CardinalHealth

Choices

Research and technology supporting your decisions

In this issue…

This issue is a reprint of a popular "Choices" bulletin from 1998 analyzing the third National Health and Nutrition Examination Survey (NHANES III), conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics.

This landmark study established that occupation does not seem to be a factor in the development of natural rubber latex allergy.

Allergy to natural rubber latex is a serious concern in clinical settings where many medical devices, including gloves, contain latex. However, like many other allergies, you can manage natural rubber latex allergy effectively. Healthcare workers should seek out the facts about natural rubber latex and its alternatives when developing standards of practice that protect themselves and their patients. This technical bulletin highlights the results of the most recent study on this important topic.

NHANES III: a study of latex sensitivity in the United States

The third National Health and Nutrition Examination Survey (NHANES III), conducted by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics, is the largest U.S. government-sponsored study of its kind. It represents a broad cross section of occupations, illnesses and health conditions, as well as other demographic data. Between 1988 and 1994, 40,000 randomly selected subjects were surveyed and examined at 88 locations nationwide. More than 5500 adults were tested for latex sensitivity. Described as a "gold standard in data collection,"[1] NHANES III is the most complete and comprehensive study of latex sensitivity to date.

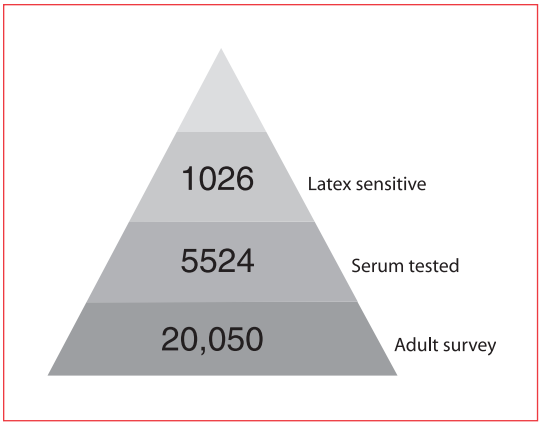
Among its conclusions are:

- Regardless of occupation, one in five American adults is likely to be sensitized to natural rubber. This is not surprising when considering that individuals in the general population tend to be sensitized to other common allergens at similar rates. These include ragweed, pollen and bee stings.[2]
- Latex sensitivity rates are no different among healthcare workers than among workers in other occupations. In fact, auto mechanics and construction workers appear to have slightly higher sensitization rates.
- Healthcare workers do not exhibit debilitating clinical symptoms of allergy at rates different than workers in other jobs.
- Latex sensitivity rates are no different for people within various age ranges, which suggests that there are no cumulative effects from latex exposure.

Healthcare worker and non-healthcare worker latex sensitivity rates

Occupation	Sensitive	Total	Rate (%)	
			Unweighted	Weighted
Healthcare Worker	38	176	21	18
Non-Healthcare Worker	789	4228	19	17
Total	827	4405	19	18

No statistically significant differences between Healthcare Workers and Non-Healthcare Workers; population sampling weights applied for "weighted" rate.



Number of subjects in NHANES III

The study used complete physical assessments and medical histories as well as blood samples from more than 5500 adults representing 40 different occupations. In the category of "healthcare worker," the following were included:

- RN
- Physician
- Dentist
- Veterinarian
- Podiatrist
- Pharmacist
- Dietician
- Dental assistant
- Nursing aide
- Orderly
- Attendant

CDC requested blood sera samples to be studied for latex sensitivity:

- Blood serum samples tested using DPC AlaSTAT® test
- Measures latex specific IgE antibodies in blood serum
- 0.35 IU/mL is the positive significant level

The Diagnostic Products Corporation's (DPC) AlaSTAT® test was used in the NHANES III study to determine latex sensitivity. It was the first test of its kind approved by the FDA. It measures the level of natural rubber latex specific IgE antibodies in blood sera. Certain genetically predisposed people, when exposed to enough allergens, may create antibodies specific to rubber. Sensitization is the production of enough natural rubber specific IgE to test positive on the DPC AlaSTAT® test. A sensitized person may or may not ever have an allergic reaction. History has shown that most sensitized people do not.

Asthma rates by occupation and glove use

"Have you ever had asthma?"

Category	Yes	Total	Rate (%)
HCW gloves	3	107	2.8
Non-HCW	104	3682	2.8

Active asthma rates by occupation and glove use

"Do you still have asthma?"

Category	Yes	Total	Rate (%)
HCW gloves	3	108	2.8
Non-HCW	85	3738	2.3

Asthma rates

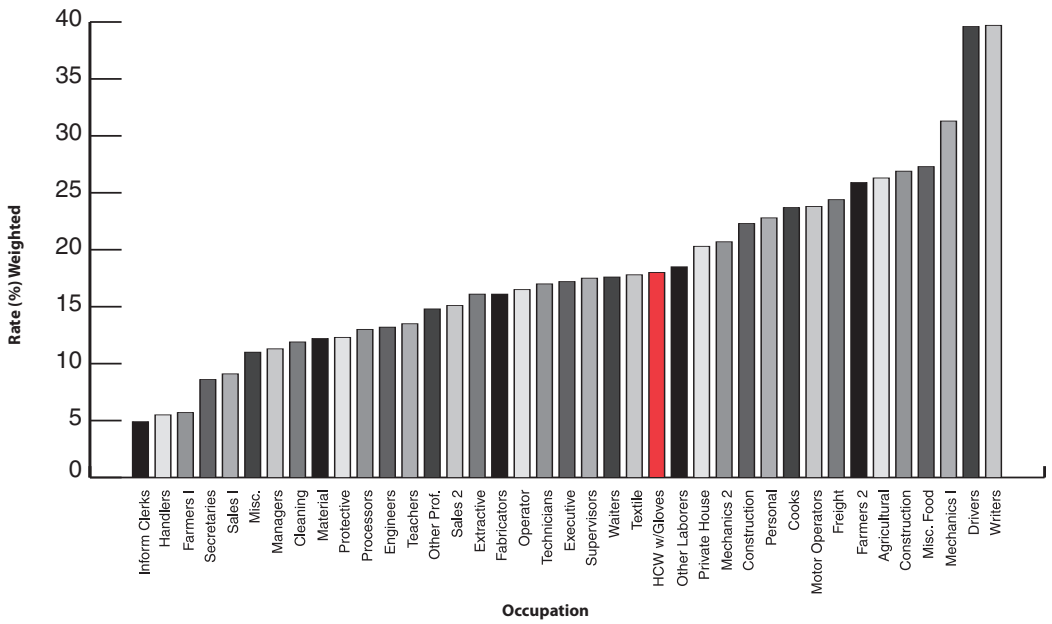
Because asthma is a disease sometimes reported by people with rubber allergies, responses to the asthma questions were also analyzed. The results showed that healthcare workers who wear gloves have the same rate of asthma as non-healthcare workers. Healthcare workers over age 20 developed asthma at the same rate as workers in other occupations.

The demographics of NHANES III

Healthcare workers who wear gloves have latex sensitivity rates that are on average lower than individuals in many other occupations, including writers, mechanics, drivers, farmers and construction workers. Of those surveyed in NHANES III, there are 23 occupations that have lower rates than healthcare workers with gloves and 15 that have higher rates.

The analyses indicate that age, gender and race as well as education are associated with latex sensitivity, but occupation is not.

Latex sensitivity by occupation



The table below shows that there were no appreciable demographic differences between the 20,050 individuals in the entire adult survey and the 5524 who were tested for latex sensitivity. The two groups had roughly the same proportion of whites to non-whites, males to females, older individuals to younger and healthcare workers to non-healthcare workers.

The analyses show that females have lower sensitization rates than males, whites have lower rates than either African-Americans or others, and healthcare workers who wear gloves have lower rates than others.

Demographics of the latex-tested group versus the entire NHANES III population

Demographics	RACE			GENDER		AGE		HCW		INCOME		EDUCATION	
	White	African-American	Other	Male	Female	Under 45	45+	Yes	No	0-$20,000	$20,000+	Less than HS	HS Grad.
% of subjects													
All	66	30	4	54	46	69	31	4	96	38	62	34	66
Latex tested	71	27	2	56	44	74	26	4	96	38	62	36	64

Conclusions of NHANES III

The results of NHANES III are consistent with several studies published over the past few years which show that there is little difference in latex sensitization rates among healthcare workers and the general population.[3, 4, 5, 6] This is good news for the healthcare community. While latex allergy is a real concern for those who are genetically predisposed, it is managable. The occupational health policies and protocols that your facility develops to manage latex allergies should include:

- Assessment – how to identify and assess latex allergies
- Management – having nonlatex products available to all employees and patients who are allergic to natural rubber latex
- Education – proactive and ongoing training in appropriate glove usage, hand care and ways to care for the latex-allergic patient.

References and further reading:

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4. Merrett, T.G. and Keckwick, R. "Prevalence of Latex-Specific IgE Antibodies in the UK." *Annal of Allergy, Asthma and Immunology*, Volume 74, Number 1, January 1995.
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