Worcestershire Acute Hospitals NHS Trust

IgE-Mediated Egg Allergy Guideline

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

This guideline is for the diagnosis and management of children and young people with suspected IgE-medicated Egg Allergy.

This guideline is for use by the following staff groups:

For use by the Paediatric Allergy Team.

Lead Clinician(s)

Dr Tom Dawson	Consultant Paediatrician
Dr Paul Watson	Consultant Paediatrician
Approved by Paediatric Governance Meeting on:	9th February 2024
Review Date: This is the most current document and should be used until a revised version is in place	9th February 2027

Key amendments to this guideline

Date	Amendment	Approved by:
9th Feb 24	Review with no amendments	Paediatric Guideline review day

Definition

Egg allergy is an adverse immunological reaction, most often induced by the proteins in egg white, usually ovalbumin (Gal d 2) and/or ovomucoid (Gal d 1) mediated by egg-specific IgE. Ovomucoid is heat stable and immunodominant. Late-phase and delayed hypersensitivity reactions also occur, typically in eczema. The production of egg-specific IgE is a pre-requisite for developing type-1 hypersensitivity to egg.

Prevalence

The EuroPrevall birth cohort reports that challenge confirmed hen's egg allergy, in children at 2 years of age, is about 1% across Europe and 2% in the UK. Egg allergy is much less common in adults.

Risk Factors for Egg Allergy (7)

Eczema (eczema predates egg allergy by 3.5 months on average, and increased likelihood in severe eczema)
Antibiotics in first weeks of life
May occur in association with other allergies (Cow's milk protein, peanut etc.)

Clinical Presentation

Onset of egg allergy is usually observed on first ingestion and most reactions occurring after ingestion of lightly cooked egg (eg scrambled egg). Typical history is following first ingestion of egg at or around time of weaning (6 – 7 months of age).

Most reactions occurring at home are mild, with facial rash, swelling or vomiting. Anaphylaxis occurs in 7% prior to presentation to allergy services.

Severity of reaction depends on the dose of egg protein, and the degree of heating/processing of the egg product.

Skin contact reactions can occur with raw egg (such as baking).

Referral to allergy clinic

Any child presenting with IgE mediated symptoms in response to ingestion of egg should be referred to the allergy service. This is to ensure introduction of baked egg is not delayed.

If the symptoms are in keeping with a non-IgE reaction then patient can be seen by paediatric dietitians.

Investigations

SPT
With no history of allergic reaction to egg, SPT has poor positive predictive value, and should not be used unless there is a clear history of reaction.
In patients with a history in keeping with egg allergy, Skin Prick Testing is the first line investigation to conform a diagnosis.
Cut off for diagnosis of egg allergy is weal size ≥ 3mm.
(Weal size ≥ 5mm is 100% diagnostic in a child aged <2years in UK)
Size of weal does not relate to potential severity of reaction.

Use of Ovomucoid SPT is controversial, but one study found that an SPT ≥11m for ovomucoid was highly predictive of reacting to baked egg and therefore introduction of this should be delayed if this was the case.

Specific IgE

Specific IgE can be carried out if SPT is not available and/or the patient has significant eczema which may result in false positive SPT.
There is no agreed cut-off value for a positive SpIgE for egg.

Component testing

The egg components are ovomucoid (Gal d 1), ovalbumin (Gal d 2), ovotransferrin (Gal d 3), lysozyme (Gal d 4) and livetin (Gal d 5). Ovomucoid (Gal d 1) is heat stable and immunodominant.

The role of component allergens in predicting tolerance to baked egg, or resolution of egg allergy in routine clinical practice has yet to be established. Some studies have shown that sensitisation to Gal d 1 may be associated with persisting egg allergy and allergy to baked or cooked egg products. However, the current evidence suggests that egg components are rarely needed for the routine diagnosis and management of egg allergy in children.

Food challenge

Food challenge should not be used routinely for diagnosis of egg allergy.
Food challenge can be used to disprove egg allergy where there is doubt regarding the diagnosis, or where it is thought that a certain step on the egg ladder can be introduced where this is not considered safe or possible at home.

Management

Avoidance/Labelling (note on breast feeding)

Egg is often served in its recognisable form; however, many products contain egg and therefore food labels must be consistently checked. It is one of the 14 allergens required by EU legislation to be declared on the labels of all packaged food products within the EU.

The majority of breastfeeding mothers of egg allergic children should continue to breastfeed on an unrestricted diet. Egg protein is detectable in breast milk and may cause reactions in a small number of infants.

Those with hen's egg allergy should also avoid eggs from other avian species such as duck, goose and quail.

Dietetic

Children with a diagnosis of egg allergy do not require routine referral to dietetic services, but should be considered in the following:

Egg allergy with co-existing allergy to either milk or wheat.
Multiple food allergies which restrict overall food choices and diet quality.
Vegetarian or vegan diet.
Coeliac disease (many gluten free breads contain egg white).
Faltering growth.

Dietetic referral may be considered for the following:
Extreme fussy eating which restricts overall food choices and diet quality.

Higher risk of significant reaction (eg previous anaphylaxis) where individual dietetic consultation may be beneficial to increase parental understanding (or older child if more independent) of an egg free diet.

Emergency Management and Allergy Action Plans

All children with a diagnosis of egg allergy should be provided with a BSACI Allergy Action Plan and the plan should be discussed at diagnosis and on every outpatient visit. A suitable antihistamine should be available at all times, and an Adrenaline Auto injector if suitable.

Resolution

At 1 year of age, resolution is more likely in children who are able to tolerate baked egg, and those who have only had mild/moderate reactions. Persisting egg allergy is associated with severe allergic reactions, high egg SpIgE, sensitisation to multiple egg allergen components, and other allergies or atopic co-morbidities.

Median age of egg allergy resolution is 6-9 years with 68% of egg allergic individuals experiencing resolution by 16 years.

Reintroduction

Reintroduction of egg via the Egg Ladder (see patient information leaflet) is safely done at home in children in low-risk groups (see flow chart below). Baked egg can be introduced from the age of 1 year. Reintroduction should not be attempted within 6 months of a severe reaction to egg.

Those in high-risk groups can potentially undergo egg reintroduction via a hospital-based food challenge (see flow chart).

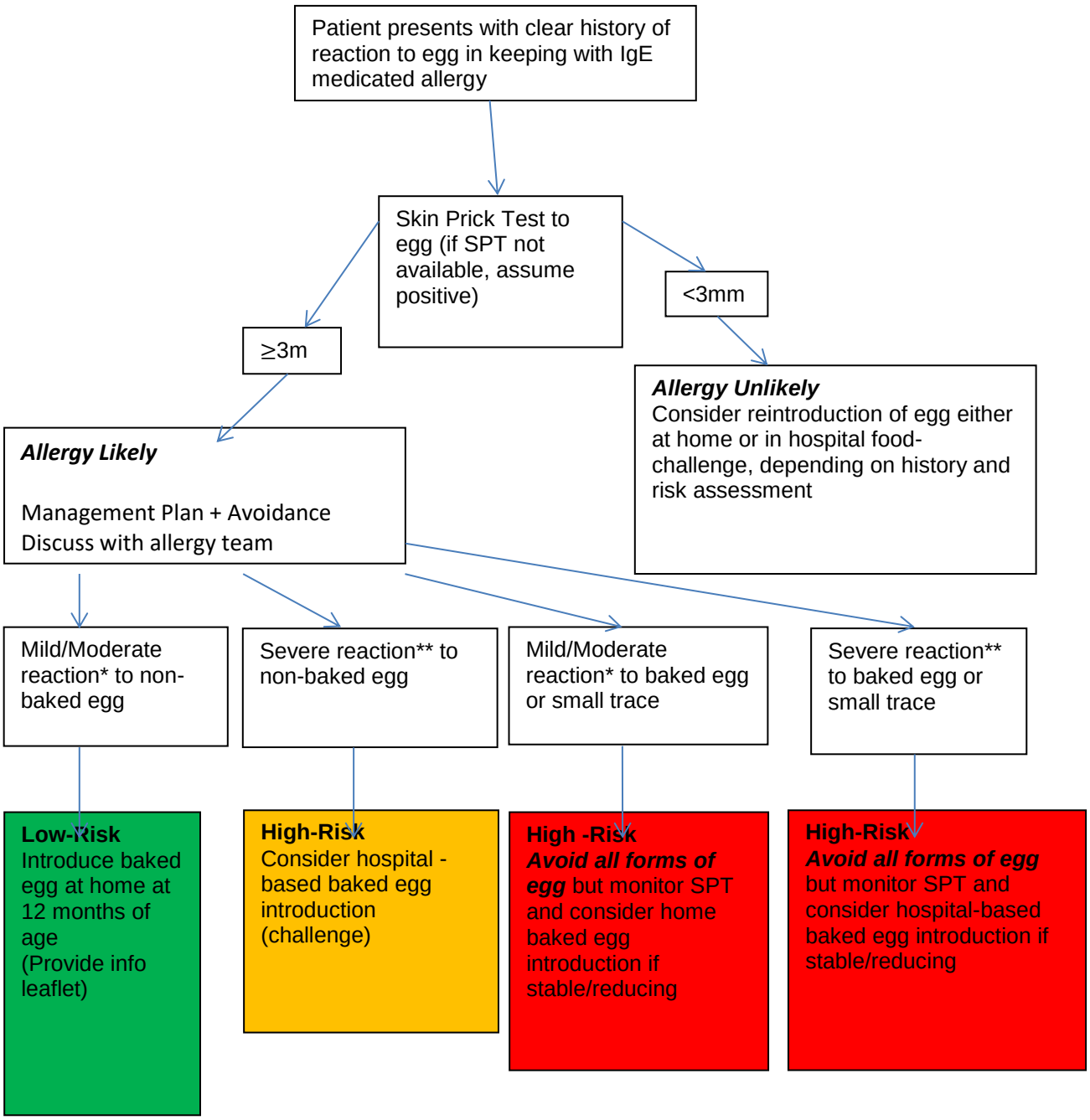
Immunisation

Most adults and children with egg allergy can be safely immunized in primary care. The exceptions that require referral for specialist supervision are those who require:

- Influenza vaccine in patients who have experienced life-threatening anaphylaxis to egg (requiring admission to intensive care).
- Yellow Fever Vaccine for travel.

Chapter 6 of the UK Department of Health Green Book, Immunization Against Infectious Disease gives advice on immunizing egg-allergic patients.

Flow Chart for Initial Management of Suspected Egg Allergy



* Mild/Moderate reactions consist swelling to lips/face/eyes, itching of mouth, hives/rash, abdominal pain, GI upset or change in behaviour

** Severe reactions involve airway, breathing, or reduced conscious level. (See BSACI Action Plan)

Monitoring

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	These are the 'key' parts of the process that we are relying on to manage risk. We may not be able to monitor every part of the process, but we MUST monitor the key elements, otherwise we won't know whether we are keeping patients, visitors and/or staff safe.	What are we going to do to make sure the key parts of the process we have identified are being followed? (Some techniques to consider are; audits, spot-checks, analysis of incident trends, monitoring of attendance at training.)	Be realistic. Set achievable frequencies. Use terms such as '10 times a year' instead of 'monthly'.	Who is responsible for the check? Is it listed in the 'duties' section of the Policy? Is it in the job description?	Who will receive the monitoring results? Where this is a committee the committee's specific responsibility for monitoring the process must be described within its terms of reference.	Use terms such as '10 times a year' instead of 'monthly'.

References

Leech, SC, Ewan, PW, Skypala, IJ, et al. BSACI 2021 guideline for the management of egg allergy. *Clin Exp Allergy*. 2021; 51: 1262– 1278.

Contribution List

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Dr Tom Dawson, Consultant Paediatrician
Dr Paul Watson, Consultant Paediatrician
Phoebe Moulsdale, Paediatric Allergy Specialist Nurse
Nikki Best, Paediatric Allergy Specialist Nurse
Vanessa Appleyard, Paediatric Dietician

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page;

NHS Worcestershire Acute Hospitals NHS Trust

NHS Worcestershire Acute Hospitals NHS Trust

Herefordshire and Worcestershire Safe and effective health and care services

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	X	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Dr Tom Dawson**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Dr Paul Watson	**Consultant Paediatrician**	**Paulwatson4@nhs.net**
Date assessment completed	**27/7/22**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title: IgE-Mediated Egg Allergy Guideline**			
What is the aim, purpose and/or intended outcomes of this Activity?	To improve the diagnosis and management of children and young people with suspected Egg Allergy			
Who will be affected by the development & implementation of this activity?	❑	Service User	☒	Staff
	☒	Patient	❑	Communities
	☒	Carers	❑	Other _____
	❑	Visitors	❑	
Is this:	☒ Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?			

What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	Discussion amongst relevant healthcare professionals BSACI Guideline on Egg Allergy
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	
Summary of relevant findings	

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age	X			Positive impact on children with appropriate diagnosis and management of egg allergy
Disability		X		Not applicable
Gender Reassignment		X		Not applicable
Marriage & Civil Partnerships		X		Not applicable
Pregnancy & Maternity		X		Not applicable
Race including Traveling Communities		X		Not applicable
Religion & Belief		X		Not applicable
Sex		X		Not applicable
Sexual Orientation		X		Not applicable
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic		X		Not applicable

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
deprivation, travelling communities etc.)				
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		X		Not applicable

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
		.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	
Date signed	27/7/22
Comments:	
Signature of person the Leader Person for this activity	
Date signed	
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.