

IN BRIEF

- Most patients allergic to natural rubber latex are able to be treated in general dental practice.
- Some patients will have moderate to severe reactions even when precautions are taken.
- General dental practitioners are not yet fully aware of the problems associated with allergy to natural rubber latex.

VERIFIABLE
CPD PAPER

The provision of dental care for patients with natural rubber latex allergy: are patients able to obtain safe care?

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Background The number of people with allergy to natural rubber latex (NRL) has increased significantly in recent years.

Aim To assess the experiences of latex-allergic patients in accessing appropriate dental care, and also the willingness and ability of general dental practitioners to provide care for these patients.

Method Two self-completing postal questionnaires, one to patients and one to general dental practitioners.

Results The majority of latex-allergic patients are able to obtain dental treatment. Some do experience adverse reactions, which may be severe, in spite of precautions being taken. Although many general dental practitioners are willing to accept such patients for treatment, few appear to be fully aware of all the necessary precautions required. Most do not have policies for the management of sensitised patients and staff, and a number are still using powdered natural rubber latex gloves in spite of the risk to patients and staff.

Conclusion Latex-allergic patients can usually obtain safe treatment in general dental practice, but more education of dentists about the risks associated with natural rubber latex is required. Information about the latex content of equipment would be advantageous.

BACKGROUND

The incidence of allergy to natural rubber latex (NRL) has increased considerably in recent years¹⁻³ yet there has been little published work relating specifically to the dental management of these patients, and nothing on the patient experience. There are two types of allergy loosely described as 'latex allergy'. The more common is a Type IV delayed hypersensitivity reaction caused by chemicals used in the processing of NRL. The other is an IgE mediated Type I reaction to proteins found in NRL which can lead to a variety of clinical reactions including anaphylaxis. The prevalence of Type I sensitisation to NRL has been estimated as up to 6% in the general population,⁴ and in healthcare workers between 5-17%.⁵⁻⁷ In 1996 the Medical Devices Agency (MDA) issued a Device Bulletin⁸ and in 1998 a Safety Notice,⁹ which described the background further and indicated the possible risks from the use

of NRL gloves. Included was information about the diagnosis of NRL allergy, the management of sensitised patients and staff, and also the need for implementation of local policies. The MDA (now Medicines and Healthcare Products Regulatory Agency) has not monitored the uptake of its recommendations. One study of hospitals showed that only around 30% had policies and even fewer had latex-free products equipment readily available,¹⁰ while a more recent study of anaesthetic departments found that the majority now have up-to-date latex allergy protocols and latex-free equipment available if required.¹¹ A survey of consultant surgeons, however, found a low level of awareness of issues around allergy to NRL.¹² No similar study in the primary care setting has been conducted to date. There are no national guidelines available for dentists[†] other than advice given by the British Dental Association,¹³ and only one UK published paper on the dental management of sensitised patients,¹⁴ which includes suggestions for protocols and latex-free alternatives to common NRL-containing dental items. A similar paper was recently published in the USA.¹⁵

It is essential that general dental practitioners (GDPs) should be aware of the implications of NRL allergy, and have procedures in place for the appropriate management of sensitised patients. They should also be aware of relevant legislative issues.

AIM

The purpose of the study was to assess the experiences of latex-allergic patients in accessing dental care, and also the willingness and ability of general dental practitioners to manage such patients.

METHOD

Two self-completing postal questionnaires were used, one for patients and one for dentists. After an initial pilot study, the patients' questionnaire was sent to all (434) present and recent members of the Latex Allergy Support Group (LASG). The LASG committee gave their approval and members of the group were given advance notice of the study in a newsletter. The questionnaire consisted of both open and structured questions about the patient's experience, and was accompanied by a letter of invitation, an information sheet and a prepaid reply envelope. Where appropriate, a separate letter and information sheet for Gillick

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[†]This was correct at time of writing. Since then The Faculty of General Dental Practitioners has published *Guidance for the Management of Natural Rubber Latex Allergy in Dental patients and Dental Healthcare Workers*.

competent children was included. Non-responders were sent a further questionnaire and letter after two months. The results of the study will be made available to members via the LASG newsletter.

The dentists' questionnaire was sent to all 1,214 primary care dentists in Yorkshire. The questionnaire was developed following the recommendations made by Tan and Burke¹⁶ and consisted of both open and structured questions about the dentists' experience and knowledge of NRL allergy, the treatment needs of patients, and the use of NRL products. No incentives to reply were offered, but participants were given the opportunity to request the results of the study.

The Multi-centre Research Ethics Committee granted approval for the study. Data from the completed questionnaires were entered into a database, and SPSS 11.5 for Windows was used for analysis (copies of the questionnaires may be obtained from the author).

RESULTS

Patients

General

Nineteen blank forms were returned because the patient had either moved away or had been incorrectly diagnosed as NRL allergic, leaving a sample of 415. Numbers of respondents are shown in Table 1. The response rate was 299 (72%) after the first mailing, increasing to 342 (82%) following the second mailing. All replies were usable, with only one question answered by less than 90% respondents.

Table 1 Number of respondents to the patients' survey, by age and gender			
	Adults	Children under 18	Total
Male	33 (9.7%)	21 (6.1%)	54 (15.8%)
Female	255 (74.6%)	25 (7.3%)	280 (81.9%)
Not specified		8 (2.3%)	8(2.3%)
Total	288 (84.2%)	54 (15.8%)	342 (100%)

Three hundred and twenty five (95%) of respondents were Type I allergic to NRL, 13 (4%) Type IV to rubber chemicals, and four (1%) unsure. Most (303) had their diagnosis confirmed by a doctor or specialist; the remainder either did not answer the question (27) or answered 'no' (12). The majority, 221 (65%) experienced allergic reactions infrequently, but 48 (14%) experienced reactions at least weekly. Over a third (116) had experienced anaphylactic reactions and 139 (41%) facial swelling or hypotension. The remainder mainly experienced respiratory symptoms, with very few having skin only reactions.

Access

Less than 8% of patients had difficulty in accessing dental care due to their latex allergy, (Table 2) whereas 24% had experienced real difficulties in obtaining appropriate medical treatment. Nineteen (6%) patients had been refused dental treatment outright because of their allergy, even though their reactions to date had not been serious. However, 281 (84%) patients, including those with severe or frequent reactions, continued to receive most if not all their dental treatment from their usual dentist, although a number expressed concerns about their dentist's knowledge. Only four patients had been referred to a dedicated NRL-free clinic, others were referred to local hospitals, dental hospitals or the community dental service. Patients in rural areas were less likely to experience difficulty in being accepted for dental treatment.

Precautions and glove use

When the 326 patients who had obtained dental treatment were asked about the precautions taken by dentists, 312 (96%) patients mentioned NRL glove avoidance, 44 (14%) mentioned the use of

Table 2 Distribution of patients who experienced major problems in accessing dental care			
Region	Yes	No	Total
London / Home Counties	10	71	81
South / South West	4	67	71
Midlands / East Anglia	6	70	76
North	4	57	61
Scotland	1	27	28
Wales	1	18	19
N Ireland	0	4	4
No data		2	2
Total	26	316	342

non-NRL local anaesthetic cartridges or syringes, and 96 (30%) had the first appointment of the day in order to minimise the risk from airborne NRL particles. Various other precautions were noted, such as care not to handle NRL contaminated items, availability of medication or resuscitation equipment, and prophylactic antihistamine. Fifty-four patients volunteered the information that their dentist did not wear gloves, and another 26 were obliged to provide the dentist with non-NRL gloves as the dentist had none available or refused to obtain them because of the additional expense incurred. These figures may have been higher had the questions been specifically asked.

Untoward occurrences

Although not specifically asked for this information, several patients reported that they experienced their first major reaction to NRL during a dental visit, which then led to a subsequent diagnosis. These patients often praised their dentist for the way in which s/he dealt with the emergency, or commented that their dentist was the first person to recognise the condition and refer the patient for an accurate diagnosis.

Post diagnosis, most patients (81%) experienced no reactions due to their NRL allergy whilst undergoing or following dental treatment, provided precautions had been taken, although 61 patients suffered some form of reaction in spite of precautions. All but six of these patients were from the most reactive group with a history of early or full anaphylaxis. Forty-eight patients experienced localised skin reactions or mild breathlessness, and nine had more severe reactions such as wheezing. Four patients experienced anaphylactic reactions even when precautions had been taken. At least two of these were attributed to the use of local anaesthetic cartridges with NRL bungs, and one occurred in a dental hospital. These patients (3 adults and 1 child) all had a history of anaphylaxis, the adults having severe and frequent reactions to everyday items. The most severely affected patient required admission to an intensive care unit for several days following dental treatment. This patient's allergy remains very unstable.

Dentists

Demographic information

The response rate was 766 (65%), with 41 blank forms returned because the dentist had either moved away or retired from practice. This response rate is slightly higher than the mean response rate to postal surveys for general dental practitioners (GDPs).¹⁶ Six hundred and twenty-eight (82%) had no postgraduate qualification, 76 (10%) had the MFGDP/DGDP, and the remainder had other postgraduate qualifications such as MSc, FDS, MGDS, FFGDP etc. The date of qualification ranged from 1952 through to 2002, with most qualifying since the late 1960s; 138 (18%) had qualified since the accepted date for the 'time of knowledge' of the risks associated with the use of NRL gloves (now accepted as 1st January 1997). Four hundred and twenty-nine (56%) were principals, 299 (39%) associates, 23 (3%) working for corporate bodies and the remain-

der were salaried or vocational dental practitioners (VDPs). Four hundred and twenty-nine (56%) were from NHS practices, 237 (31%) from mixed NHS/private, 61 (8%) from private practice and the remainder from the personal dental service (PDS) or community dental service (CDS). Three hundred and fifty-two (46%) were from cities or large towns, 322 (42%) from smaller towns and the remainder from rural areas.

Experience and knowledge of NRL allergy

Five hundred and sixteen (67%) dentists knew of someone allergic to NRL, either a patient, themselves or someone else in the practice, yet only 287 (38%) stated they were fully aware of the potential problems. Four hundred and eight (58%) correctly identified the incidence of NRL allergy in the general population, and 645 (84%) correctly identified the NRL proteins as the cause. Of the 121 dentists who failed to identify NRL proteins as being the true cause of the allergy, 23 (3% overall) thought that glove powder alone caused the allergy, and 28 (4% overall) thought it was caused only by rubber chemicals. These last two may be factors, but are not the prime cause.

Willingness to accept an NRL sensitised patient for treatment

Five hundred and twenty-two (69%) of GDPs would accept an NRL sensitised patient for treatment and 176 (23%) would consider doing so. Sixty-three (8%) would not accept a sensitised patient for treatment. Of the latter group, 42 (68%) would refer the patient to a dental hospital; the rest would refer to either the CDS or a dental department of a general hospital. In addition, 35 (56%) of this group admitted that they did not feel confident in managing a severe allergic reaction, compared with 43% overall; this could be a major factor in their decision not to accept NRL sensitised patients.

Awareness of potential problems and precautions taken

Most respondents were aware that NRL gloves could be a problem, but were less aware of other potential hazards. Similarly, most GDPs willing to accept a patient for treatment would use non-NRL gloves when treating an NRL sensitised patient, but were less knowledgeable about other precautions required (see Table 3). It would appear that identification of a potential problem does not always mean the appropriate precaution will be taken. Very few (49, 6%) correctly identified five items commonly found in general dental practice which pose the greatest threat to the NRL sensitised patient.

Table 3 Percentage of dental respondents who correctly identified important potential hazards, and the percentage who would use a NRL free alternative (if willing to accept NRL sensitised patients).

	Identified potential hazard Sample size N = 764	Would use NRL free Sample size N = 705
Gloves	90	90
Rubber dam	77	47
Local anaesthetic cartridge	12	14
Prophy polishing cup	25	7
O ₂ giving equipment	7	3

Policies and glove use

Only 67 (9%) of respondents claimed to have a written policy on the management of NRL sensitised patients and staff. Responses were received from a total of 61 practices, 42 of which had more than one dentist replying to the questionnaire. Of these 42 practices, only five had more than one dentist aware of that policy. In only two practices were all respondents aware of the policy. Dentists with a postgraduate qualification were slightly more likely to have a policy in place (13% in this group opposed to 9% overall),

as were dentists working for corporate bodies (23% opposed to 9% overall) and those working in CDS/PDS centres (27%). In general, dentists with policies were able to give more detailed information about precautions they would take when treating NRL sensitised patients, were knowledgeable about the cause and incidence of allergy to NRL, and most had some experience of dealing with a sensitised patient or staff member. The length of time since qualification and the gender of dentists did not appear to be relevant.

The majority, 572 (75%), of dentists were using non-powdered NRL gloves. Seven (1%) did not wear gloves (all of these qualified before 1974), and 59 (8%) wore non-NRL gloves routinely. Overall, 123 (16%) still wear powdered NRL gloves in spite of the associated risks,¹⁷ but only 7% of dentists with a written policy on the management of NRL allergy use powdered NRL gloves. Only 85 (11%) knew the protein content of their gloves, the rest did not know, although 114 offered the information that the protein content was 'low'. It is not known how many respondents are able to define the term 'low'. Of the dentists qualifying since 1997 (time of knowledge of allergy to NRL) only 9% wore powdered NRL gloves, compared with 18% in those qualifying before 1997. The use of non-NRL gloves seems to be slightly higher in the group who qualified since 1997. Holding a postgraduate qualification, gender, status, and type of practice were not related to type of glove use.

DISCUSSION

There was a high response rate from the patient group, suggesting that the subject is very relevant and of interest to them. Late responders had experienced few problems in accessing dental treatment, suggesting less interest. The high number of female respondents accords with the known higher prevalence of allergy to latex in females than in males. The response rate from the dentists was lower than that from the patients, but similar to other postal surveys of GDPs.¹⁶ The proportion of male/female and principal/associate dentists was also similar to other studies, and other data indicates a reasonable sample of GDPs. There was a higher incidence of non-responders from the areas closest to a dental hospital, perhaps indicating a belief that the subject was of less relevance to general dental practice.

This study has shown that, contrary to the opinion of some healthcare professionals, patients can and do experience serious or potentially serious reactions at dental surgeries, and that allergy to NRL is far from being confined to a skin reaction. It is acknowledged that a patient support group may attract the more seriously affected patients, and so the experiences reported in this survey may not be typical of NRL sensitised patients generally. Obtaining a more representative sample would have been difficult in the absence of a national database.

NRL sensitised patients appear to have greater difficulty in accessing appropriate medical care than dental care. Most patients were able to access dental care, usually provided by their own GDP. Patients often expressed their appreciation of the great lengths their dentist went to in order to ensure their safety and well being, but some expressed concern about their dentist's lack of knowledge or failure to provide NRL-free equipment. A small but significant number had great difficulty finding a dentist willing to accept them for treatment; one reason often quoted was the perceived additional expenses incurred in obtaining non-NRL gloves and equipment.

Many GDPs (43%) feel unsure of their ability to manage a severe reaction. Patients can, and do, experience adverse reactions during dental treatment, but if adequate precautions are taken, these reactions are only rarely very serious. However, this survey shows that many GDPs are not fully aware that many patients will react to airborne particles or indirect contact, and have poor knowledge of the range of equipment that may contain NRL. More training is needed, and improved labelling of NRL-containing

items would assist the identification of high-risk products. In addition, few GDPs reported that they have, or know of, policies as advised by the MDA,^{8,9} or to have properly risk assessed their use of NRL-containing items as required under the Control of Substances Hazardous to Health Regulations (COSHH).¹⁸ Dentists need to be sure that they do not contravene the Disability Discrimination Act if they decide not to accept NRL sensitised patients

CONCLUSION

In recent years there has been a sharp rise in allergy to NRL, and it is now very likely that a dentist will encounter this condition in either a patient or a member of the dental team. If correct procedures are followed, it is possible for an NRL sensitised patient to obtain appropriate dental care in general dental practice. This survey highlights the problems encountered by some patients in accessing appropriate dental treatment, training needs for dentists, and significant health and safety issues. Dental healthcare workers need to be educated about the risk of NRL sensitisation, and how to provide a safe environment for both their patients and themselves. In addition, they must ensure that they feel confident in dealing with an emergency situation should an undiagnosed patient have a serious reaction during dental treatment. Appropriate labelling of NRL containing equipment is necessary to assist in the identification of potential hazards.

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