ALLERGY TO LATEX AND RUBBER PRODUCTS
What is latex?

The whitish, milky fluid that flows out of a cut in the tropical rubber tree Hevea brasiliensis is called natural rubber latex. It is used in rubber production, during which various chemicals are added to it.

Photo by The Tun Abdul Razak Research Centre
What types of rubber latex allergy may occur?

Two types of allergy to natural rubber latex products may occur:

- **Immediate type allergy** (technically known as Type I allergy and mediated by immunoglobulin-E) is a reaction to the proteins in natural latex and has been recognized since 1979. Its mechanism is identical to that of other plant-derived protein allergies and symptoms are similar to reactions to nuts, for example. Local redness, itching and swelling of the contact area (i.e. hands in the case of gloves; mouth for teats and pacifiers or dummies), swelling of the face, conjunctival oedema (accumulation of fluid in the mucous membrane of the eye), rhinitis, asthma, whole body urticaria (hives) may occur. In severe cases, even anaphylaxis (collapse) is possible. This reaction may be fatal.

The proteins that cause this type of allergy remain unchanged by the manufacturing process of rubber products. The protein allergens may be released into the air. In hospitals they become airborne when the powder put into gloves to facilitate taking them on and off becomes contaminated by latex allergens.

- The old type of rubber allergy is a **delayed type allergy** (technically known as Type IV allergy and mediated by T-cells). It causes eczema/dermatitis with skin itching and rashes over the area in contact with the latex. This type of allergy is caused by the chemical additives such as antioxidants, vulcanising agents, accelerators, stabilizers and colorants used in rubber manufacture. The reaction always remains local and limited to the skin. Onset is not immediate: symptoms usually occur 6-48 hours after contact.

This type of allergy has been known about for more than 50 years. Recently proteins in latex have been found to be capable of triggering delayed type reactions, too, but so far there is little information about this type of allergy.
What is cross-reactivity?

People who are allergic to birch pollen can get symptoms from eating different kinds of fruit and vegetables. In the same way, those people allergic to latex of the rubber tree (*Hevea brasiliensis*) can get symptoms from eating banana, avocado, kiwi and raw potato. Allergic reactions to other fruits and vegetables have also been described in the literature.

This phenomenon is called cross-reactivity and is due to common protein allergens found in different plants. The ficus plant, often used to decorate homes, may also cause symptoms in those people who are allergic to latex.

Who is at risk?

Everyone who uses latex products may become sensitized. The risk of immediate type allergy is greater for atopic individuals (for example, those with flexural eczema, allergic rhinitis or asthma) or those suffering from hand dermatitis. Health care workers form the biggest single occupational risk group, but they are out-numbered by the people with latex allergy from all other occupations exposed to latex taken together. Children with spina bifida or other children who are frequently operated on are repeatedly exposed to latex and therefore often become sensitized.
There is some risk that children with the food allergies mentioned previously and those who blow up balloons may develop symptoms. Adults using condoms or household gloves are also at risk. It is possible to get symptoms in the mouth and gut after eating food which has been prepared with gloved hands.

Latex allergy is not common. It occurs in less than 1% of the general population, but 3-10% of health care workers and up to 50% of spina bifida children are sensitized to latex.

Delayed type allergy to rubber chemicals is not related to atopy. The only known risk factor is prolonged use of rubber products.

**How is allergy to latex and rubber products diagnosed?**

Immediate type allergy is diagnosed using a skin prick test. Various commercial skin prick test allergens are available in Europe today, for example: Stallergenes, ALK, Lofarma. This is the most reliable method known for diagnosing latex allergy. The latex RAST (radioallergosorbent test) measures specific immunoglobulin E-antibodies in the blood of the patient. It is somewhat less sensitive than the skin-prick test. In cases where the test results and symptoms of the patient do not match and allergy is unclear, an experienced doctor can perform a provocation test with a piece of highly allergenic glove. A lung challenge may be performed if occupational asthma is suspected.

Latex allergy may be suspected as a result of personal history (member of a group at risk, previous allergic reactions to latex) but this data is often misleading. Questioning the patient about the appearance of symptoms in relation to blowing up balloons, using condoms or gloves may be helpful.
There may well be cumulative factors of irritation or other allergies that add to the latex allergy. For example, dentists who have irritation from the frequent use of harsh soaps may be allergic to glutaraldehyde (a cold-sterilising agent) in addition to having a latex allergy.

Delayed type allergy to rubber chemicals is diagnosed using patch tests. Chemicals are attached to the skin of the patient’s back with the help of aluminium caps for two days. Results are seen on the fourth day, when a positive test is indicated by an eczematous reaction (skin lesions that scale, crust or ooze).

What can I do to prevent latex allergy?

Latex should be avoided if you are a member of a group at risk of developing latex allergy, for example, health care workers using latex gloves or children who are frequently operated on. Substitution products should be found instead of those containing latex. In the home, this means using vinyl or other non-latex household gloves. In the medical context, non-powdered or low-allergenic surgical and examination gloves should be used.

It is important that latex allergen is included in all skin test series applied to atopic persons and patients with hand dermatitis. Once a positive diagnosis is made, you should get good information about latex-containing products. After that, contact with latex must be avoided.

You should carry a card or bracelet indicating that you are allergic to latex. This will warn emergency medical crews in case of accident. If you have already suffered from latex-related anaphylaxis (collapse) you should be sure to keep an epinephrine autoinjector pen handy for emergency use.
Which products contain latex?

In the health-care setting, latex is commonly used. Latex gloves represent the most important source of exposure to latex. But many other products may contain latex: catheters, wound drains, elastic bandages, electrodes, endoscopes, masks, tubes, protective sheets, rubber tops of multi-dose vials, syringes with rubber joints etc.

Photo by The Tun Abdul Razak Research Centre

Common dental materials containing latex are: dams, orthodontic supplies, polishers, teeth protectors.

Many consumer products and particularly most protective gloves are made with latex. Most of these mention latex on their labels, but unfortunately, not all do so. As a general rule, hard forms of rubber contain fewer allergens than elastic material.

What alternatives exist?

Latex-allergic patients should only be examined or operated on using totally latex-free gloves. There are several brands available for this purpose.

Non-powdered gloves are strongly marketed for health care workers for use in their daily work. These usually contain fewer latex allergens than powdered gloves and without the powder, the allergens do not become airborne so easily. “Hypoallergenic” gloves may still contain latex and were designed only for those who develop allergic skin rashes on contact with chemicals.
European guidelines will soon be available for gloves used in health care. Routine use of totally latex-free gloves is not feasible because of their high price.

There are non-latex alternatives available for most other health care products, such as catheters.

Outside of health care non-latex household and protective gloves are available. There is already at least one totally latex-free condom. Dental dams also exist in non-latex versions.

If your baby is allergic to latex, he or she should only use a silicon dummy (pacifier) and if your child is allergic to latex, do not let him or her blow up balloons. This is because contact with the mouth is more dangerous than contact with the skin.

After touching a latex product, care must be taken not to transfer allergens to the eye, for example by rubbing the eye. This kind of contact leads to oedema (accumulation of fluid in the mucous membrane of the eye) and itching.
What treatment is available?

Good treatment depends on getting an accurate diagnosis. After that, the best course of action is to combine learning about the allergy with avoidance of latex-containing products.

Mild symptoms like skin itching and redness, runny eyes or nose and sneezing can be treated with antihistamines. If symptoms appear generally over the whole body or if asthma develops, go immediately to an out-patients clinic for further treatment.

If you have a known allergy to latex you should always carry antihistamine. Those who are highly sensitive should have autoinjectable epinephrine with them at all times.

If you are allergic to latex, you should tell your doctor, gynaecologist and dentist. He or she will then make sure that no latex-containing materials are used near you. All other medical staff involved in your treatment (e.g. nurses) should also be informed about your allergy.

Premedication before operations may reduce symptoms in the event of a reaction but only the use of totally latex-free products guarantees a successful outcome.
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