

Medical Management of Vaccine Reactions in Children & Teens

All vaccines have the potential to cause an adverse reaction. In order to minimize adverse reactions, patients should be carefully screened for precautions and contraindications before vaccine is administered (see www.immunize.org/catg.d/p3072.pdf, guidance in provided clinic protocols, and vaccine standing orders). Even with careful screening, reactions may occur. These reactions can vary from minor (e.g., soreness, itching) to severe and life threatening (e.g., anaphylaxis). Vaccine providers should be familiar with identifying allergic reactions, including anaphylaxis, and must be competent in managing these vaccine events at the site of vaccine administration. Providers should also have a plan in place to immediately contact emergency medical services (EMS) in the event of a severe vaccine reaction. Maintenance of the airway, oxygen administration, and administration of intravenous medications might be necessary. The table below describes procedures to follow if various reactions occur.

REACTION	SIGNS and SYMPTOMS	MANAGEMENT
Localized	Soreness, redness, itching, or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.
	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)	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Patient feels "faint" or has paleness, sweating, nausea, lightheadedness, dizziness, weakness, or visual disturbances	Have patient lie flat. Loosen any tight clothing and maintain an open airway. Apply cool, damp cloth to patient's face and neck. Keep them under close observation until full recovery.
	Fall, without loss of consciousness	Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
	Loss of consciousness	Check the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover immediately.
Anaphylaxis	Skin and mucosal symptoms such as generalized hives, itching, or flushing; swelling of lips, face, throat, or eyes. Respiratory symptoms such as 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 "Emergency Medical Protocol for Management of Anaphylactic Reactions in Children and Teens" on the next page for detailed steps to follow in treating anaphylaxis.

Suggested medications for a community immunization clinic

First-line medication

- **Epinephrine** aqueous solution 1.0 mg/mL (1:1,000 dilution), in ampules, vials of solution, or prefilled syringes, including epinephrine auto injectors (e.g., EpiPen and Auvi-Q). If autoinjectors are stocked, at least three should be available at all times (both pediatric and adult formulations).

Optional medication: H₁ antihistamines

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

Suggested supplies for a community immunization clinic

- Syringes (1 and 3 cc) and needles (22 and 25 g, 1", 1½", and 2") for epinephrine. For ampules, use filtered needles.
- Alcohol wipes
- Tourniquet
- Pediatric and adult airways (small, medium, and large)
- Pediatric and adult size pocket masks with one-way valve
- Oxygen (if available)
- Stethoscope
- Sphygmomanometer (blood pressure measuring device) with child, adult, and extra-large cuff sizes
- Tongue depressors
- Flashlight with extra batteries (for examination of the mouth and throat)
- Wrist watch with a second hand or other timing device
- Cell phone or access to onsite phone

Emergency Medical Protocol for Management of Anaphylactic Reactions in Children and Teens

1. If itching and swelling are confined to the injection site where the vaccination was given, observe patient closely for the development of generalized symptoms.
2. If symptoms are generalized, activate the emergency medical system (i.e., call 911). This should be done by a second person, while the primary healthcare professional assesses the airway, breathing, circulation, and level of consciousness of the patient. Vital signs should be monitored continuously.
3. **Drug dosing information: The first-line and most important therapy in anaphylaxis is epinephrine. There are NO absolute contraindications to epinephrine in the setting of anaphylaxis.**
 - a. **First-line treatment:** Use **epinephrine** 1.0 mg/mL aqueous solution (1:1,000 dilution). Administer 0.01 mg/kg per dose intramuscularly (maximum single dose is 0.3 mg in prepubertal children, and 0.5 mg in adolescents); see dosing chart on page 3. Prefilled autoinjector use is preferred, if available for patient age and weight. Repeat dosing every 5-15 minutes in the absence of clinical improvement. Administration should preferably occur in the mid-outer thigh; administer through clothing if necessary. Follow manufacturer instructions for autoinjector use – hold the device/needle in the thigh for at least 3 seconds. Never re-insert needle. Do not administer repeated injections at the same site.
 - b. **Optional treatment: H₁ antihistamines** – for hives or itching use **diphenhydramine**. Administer 1–2 mg/kg of body weight orally every 4-6 hours (maximum single dose is 50 mg, but may be less based on age). See dosing charts on page 3. H₁ antihistamines do NOT relieve upper or lower airway obstruction, hypotension, or shock.
4. Monitor the patient closely until EMS arrives. Perform cardiopulmonary resuscitation (CPR), if necessary, and maintain airway. Keep patient in supine 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. Monitor blood pressure and pulse at least every 5 minutes.
5. If EMS has not arrived and symptoms are still present, repeat dose of epinephrine every 5–15 minutes for up to 3 doses, depending on patient's response.
6. Record the adverse event (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. Report the incident to the Vaccine Adverse Event Reporting System (VAERS).
7. Notify the patient's primary care physician.

These standing orders for the medical management of vaccine reactions in pediatric patients shall remain in effect for patients of the

NH State-Managed Vaccine Clinic until rescinded, or until **6/30/2022**

Name of Facility

Date



Medical Director's Signature (Benjamin P. Chan, MD, MPH)

12/21/2021

Date of Signing