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Learning outcomes

After reading this 'Guide to Latex Allergy' you should:

- Understand the risks of latex allergy in a dental practice
- Be aware of the causes of latex allergy and know how to treat/refer patients that suffer a reaction
- Understand how to use sedation equipment efficiently to minimise exposure to latex
- Ensure your practice has written policies and protocols for the prevention of latex allergy and the management of sensitised staff and patients.



GUIDE TO... Latex allergy

This guide looks at the causes, diagnosis and management of latex allergy in the dental setting, focussing on minimising latex allergy via inhalation sedation equipment

Latex allergy has become a significant occupational health problem, which has reached epidemic proportions in certain highly exposed workers such as dental professionals (American College of Asthma, Allergy and Immunology (ACAAI), 1995). In this context, latex allergy (*Figure 1*) refers to a sensitivity to natural rubber latex (NRL) derived from the *Hevea Brasiliensis* tree, not an allergy to synthetic rubbers such as nitrile or neoprene.

The Health and Safety Executive (HSE) (2003) has listed NRL as one of the top five causes of occupational asthma. Medical devices, principally medical NRL gloves, are the greatest single source of exposure to NRL and have been associated with a significant increase in the number of cases of latex allergy over the past two decades. An example of exposure to NRL allergen may occur through direct contact with an offending device or by inhalation of an allergen carried by cornstarch powder with which most powdered gloves are coated (American Academy of Asthma, Allergy and Immunology (AAAAI) and ACAAI, 1997).

Background

There are three types of reaction to NRL products (*Table 1*). Months or even years of asymptomatic sensitisation may precede the onset of clinical symptoms of latex allergy.

In many cases symptoms become progressively more severe on repeated exposure to NRL allergens. Deaths have occasionally been reported owing to latex allergy (ACAAI, 1995).

This article suggests what you should do and how you can provide a safer environment for those patients and personnel who are already sensitised. The article also focuses

on the provision of latex-free components for inhalation sedation equipment. *Figure 2* shows a simple flow chart for the management of the risks associated with NRL.

Latex-free inhalation sedation equipment

Over the last 15 years or so, the majority of equipment and associated products used for the administration of inhalation sedation (IS) have changed to reflect the use of primarily latex-free items, such as the Porter brown breathing system (*Figure 3*). However, this has not always been the case. Historically, the use of breathing system items containing black latex, such as masks, reservoir bags and corrugated hoses, was widespread until fairly recently, when the concern with regard to the prevalence and results of latex allergy began to make itself apparent.

Manufacturers of IS equipment are aware of this issue and have responded to the problem by bringing out a range of products that are all latex free. This includes such components as nasal masks, tubings and reservoir bags. However, it can be difficult to ascertain, merely from observation, that the product is latex free and staff should always make a point of either reading the packaging information or contacting the supplier direct for further information.

IS products come in many shapes and colours – autoclavable and disposable – and this can cause an element of confusion. However, a general rule to apply is – if it is black, discard. This category is most likely to include items such as corrugated hoses and reservoir bags.

This information is intended as a guide only, as there are some black non-latex products available, but again, care should be taken to identify these correctly.



Figure 1. Latex allergy

Any product that comes into contact with the titrated gases – reservoir bag, tubings and masks – should be latex free. This is important in the case of patients who are particularly susceptible to NRL as the mere action of the gases coming into contact with the reservoir bag could potentially cause a significant reaction.

The same principle would apply to dental staff, caused by assembling and handling the sedation breathing system, especially as part of the pre-use checklist involves examining the reservoir bag to checks for holes around the ferrule neck—usually achieved by gently grasping the bag at the neck area and pulling downwards.

Management of a sensitised dental professional

If you develop problems with your skin or hands, or develop a cough or respiratory problems while at work, report this to the practice manager or owner. You may need a referral to a dermatologist or immunologist via your GP or the PCT's occupational health service. The condition needs to be appropriately investigated as soon as signs and symptoms develop.

If you are found to be sensitive to NRL, it is essential that your work environment is adapted as soon as possible to avoid unnecessary exposure to NRL, as this would increase your sensitivity and put you at risk of more severe reactions.

You will need to wear non-NRL gloves and avoid direct contact with latex-containing items, both at work and elsewhere. As long as your colleagues are using non-powdered NRL gloves, this may be enough to control your symptoms. In some cases, it may be necessary for other people working in close proximity to you to also change to non-NRL gloves. In a few cases, it has been necessary for the sensitised individual to change their role to avoid areas of high NRL use. Early detection and appropriate management can help prevent this happening.

You will need to inform your GP, dentist and other healthcare providers and ensure your records are marked with warning signs. You may also be advised to wear a MedicAlert or carry a warning card in case of emergency, so that others are warned not to use NRL gloves when treating you. Some people who have more severe reactions to NRL, such as asthma-type respiratory problems or anaphylaxis, may be advised to carry emergency adrenaline, such as an EpiPen, and also a supply of antihistamine.

After a period of strict avoidance of NRL, many people find that their reactions become less severe. They also learn what can trigger a reaction, and recognise the early warning signs. Development of NRL sensitivity need not lead to loss of employment and a restricted lifestyle, if appropriately managed. However, it should be remembered that a few people can develop very serious, life-threatening reactions to NRL, so sensitisation to NRL should not be taken lightly.

Protection

It is important that you protect yourself against breaches of the skin barrier, which can result from frequent use of skin cleansers, especially if you have an atopic background (suffer from asthma, hay fever, eczema or other allergies). A compromised skin barrier will increase your chances of developing NRL allergy.

You should follow good hand care protocols, as described in *HTM 01–05* guidelines. Do not wear jewellery, keep your nails short and do not wear false nails or nail extensions. Wash

Table 1. Types of allergic reactions to natural rubber latex

Type I latex allergy	Type IV rubber allergy	Irritant reactions
Mast cell-mediated IgE immediate hypersensitivity to NRL proteins	T cell-mediated, delayed hypersensitivity to chemicals added to latex during manufacture	Do not involve the immune system
Causes symptoms that range through urticaria, angioedema, rhinitis, asthma and anaphylaxis	Causes allergic contact dermatitis	Gloves can produce an irritant contact dermatitis, often in combination with repeated hand-washing, glove powder or detergents, for example
Is potentially life threatening	Is more common than type I allergy to NRL proteins Is localised to the skin	May contribute to the subsequent development of allergic responses
<i>Notes: IgE: immunoglobulin E; NRL: natural rubber latex.</i>		

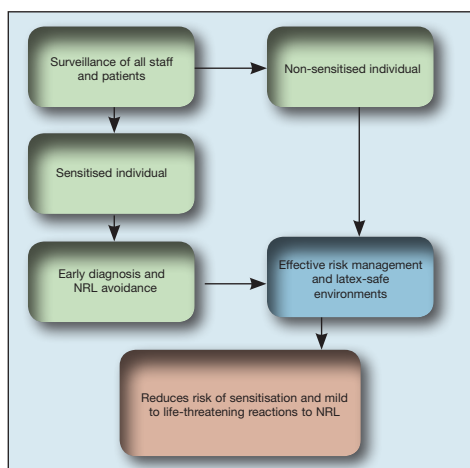


Figure 2. How do we manage the risk of latex allergy?

your hands frequently using tepid water, rinse thoroughly and pat hands dry.

At the end of the session, wash your hands to remove traces of NRL and apply an aqueous-based hand-cream. Away from work, do not forget to protect your hands when gardening or doing household chores, but use non-NRL gloves wherever possible.

You should be aware of the signs and symptoms of NRL allergy and hand dermatitis. Report any problems to your manager or the practice owner, and seek advice if problems persist.

Your practice should provide health screening and training. Keep your own records, especially of the training, as it will count towards your CPD.

Management of a sensitised patient

Diagnosis

History taking includes asking the patient about previous reactions to NRL (e.g. after blowing up balloons), observing his/her occupation or medical exposure to latex (e.g. number of surgical procedures he/she has had), the timing of the reaction and the circumstances under which the reaction occurred. Patients with suspected NRL allergy should be referred to a diagnosing physician (a dermatologist or immunologist) for further investigation.

Skin prick or allergen-specific IgE in-vitro testing (immunoassay) can be helpful in confirming a clinical suspicion of NRL allergy, although negative testing cannot exclude allergy because false reactions may occur.

Testing should be performed by trained physicians in facilities that are equipped to deal with latex anaphylaxis (AAAAI, 1995) because skin prick testing, as with glove challenge, has the potential to cause anaphylactic reactions (Lowe et al, 2005).

All NRL-sensitised patients must be treated in a latex-safe environment, with both the dentist and the nurse wearing non-NRL gloves. You will need to identify other equipment that may contain NRL and use appropriate alternatives. Items to consider are local anaesthetic syringes; prophylactic cups; orthodontic elastics; rubber dam and related products.

You will also need to ensure that your oxygen-giving equipment is latex free, and that your emergency drugs, such as adrenaline, are also safe to use. You may have to request that dental technicians

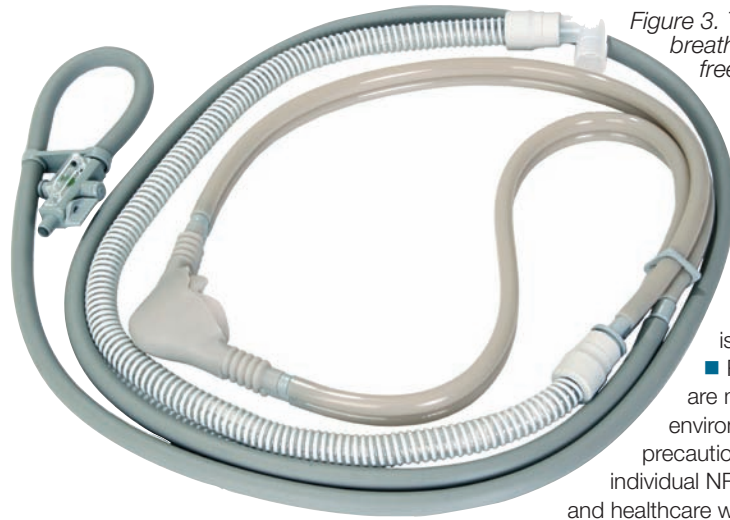


Figure 3. The Porter Brown breathing system is a latex-free breathing system

also use non-NRL gloves and equipment.

Just how many precautions you need to take will depend on the patient's needs. It is important to obtain a detailed history from the patient, and carry out an individual risk assessment. Some patients may have only minor reactions, such as reddening of the skin, following prolonged direct contact with NRL. Others could have an anaphylactic reaction if they enter a room where there had recently been some balloons or other NRL items.

One protocol will not be appropriate for all NRL-sensitised patients. Only when you have fully assessed the risk, can you decide exactly how to manage the situation for that particular patient.

Minimising risk

To minimise the risks associated with NRL, you need to ensure the following:

- Ensure all breathing system components—masks, tubing and reservoir bag—are latex free
- There should be documented training on the recognition and management of sensitisation to NRL
- There should be regular health surveillance and pre-employment screening carried out by a responsible person
- Risk assessments should be carried out and recorded, and acted upon. Further risk

assessments should be carried out for individual sensitised patients and healthcare workers as required

- Good hand care is performed, and training is provided and recorded
- Reasonable adjustments are made to ensure a safe environment for all, with further precautions as appropriate for individual NRL sensitised patients and healthcare workers ensure a safe

environment for all, with further precautions as appropriate for individual NRL-sensitised patients and healthcare workers.

Conclusion

The possibility of latex allergy among both staff and patients is a subject that all staff must be aware of. With a little care and attention to detail, taking the information contained in this guide as a starting point, then it should be possible to avoid any major problems when using IS equipment.

While there are still some older breathing systems in use that contain latex products, these are few and far between. Staff should be able to identify these components and eliminate them entirely from the dental environment. A golden rule is, 'when in doubt - ask!'

American Academy of Asthma, Allergy and Immunology and American College of Asthma, Allergy and Immunology (1997) *Joint Statement Concerning the Use of Powdered and Non Powdered Natural Rubber Latex Gloves*. ACAAI, Arlington Heights, IL

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