PROCEDURE

Giving a child an epinephrine shot

An epinephrine shot is an emergency injection used to treat a child's severe allergic reaction.

PURPOSE
Stop a severe allergic reaction from getting worse

PROCEDURE TYPE
Therapeutic, bedside intramuscular injection

WHERE IT IS DONE
Home, school, clinic, or wherever symptoms begin

ANAESTHESIA
None

HOW LONG IT TAKES
Seconds to inject; hold time follows the device label

PREPARATION
No fasting; keep prescribed injectors available and learn their steps

RECOVERY
Emergency assessment same day; the child must not drive

MAIN RISKS
Fast heartbeat, shakiness, injection injury, accidental finger injection

RESULTS
Symptoms may improve within minutes; emergency monitoring remains necessary

Overview

Epinephrine, also called adrenaline, is the first-line emergency treatment for anaphylaxis. Anaphylaxis is a severe allergic reaction that can affect breathing, blood pressure, or several parts of the body at once.

Most caregivers give epinephrine with an auto-injector. The device contains a measured amount of medicine and a spring-loaded needle. It is pressed firmly against the outer middle thigh.

Epinephrine helps open the airways, reduce swelling, and support blood pressure. It works best when given promptly. Antihistamines like cetirizine or loratadine cannot replace it because they do not quickly treat dangerous breathing or circulation problems.

After giving the shot, call emergency services. A child can improve and then become unwell again, so medical assessment is still needed.

Why the procedure is performed

The shot is given when a child's allergy action plan says to use it or when anaphylaxis is suspected.

Possible warning signs include trouble breathing, throat tightness, tongue swelling, repeated coughing, wheezing, faintness, collapse, or sudden severe weakness. A reaction may also involve symptoms in more than one body system, such as hives together with vomiting or breathing trouble.

Anaphylaxis can occur without hives. Do not wait for a rash if the child has serious breathing or circulation symptoms after a possible allergen exposure.

Common triggers include foods, insect stings, medicines, and latex. Sometimes the trigger is not known when treatment is needed.

Who should and should not have it

A child should receive epinephrine when their emergency plan directs it or when a severe allergic reaction is suspected. If you are uncertain and the symptoms are severe or progressing, use the prescribed device and call emergency services rather than waiting for every possible symptom.

There is no absolute medical reason to withhold an intramuscular epinephrine shot during suspected anaphylaxis. This includes children with heart conditions, although their emergency plan may require extra guidance.

Epinephrine is not usually used as a routine preventive injection before eating or encountering a possible allergen. Mild symptoms affecting only one area, such as a few hives or mild itching, should be managed according to the child's individual allergy plan. Do not delay if symptoms spread or become severe.

Use the device prescribed for that child. Auto-injectors can contain different amounts of medicine, often selected according to body weight. Do not use another person's injector unless an emergency professional specifically directs you to do so.

Never inject an auto-injector into a hand, foot, buttock, or vein. Do not use injectable epinephrine products intended for healthcare professionals unless you have been trained and

instructed to use that exact product.

How to prepare

No fasting or medication changes are needed. Preparation means having the injector available and knowing how that particular model works.

The treating facility's own instructions take priority if the child is in a clinic, hospital, or other healthcare setting. Elsewhere, follow the child's written allergy action plan and the instructions printed on the device.

Check the expiry date regularly. If the device has a viewing window, the liquid should match its product instructions. Replace a device that has been used, damaged, or stored outside the recommended temperature range.

Practise with a needle-free trainer if one is supplied. Different brands have different safety releases and hold times, so do not assume they all work the same way.

Make sure family members, school staff, childcare workers, and other caregivers know where the injectors are kept. The child should have the number of devices prescribed for them.

What happens during the procedure

Recognize the emergency. Follow the child's allergy plan. If epinephrine is needed, act promptly rather than waiting for an antihistamine to work.

Position the child safely. In most cases, have the child lie flat with their legs raised. If breathing is difficult, they may be more comfortable sitting with their legs extended. If they are vomiting or unconscious but breathing, place them on their side. Do not let them stand or walk suddenly.

Prepare the injector. Remove it from its carrier and take off the safety release as shown in its instructions. Keep your fingers away from both ends. Hold the device with the needle end pointing away from your hand.

Keep the leg still. Place the needle end against the outer middle thigh at a right angle. It can usually be given through ordinary clothing, but avoid thick seams or objects in pockets. Hold a young child's leg firmly to reduce the risk of a cut from sudden movement.

Activate the device. Press firmly until it activates, then keep it in place for exactly the time stated on its label or voice instructions. Remove it and note when the dose was given.

Call emergency services. If another person is present, they can call while you give the shot. Tell the dispatcher that epinephrine was used.

If symptoms do not improve or return, a second prescribed injector may be needed. Many emergency plans direct a second dose after 5 to 15 minutes, but follow the child's plan, device instructions, and emergency dispatcher's advice.

If the child stops breathing normally, begin cardiopulmonary resuscitation if you are able and follow the dispatcher's directions.

Recovery and what to expect afterward

The injection may cause a brief sting, tenderness, or a small amount of bleeding. Keep the child still and reassure them while waiting for help.

The child should not eat or drink while having breathing trouble, vomiting, severe drowsiness, or difficulty swallowing. Healthcare professionals will advise when it is safe to resume food and fluids.

Avoid walking, exercise, sports, and other activity until the child has been medically assessed. Standing suddenly after anaphylaxis can worsen low blood pressure.

The child must not drive. Call emergency services rather than relying on the child or a lone caregiver to drive while symptoms may change. Follow the emergency dispatcher's transport instructions.

Returning to school and a caregiver's return to work will depend on the child's recovery and the medical team's advice. Before normal activities resume, replace the used injector and make sure responsible adults understand the updated plan.

Risks and possible complications

Expected effects of epinephrine can include a fast or pounding heartbeat, shakiness, anxiety, sweating, headache, nausea, and pale skin. These effects are usually temporary.

Possible injection-related problems include bruising, bleeding, infection, or a cut if the child moves during injection. Accidental injection into a finger, thumb, hand, or foot may reduce blood flow and needs urgent medical advice.

Serious heart rhythm or blood pressure problems can occur, particularly with excessive doses or injection into a vein. Correct use of a prescribed thigh auto-injector lowers these risks.

During suspected anaphylaxis, the danger of delaying epinephrine is generally greater than the expected side effects of a correctly used injector.

Results and follow up

Breathing, swelling, alertness, or skin symptoms may begin improving within minutes. Lack of immediate improvement does not mean the procedure was done incorrectly.

Emergency professionals will check the child's airway, breathing, circulation, and response to treatment. Further epinephrine or other treatments may be required. The child may be observed because symptoms can return after initially improving.

Routine follow-up may include reviewing the trigger, updating the allergy action plan, checking the prescribed device strength, and practising injector technique. Arrange a replacement promptly because a used auto-injector cannot be reused.

An allergy specialist may recommend testing or other steps to reduce future exposure. Testing is not performed during the injection itself.

Alternatives

There is no equally effective substitute for epinephrine when a child is experiencing anaphylaxis.

Antihistamines may help itching or hives, but they work too slowly and do not reliably treat throat swelling, breathing difficulty, or low blood pressure.

An asthma reliever inhaler like albuterol or ipratropium may help wheezing, but it does not treat throat swelling or circulation problems. It may be used in addition to epinephrine when the child's plan says to use it.

Calling an ambulance provides essential additional care, but it does not replace giving available epinephrine promptly. Waiting for emergency professionals trades away valuable treatment time.

Avoiding known allergens and, in selected cases, receiving specialist allergy treatment may reduce future risk. These measures prevent reactions; they cannot stop anaphylaxis that is already happening.

When to call your healthcare team

Call emergency services immediately after every epinephrine injection. Also call if severe symptoms are suspected but an injector is unavailable. Follow instructions about positioning, repeat treatment, and resuscitation.

Get urgent help for an accidental injection into a finger, thumb, hand, or foot, especially if the area becomes pale, cold, painful, or numb.

Contact the child's regular healthcare team after the emergency to:

- Replace any used, expired, damaged, or missing injectors
- Review a reaction or possible trigger
- Update school forms and the written allergy plan
- Check technique, storage, or the prescribed device strength
- Arrange allergy follow-up when recommended

Common questions

Will my child be asleep for the shot?

No. An epinephrine auto-injector is given without anaesthesia or sedation. The emergency takes only seconds to treat.

Can I drive my child home afterward?

Do not simply drive home. Call emergency services after using epinephrine and follow the dispatcher's transport instructions. The child needs medical assessment even if they seem better.

How painful is an epinephrine shot?

It usually causes a brief, sharp sting. The thigh may feel sore afterward. Keeping the child's leg still helps prevent a scratch or deeper cut.

Can I give it through clothes?

Most auto-injectors can be used through ordinary clothing. Avoid thick seams and items in pockets, and follow the instructions for the child's exact device.

When will I know whether it worked?

Symptoms may improve within minutes. Continue watching the child's breathing and alertness because symptoms may persist or return. Emergency assessment is still required.

What if I gave the shot and it was not anaphylaxis?

Call emergency services and explain what happened. Temporary shakiness or a fast heartbeat may occur. A correctly used intramuscular dose is generally safer than delaying treatment when anaphylaxis is genuinely suspected.

Sources

- American Academy of Pediatrics. Epinephrine for First-aid Management of Anaphylaxis . Pediatrics. 2017;139(3):e20164006.
- Cardona V, Ansotegui IJ, Ebisawa M, et al. World Allergy Organization Anaphylaxis Guidance 2020 . World Allergy Organization Journal. 2020;13(10):100472.
- Joint Task Force on Practice Parameters. Anaphylaxis: A 2023 Practice Parameter Update . Annals of Allergy, Asthma & Immunology. 2024;132(2):124-176.
- Resuscitation Council UK. Emergency Treatment of Anaphylaxis: Guidelines for Healthcare Providers . 2021.
- Viatris. EpiPen and EpiPen Jr (epinephrine injection) Auto-Injector: Prescribing Information and Instructions for Use .