

RESEARCH LETTER

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Adrenaline auto-injector prescription for patients at risk of anaphylaxis: BSACI guidance for primary care

To the Editor,

Anaphylaxis is 'a severe, life-threatening, generalised or systemic hypersensitivity reaction'.¹ It is characterised by rapidly developing features involving one or more of the airways (laryngeal oedema and/or bronchospasm) and circulation (hypotension) often with associated skin and mucosal changes (urticaria, angioedema). Hospital admissions for anaphylaxis are increasing. However, fatalities remain very rare at a stable rate of approximately 20 per year in the UK.² This primary care guidance builds on the 2016 British Society of Allergy and Clinical Immunology (BSACI) specialist guideline plus other recent statements (World Allergy Organisation, European Academy Allergy and Clinical Immunology and Resuscitation Council UK).³⁻⁶ This guidance aims to help risk assess community patients who might be at risk of anaphylaxis.

The guidance was created to address key primary care clinical questions which are informed by current practice and known gaps in care from reported fatalities. A literature search (Medline and Ovid) was performed alongside review of key papers and recent guidelines. These were discussed and agreed upon by the lead authors and BSACI Standards of Care Committee and feedback from stakeholders was incorporated. It is intended to act as a resource and signpost to materials for primary care workers. It is intended to assist in decision making during consultations especially around risk assessment, need for referral and prescription of adrenaline auto-injectors. Further details and illustrative case studies can be found on the BSACI website (www.bsaci.org).

We considered the following five key primary care clinical questions:

The first was how are patients at risk of anaphylaxis identified and which ones require adrenaline autoinjectors? Some patients have an absolute need for prescription of adrenaline auto-injectors (AAI) (details in [Figure 1](#) and online cases 2, 4, 5, 9). Drug allergy is usually not an indication as most drugs are easily avoided.³ The assessment of risk of future anaphylaxis is challenging as there are few consistent predictors of future severe reactions.⁵ BSACI recommend prescription of two adrenaline autoinjectors for those at significant risk of anaphylaxis, referral for specialist assessment and training the patient, advising them to carry the AAIs at all times. Where the healthcare professional is uncertain about the risk of anaphylaxis, they can explain that

they are prescribing adrenaline as a safety netting procedure, pending review in a specialist allergy clinic. The allergist may continue or discontinue the AAIs prescription. Every patient prescribed AAIs or considered at risk of anaphylaxis must be reviewed by a specialist.^{1,3}

Secondly, are tests helpful to decide whether to prescribe adrenaline autoinjectors in primary care and how are they interpreted? The decision to prescribe AAIs should be based on an allergy-focused history and not just allergy tests.⁵ Validated allergy tests can be helpful in allergy diagnosis, but only in the context of an allergy-focused history (see online cases 2,4).^{5,7} Validated tests include serum specific IgE or skin prick tests – both give similar results and need careful interpretation.^{5,7} Requests for screening using specific IgE tests or panels should be avoided due to the frequency of false-positive results when allergy does not exist. Total IgE measurement alone is not helpful. Skin prick tests need to be performed by those with correct competencies with the appropriate equipment and resuscitation facilities available.⁷

Thirdly, we reviewed healthcare professional management of patients at risk of anaphylaxis in the community. Training and use of self-management plans can support this. AAI training should be incorporated into the process of prescribing and dispensing the device (see online cases 2, 4, 5, 9).^{1,8} Any competent healthcare professional can deliver this. Risk factors for fatal anaphylaxis include failure to carry an autoinjector, lack of knowledge of how to use them, delay in use, use of out-of-date AAI and poorly controlled asthma.⁵ Regular retraining going through an updated anaphylaxis plan, emphasising the importance of carrying AAIs at all times, and controlling co-morbidities, such as asthma, are important.⁵ Details for self-management can be found on the BSACI allergy action plan (<https://www.bsaci.org/about/download-paediatric-allergy-action-plans>) which should be tailored to the patient.

When considering advice on acute allergic reactions, patients should use their AAI if they develop breathing problems or feel they are about to collapse during an acute allergic reaction (see online cases 2, 4, 5, 9). They should sit up if they are having breathing difficulties and lie down if they are feeling faint with their legs raised and avoid sudden changes in posture.⁹ Patients should use their AAI and then call 999, ask for ambulance services, state their location, and

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that they are having an anaphylactic reaction (phonetically ANA-FIL-AX-IS) to ensure the call is prioritised. If there is no improvement in symptoms after 5 minutes, they should administer a second AAI.

Children at primary school should have an AAI administered by a trained adult. Children at secondary school should be trained to carry and administer their autoinjector themselves. Some may still need the assistance of a trained adult.

There are multiple different types of AAI devices available in the UK with different instructions. Training should be specific to the device and practical training with a trainer device should ideally be repeated annually (e.g., at re-prescription). If a different brand is prescribed, the patient will require retraining in the use of the new devices.^{1,9} When seeing patients prescribed AAIs, check if appropriate for weight, ask to see their devices to check that they are carrying them and that they are in date. Patients should be reminded that AAIs expire, to check the date when picking up their prescription and know the process for renewal. Patients can register for a reminder system that companies have in place using text messaging. Patients should

Key Points

- The BSACI has produced guidance for primary care for patients at risk of anaphylaxis.
- Recommendations include prescribing two adrenaline auto-injectors for patients at risk of anaphylaxis and providing training.
- As part of training, BSACI recommends advice to avoid sudden changes in posture during anaphylaxis.

be informed about storage of AAIs. Patients should obtain their own trainer pens (they can get these free from the brand company) and practice with them regularly. Signpost to patient organisations for resources and peer support.^{1,5,9} Remind patients to carry a charged mobile phone in case they need to call for help. This can be done by any competent healthcare professional including pharmacists.

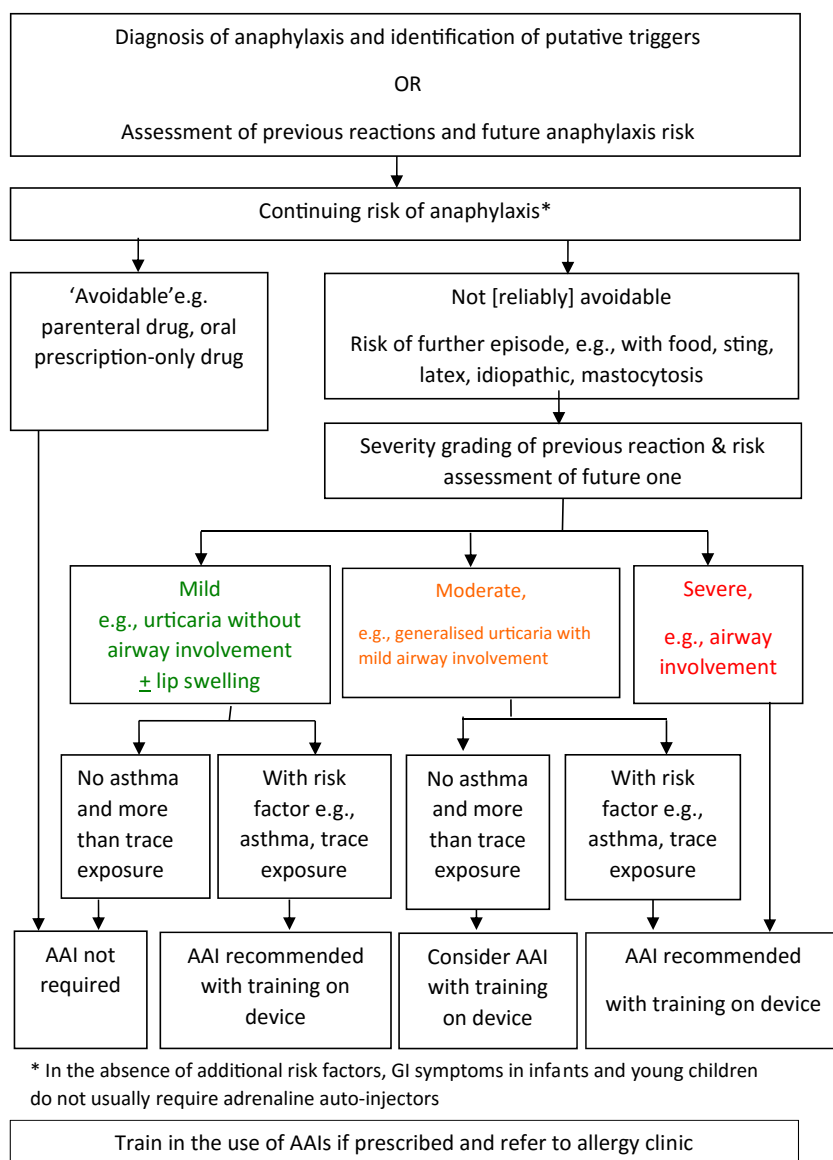


FIGURE 1 Algorithm for support of prescribing adrenaline autoinjectors. Adapted algorithm from the BSACI guideline.³

Certain co-factors may worsen the severity of an allergic reaction. These include exercise, lack of sleep, stress, alcohol and NSAIDs, asthma and acute illness.^{4,5} Patients should be made aware of these.

It is recommended that patients give a copy of their individualised allergy action plan to school, universities, colleges and employers so that staff are aware of their allergies.

The fourth question was how many adrenaline autoinjectors should be prescribed? The longstanding regulatory advice is that patients should be prescribed two AAls as the norm, and that the patient should always have immediate access to these (online cases 2, 4, 5, 9).^{1,9} This is because of the possibility of a severe reaction that needs more than one dose of adrenaline before the arrival of emergency services, or device failure or misplacement of the first injection.

Parents may request that a total of four autoinjectors are prescribed, two for school and two for other times. This can be reduced back to two once the child is able to administer and allowed to carry their own AAls at school. Parents should be reminded that their child should always have access to the AAls even on the way to school. Requests for more than two (four for a child) AAls should be discouraged. The overriding principle is that the patient should always be carrying the AAls rather than having them at multiple locations which might not be accessible at all times.

The final question was how can at risk groups and at-risk situations be recognised and how should they be managed? Adolescents and young adults are at highest risk of severe or fatal anaphylactic reactions to food, but the elderly have the highest risk of fatal drug anaphylaxis (see online case 5).^{2,5} Adolescents and young adults need to know how to advocate for their allergy within peer groups or other social situations.

Caution needs to be exercised during parties, travel in unfamiliar places and different languages, and eating from roadside vendors, festivals, takeaways, restaurants and food stores. Signpost to patient organisations resources to cover advocacy, translation cards, air travel.

This guidance highlights how to identify which patients are at risk of anaphylaxis and the need for referral to a specialist allergy clinic. The executive summary acts as a reminder of points to consider (Table 1). The recent Medicine and Healthcare Regulatory Agency report also sets out clear recommendations about training, carrying pens, patient positioning and self-management.⁹ The evidence base for the prescription of AAls is limited, it is described in the BSACI guideline.³ It is important that a system wide approach is taken to ensure the right patients are prescribed AAls, that they are appropriately trained with re-prescription and re-training at appropriate intervals. Further materials, including frequently asked questions and a service delivery pathway, to facilitate the optimal prescription of adrenaline in primary care can be found at www.bsaci.org.

AUTHOR CONTRIBUTIONS

Elizabeth Angier and Deepa Choudhury conceptualised the original draft the other authors have provided feedback and content and

TABLE 1 Executive summary for adrenaline auto-injectors prescription for primary care.

1. An allergy focused history supports the risk assessment for anaphylaxis.
2. Total and specific IgE blood tests alone are not helpful in predicting future anaphylaxis. If requested this must be done in conjunction with an allergy focused history to enable interpretation of results. Specific IgE testing when the allergen is suspected from the history is of value.
3. Prescribe two adrenaline autoinjectors for those at significant risk of anaphylaxis, refer for specialist assessment and train the patient telling them to carry the AAls at all times. This can be done as part of the referral process prior to being seen at the allergy clinic and ongoing after review if required.
4. Training should be specific to the device, ongoing and be incorporated into the prescribing process alongside an individualised action plan.
5. Encourage self-management by issuing an allergy action plan supporting the patient to know how and when to use their adrenaline autoinjectors, and avoidance of triggers.
6. Optimise asthma control and other comorbidities such as allergic rhinitis.
7. Advice on positioning during anaphylaxis. They should sit up if they are having breathing difficulties and lie down if they are feeling faint. Sudden movements to an upright posture should be avoided. Do not stand up.
8. Emphasize the early use of an adrenaline autoinjector in anaphylaxis, which is given intramuscularly, administer a second AAI after 5 minutes if no improvement in symptoms. Prompt use of adrenaline can save lives.
9. When reviewing patients check their devices are appropriate for weight, that they are carrying their adrenaline autoinjectors, they are in date, they know the process for renewal and have reminders for expiry in place.
10. Adolescents and young adults are at increased risk of fatal food anaphylaxis and need an individualised approach. Adolescents and young people may require a specific developmentally appropriate approach which may be supported by transition services.
11. Refer to patient organisations for resources and peer support.
12. Refer for assessment. Every patient prescribed AAls or considered at risk of anaphylaxis must be reviewed by a specialist. Prescription of AAls is not a substitute for referral.

have approved the final draft. All the co-authors contributed to writing of the article. The document was discussed within the British Society of Allergy and Clinical Immunology SOCC committee.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

KEYWORDS

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