

The RCPCH care pathway for children with latex allergies: an evidence- and consensus-based national approach

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ABSTRACT

Aims The Royal College of Paediatrics and Child Health (RCPCH) Science and Research Department was commissioned by the Department of Health to develop national care pathways for children with allergies; the latex allergy pathway is the seventh pathway. The pathways focus on defining the competences to improve the equity of care received by children with allergic conditions.

Method The RCPCH latex allergy pathway was developed by a multidisciplinary working group and was based on a comprehensive review of evidence. The pathway was reviewed by a broad group of stakeholders including the public and approved by the Allergy Care Pathways Project Board and the RCPCH Clinical Standards Committee.

Results The results are presented in four parts, the evidence review, pathway mapping, external review and core knowledge documents. The evidence review highlighted the paucity of recent evidence for latex allergy in childhood. The review found that the diagnostic sensitivity of different latex extracts for skin-prick testing may differ. It also noted that health professionals should be aware of latex allergy, and care should be taken to avoid contact with latex in young infants, especially when there is a family history for latex allergy. The pathway entry points are defined by the severity at presentation.

Conclusions The latex allergy pathway provides a guide for training and development of services to facilitate improvements in delivery as close to the patients home as possible. The authors recommend that this pathway is implemented locally by a multidisciplinary team with a focus on creating networks between primary, secondary and tertiary care to improve services for children with allergic conditions.

INTRODUCTION

Natural rubber latex (NRL) is a product of the *Hevea brasiliensis* tree and is commonly used in everyday consumer products. Since a handful of case reports in the late 1970s and early 1980s, the prevalence of latex allergy has developed into a significant health concern in adults and children.¹ Allergy to NRL can be caused by immunoglobulin E (IgE)-mediated (type I) or contact dermatitis (type IV) hypersensitivity in susceptible individuals. In this care pathway for children, we consider the need to differentiate between type I and type IV reactions,

and then concentrate predominantly on the management of IgE-mediated reactions.

The clinical spectrum of IgE mediated reactions includes contact urticaria, rhinoconjunctivitis, asthma and life-threatening anaphylaxis. Prevalence studies of latex sensitisation and IgE-mediated allergy in children are scarce, but data from a number of countries suggest that latex allergy occurs in approximately 1% of atopic children.^{2–4} However, reactions are exceedingly rare in healthy children with no previous history of atopic disease.^{5–6} Latex allergy has been described in infants with no surgical history, but most of these children had atopic dermatitis and a parental history of latex allergy.⁷ Certain groups are at particular risk of latex allergy: those with existing atopy and eczema, those with a history of fruit or vegetable allergy, children with multiple surgical exposures and patients with urogenital abnormalities requiring long-term or intermittent catheterisation. The link with fruit and vegetable allergy is due to homologous proteins in these foods and in NRL.⁸ Children with spina bifida appear to be at higher risk of latex sensitisation than those undergoing similarly invasive procedures.^{9–10} A study of children undergoing a surgical procedure for a variety of reasons demonstrated that even one previous operation increased the risk of latex sensitisation,¹¹ suggesting that all children having surgery may need primary prophylaxis. A recent study has confirmed that latex avoidance in children with spina bifida prevents sensitisation and allergy.¹² A 12-year survey of anaphylaxis during general anaesthesia in French children reported that 27% of cases were due to latex allergy.¹³

Vigorous avoidance measures are important in at-risk populations. However, avoidance of latex remains challenging, owing to its extensive and widespread presence in medical situations (eg, gloves, catheters, tourniquets), the home (eg, balloons, carpet backing, rubber bands), school (eg, sports equipment) and food preparation (eg, packaging sealants, gloves worn by food preparers). A number of recent studies have suggested that sublingual immunotherapy is efficacious and safe in children,^{14–15} but fully powered, randomised studies are needed before this becomes part of routine management.

METHOD

The full methodology is outlined separately in this supplement.¹⁶

RESULTS

The pathway results are presented in four parts: evidence review, mapping, external review and core knowledge documents.

Evidence review

A total of 162 titles and abstracts were screened by the Project Manager and Drug, Venom, Latex Allergies Working Group (DVLWG) Chair (figure 1). Nine reviews and/or primary papers and no guidelines were identified for appraisal; handsearching the reference lists of appraised papers did not identify any additional papers. The full critical appraisal resulted in the inclusion of two systematic reviews and/or primary papers, and no clinical practice guidelines.

The evidence review was restricted to the previous 10 years, and this restricted the number of papers that were found. The review highlighted that the diagnostic sensitivity of different latex extracts for skin-prick testing may differ with ammoniated latex extract showing a higher sensitivity in comparison with non-ammoniated products.¹⁷ The review also highlighted that health professionals should be aware of latex

allergy, and care should be taken to avoid contact with latex in young infants, especially when there is a family history for latex allergy.⁷

Mapping

The Royal College of Paediatrics and Child Health (RCPCH) national care pathway for Latex Allergy can be downloaded at <http://www.rcpch.ac.uk/allergy>. For the purposes of this pathway, latex allergy is defined as an immune-mediated reaction to latex products (eg, sporting equipment, balloons, contact dermatitis for gloves, condoms, surgical catheters); these encompass immediate and delayed hyposensitivity reactions. This pathway focuses on immediate reactions.

External review

This pathway was made available with the latex-allergy and drug-allergy pathways on the RCPCH website and emailed to a general allergy stakeholder list. A total of 9/57 (16%) of invited organisations responded, providing 32 comments.

Core knowledge documents

The working group did not identify any key guidelines (core knowledge documents) supporting the skills required to deliver this pathway.

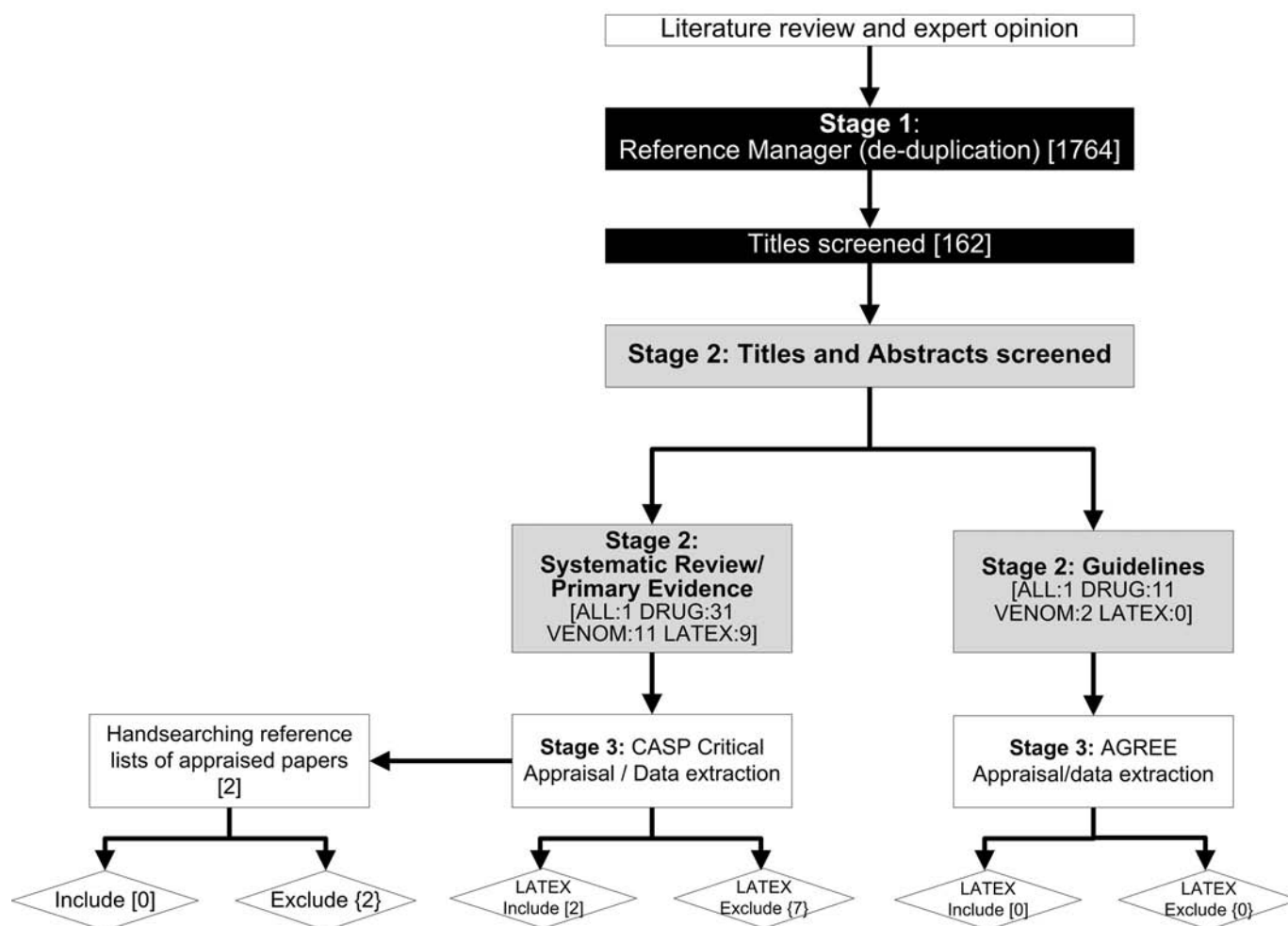


Figure 1 Methodology of evidence review.

DISCUSSION

The aim was to develop an evidence-based pathway of care for children with latex allergy, from their first presentation. We anticipate that the pathway will be adopted locally to standardise the care process that children receive nationally. The pathway will enable the health professional to determine whether they have the competency to manage the latex allergic child, or whether they need to refer to others with greater experience of this relatively rare and complex childhood allergy. While the pathway is intended as a guide to what should be done at every stage of care for the child with latex allergy, it does not dictate how everything should be done. This should be determined by the local professional, drawing on their experience and emerging evidence.

A comprehensive literature search was undertaken to inform the pathway. However, this resulted in the identification of only two publications that fulfilled the inclusion/exclusion criteria.^{7 17} The pathway is therefore primarily based upon the expert opinion of the working group.

Acute management

As with any allergic reaction, immediate care requires recognition by the patient or healthcare professional that symptoms may be due to latex so that exposure can be immediately stopped and emergency treatment provided. Treatment of an acute reaction is symptomatic and depends upon the severity of the reaction. Healthcare professionals in acute settings should be competent to determine the severity of a reaction and to treat it appropriately. Severe or life-threatening reactions to latex require immediate treatment following evidence-based guidelines.^{18 19} Management of anaphylaxis is addressed in a separate pathway.

Assessment and management following a reaction

Once the acute reaction has been managed, the child will require referral for prompt assessment to confirm the allergic trigger and to provide further management advice. The family should be provided with the provisional diagnosis and provided with preliminary avoidance advice and emergency medication while awaiting a definitive diagnosis. A definitive diagnosis should be made by a healthcare professional competent in the assessment of latex allergy, including the initiation and interpretation of diagnostic investigations. The assessment should be designed to confirm the diagnosis or, in the case of refuting latex as the trigger, to explore differential diagnoses. By the end of the specialist assessment the family should have a definitive diagnosis and management plan including avoidance advice and emergency plans.

Multidisciplinary involvement

This pathway was devised by a multidisciplinary working group which included health professionals, an allergy nurse, a parent representative and a member of a national allergy-support charity. The management of latex allergy requires effective partnership between the patient, family and health professionals, but also requires close involvement and careful communication with primary care, dentists, schools and early years settings. Families should be directed to other support organisations such as the Anaphylaxis Campaign and Latex Allergy Support Group.

CONCLUSION

This pathway defines the competencies required by health professionals to manage the latex allergic child. Since latex allergy in childhood is relatively rare, and management is based on expert experience, it is likely that most health professionals will need to refer the child to specialist services following management of the acute episode. Patients, families and carers need detailed guidance regarding allergen avoidance, and the recognition and emergency treatment of reactions. Verbal and written management plans should be provided for use at home and school. The patient and family will require an ongoing review to reassess the diagnosis and risks, and to update avoidance and emergency treatment advice.

The paucity of evidence on which to base this pathway highlights the urgent need for research into latex allergy in children. Even basic information regarding the natural history of latex allergy is lacking. Clinical studies are required to clarify diagnostic criteria—for example, the positive and negative predictive values of skin tests and specific IgE in atopic and non-atopic children; a standardised latex product and protocol for provocation challenge. There are emerging data that sublingual therapy may be beneficial in latex allergy,^{13 14} but this must be confirmed in well-designed, multicentre clinical trials. Research recommendations identified by the DVLWG are currently the subject of a Delphi consensus.

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Competing interests GdT: Allergy Therapeutics and Nutrition SHS; DT: Nutricia, SMA; CC: Stiefel, Galderma, Almirall. Leo, Galderma; JL: ALK; JW: Novartis, Danone, Airsonette, Merck, Allergy Therapeutics, Phadia. Research, GSK, AstraZeneca, Merck, Allergy Therapeutics, ALK.

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