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New action plans for the management of anaphylaxis

The Australasian Society for Clinical Immunology and Allergy has developed new anaphylaxis action plans intended for use across Australasia. These educational tools aim to give patients and carers easily accessible information about key steps in the emergency treatment of acute allergic reactions and anaphylaxis. This article outlines the rationale for these plans, introduces two new action plans and key practice points to consider when providing these plans.

■ **Action plans are primarily an educational tool for patients considered to be at risk of anaphylaxis. They also function in a similar fashion to a doctor's letter, providing written information that patients and parents can give to child care centres, schools and employers to assist in the provision of appropriate care.**

The common triggers of anaphylaxis are foods, insect stings and drugs. In most situations drugs can be avoided, but there is ongoing risk of exposure to foods and insect stings. Action plans outline the steps to be taken in the event of an acute allergic reaction, and for patients who have been provided with adrenaline (EpiPen®), the plan also indicates when and how to administer an EpiPen®.

However, an action plan is not a substitute for training in preventive strategies, first aid measures and practical training in EpiPen® administration. An action plan is intended to provide an easy to read *aide memoire* in the event of an emergency, not a comprehensive set of instructions.

Have action plans been evaluated?

Evidence that action plans improve the outcome from anaphylaxis is incomplete.¹ For families of food allergic children there is increased parental satisfaction and less parental and teacher anxiety following anaphylaxis education which included the provision of an action

plan.² Knowing when and how to use an EpiPen® is a key concern for parents of food allergic children³ and Australian research has found that the EpiPen® was used appropriately in only one in three instances of an acute allergic reaction.⁴ Action plans are intended to improve this situation and international expert bodies recommend the provision of a written action plan.^{5,6}

Who should provide patients with action plans?

Although action plans may be downloaded from the internet by any interested party, the Australasian Society of Clinical Allergy and Immunology (ASCIA) considers it is the role of the medical practitioner to provide patients with action plans. When provided, an action plan should specify allergens that need to be avoided. Standardised action plan templates are likely to reduce confusion caused by varying instructions and differing plans formulated by medical practitioners or by parents and carers. For these reasons the ASCIA has developed uniform action plans which are appropriate for use throughout Australasia.

What should I consider when recommending an action plan?

An action plan is mandatory for individuals who have been prescribed an EpiPen®. They are also useful for patients who need to avoid allergens to reduce the risk of acute reactions, in particular, children with food allergies, as they clearly communicate to parents and carers what allergens need to be avoided.

All action plans should:

- list allergens that need to be avoided
- provide instructions for action in the setting of an allergic reaction and/or anaphylaxis
- be dated and signed by a medical practitioner, and
- be easily accessible by carers.

What action plans are available?

The original ASCIA action plan, developed in 2003 for the treatment of anaphylaxis, aimed to provide a uniform and consistent set of

instructions throughout Australasia. This plan included illustrated steps for administering an EpiPen®, the indications (in lay terms) for when the EpiPen® should be administered, and instructions for calling an ambulance. To personalise the plan, space was provided for the name and photo of the person at risk, as well as the list of allergens to be avoided. These action plans have been widely used by immunologists, allergists and other practitioners. In response to a need for more specific action plans covering different situations, the ASCIA revised the original plan (Figure 1) and developed two new action plans (Table 1). These new plans include an action plan for the treatment of allergic reactions for patients with allergies (in particular food allergies) who do not require an EpiPen® (Figure 2), and an action plan for insect sting anaphylaxis (Figure 3).

What is different from the original ASCIA action plan?

Action plan for anaphylaxis (red)

This is similar to the original plan, with additional instructions under the heading ACTION to:

- ‘watch for any one of the following signs of anaphylaxis’ which has replaced the instruction ‘watch for signs of anaphylaxis’. This emphasises the point that adrenaline should be administered if any of the signs of a severe allergic reaction develop
- ‘lay the person flat and elevate the legs’. This can increase venous return and cardiac output where there is hypotension
- ‘if breathing is difficult allow to sit but do not stand’. Standing can cause blood pooling in the lower extremities and further reduce cardiac output critically
- ‘further EpiPen® doses may be given if there is no response after 5 minutes’. Twenty percent of anaphylactic reactions may require more than a single dose of adrenaline.⁷

Under personal information, there is now a heading ‘allergens to be avoided’. The previous heading ‘severe allergies’ was confusing, as a range of food allergens may need to be avoided although they may not necessarily cause a severe allergic reaction.

Action plan for allergic reactions (green)

There are many children with food allergies who should avoid particular foods, but do not necessarily require an EpiPen®. Medical practitioners can use this plan to advise child care centres and schools what foods the child should avoid and what to do in the unlikely event that the child does develop an anaphylactic reaction.

Insect anaphylaxis (yellow)

This plan was developed because the clinical and prodromal features of anaphylaxis in insect allergy are different from that in food allergy. In particular, abdominal symptoms such as pain and vomiting are listed as symptoms of anaphylaxis, and thus, an indication to administer an EpiPen®. In subjects with insect allergy, abdominal symptoms frequently herald more severe reactions.⁸ In contrast, younger children with a food allergic reaction may vomit or have abdominal discomfort without progressing to a more severe reaction.

Specific features of the insect anaphylaxis action plan include:

- an instruction to flick out the sting. It is important to flick the sting out rather than grab and squeeze it, as this is likely to inject more venom into the person
- space to write the specific insect causing the allergy, as well as other allergies. Anaphylaxis to insect stings is not more common in atopic individuals than in the general population, and for many patients with insect allergy this will be the only allergy that needs to be specified.

Following anaphylaxis from any cause, the action plans recommend that patients should be observed for at least 4 hours in a hospital. This is because anaphylaxis is often biphasic with significant improvement following an initial reaction, only to be followed by a relapse which often occurs several hours later.⁹ The approximate age range for prescription of EpiPen® Jr (1–5 years) is now provided.

How often should action plans be reviewed?

It is essential that patients provided with action plans be regularly reviewed. Commonly this is done annually, but may vary depending upon circumstances. For example, review is indicated following a repeated

Figure 1. Action plan for anaphylaxis

ACTION PLAN FOR Anaphylaxis

Name: _____
Date of birth: _____

Photo: _____

Allergens to be avoided: _____

Family/carer name(s): _____

Work Ph: _____
Home Ph: _____
Mobile Ph: _____
Plan prepared by: _____
Dr: _____
Signed: _____
Date: _____

MILD TO MODERATE ALLERGIC REACTION

- swelling of lips, face, eyes
- hives or welts
- tingling mouth, abdominal pain, vomiting

ACTION

- stay with person and call for help
- give medications (if prescribed)
- locate EpiPen® or EpiPen® Jr
- contact family/carer

Watch for any one of the following signs of Anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- difficult/noisy breathing
- swelling of tongue
- swelling/tightness in throat
- difficulty talking and/or hoarse voice
- wheeze or persistent cough
- loss of consciousness and/or collapse
- pale and floppy (young children)

ACTION

- 1 Give EpiPen® or EpiPen® Jr
- 2 Call ambulance* - telephone 000 (Aus) or 111 (NZ)
- 3 Lay person flat and elevate legs. If breathing is difficult, allow to sit but do not stand
- 4 Contact family/carer
- 5 Further EpiPen® doses may be given if no response after 5 minutes

If in doubt, give EpiPen® or EpiPen® Jr

EpiPen® is generally prescribed for children aged 1-5 years.
*Medical observation in hospital for at least 4 hours is recommended after anaphylaxis.

Additional information: _____

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Table 1. New action plans for allergic reactions and anaphylaxis

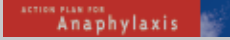
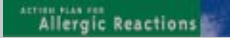
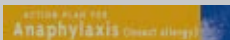
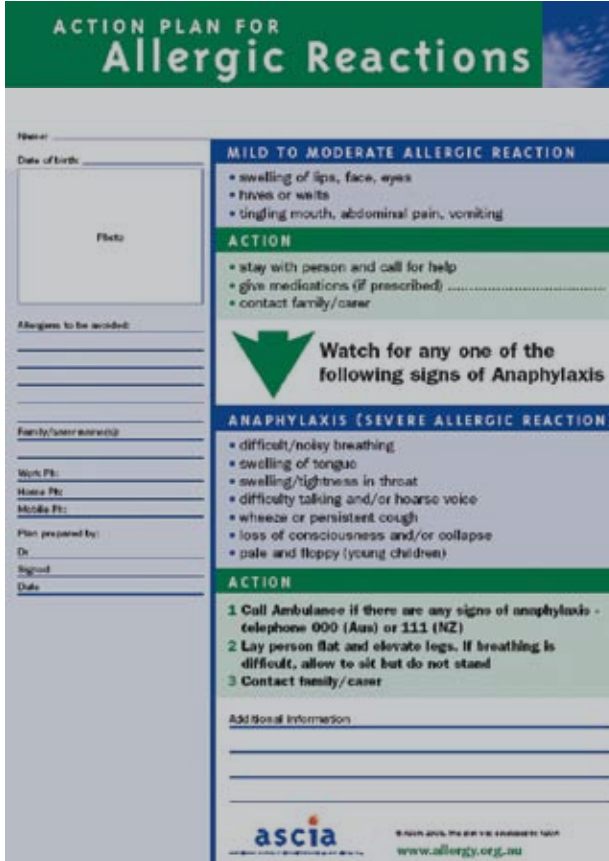
Name of action plan	Colour of action plan colour	Intended patient group	Important instructions
Anaphylaxis	Red 	Patients with food or other allergies who have been provided with an EpiPen®	If any sign of anaphylaxis, administer EpiPen® and call an ambulance
Allergic reactions	Green 	Patients with allergic reactions who need to avoid particular allergens, but where risk of a life threatening reaction is insufficient to warrant an EpiPen®	If any sign of anaphylaxis call an ambulance
Insect allergy	Yellow 	Patients with allergies to insect stings who have been provided with an EpiPen®	Flick out the sting. Abdominal symptoms indicate a severe allergic reaction (anaphylaxis) requiring EpiPen® administration

Figure 2. Action plan for allergic reactions



ACTION PLAN FOR Allergic Reactions

Name: _____
Date of birth: _____
Photo: _____
Allergies to be avoided: _____
Family/carer name(s): _____
Work Pt: _____
Home Pt: _____
Mobile Pt: _____
Plan prepared by: _____
Dr: _____
Signed: _____
Date: _____

MILD TO MODERATE ALLERGIC REACTION

- swelling of lips, face, eyes
- hives or welts
- tingling mouth, abdominal pain, vomiting

ACTION

- stay with person and call for help
- give medications (if prescribed)
- contact family/carer

Watch for any one of the following signs of Anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- difficult/noisy breathing
- swelling of tongue
- swelling/tightness in throat
- difficulty talking and/or hoarse voice
- wheeze or persistent cough
- loss of consciousness and/or collapse
- pale and floppy (young children)

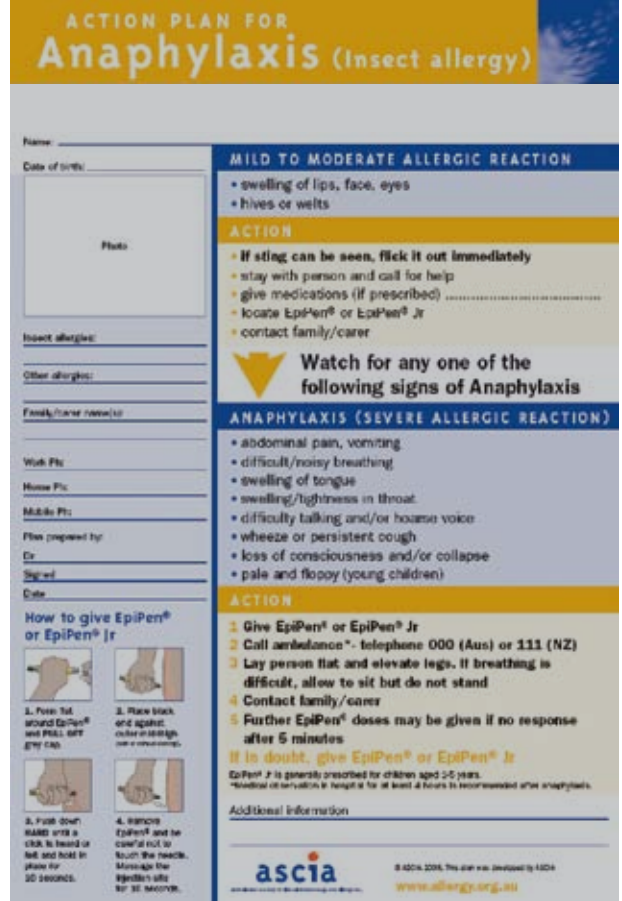
ACTION

- 1 Call Ambulance if there are any signs of anaphylaxis - telephone 000 (Aus) or 111 (NZ)
- 2 Lay person flat and elevate legs. If breathing is difficult, allow to sit but do not stand
- 3 Contact family/carer

Additional information: _____

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Figure 3. Action plan for anaphylaxis (insect allergy)



ACTION PLAN FOR Anaphylaxis (Insect allergy)

Name: _____
Date of birth: _____
Photo: _____
Insect allergies: _____
Other allergies: _____
Family/carer name(s): _____
Work Pt: _____
Home Pt: _____
Mobile Pt: _____
Plan prepared by: _____
Dr: _____
Signed: _____
Date: _____

MILD TO MODERATE ALLERGIC REACTION

- swelling of lips, face, eyes
- hives or welts

ACTION

- If sting can be seen, flick it out immediately
- stay with person and call for help
- give medications (if prescribed)
- locate EpiPen® or EpiPen® Jr
- contact family/carer

Watch for any one of the following signs of Anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- abdominal pain, vomiting
- difficult/noisy breathing
- swelling of tongue
- swelling/tightness in throat
- difficulty talking and/or hoarse voice
- wheeze or persistent cough
- loss of consciousness and/or collapse
- pale and floppy (young children)

ACTION

- 1 Give EpiPen® or EpiPen® Jr
- 2 Call ambulance - telephone 000 (Aus) or 111 (NZ)
- 3 Lay person flat and elevate legs. If breathing is difficult, allow to sit but do not stand
- 4 Contact family/carer
- 5 Further EpiPen® doses may be given if no response after 5 minutes

If in doubt, give EpiPen® or EpiPen® Jr

*EpiPen® Jr is generally prescribed for children aged 2-5 years.
Medical observation is required for at least 4 hours to be recommended after anaphylaxis.

Additional information: _____

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How to give EpiPen® or EpiPen® Jr

1. Peel off and discard the cap. Hold the EpiPen® or EpiPen® Jr by the blue cap.
2. Place back of hand against the back of the other hand. Push the blue cap forward until it clicks.
3. Push down HARD with a thumb to bend or fold, and hold in place for 10 SECONDS.
4. Release EpiPen® and be careful not to touch the needle. Massage the injection site for 30 SECONDS.

anaphylactic reaction. As children often grow out of food allergies in the first decade of life it is important to reassess them annually to see if an action plan is still required. Australian guidelines recommend that schools, preschools and child care centres request updated action plans from parents generally on an annual basis¹⁰ to confirm that food restrictions and EpiPen® training for staff are still required.

Where can I obtain an action plan?

All action plans are available free from the ASCIA website at www.allergy.org.au. Hard copies can be obtained by emailing education@allergy.org.au.

Conflict of interest: CSL funded printing of the action plans but had no input into the content of the plans.

Acknowledgment

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