those who were sent the Alert scored higher on a three item knowledge scale than those not sent the Alert (ANOVA, $N = 297$, $F = 4.6$, $P = .03$).

Knowledge is a prerequisite for advocating change, and as Table II indicates, the Alert appears to have created advocates. Directors of Infection Control were significantly more likely to say that they will advocate for eliminating powdered latex gloves if they received the Alert. The shaded area was crosstabulated and the test of significance used was a Pearson chi-square (chi-square = 3.6, $P = .06$, $N = 48$).

CONCLUSIONS

Whether or not the Directors of Infection Control will be successful in convincing others in their organizations to adopt the policy remains to be seen, but the Alert appears to have moved organizations from being inactive to some level of advocacy. In general, the stages of organizational change

TABLE II. Organizational Stage of Change in Eliminating Powdered Latex Gloves

	Directors of infection control	
	Alert (N = 101)	No Alert (N = 54)
Inactive	17%	27%
Advocacy	13	6
Consensus	19	16
Maintenance	51	49

suggest a framework for understanding the processes by which organizations recognize and adopt new policies and practices.

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