

Medical Management of Vaccine Reactions in Children and Teens in a Community Setting

The table below describes steps to take if an adverse reaction occurs after vaccination.

Administering any medicine, including vaccines, can cause an adverse reaction. Always verify container labels to ensure the correct product is being administered. To reduce the risk of an adverse reaction, screen patients for vaccine contraindications and precautions before vaccination (see "Screening Checklist for Contraindications to Vaccines for Children and Teens" at www.immunize.org/catg.d/p4060.pdf).

When adverse reactions do occur, they can range from minor (e.g., soreness, itching) to serious (e.g., anaphylaxis). Be prepared.

Vaccinators should know how to recognize allergic reactions, including anaphylaxis. Have a plan and supplies ready to provide appropriate medical care if an event occurs.

REACTION	SIGNS AND SYMPTOMS	MANAGEMENT
Injection site	Soreness, redness, itching, or swelling	Apply a wet cloth to the injection site. Consider giving medication to reduce pain (e.g., Tylenol) or itching (e.g., Benadryl) if needed.
	Slight bleeding	Apply pressure and an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient's heart.
Psychological fright and syncope (fainting)	Anxiety before injection	Have patient sit or lie down for the vaccination.
	Paleness, sweating, coldness of the hands and feet, nausea, light-headedness, dizziness, weakness, or visual disturbances	Have patient lie flat. Loosen any tight clothing and maintain open airway. Apply cool, damp cloth to patient's face and neck. Keep patient under close observation until full recovery.
	Fall, without loss of consciousness	Check the patient for injury before trying to move the patient. Place patient flat on back with feet elevated.
	Loss of consciousness	Check the patient for injury before trying to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover promptly.
Anaphylaxis	Skin and mucosal symptoms such as generalized hives, itching, or flushing; swelling of lips, face, throat, or eyes. Respiratory symptoms such as nasal congestion, change in voice, sensation of throat closing, stridor, shortness of breath, wheeze, or cough. Gastrointestinal symptoms such as nausea, vomiting, diarrhea, cramping abdominal pain. Cardiovascular symptoms such as collapse, dizziness, tachycardia, hypotension.	See next page for details on treating anaphylaxis.

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Supply List for Managing Anaphylaxis**FIRST-LINE medication**

- Epinephrine 1 mg/mL aqueous solution (1:1000 concentration) in prefilled autoinjector or various vials or ampules. At least three epinephrine doses should be available on site, dosages as appropriate for patient population.

OPTIONAL medications: H₁ antihistamines

- Diphenhydramine (e.g., Benadryl) oral, 12.5 mg/5 mL liquid; 25 or 50 mg capsules or tablets

Additional emergency supplies

- Syringes (1 and 3 mL) and needles (22 and 25 g, 1", 1¼", 1½", and 2") if needed for epinephrine
- Alcohol wipes
- Stethoscope
- Blood pressure measuring device (with a variety of cuff sizes as needed)
- Light with extra batteries (for examination of the mouth and throat)
- A timing device, such as wristwatch, for measuring pulse
- Cell phone or access to onsite phone
- CPR rescue mask with one-way valve
- Oxygen (if available)

See also "Supplies You May Need at an Immunization Clinic" at www.immunize.org/catg.d/p3046.pdf.

REFERENCES

American Academy of Pediatrics. *Red Book: 2021–2024 Report of the Committee on Infectious Diseases*. 32nd edition, p. 64–67.

Campbell RL, Kelso JM. Anaphylaxis: Emergency treatment, updated August 4, 2022 in UpToDate, www.uptodate.com/contents/anaphylaxis-emergency-treatment

Kroger A, Bahta L, Long S, Sanchez P. General Best Practice Guide-lines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html,

Emergency medical protocol for managing anaphylaxis in children and teens

- 1** If itching and swelling are limited to the injection site, observe patient closely for the development of generalized symptoms.
- 2** If symptoms are generalized, alert the lead clinical healthcare professional on-site and call 911. A healthcare professional should assess the airway, breathing, circulation, and level of consciousness of the patient. Monitor vital signs at 5-minute intervals.
- 3 DRUG DOSING INFORMATION:** The most important therapy in anaphylaxis is epinephrine. There are NO absolute contraindications to epinephrine in the setting of anaphylaxis.
 - a First-line treatment:** EPINEPHRINE is the first-line treatment for anaphylaxis. Use epinephrine in a 1 mg/mL aqueous solution (1:1000 concentration). See page 3 to determine correct dose to be used based on child's weight. If using an autoinjector, administer a dose of 0.1 mg, 0.15 mg, or 0.3 mg IM (as appropriate for the patient's weight) into the anterolateral thigh. If using another epinephrine formulation, the recommended dose is 0.01 mg/kg per dose, up to a maximum single dose of 0.5 mg. Administer IM, preferably in the anterolateral thigh.
Epinephrine dose may be repeated every 5–15 minutes intervals while waiting for EMS to arrive.
 - b Optional treatment:** H₁ ANTIHISTAMINES relieve itching and urticaria (hives). These medications DO NOT relieve upper or lower airway obstruction, hypotension, or shock. Consider giving diphenhydramine (e.g., Benadryl) for relief of itching or hives.
Administer diphenhydramine orally, standard dose of 1–2 mg/kg every 4–6 hours. See dosing chart on page 3.
- 4** Monitor the patient closely every 5 minutes. Perform cardiopulmonary resuscitation (CPR), if necessary, and maintain airway. Keep patient in recumbent position (flat on back) unless he or she is having breathing difficulty. If breathing is difficult, patient's head may be elevated, provided blood pressure is adequate to prevent loss of consciousness. If blood pressure is low, elevate legs.
- 5** Record the patient's reaction (e.g., hives, anaphylaxis) to the vaccine, all vital signs, medications administered to the patient, including the time, dosage, response, and the name of the medical personnel who administered the medication, and other relevant clinical information.
- 6** Notify the patient's primary care physician.
- 7** Report the incident to the Vaccine Adverse Event Reporting System (VAERS) at <https://www.vaers.hhs.gov/reportevent.html>.

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For your convenience, approximate dosages based on weight and age are provided in the following charts.
Please confirm that you are administering the correct dose for your patient.

Recommended dose is 0.01 mg/kg body weight up to 0.5 mg maximum dose. May be repeated at 5–15 minute intervals up to 3 times while waiting for EMS to arrive.

First-Line Treatment: Epinephrine				Epinephrine Dose	
	Age group	Range of weight (lb)	Range of weight (kg)*	1 mg/mL aqueous solution (1:1000 concentration); intramuscular. Minimum dose: 0.05 mL	Epinephrine autoinjector (0.1 mg, 0.15 mg, 0.3 mg)
Infants and children	1–6 months	9–19 lb	4–8.5 kg	0.05 mL (or mg)	off label
	7–36 months	20–32 lb	9–14.5 kg	0.1 mL (or mg)	0.1 mg†
	37–59 months	33–39 lb	15–17.5 kg	0.15 mL (or mg)	0.15 mg/dose
	5–7 years	40–56 lb	18–25.5 kg	0.2–0.25 mL (or mg)	0.15 mg/dose
	8–10 years	57–76 lb	26–34.5 kg	0.25–0.3 mL (or mg)	0.15 mg or 0.3 mg/dose
Teens	11–12 years	77–99 lb	35–45 kg	0.35–0.4 mL (or mg)	0.3 mg/dose
	13 years & older	100+ lb	46+ kg	0.5 mL (or mg) – max. dose	0.3 mg/dose

NOTE: If body weight is known, then dosing by weight is preferred. If weight is not known or not readily available, dosing by age is appropriate.

* Rounded weight at the 50th percentile for each age range

† 0.1 mg autoinjector is approved for use in 7.5 to 14 kg infants and children

► commonly known as Benadryl

Recommended dose is 1–2 mg/kg body weight every 4–6 hrs†

Optional Treatment: Diphenhydramine				Diphenhydramine dose calculations based on 1 mg/kg†
	Age group	Range of weight (lb)	Range of weight (kg)*	Liquid: 12.5 mg/5 mL Capsules or tablets: 25 mg or 50 mg
Infants and children	7–36 months	20–32 lb	9–14.5 kg	10–15 mg/dose†
	37–59 months	33–39 lb	15–17.5 kg	15–20 mg/dose†
	5–7 years	40–56 lb	18–25.5 kg	20–25 mg/dose†
	8–12 years	57–99 lb	26–45 kg	25–50 mg/dose†
Teens	13 years & older	100+ lb	46+ kg	50 mg/dose (up to 50 mg or 100 mg single dose)†

NOTE: If body weight is known, then dosing by weight is preferred. If weight is not known or not readily available, dosing by age is appropriate.

* Rounded weight at the 50th percentile for each age range

† AAP. Red Book: 2021–2024, 32nd ed. (p. 66). Diphenhydramine maximum single dose for children younger than age 12 years is 40 mg, for children age 12 years and older, 100 mg.

This policy and procedure shall remain in effect for all patients of the _____		NAME OF PRACTICE OR CLINIC
effective _____	until rescinded or until _____ .	DATE
Medical Director _____	/ _____	PRINT NAME SIGNATURE DATE