

PRACTICE

GUIDELINES

Assessment and referral after emergency treatment of a suspected anaphylactic episode: summary of NICE guidance

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This is one of a series of *BMJ* summaries of new guidelines based on the best available evidence; they highlight important recommendations for clinical practice, especially where uncertainty or controversy exists.

Anaphylaxis is a severe, life threatening, generalised or systemic hypersensitivity reaction. It is characterised by rapidly developing, life threatening problems involving the airway (pharyngeal or laryngeal oedema) and/or breathing (bronchospasm with tachypnoea) and/or circulation (hypotension and/or tachycardia). In most cases, there are associated skin and mucosal changes.¹ UK estimates suggest that about 1 in 1333 of the population in England has experienced anaphylaxis.² A common trigger of anaphylaxis in children is food and in older people is medication.³ About 20 deaths from anaphylaxis are reported each year in the United Kingdom, of which about half are known to be iatrogenic,⁴ although this may be a substantial underestimate. This article summarises the most recent recommendations from the National Institute for Health and Clinical Excellence (NICE) on assessment to confirm an anaphylactic reaction and on the decision to refer a patient after emergency treatment for a suspected anaphylactic reaction.⁵

Recommendations

NICE recommendations are based on systematic reviews of the best available evidence and explicit consideration of cost effectiveness. When minimal evidence is available, recommendations are based on the Guideline Development Group's experience and opinion of what constitutes good practice. Evidence levels for the recommendations are given in *italic* in square brackets.

Duration of observation after suspected anaphylactic reaction

- Observe adults and young people aged 16 years or older who have had emergency treatment for suspected anaphylaxis for 6-12 hours from the onset of symptoms, depending on their response to emergency treatment. (The main purpose of observation is to detect potential biphasic reactions and monitor response to treatment while the individual is in hospital.) In patients with reactions that are controlled promptly and easily, a shorter observation period may be considered provided that they receive appropriate care before discharge. [*Based on very low quality indirect evidence from observational studies and on the experience and opinion of the Guideline Development Group (GDG)*]
- Admit children younger than 16 years who have had emergency treatment for suspected anaphylaxis to hospital under the care of a paediatric medical team. [*Based on the experience and opinion of the GDG*]

Use and timing of mast cell tryptase testing in diagnosis of anaphylaxis

Raised levels of mast cell tryptase may help to distinguish anaphylactic reactions from other systemic conditions.

- After a suspected anaphylactic reaction in adults or young people aged 16 years or older, take timed blood samples for mast cell tryptase testing as follows:

-A sample as soon as possible after emergency treatment has started

-A second sample ideally within one to two hours (but no later than four hours) from the onset of symptoms.

[Based on very low quality evidence from observational studies and on the experience and opinion of the GDG]

- After a suspected anaphylactic reaction in children younger than 16 years, if the cause is thought to be venom related, drug related, or idiopathic, consider taking blood samples for mast cell tryptase testing as follows:

-A sample as soon as possible after emergency treatment has started

-A second sample ideally within one to two hours (but no later than four hours) from the onset of symptoms.

[Based on the experience and opinion of the GDG]

- Inform the person (or, as appropriate, the parent and/or carer) that a blood sample may be needed at specialist follow-up to measure the baseline level of mast cell tryptase. *[Based on the experience and opinion of the GDG]*

Assessment and decision to refer after suspected anaphylactic reaction

- Document the acute clinical features of the suspected anaphylactic reaction: rapidly developing, life threatening problems involving the airway (pharyngeal or laryngeal oedema) and/or breathing (bronchospasm with tachypnoea) and/or circulation (hypotension and/or tachycardia) and, in most cases, associated skin and mucosal changes.
- Record the time of onset of the reaction.
- Record the circumstances immediately before the onset of symptoms to help to identify the possible trigger.

[The above three points are based on the experience and opinion of the GDG]

- After emergency treatment for suspected anaphylaxis, offer people a referral to a specialist allergy service (appropriate for age where possible) that has healthcare professionals with the skills and competencies necessary to accurately investigate, diagnose, monitor, and provide ongoing management and patient information on suspected anaphylaxis. *[Based on low to medium quality evidence from observational studies, on the experience and opinion of the GDG, and a new economic model]*
- After emergency treatment for suspected anaphylaxis, offer people (or, as appropriate, the parent and/or carer) an appropriate adrenaline injector as an interim measure before the specialist allergy service appointment. *[Based on the experience and opinion of the GDG and a new economic model]*

Information for patients after suspected anaphylactic reaction

- Before discharge, a healthcare professional with the appropriate skills and competencies should offer people (or the parent and/or carer) the following:
 - Information about anaphylaxis, including the signs and symptoms of an anaphylactic reaction
 - Information about the risk of a biphasic reaction (a recurrence of symptoms within 72 hours after complete recovery from anaphylaxis, with no further exposure to the allergen and managed in the same way as anaphylaxis)

-Information on what to do if an anaphylactic reaction occurs (use the adrenaline injector and call emergency services)

-A demonstration of the correct use of the adrenaline injector and when to use it

-Advice about how to avoid the suspected trigger (if known)

-Information about the need for referral to a specialist allergy service and the referral process

-Information about patient support groups.

[Based on moderate to very low quality evidence and the experience and opinion of the GDG]

Models of care for diagnosis of anaphylaxis

- Each hospital trust providing emergency treatment for suspected anaphylaxis should have separate referral pathways for suspected anaphylaxis in adults (and young people) and children. *[Based on very low quality indirect evidence and on the experience and opinion of the GDG]*

Overcoming barriers

As clinical practice is thought to vary across the UK, some recommendations in this guideline may pose difficulties for some services—for example, referrals to specialist allergy services where these services are not currently available. However, specialist services are important to help improve the level of care through accurate diagnosis, thereby reducing patient anxiety, minimising subsequent reactions, and reducing unnecessary costs. Taking blood samples for tryptase measurements and observing people for a biphasic reaction may also be a change in practice. However, the results of the tryptase tests, in conjunction with a clinical assessment, will help specialist allergists to select the most appropriate long term management strategy. In addition, the Guideline Development Group concluded that for adults and young people a period of observation of 6-12 hours (during which other activities, such as recovery and provision of information to the patient, will also be taking place) would be sufficient to detect potential biphasic reactions in most patients.

The Guideline Development Group comprised T Brown, S Clarke, M Doyle, M East, P Ewan, D Glaser, N Harper, P D Howdle (chair), P Kumar, N Mundy, L Sinnott, C Taylor, L Williams. The NICE Short Clinical Guideline Technical Team comprised M Baker, M Dzingina, N Elliott, M Heath, D Jones, P Kandaswamy, V Kelly, G Rogers, EJ Shaw, H Stegenga.

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Further information on the guidance

Many professional guidelines on emergency treatment and management of anaphylaxis have been published, but there is currently no relevant national guidance for England and Wales on assessment after a suspected anaphylactic reaction or on the decision to refer after emergency treatment. This guideline aims to fill this gap and reduce the perceived geographic variation in both practice and service provision.

Methods

This guidance was developed by Short Clinical Guidelines at NICE in accordance with NICE guideline development methods (www.nice.org.uk/about/nice/howwework/developingniceclinicalguidelines/clinicalguidelinedevelopmentmethods/GuidelinesManual2009.jsp). The Guideline Development Group comprised a range of healthcare professionals: a general practitioner, an allergist, two paediatricians (including one paediatric allergy specialist), three physicians (including an emergency medicine physician and a clinical lead in allergy and paediatrics), an anaesthetist, a paediatric respiratory and allergy nurse specialist, a commissioner, two patient members, and a patient representative. The group formulated seven key clinical questions and analysed and appraised the evidence using GRADE methodology for assessing the quality of evidence where appropriate (www.gradeworkinggroup.org). The cost effectiveness of both referral to specialist allergy clinics and the provision of adrenaline injectors was also assessed. The draft guideline underwent a rigorous validation process, which included inviting stakeholder organisations to comment. The group took all comments into consideration when producing the final version of the guideline.

NICE has produced three different versions of the guideline: a full version containing all the evidence, the process for developing the recommendations, and all the recommendations; a version for patients and the public; and a web version of the care pathway ("NICE pathways"). All these versions are available from the NICE website (<http://guidance.nice.org.uk/CG134>). The guideline will be reviewed for an update in three years' time as part of the NICE guideline development programme.

Future research

The guideline recommends research in several areas including:

- Chemical inflammatory mediators (other than mast cell tryptase) that could be potential indicators of anaphylaxis
- The frequency, timing, severity, and predictors of biphasic reactions in those who have had emergency treatment for anaphylaxis
- The optimal length of observation after emergency treatment for anaphylaxis
- The annual incidence of anaphylactic reactions in the UK and their associated outcomes
- To inform future economic analyses: the effect on health related quality of life (using validated tools, including EQ-5D) of referral to specialist allergy services and provision of adrenaline injectors compared with emergency treatment alone

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- 3 Capps, JA, Sharma V, Arkwright PD. Prevalence, outcome and pre-hospital management of anaphylaxis by first aiders and paramedical ambulance staff in Manchester, UK. *Resuscitation* 2010;81:653-7.

- 4 Pumphrey RS. Lessons for management of anaphylaxis from a study of fatal reactions. *Clin Exp Allergy* 2000;30:1144-50.
- 5 National Institute for Health and Clinical Excellence. Anaphylaxis: assessment to confirm an anaphylactic episode and the decision to refer after emergency treatment for a suspected anaphylactic episode. (Clinical guideline 134.) 2011. <http://guidance.nice.org.uk/CG134>.

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