

AORN Latex Guideline

I. Overview

A. Introduction

Preamble

Natural rubber latex allergy is a significant medical concern because it affects health care workers, as well as the general population. It crosses racial and ethnic boundaries, and it can affect males or females anytime during their lives.

There is no cure at this time, only prevention. Three types of reactions are associated with latex products. In order of frequency of occurrence they are an irritant reaction, a delayed hypersensitivity reaction (ie, type IV), and an immediate hypersensitivity reaction (ie, type I) (**Table 1**). Any individual who experiences any type of latex-associated reaction should be evaluated by a qualified health care practitioner.

Assumptions

Natural rubber latex allergy can be a serious and potentially life-threatening condition. Health care workers and others who experience repeated exposure to latex allergens can develop a latex sensitivity or allergy. Several hundred cases of severe allergic reactions and anaphylaxis and 17 deaths have been reported to the US Food and Drug Administration (FDA).^{1,2}

Sensitivity can be described as development of an immunologic memory to the specific latex proteins; however, the affected individual may be asymptomatic. Allergy is the demonstrated outward expression of the sensitivity (eg, hives, rhinitis, conjunctivitis, anaphylaxis). Sensitivity to natural rubber latex is more common than the actual allergy; however, any individual sensitized to natural rubber latex is at risk of a life-threatening reaction and should be treated in the same way as an allergic individual.

Powdered latex gloves are the most common item contributing to the latex load in health care facilities. Recent estimates have shown a 20-fold increase in medical glove use (in billions of pairs) since the introduction of universal precautions in 1987.³ During the manufacturing process, powder usually is applied to the glove as cornstarch slurry when the glove still is on the mold or former. When the powder slurry is applied to the glove, the extractable, water-soluble proteins leach from the surface of the glove onto the cornstarch particles. When dry, the glove powder then acts as a

vector that carries latex proteins from the glove into the environment.

Health care facilities and providers have an ethical responsibility to prevent latex sensitization in patients and employees by creating an environment in which it is safe to be treated and to work. Many facilities in the United States consciously have moved toward a latex-safe environment by switching from powdered latex gloves (eg, examination, surgical) and other latex products to powder-free products with reduced latex protein content. High-protein, powdered latex gloves and other products that create aerosolization can contaminate a facility's environment with latex allergens.

In 1998, Sussman et al reported a 1% annual incidence of sensitization among powdered latex-glove users, whereas users of powder-free, low-protein, latex gloves reported a 0% sensitization rate.⁴ In 1999, Levy et al studied a group of dental students in both France and England, reporting that students who wore protein-rich (ie, high protein), powdered latex gloves had a 15% and a 5% sensitization rate, respectively, while students who wore powder-free, protein-poor (ie, low protein) gloves had a 0% sensitization rate.⁵

It is unsafe to treat latex-allergic individuals in an environment laden with latex allergens. Individuals who have been clinically diagnosed as either sensitive or allergic to natural rubber latex should be treated or work in an environment that is latex-safe, with additional measures taken for the immediate vicinity (ie, room) in which the individual receives or provides care. If the entire care facility is maintained as a latex-safe environment, few additional precautions will be needed for latex-allergic individuals. If the facility is not maintained as latex-safe, comprehensive latex precautions will be required each time a latex-allergic individual presents for care or services.

This revised "AORN latex guideline" is based on research and expert opinion available at the time of its revision. Ongoing and future research likely will enhance and expand current knowledge about this topic.

Review of this document has been solicited from content experts at the American Association of Nurse Anesthetists (AANA), the American College of Surgeons (ACS), the American Society of Anesthesiologists (ASA), the American Academy of Allergy, Asthma, and Immunology (AAAAI), the American

Table 1

TYPES OF REACTIONS TO LATEX¹⁻⁴				
Type of Reaction	Cause	Onset	Symptoms	Prevention
Irritant contact dermatitis <i>(Nonallergic irritation; not a true allergy)</i>	Frequent hand washing, insufficient rinsing, aggressive scrubbing technique, use of anti-septics, climatic irritation, glove occlusion, glove powder.	Reaction develops gradually over a period of days or weeks.	Scaling, drying, cracking of skin may develop as dermatitis on the backs of the hands. Wearing latex gloves when symptoms are present may increase the risk of developing latex allergy.	Obtain medical diagnosis, dermatology consultation; avoid irritant product; ensure barrier effectiveness of glove material; consider alternative products, cotton glove liners.
Type IV hypersensitivity; T cell-mediated <i>(Also called delayed cutaneous hypersensitivity; allergic contact dermatitis; chemical allergy)</i>	Results from exposure to chemicals used in latex harvesting, processing, or manufacturing (eg, thiurams, carbamates, benzothiazoles).	Rash usually begins six to 48 hours after contact and may progress to oozing skin blisters or spread away from the area of skin touched by the latex.	Red, raised, palpable area with bumps, sores, and horizontal cracks may extend up the forearm. May occur after a sensitization period resulting from repeated exposure to latex or irritant chemicals.	Obtain medical diagnosis, dermatology consultation; identify irritant chemical; use alternative glove material without chemical; ensure barrier effectiveness of glove material; consider alternative products, cotton glove liners.
Type I hypersensitivity; immunoglobulin-mediated <i>(Also called immediate reaction hypersensitivity; latex allergy; protein allergy)</i>	Results from exposure to proteins in latex on glove surface or bound to powder and suspended in the air, settled on objects, or transferred by touch.	Reactions usually begin within minutes of exposure but can occur as much as two hours later. May fade away rapidly after removing the glove.	Mild reactions involve skin redness, hives, or itching on the skin under the glove. The chronic form may mimic irritant and allergic contact dermatitis. More severe reactions may include facial swelling, rhinitis, eye symptoms, generalized urticaria, scratchy throat, respiratory distress, and asthma. In rare cases, anaphylactic shock may occur.	Obtain medical diagnosis, allergy consultation; substitute non-latex gloves or other nonlatex products; reduce or eliminate exposure to glove powder; clean powder from environment; consider latex-safe environment.

REFERENCES

1. Latex Allergy: Protect Yourself, Protect Your Patients (Silver Spring, MD: American Nurses Association, 1996).
2. "Preventing allergic reactions to natural rubber latex in the workplace," NIOSH publ no 97-135, National Institute of Occupational Safety and Health, <http://www.cdc.gov/niosh/latexalt.html> (accessed Sept 4, 2008).
3. Reddy, S, "Latex allergy," American Academy of Family Physicians, <http://www.aafp.org/afp/980101ap/reddy.html> (accessed Sept 4, 2008).
4. "Potential for sensitization and possible allergic reaction to natural rubber latex gloves and other natural rubber products," Occupational Safety and Health Administration, <http://www.osha.gov/dts/shib/shib012808.html> (accessed Sept 4, 2008).

College of Allergy, Asthma, and Immunology (ACAAI), the American Nurses Association (ANA), the Association of Practitioners of Infection Control, Inc (APIC), the Spina Bifida Association, and the National Institute of Occupational Safety and Health (NIOSH) division of the Centers for Disease Control and Prevention, as well as the AORN Board of Directors and other recognized experts. This guideline may not apply to every individual and may require modification based on specific needs of a given patient, health care provider, or situation.

Definitions

For purposes of this document the following definitions apply.

- ◆ *Allergen*: A substance that in some individuals can cause an allergic or hypersensitivity reaction but is not normally considered harmful.⁶
- ◆ *Allergenic*: A substance that can elicit a hypersensitivity reaction in certain individuals.⁷
- ◆ *Allergy*: An immune reaction to an environmental agent that results in a symptomatic reaction.^{6,7}
- ◆ *Antigen*: Any molecule or substance, more