

Adrenaline autoinjector (Anapen) for acute allergic anaphylaxis

Summary

- Anapen is a new adrenaline autoinjector for the emergency treatment of acute allergic reactions with anaphylaxis.
- Anapen has a substantially different administration technique to that of EpiPen. Specific training is required for each autoinjector.
- Ensure that all patients prescribed an adrenaline autoinjector have an anaphylaxis management plan that includes:
 - referral to an appropriate specialist
 - identification of the relevant allergen(s)
 - education on avoiding allergen(s)
 - an anaphylaxis action plan
 - appropriate follow-up and review.
- Train patients to recognise the symptoms of anaphylaxis and how to use their adrenaline autoinjector correctly.
- Parents should advise preschools or schools of their child's adrenaline autoinjector prescription, and provide a completed anaphylaxis action plan illustrating the use of the device prescribed.
- Some high-risk patients can be prescribed two adrenaline autoinjectors, but they must be of the same brand.
- Advise patients to check the expiry date of their adrenaline autoinjector regularly.
- See the Australasian Society of Clinical Immunology and Allergy website at www.allergy.org.au for health professional and consumer anaphylaxis resources.

PBS listing

Authority required

For anticipated emergency treatment of acute allergic reactions with anaphylaxis:

- when risk and clinical need has been assessed by, or in consultation with, a clinical immunologist, allergist, paediatrician or respiratory physician
- after hospital or emergency department discharge for acute allergic anaphylaxis treated with adrenaline.

Patients previously issued with an authority prescription for Anapen can receive continued treatment from a general practitioner. Prescribe Anapen with a comprehensive anaphylaxis prevention program and patient action plan.

Patients can be prescribed only one brand of PBS-subsidised adrenaline autoinjector at a time. Specific training of the patient or carer is required for the device prescribed, and a maximum quantity of two adrenaline autoinjectors of the same brand may be prescribed at any one time.

Reason for PBS listing

The Pharmaceutical Benefits Advisory Committee (PBAC) recommended the listing of the Anapen adrenaline autoinjector on a cost-minimisation basis — that is, similar efficacy and cost — compared with the EpiPen adrenaline autoinjector.

The pharmacist is not permitted to substitute Anapen with EpiPen when dispensing.

Place in therapy

Adrenaline is the first-line emergency treatment for anaphylaxis.^{1,2} Early administration can reduce the risk of hospitalisation and death in children at significant risk of anaphylaxis.³

Anapen is a new adrenaline autoinjector for the emergency treatment of acute allergic reactions with anaphylaxis. Each Anapen device is designed to deliver a single intramuscular dose of adrenaline to the outer mid-thigh.

Anapen is an alternative to EpiPen for those at risk of anaphylaxis; patient preference may be influenced by previous experience and ease of use. There are no head-to-head studies comparing Anapen with EpiPen.

Anapen and EpiPen autoinjectors appear superficially similar, but have substantially different administration techniques (Figure 1).

Anapen is not given in the same way as EpiPen

Anapen requires a different administration technique to EpiPen. The Anapen autoinjector is triggered by

depressing a red button with the thumb, whereas the EpiPen device is held mid-section — with the thumb and fingers forming a fist — and triggered by pressing firmly into the outer mid-thigh (Figure 1).

To avoid confusion among patients and carers, limit prescribing to one brand of adrenaline autoinjector per patient (see PBS listing).

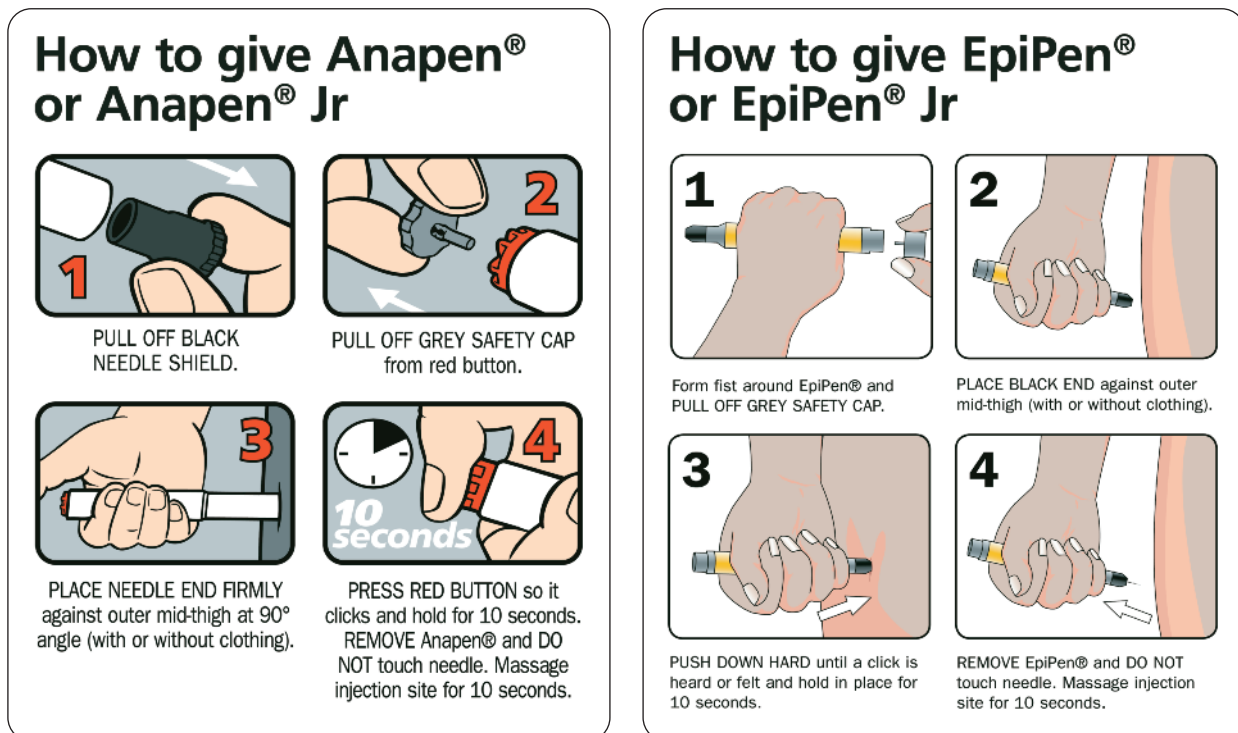
Ensure patients know how and when to use their adrenaline autoinjector

Health professionals, patients and carers often cannot correctly demonstrate the use of an adrenaline autoinjector.³⁻⁶

Ensure that patients and carers:

- know when to use an adrenaline autoinjector for acute allergic anaphylaxis
- know how to use their adrenaline autoinjector (Figure 1), and reinforce this at repeat visits. Regular practice with a training device (a dummy adrenaline autoinjector without a needle) is likely to improve confidence

Figure 1: Anapen and EpiPen administration techniques.



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- have the appropriate anaphylaxis action plan for their adrenaline autoinjector. Illustrated action plans demonstrating the use of Anapen or EpiPen, respectively, are available from the Australasian Society of Clinical Immunology and Allergy (ASCIA) website (www.allergy.org.au).

Advise patients and carers that — if in doubt in an emergency — it is better to use an adrenaline autoinjector; it is more harmful to undertreat anaphylaxis than to overtreat a mild allergic reaction. Australian survey data suggests that fewer than half of patients and carers who had access to an adrenaline autoinjector actually used it during an anaphylactic reaction.^{3,7}

Consider the role of carers and school teachers

If the patient is a child or adolescent, preschools or schools should be informed about the condition and its management. Parents should advise school staff of their child's adrenaline autoinjector prescription, and provide a completed anaphylaxis action plan illustrating the use of the device prescribed. Teachers and carers will require training to ensure that they are familiar with the different administration techniques of Anapen and EpiPen.

ASCIA provides links to relevant State and Territory health initiatives and has published guidelines to assist in preventing food anaphylactic reactions in schools.^{8,9} Anaphylaxis education and training is also available from First Aid organisations.

Prescribe adrenaline autoinjectors within a comprehensive anaphylaxis management plan

Prescribing an adrenaline autoinjector is only a small part of managing patients at risk of allergic anaphylaxis. An adrenaline autoinjector should be prescribed within the context of an anaphylaxis management plan [www](#) that includes:

- referral to an appropriate specialist
- identification of the relevant allergen(s)
- education on avoiding allergen(s)
- an anaphylaxis action plan
- appropriate follow-up and review, including re-education on Anapen or EpiPen use.

Who should be prescribed an adrenaline autoinjector?

All patients with a history of acute allergic anaphylaxis should have access to an adrenaline autoinjector.

A history of generalised allergic reaction and one or more risk factors (Table 1) warrants consideration of anaphylaxis risk — refer or consult with an appropriate specialist. (See guidelines for prescribing an adrenaline autoinjector). [www](#)

Table 1: Risk factors for more severe or fatal reactions in patients with a history of generalised allergic reaction*

- Asthma (current or past history)
- Age (children over 5 years, adolescents and young adults)
- Specific allergic triggers:
 - Peanut/nut allergy
 - Stinging insect allergy in adults (bees, wasps, jumper ants)
- Comorbidity (e.g. ischaemic heart disease)
- Geographical remoteness from emergency medical care

* Abbreviated from ASCIA guidelines for adrenaline autoinjector prescription

Some high-risk patients can be prescribed two adrenaline autoinjectors of the same brand

A maximum quantity of two adrenaline autoinjectors may be prescribed to people considered to be at high risk of fatal anaphylaxis.¹⁰ Limit prescribing to one brand of adrenaline autoinjector per patient.

Factors that may influence the decision to prescribe two adrenaline autoinjectors to high-risk patients include:

- severe anaphylaxis to an exposure that is difficult to avoid
- geographical remoteness from medical care; anecdotal evidence indicates that a second dose of adrenaline may be administered 5–15 minutes after the first dose if there is no clinical improvement^{1,11}
- body mass index; imaging studies suggest that needle length may be insufficient to deliver adrenaline intramuscularly in some patients, potentially resulting in delayed absorption^{12,13}
- children or adolescents (< 18 years of age) attending educational institutions; to ensure that an adrenaline autoinjector is available at all times.

[www](#) Refer to this review at www.npsradar.org.au for the ASCIA anaphylaxis management plan.

[www](#) Refer to this review at www.npsradar.org.au for the ASCIA guidelines for prescribing an adrenaline autoinjector.

Safety issues

The benefit of using intramuscular adrenaline exceeds the risk of harm in anaphylaxis.¹

Transient pallor, tremor and anxiety occurred with injection of 150 micrograms or 300 micrograms of adrenaline in children at risk of allergic anaphylaxis in a small, prospective study.¹⁴ Palpitations, headache and nausea were observed in those who received the higher dose.

Regular practice with an adrenaline autoinjector training device should reduce the risk of unintentional injection.

Report suspected adverse reactions to the Therapeutic Goods Administration (TGA) online (www.ebs.tga.gov.au [click 'Adverse reaction to a medicine' at left]) or by using the 'Blue Card' distributed three times a year with *Australian Prescriber*. For information about reporting adverse reactions, see the TGA website (www.tga.gov.au).

Shelf life and storage

Advise consumers about adrenaline's short shelf life, the need to check and record expiry dates, and to replace their autoinjector before the expiry date.

Anapen and EpiPen should be stored below 25°C, but not refrigerated.^{15–17} An insulated wallet could be used in hotter areas of Australia.

Adrenaline is light sensitive and autoinjectors should be protected accordingly.^{15–17} Degradation may occur without obvious discolouration or precipitation, so visual inspection is not a sufficient safeguard against adrenaline decay.¹⁸

Dosing issues

The Anapen autoinjector is available as Anapen (300 micrograms adrenaline) and Anapen Junior (150 micrograms adrenaline). It should be administered as an intramuscular injection into the outer mid-thigh.

Anapen and EpiPen recommended doses are listed in Table 2.

Avoid injecting into the extremities (e.g. hands or feet) because this may stop blood flow to the affected area. Injection into the buttock may result in adrenaline being delivered to subcutaneous fat, potentially resulting in delayed absorption.

Table 2: Adrenaline autoinjector doses recommended by ASCIA¹⁹

Weight	Adrenaline autoinjector (strength)
Children < 10 kg	Not usually recommended
Children 10–20 kg	Anapen Junior (150 micrograms) or EpiPen Jr (150 micrograms)
Adults or children > 20 kg	Anapen (300 micrograms) or EpiPen (300 micrograms)

Note: The respective product information leaflets state that Anapen Junior and EpiPen Jr are intended for children 15–30 kg, and Anapen and EpiPen for those over 30 kg.^{15–17} However, the doses above are broadly consistent with intramuscular adrenaline dosing schedules.^{2,20}

Information for patients

Ensure that all patients have an anaphylaxis action plan. Action plans are available from the ASCIA website (www.allergy.org.au).

Advise patients and carers:

- that Anapen has a substantially different administration technique to that of EpiPen
- of the importance of knowing when and how to use their adrenaline autoinjector. Teach patients accordingly and reinforce training at repeat visits
- that regular practice with a training device (a dummy adrenaline autoinjector without a needle) is likely to improve confidence
- to inform preschools or schools of their child's adrenaline autoinjector prescription, and provide a completed anaphylaxis action plan illustrating the use of the device prescribed
- that, if in doubt in an emergency, it is safer to use an adrenaline autoinjector than to risk an anaphylactic reaction
- to seek medical treatment immediately in the event of an anaphylactic reaction; further adrenaline or other follow-up may be needed even if the autoinjector is used
- that adrenaline autoinjector needles are usually exposed after use, and could cause injury
- to check the expiry date of the adrenaline autoinjector regularly because adrenaline has a short shelf life.

Discuss the Anapen consumer medicine information (CMI) leaflet with the patient.

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