BACKGROUND INFORMATION

Latex Production

Natural rubber latex (NRL) comes from the sap obtained from the *Hevea brasiliensis* tree commonly found in Malaysia. The collected sap is transferred to vats where it is concentrated and stabilised by centrifugation; this composition of natural proteins and added chemicals goes through a complex manufacturing process. Some of these chemicals and proteins are lost in a washing procedure carried out in the later stages of production. Products made from NRL are flexible and durable. Health risks associated with exposure to NRL have been increasingly recognised during the last twenty years.

Why Latex is Used

In the late 1980s there was an increase in the number of blood-borne infections which has resulted in a greater use of hand protection by health care workers.

Gloves made from NRL provide excellent protection from these blood born infections and allow the high level of sensitivity and control needed by health care workers. The number of other products made from, or containing NRL also increased.

Other Health Care Products which may contain Latex

- Airways / Ambu – bags / Elastic Straps on Oxygen Masks
- Dressings / Bandages
- Blood Pressure cuffs / Stethoscope tubing
- Catheters
- Endotracheal tubes
- Piggyback IV ports
- Penrose Drains
- Adhesive tape
- Dental dams
- Electrode Pads + EKG straps
- Intravenous tubing
- Rubber bungs on drug vials
- Some Dental Local anaesthetics
- Tourniquets
- Elastic in overshoes
- Elastic strips for securing catheter bags / colostomy bags to body
- Endostent balloons
- Wheelchair cushions and tyres
- Contraceptive devices, e.g. condoms and diaphragms

MODES OF EXPOSURE

The five ways latex can come into contact with employees at work or as a service user are:

- **Cutaneous** through touch on the skin e.g. body fluid spillages and venepuncture
- **Mucosal contact** e.g. from internal examinations, dental treatment, intubation
- **Inhalation** breathing in microfine airborne particles from glove powder
- **Internal tissue** via latex products used during surgery
- **Intravascular** via injection from products stored or drawn up through rubber bungs on medication vials

General information	
Health and Safety Executive	www.hse.gov.uk/skin/employ/latex.htm
National Patient Safety Agency	www.nrls.npsa.nhs.uk/resources/?entryid45=59791
Royal College of Paediatric and Child Health	www.rcpch.ac.uk/allergy/latexallergy

Latex Content of Medicines:

For information on the latex content of medicines and medicinal products, the Summary of Product Characteristics should be checked. See Electronic Medicines Compendium website**: http://www.medicines.org.uk/emc/**

Other sources of information include the manufacturer's medical information department, and regional drug information services**.** The contact details of the majority of manufacturers are available at the back of the BNF

Allergy

A substance which causes sensitisation is one which is able to cause an allergic reaction in certain people. Once sensitisation has occurred, further exposure to the substance, even the tiniest trace, will cause the symptoms to recur.

The increased use of latex products has significantly increased the risk of individuals developing latex allergy. The amount of latex exposure needed to cause sensitisation is not known.

Risks from natural rubber proteins known as latex are found not only in gloves, but also in syringes, medication vials, resuscitation equipment, catheters, pencil erasers, underwear elastic, condoms, hot water bottles, scratch cards etc.

The risk is exacerbated by the use of powdered gloves. Modified starch powder is used in some gloves to aid lubrication and facilitate ease of application. These increase the risk of sensitisation for both health professionals and patients as the powder absorbs the antigens from the gloves. When removing them particles become airborne and are inhaled, increasing the risk of respiratory sensitisations, or settle on surface including wound site.

Attempts to wash off surface glove powder, as advocated by some manufacturers, particularly when gloves are used in operating theatres, can cause aggregation and adverse reactions. Glove powder has been identified as a causative agent in the formation of abdominal adhesions, starch granuloma, contamination of abdominal wounds and the misdiagnosis of carcinomas. (Health Services Circular 1999 / 186)

Poor quality gloves also increase the risk of sensitisation as they are often not washed properly during the manufacturing process in order to cut production costs resulting in a higher protein level.

Types of Reaction to Latex

There are four clinical stages to a Type I Allergy through which individuals may progress if they continue to be exposed:

Stage 1	Urticaria (reddening, thickening and/or itchiness of the skin) localised to contact area 'Wheal and flare' response, a hive-like rash
Stage 2	Generalised urticaria spreading beyond area of contact
Stage 3	Skin response: Immediate (0-60 minutes)Reddening of skin, blisters Systemic response: Rhinitis, conjunctivitis Respiratory response: Wheezing, occupational asthma
Stage 4	Urticaria with Anaphylaxis i.e. fall in blood pressure, shock and difficulty breathing. Can lead to death if untreated.

There are three types of reaction to Latex recognised:

- Irritation
- Immediate Hypersensitivity (Type I)
- Delayed Hypersensitivity (Type IV)

Irritation

This is a non-allergic reaction to one or more of the components of latex products. When latex products are used, particularly gloves, a characteristically dry itchy rash occurs. These symptoms resolve once the contact with latex ceases.

N.B. Skin irritation may be caused by the use of a range of substances including skin cleansing and disinfection. These reactions may be confused with latex sensitisation.

Immediate sensitivity – Type I allergic reaction
Immunological response to proteins which naturally occur in latex – immunoglobulin E response (IgE) – symptoms

- Generalised or localised rash (urticaria or hives)
- Red, swollen and watery eyes
- Inflammation of the mucous membranes in the nose (rhinitis)
- Wheezing, breathlessness – asthma like symptoms
- Anaphylaxis may occur in the most severe form of reaction – please refer to anaphylaxis guidelines.

Delayed hypersensitivity – Type IV allergic reaction
Sensitisation caused by accelerating agents used in manufacturing process.

Symptoms may include:

- Swelling, redness, itching, with oozing red blisters cracking and thickening of skin in areas exposed to latex
- Symptoms may also extend beyond area exposed to latex

Reaction occurs 10-24 hours post contact and can get worse over the following 72 hours.

Predisposition to Latex Allergy/Those Most at Risk

- Individuals exposed to NRL on a regular basis in occupations where single-use gloves are frequently used e.g., Healthcare workers, Dentistry, workers in the car mechanics, catering, hairdressing and electronics trades, construction
- Individuals undergoing multiple surgical procedures (some studies have reported that up to 65% of Spina Bifida children are sensitised to NRL);
- Individuals with a history of certain food allergies, such as banana, avocado, kiwi and chestnut;
- Individuals with atopic allergic disease (estimated at some 30 - 40% of the UK population) because they are predisposed to allergic reactions in general. They tend to experience hypersensitivities in the form of asthma, hay fever or atopic dermatitis.
- Individuals exposed to NRL on a regular basis e.g., workers in the car mechanics, catering and electronics trades
- Latex allergy appears to be more common in women probably due to their increased contact with latex through contact with contraceptives, obstetric procedures and vaginal examinations. Female clothing, e.g. bras are more likely to contain latex. Females are also the majority in the caring professions where latex products are widely used.

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