



presents

***Latex Allergy: Are You Risking
Your Life For Your Job?***

2.4 Contact Hours

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Course Objectives

At the end of this program the participant should be able to:

1. List the occupations and populations at risk for latex allergy.
2. Identify why latex allergy has grown more prevalent since 1987.
3. Describe the three types of reactions associated with latex allergy, along with common symptoms of each.
4. Identify methods used to diagnose latex allergy.
5. List ten products (medical and household) that contain latex.
6. List foods that can cause cross-reactions in people allergic to latex.
7. Describe why allergy shots are not approved as a treatment option.

Course Outline

Thesis statement: Latex allergy has become an epidemic among workers who have frequent exposure to latex gloves.

- I. Occupations and populations at risk for latex allergy
 - A. Healthcare workers
 - 1. Nurses and nursing assistants
 - 2. Doctors
 - 3. Lab personnel
 - 4. Dentists and dental hygienists
 - 5. Emergency Medical Technicians (EMTs)
 - B. Patients
 - 1. History of multiple surgeries
 - 2. Frequent urogenital procedures
 - 3. Spina bifida
 - 4. Asthma or other allergies
 - C. Other workers with frequent exposure to latex gloves
 - 1. Beauticians
 - 2. Food service workers
 - 3. Environmental services workers
 - 4. Firefighters
 - 5. Police
 - 6. Auto mechanics
 - 7. Painters
 - 8. People working in latex manufacturing
- II. Reasons for increased prevalence of latex allergy
 - A. Universal Precautions instituted in 1987
 - 1. Increased glove use
 - 2. New methods of glove manufacturing
 - B. Latex considered barrier of choice against blood-borne diseases

- III. Products that contain latex
 - A. Medical
 - B. Household
 - C. Foods that can cause cross-reactions
 - D. Latex-free alternatives
- IV. Types of reactions associated with latex allergy
 - A. Contact dermatitis
 - 1. Cause
 - 2. Symptoms
 - B. Type IV hypersensitivity
 - 1. Cause
 - 2. Symptoms
 - C. Type I hypersensitivity
 - 1. Cause
 - 2. Symptoms
- V. Methods used to diagnose latex allergy
 - A. History and physical
 - B. RAST test
 - C. Skin prick test
 - D. Patch test
- VI. Treatment for latex allergy
 - A. Allergy shots contraindicated
 - B. Avoidance of latex
 - C. Current research
- VII. Preventing latex allergy
 - A. Recognize symptoms
 - B. Hereditary component
- VIII. Legislation
 - A. Government agencies
 - B. Professional associations

Latex Allergy: Are You Risking Your Life For Your Job?

Julie is a nurse in a busy ICU. Over the past year, she has noticed an itchy rash on her hands after working, along with occasional wheezing and shortness of breath. She had attributed the difficulty breathing to being out of shape, but after just being on vacation for two weeks, she is surprised to find all of her symptoms gone. Is Julie allergic to work?

Julie does have an allergy, not to her job, but as a result of it. Her work environment has put her at risk for developing a latex allergy; it looks like she has succumbed, along with many others.

What is latex?

Natural rubber latex comes from the milky sap produced by a variety of plants; however, the latex used in manufacturing comes primarily from the Malaysian rubber tree *Hevea brasiliensis*. Natural rubber latex should be differentiated from synthetic (man-made) rubber, as well as from the technical term "latex," which refers to a combination of different kinds of particles, but which does not necessarily indicate the presence of natural rubber latex. (An example of this is latex paint). Allergic reactions are only caused by natural rubber latex from rubber tree sap.

Who is at risk?

In the 1990s, latex allergy reached epidemic levels among healthcare workers. It was estimated that 8-17% of healthcare workers developed a latex sensitivity due to frequent exposure to powdered latex gloves (Burt, 1999). The increased incidence is dramatically shown by the increased number of Medic Alert bracelets listing latex allergy. In 1986, there were just 12. By October 1997, there were 2,116, and by October 1999, the number had grown to 11,032 (ENA position statement, 1999). However, much progress has been made in latex allergy research and awareness, and the number of healthcare workers who are newly diagnosed has now greatly diminished due to decreased use of powdered latex gloves in healthcare facilities. However, because the development of latex allergy is directly related to frequent exposure, any healthcare workers who are still regularly exposed to powdered latex gloves remain at high risk for developing the allergy.

This is also true for other workers who are frequently exposed to powdered latex gloves on the job or at home. These include firefighters, police, food service workers, environmental services workers, beauticians, auto mechanics, greenhouse workers, day care workers, painters, and people working in latex manufacturing. Latex gloves are sold in most stores and many people wear them for routine household chores such as cleaning and washing dishes. The continued use of latex gloves in everyday life combined with an unawareness of the allergy has now made the general population the group at highest risk. There is even a report of a horse farmer who developed a latex allergy.

Certain patient populations are also highly prone to developing latex allergy. Children born with spina bifida often have frequent surgeries and urogenital procedures, which used to mean frequent contact with latex gloves and catheters. In fact, the first fatalities related to latex allergy resulted from the use of latex catheters used for barium enemas (Gritter, 1999). In industrialized countries, the prevalence of latex allergy in children with spina bifida is about 50% (Brehler & Kutting, 2001); therefore, these children are now simply treated as though they are allergic to latex from birth and strict latex precautions are used. Frequent surgical intervention is also a risk factor in children without spina bifida; sensitivity to latex has been

found in 34.1% of children with a history of three or more surgical procedures. However, this was not found to be true in adults (Brehler & Kutting). Patients with preexisting asthma, or a history of atopy are also likely to develop latex allergies. Atopy is defined as a genetic predisposition to allergic conditions, such as asthma, eczema, or hay fever. The presence of coexisting allergies is strongly correlated with the development of latex allergy.

Why has incidence increased?

The first published article relating allergic reactions to latex gloves appeared in 1933 in the New England Journal of Medicine. In the article, Dr. John Downing stated that he had seen two surgeons during the previous six months who had dermatitis on their hands corresponding with rubber glove use. He also described seven men who worked for a public utility company who wore rubber gloves eight hours every day. They all had redness, swelling and fine vesicles where the gloves touched their bare hands. The same reaction occurred in two control subjects who had rubber gloves applied to their bare arms. Dr. Downing cited a letter he had received from the chief chemist of a rubber company that stated that the company had received approximately 20 reports of dermatitis caused by rubber gloves in the last 20 years (taking documented occurrence back to 1913), and that he believed there were many more unreported incidences. The chemist also mentioned there were about the same number of reactions reported from other rubber goods in which the rubber touched bare skin.

It's apparent that latex allergy is nothing new, so why is it exploding into an epidemic now?

The HIV scare changed how healthcare workers thought about the use of gloves. With the recommendation of "Universal Precautions" in 1987 (treating blood and body fluids from all individuals as potentially infectious), gloves literally became a barrier between life and possible death. Latex gloves are considered the barrier of choice against blood-borne diseases, and the high demand for the gloves led to a change in the manufacturing process that allowed faster production. Previously, the latex was poured into a mold. Now, the gloves are dipped, permitting more of the latex proteins to remain in the gloves. The exact process varies between manufacturers, thus levels of latex proteins may vary as much as 400% among various brands of gloves (Gritter, 1998). The new manufacturing process provides a large supply of gloves for a low cost, which makes it easy for employers to choose latex gloves even for their employees who are not at risk for blood contact.

Which products contain latex?

Over 40,000 products contain latex! Many of these are medical supplies. The dipping process is also used to make balloons and condoms, so there tends to be a high incidence of reaction from these. The following is a partial list of examples with latex-free alternatives. Any of these latex products can cause a reaction in a person who is sensitized.

Product containing latex

Latex-free alternative

Latex gloves	Vinyl gloves
Stethoscope tubing	Cover tubing with stockinet
Urinary catheters	Silicone catheters
Medication vial stoppers	Remove stopper before drawing up med
IV tubing ports	Use stopcock to inject meds
Tape	Plastic tape
Erasers	Vinyl erasers
Latex balloons	Mylar balloons
Non-skid backing on rugs	100% cotton rugs
Band-Aids	Gauze with latex-free tape
Elastic in clothing	Don't let elastic touch skin
Rubber balls	Vinyl/PVC balls
Rubber kitchen gloves	Vinyl gloves
Foam earphones	Plastic earphones without foam
Computer mouse pads	Plastic/vinyl mouse pad
Anything with a rubber handle	Vinyl, leather or cover handle with latex-free tape

Quiz yourself:

Identify a latex-free alternative for the following items.

<u>Latex Item</u>	<u>Latex-free Alternative</u>
Latex gloves	Vinyl gloves
Latex balloons	Mylar balloons
Band-Aids	Gauze with latex-free tape
Erasers	Vinyl erasers
Computer mouse pads	Vinyl/plastic mouse pad

Food Allergies

There are some foods that can cause cross reactions because the proteins in the food are similar to one or more of the proteins found in latex. These primarily include bananas, kiwi, avocados, chestnuts and mangos, although some studies are showing that there may be others. If a person is already allergic to one or more of these foods, the chance of developing a latex allergy increases. However, not everyone with a latex allergy has food allergies. Natural rubber latex contains over 200 proteins, 56 of which are known to cause reactions (Brehler & Kutting, 2001). Different people can be sensitized to different combinations of proteins. Studies have also shown that people allergic to latex may react to foods prepared by someone wearing latex gloves. A recent study found fingerprints containing latex proteins on cheese and lettuce that were handled with powdered latex gloves. The protein was present in amounts large enough to cause allergic reactions (Beezhold, et al., 2000).

What are the symptoms of latex allergy?

There are three general types of reactions associated with latex allergy, although they won't manifest the same way in everyone since people may not react to the same proteins.

- Contact dermatitis is irritation at the site of contact caused by the powder added to gloves. Powdered gloves have an irritating alkaline pH, whereas powder-free gloves have a lower pH that is closer to that of skin. Studies have shown that an alkaline skin surface lasts long after the removal of powdered gloves. Dermatitis can also be caused by sweat on the hands while they're covered by gloves, and "mechanical" irritation from the powder rubbing on the skin. Usual symptoms include redness, scaling and itching that disappear when the source is removed. This is not a latex allergy since it is not an immunological reaction and is not related to the latex proteins.
- Type IV hypersensitivity is a cell-mediated allergic reaction to the chemicals (mostly accelerators) used in processing, but not to the latex itself. These chemicals can be airborne by the powder used in gloves. Thiurams have been identified as the main source of reaction, but as this chemical is no longer used by most manufacturers, the incidence of this type of reaction may start to decrease. The reaction is delayed for 24 to 48 hours after exposure and includes redness and itching, localized swelling, hives, red and itchy eyes, runny nose and coughing. Repeated exposure causes the symptoms to arise faster and persist longer. Often, symptoms occur at work and disappear at home. While this is not a reaction to latex either, it does predispose the person to progressing to a true latex allergy.
- Type I hypersensitivity is an immediate IgE-mediated response that can be life threatening. This is a true latex allergy, caused by histamine release upon exposure to latex. Latex proteins bind to glove powder and become aeroallergens when the powder is released, thus inducing respiratory symptoms as well as skin reactions. Glove powder has been found in the air for up to 12 hours after release, so a sensitized person can react hours after the actual gloves were used. The latex proteins are also water-soluble and are easily absorbed through the skin. It's estimated that 19% of all anaphylactic reactions during surgery are related to latex allergy (Brehler & Kutting, 2001). These reactions are frequently termed "anesthesia accidents." The risk of anaphylaxis caused

by latex allergy is even higher in children with spina bifida. Their risk is projected to be 500 times greater than that of the general population (Brehler & Kutting). Symptoms of a Type I reaction include difficulty breathing (from bronchospasm or airway swelling), increased heart rate, hypotension, hives, nausea or abdominal cramping, dizziness, or respiratory and/or cardiac arrest. Chronic asthma is also a frequent result of Type I hypersensitivity. Eighty percent of people with a Type I response initially had a Type IV reaction (Gritter, 1999).

Quiz Yourself:

Identify which symptoms are associated with each type of reaction.

Contact dermatitis	<input type="checkbox"/> Coughing <input checked="" type="checkbox"/> Itching <input checked="" type="checkbox"/> Redness
Type IV hypersensitivity	<input checked="" type="checkbox"/> Hives <input checked="" type="checkbox"/> Runny nose <input type="checkbox"/> Chest pain
Type I hypersensitivity	<input checked="" type="checkbox"/> Anaphylaxis <input checked="" type="checkbox"/> Difficulty breathing <input type="checkbox"/> Sneezing

How is latex allergy diagnosed?

History and physical are crucial to diagnosis. A blood test (RAST test) may be done to detect antibodies but it is often unreliable since a person with a positive history may have a negative RAST test. Often, a scratch test is done. The skin on the forearm is pricked and a solution containing latex is dropped on the area. If the area becomes red, swollen and itchy within 15 minutes, the test is positive. However, there is no commercially available testing solution. This leads to variance in the amount of latex in the solution used by different physicians, since they make their own. A patch test is similar in that a piece of latex glove is applied to the arm for up to 15 minutes. Hives with itching or redness indicates a positive response. The physician may not even do the scratch or patch tests on a person with a strong history, as the tests themselves have caused some people to experience anaphylaxis.

What about treatment?

Currently, there is none. Allergy shots (desensitization or immunotherapy) are not approved for use in the United States because they have caused Type I reactions. The other bad news is that this is a progressive allergy; each exposure increases sensitization and the chance of an anaphylactic reaction.

Researchers in Europe have conducted clinical trials on immunotherapy for latex allergy. In one study, administering oral and subcutaneous natural rubber latex allergens significantly lowered the incidence of rhinitis, conjunctivitis, and skin reactions; however, it did not significantly affect asthma associated with latex allergy (Brehler & Kutting, 2001). In another study, there were a



large number of systemic reactions to the latex injection during both the initial therapy and the monthly maintenance injections (Brehler & Kutting). Despite these results, immunotherapy is more commonly used in other countries than in the United States. Since people may react to different combinations of the latex proteins, it will be difficult to find a common treatment for all latex allergy sufferers. Therefore, immunotherapy is considered an experimental treatment, and avoidance of exposure is the primary treatment and means of prevention.

There have been many advances in latex allergy research. For example, the specific proteins that are the major allergens for people with spina bifida have been isolated, and it's been discovered that they are not the same proteins that are the primary allergens in healthcare workers (Brehler & Kutting, 2001). This may be explained by a difference in the routes of exposure between the two groups, and different means of subsequent sensitization. The allergens that affect children with congenital malformations (such as spina bifida) are particle-bound proteins that are less soluble than other latex proteins. Sensitization to these proteins may be caused by repeated mucosal contact. Healthcare workers tend to be exposed primarily through topical and respiratory contact since they wear latex gloves for long periods of time, and constantly inhale the powder that is all around them. It's been theorized that neonates who develop latex allergy are sensitized by inhaling the powder from latex gloves worn in the delivery room. Studies done with mice show that the mice develop IgE antibodies to specific combinations of latex proteins based on the type of exposure they've had (injected vs. topical vs. inhaled). There's also evidence that latex proteins may be altered to form new allergens during glove manufacturing. One study found an allergen in a surgical glove extract that is not found in natural rubber (Brehler & Kutting). There's still a lot of research to be done, but isolating the specific allergens to each population and method of exposure gives hope that there may be effective treatments developed in the future.

How can latex allergy be prevented?

First, notice if you have any of the above symptoms. Healthcare workers are so good at taking care of others that we tend to overlook ourselves. If you do have symptoms, (especially at work but not at home), keep a journal to find a pattern. Ask your doctor or allergist to be tested for latex allergy and remind them that you are at high risk because of your occupation, and even more so if you have other allergies. There is also a hereditary component to latex allergy, so find out if anyone in your family has symptoms. Finally, avoid latex gloves as much as possible.

Legislation

Latex allergy is recognized as a serious occupational health risk by the FDA (Federal Drug Administration, OSHA (Occupational Safety and Health Administration), NIOSH (National Institute for Occupational Safety and Health), and the CDC (Centers for Disease Control). The FDA now requires manufacturers of medical supplies to put warning labels on products that contain latex, and is regulating the use of the misleading term "hypoallergenic." The FDA and the American Society for Testing and Materials are recommending that manufacturers limit the amount of latex protein in gloves and that this limit be printed on the glove label. In 2002, the CDC released new hand hygiene guidelines for healthcare facilities that recommend reduced-protein, powder-free latex gloves when there is a risk of blood exposure. In addition, most nursing, medical, and dental associations now have position statements on latex allergy that

recommend decreasing the use of powdered latex gloves and providing alternative products that are latex free.

A number of states have passed legislation that either limits, or completely bans, the use of powdered latex gloves in healthcare facilities and food establishments. The following are some examples. Several other states have proposed such bills, but these have been stalled and never achieved enforceable status.

ARIZONA

The Arizona Department of Health Services has updated the requirements for food safety in restaurants and other food service establishments for the first time in 25 years. One of the new rules is that food service workers must wear non-latex gloves when preparing food. This went into effect on October 3, 2001.

MAINE

A bill has been enacted in Maine that prohibits health care facilities from using powdered latex gloves. This means the gloves cannot be provided by the organization, or even allowed in the building. Healthcare facilities affected include: hospitals, psychiatric hospitals, nursing facilities, kidney disease treatment centers (including free-standing hemodialysis centers), rehabilitation facilities, ambulatory surgical facilities, independent radiologic service centers, independent cardiac catheterization centers, cancer treatment centers, and private physician and dentist offices, whether in individual or group practice. Any facility found noncompliant can be fined up to \$500. (Note: This bill still allows powder-free latex gloves to be used, but it's a step in the right direction. The Maine Nurses Association is encouraging legislation that would ban all latex gloves.)

MASSACHUSETTS

The General Laws of Massachusetts have been amended by the State Senate and House of Representatives to prohibit latex gloves in any food establishment. This includes businesses that manufacture and store food, as well as those that sell it. Any business found noncompliant can be fined up to \$100 for each violation.

NEW YORK

The public health law has been amended by the State Senate and House of Representatives to require any food service establishment that uses latex gloves to provide written notice to patrons that states: "Latex gloves are used by staff in the preparation and conveyance of food in this establishment. If you are allergic to latex products, please take appropriate action." (Note: Unfortunately this bill does not ban the use of latex gloves in food preparation, but again, it's a step in the right direction. Latex allergy is being recognized at the state level.)

OREGON

The Oregon Legislative Assembly has passed a bill that "requires health care facilities to use non-latex products, to provide workers with information and diagnostic services for ailments related to the use of latex, and prohibits use of powdered latex products in health care facilities." This includes not only all healthcare and dental facilities, but also home health agencies. Any facility found noncompliant can be fined up to \$100 for the first violation and not more than \$500 for each subsequent violation. (Each day of continuing violation is considered

a subsequent violation.) In addition, a notice of these requirements must be posted in a conspicuous place, or the facility can be fined up to \$100 for each day of violation.

RHODE ISLAND

Rhode Island has passed a Latex Glove Safety Act that prohibits the use of disposable natural rubber latex gloves in food establishments. In addition, any other business regulated by the state that uses latex gloves must post a sign in a conspicuous place, in both English and any other language spoken by customers, that states:

- (a) that latex gloves are used in the business;
- (b) that latex exposure may result in development of an allergy;
- (c) that allergic reactions to latex can manifest by skin rash, hives, nasal and eye irritation, asthma, and shock;
- (d) that anyone experiencing symptoms of an allergic reaction to latex should contact their healthcare provider.

In addition, healthcare workers must be provided with initial and periodic education about latex allergy and must be represented on latex allergy or safety committees. Any facility or business found noncompliant is subject to a fine of \$500 and license revocation.

Progress is being made, but the fact remains that latex is the best barrier against blood-borne diseases, and it's a superior material in terms of strength, flexibility, and durability. Surgeons and dentists especially favor latex gloves over synthetic because of these factors. Even healthcare facilities that aren't affected by state legislation are taking steps to decrease powdered latex glove use and are providing latex-free alternatives. This has proven to be effective, as the incidence of latex allergy among healthcare workers has decreased. It will take healthcare organizations some time to work through this issue, since the ramifications related to blood contact are so great. However, workers who have no risk for blood contact should not hesitate to switch to synthetic gloves. The cost of synthetic gloves has been shown to be comparable to that of latex gloves, and the health benefits are worth the change.

Julie's story continued...

Julie asked her doctor about her symptoms and he referred her to an allergist. The allergist suspected latex allergy based on her history and did a scratch test. Within minutes of the latex solution application, her arm became swollen, red and itchy. Spirometry indicated that Julie has asthma, and since it had not been previously documented in her medical record, the allergist diagnosed latex-allergy-induced asthma. Julie can no longer work in the ICU, so the employee health nurse is helping her find another job within the hospital that will be safe for her.

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Websites

American Academy of Allergy, Asthma & Immunology: www.aaaai.org

American College of Allergy, Asthma & Immunology: www.acaai.org

American Latex Allergy Association: www.latexallergyresources.org

Latex Allergy Links: latexallergylinks.tripod.com

Spina Bifida Association: www.sbaa.org

Medline Plus Health Information: www.nlm.nih.gov/medlineplus/latexallergy.html



EVALUATION

Latex Allergy: Are You Risking Your Life For Your Job?

The following questions are related to this educational program. Circle the number that best represents your rating of the program starting with question one (1) and using the following scale:

- | | | |
|---|---|----------------------------|
| 1 | = | Inadequate or poor |
| 2 | = | Adequate or fair |
| 3 | = | More than adequate or good |
| 4 | = | Very good |
| 5 | = | Excellent |

If you rate any of the statements "1" (inadequate or poor), please explain the reason for this rating. If you need more space use the back of the page.

- | | | | | | |
|---|-----|---|----|---|---|
| <p>A. Please indicate to what extent you achieved the following objectives:</p> | | | | | |
| 1. List the occupations and populations at risk for latex allergy. | 1 | 2 | 3 | 4 | 5 |
| 2. Identify why latex allergy has grown more prevalent since 1987. | 1 | 2 | 3 | 4 | 5 |
| 3. Describe the three types of reactions associated with latex allergy, along with common symptoms of each. | 1 | 2 | 3 | 4 | 5 |
| 4. Identify methods used to diagnose latex allergy. | 1 | 2 | 3 | 4 | 5 |
| 5. List ten products (medical and household) that contain latex. | 1 | 2 | 3 | 4 | 5 |
| 6. List foods that can cause cross-reactions in people allergic to latex. | 1 | 2 | 3 | 4 | 5 |
| 7. Describe why allergy shots are not approved as a treatment option. | 1 | 2 | 3 | 4 | 5 |
| B. Rate the content as it relates to the program objectives. | 1 | 2 | 3 | 4 | 5 |
| C. Rate the effectiveness of the teaching/learning methods used in this instructional packet. | 1 | 2 | 3 | 4 | 5 |
| D. Rate your ability to use this in your work. | 1 | 2 | 3 | 4 | 5 |
| E. Rate the relationship of the objectives to the overall purpose of the program. | 1 | 2 | 3 | 4 | 5 |
| F. Would you recommend this instructional packet to other colleagues? | Yes | | No | | |

(over)

H. What areas in your practice could be improved or enhanced with additional education and training?

I. Please give us your comments or suggestions on this course and its handouts:

J. In what state(s) are you licensed to practice nursing?

K. What other nursing-related topics would you like to see covered in our continuing education offerings?

With my signature I confirm that I am the person who completed this independent educational activity by reading the article and completing this self-evaluation.

Signature: _____ **Date:** _____



Latex Allergy Post Test

Name: _____

MULTIPLE CHOICE

Directions: Circle the best answer to each question. Use a pencil to circle your answers. If you make a mistake be sure to completely erase it.

1. Why has the incidence of latex allergy decreased among healthcare workers?
 - A. Not as many people are choosing a career in healthcare.
 - B. The statistics are no longer being recorded.
 - C. The use of powdered latex gloves has decreased in many healthcare facilities.
 - D. Latex is completely banned in all healthcare facilities.

2. Which patient population is at highest risk for developing a latex allergy?
 - A. Elderly patients with diabetes
 - B. Women with multiple sclerosis
 - C. Elderly patients with COPD
 - D. Children with spina bifida

3. A skeptical coworker asks you why latex allergy is so prevalent among healthcare workers now. Your best response would be:
 - A. The fact that more people are wearing latex gloves more often combined with new manufacturing methods that cause retention of the latex proteins.
 - B. It's always been this bad but most people didn't know about it.
 - C. More people have other allergies now, which increases the incidence of latex allergy too.
 - D. Environmental pollution has increased the incidence of latex allergy.

4. A patient tells you that he used to have delayed rashes, itchy eyes, and a runny nose after he was exposed to latex. However, after the last exposure, he felt his heart race, he was dizzy, and he had a hard time breathing. You tell the patient that his reactions may have progressed from:
 - A. Type I to Type IV
 - B. Type I to contact dermatitis
 - C. Contact dermatitis to Type I
 - D. Type IV to Type I

5. Type I reactions include all of the following except:
- A. Difficulty breathing
 - B. Increased heart rate
 - C. Rash
 - D. Hives
6. Which test for latex allergy may be negative even when the patient has positive symptoms?
- A. RAST test
 - B. Patch test
 - C. Skin prick test
 - D. Latex assay test
7. Your patient has a latex allergy. You need to listen to her lungs, but you don't want the stethoscope tubing to touch her skin. You decide to:
- A. Ask each of your coworkers if their stethoscope is latex-free .
 - B. Skip that part of your respiratory assessment.
 - C. Cover the stethoscope tubing with foam rubber.
 - D. Cover the stethoscope tubing with a stockinette.
8. You were diagnosed with a latex allergy two weeks ago. You're now in the cafeteria at lunchtime and you just remembered that some foods can cause cross reactions in people who are allergic to latex. Which of the following will you avoid?
- A. Chicken salad
 - B. Banana
 - C. Bread
 - D. Coffee
9. A friend asks "Why don't you just get allergy shots like other people with allergies?" You reply:
- A. There is currently a shortage of the serum.
 - B. Allergy shots aren't approved in the U.S. because they've caused Type I reactions.
 - C. Insurance doesn't cover allergy shots and they're very expensive.
 - D. No studies have been done on the effectiveness of allergy shots for latex allergy.
10. Another nurse asks you how she can decrease her risk of developing a latex allergy. You reply:
- A. Stop chewing gum.
 - B. Don't take care of patients with latex allergy.
 - C. Avoid powdered latex gloves as much as possible.
 - D. Stop eating bananas.