# Recognition and Treatment of Anaphylaxis in the School Setting

# Revised January 2023

## Overview

Anaphylaxis is one type of allergic reaction, in which the immune system responds to otherwise harmless substances from the environment (called “allergens”). A variety of allergens can provoke anaphylaxis, but the most common culprits are food, insect venom, medications, and latex. Unlike other allergic reactions, however, anaphylaxis is potentially lethal and can kill in a matter of minutes. Anaphylaxis typically begins within minutes or even seconds of exposure, can rapidly progress to cause airway constriction, skin, and intestinal irritation, and altered heart rhythms. Without treatment, in severe cases, it can result in complete airway obstruction, shock, and death. Initial emergency treatment is the administration of injectable epinephrine (also known as “adrenaline”) coupled with immediate summoning of emergency medical personnel and emergency transportation to the hospital. Appropriate, timely treatment can totally reverse anaphylaxis and return a child or adult to their prior state of health.

Reports of anaphylaxis have increased in recent years. As it is impossible to eliminate allergens from the school setting, all school districts, all schools, and all school staff must be prepared to help students who experience anaphylaxis. All school staff should know what to do in case of a life-threatening anaphylactic reaction whether they are personally responsible for administration of epinephrine. They need to know what anaphylaxis is, how to tell if someone might be experiencing anaphylaxis, and how to get timely help for that child or adult. In addition, designated personnel need to go one critical step further and be able to provide the life-saving medication epinephrine while quickly summoning emergency care.

The purpose of this document is to provide best practices for responding to anaphylaxis in the school setting. It is not intended to supersede the individual prescriptive orders for epinephrine administration contained in the individualized healthcare plans of students with an established need for epinephrine availability.

### Legislative Background

The *Code of Virginia* [§ 22.1-274.2](https://law.lis.virginia.gov/vacode/title22.1/chapter14/section22.1-274.2/) requires schools to possess, train selected personnel, and administer epinephrine to any student believed to be having an anaphylactic reaction. It also allows for students diagnosed with a life-threatening allergy to self-administer epinephrine while at school. The Unlicensed Assistive Personnel (UAP) should be familiar with all types of epinephrine, auto-injectable medications used in an emergency response to an overwhelming allergic reaction. The medication may be available for administration by a variety of methods or auto-delivery devices.

Local school boards shall adopt and implement policies for the possession and administration of epinephrine in every school, to be administered by any school nurse, employee of the school board, employee of a local governing body, or employee of a local health department who is authorized by a prescriber and trained in the administration of epinephrine to any student believed to be having an anaphylactic reaction.

In March 2020, the General Assembly approved § [22.1-274.2 (C)](https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+HB999ER&201+ful+HB999ER) to ensure the accessibility of epinephrine at all times by individuals trained to administer this life-saving drug when needed during regular school hours. This legislation directs local school board policies to require that at least one school nurse, employee of the school board, employee of a local governing body, or employee of a local health department who is authorized by a prescriber and trained in the administration of epinephrine has the means to access at all times during regular school hours any such epinephrine that is stored in a locked or otherwise generally inaccessible container or area.

The *Code of Virginia* [§ 54.1-3408](https://law.lis.virginia.gov/vacode/title54.1/chapter34/section54.1-3408/) (C) states, “Pursuant to an order or standing protocol issued by the prescriber within the course of his professional practice, any school nurse, school board employee, employee of a local governing body, or employee of a local health department who is authorized by a prescriber and trained in the administration of epinephrine, may possess and administer epinephrine.”

The *Code of Virginia* [§ 8.01-225](https://law.lis.virginia.gov/vacode/title8.01/chapter3/section8.01-225/) (A)(1) states, “Any person who…Is a school nurse, an employee of a school board, an employee of a local governing body, or an employee of a local health department who is authorized by a prescriber and trained in the administration of epinephrine, and who provides, administers, or assists in the administration of epinephrine to a student believed in good faith to be having an anaphylactic reaction, or is the prescriber of the epinephrine, shall not be liable for any civil damages for ordinary negligence in acts or omissions resulting from the rendering of such treatment.”

## Recognizing and Treating Anaphylaxis

### Known Allergens Causing Anaphylaxis

Anaphylaxis cannot be totally avoided in the school setting. Even if all students with known allergies can avoid exposure to their allergens, the nature of childhood is for some students to develop new allergies each year. For those students with a known life-threatening allergy anaphylaxis, an Emergency Action Plan (EAP) is needed. Refer to the resources section for EAP’s. The Healthcare provider, parent or guardian, and school health staff work together, training teachers and substitutes. The following is a list of allergens known to cause anaphylaxis.

* Animal Dander
* Fish
* Latex
* Milk
* Shellfish
* Tree Nuts (e.g., pecans)
* Eggs
* Insect Venom
* Medications
* Peanuts
* Soy
* Wheat

\**Non-food items, such as arts and craft materials, may contain trace amounts of food products capable of causing an allergic reaction in susceptible individuals.*

### Signs and Symptoms of Anaphylaxis

Epinephrine is used for life-threatening anaphylaxis following exposure to an allergen. An allergic reaction is an immune response to a foreign substance resulting in inflammation and/or organ dysfunction. Allergic reactions may have many symptoms that could appear immediately or not for several days or weeks. A student may have the same reaction to an ingested food or insect sting/bite that might occur with a medication. Signs and symptoms of anaphylaxis include:

* shallow respirations, difficulty breathing, swelling of tongue, gurgling or high-pitched sounds;
* feelings of apprehension, sweating, weakness;
* nausea, vomiting, abdominal pain, diarrhea;
* low blood pressure with weak, rapid pulse;
* flushing of skin, hives, itching;
* nasal congestion, itching, sneezing, wheezing;
* seizures, loss of consciousness, shock, coma; and
* difficulty walking, blue/gray lips or fingernails.

### General Treatment for Anaphylaxis

Epinephrine (also known as “adrenaline”) is the drug of choice used to treat and reverse the symptoms of anaphylaxis by constricting blood vessels and raising blood pressure, relaxing the bronchial muscles, and reducing tissue swelling. Epinephrine is a prescribed medication and is administered by injection, either intramuscularly by an auto-injector or intramuscularly by syringe. **Epinephrine should be administered promptly at the first sign of anaphylaxis. It is safer to administer epinephrine than to delay treatment for anaphylaxis**.

The sooner anaphylaxis is treated, the greater the person’s chance for surviving the reaction. Epinephrine is fast acting, but its effects last only 5-15 minutes; therefore, a second dose of epinephrine may be required if symptoms continue. Common side effects of Epinephrine are rapid heart, tremor, anxiety, and nervousness.

Epinephrine is available premeasured in an auto-injector or by ampoule or vial. Epinephrine auto-injectors can be administered in the school setting by both licensed personnel (i.e., registered nurse, physician) and trained unlicensed personnel as well as by self-administration in the case of older students. Use of epinephrine from a vial or ampoule requires careful measurement and administration by licensed medical professionals. These guidelines will address the use of epinephrine by auto-injector. However, epinephrine from vials or ampoules may be appropriate for some schools, dependent on the availability of adequate numbers of licensed medical personnel. The single dose epinephrine auto-injector is currently available in two doses: 0.15mg (for individuals weighing 33 to 66 lbs.) and 0.3mg (for individuals weighing greater than 66 lbs.).

## Guidance for School Policies and Procedures

Local school divisions need to develop policies and procedures for responding to a life-threatening allergic reaction in the school setting. Considerations for such development include:

* Specific protocols for responding to anaphylaxis in the school setting, both on-site and at off-site events, such as field trips.
* Standing orders for non-student specific epinephrine.
* Establishing procedures for purchasing, storage, and maintenance of supplies.
* Identification, assignment, and training of at least two staff per school to administer epinephrine in case of anaphylaxis.
* Stocking of epinephrine in the school should remain on-site and not be carried off-site. Additional/supplemental epinephrine should be available for administration during field trips and other official off-site school activities.
* Parents/guardians of students known to have a need for epinephrine availability should provide the school with student specific medical orders, an individualized healthcare plan, and their own supply of epinephrine promptly at the start of the school year or upon transfer to the school.

It is recommended schools make available and stock both the 0.15mg and 0.3mg doses of epinephrine via auto-injector (or vial or ampoule) in each school regardless of whether any students have been diagnosed with allergies. At least two doses each of 0.15mg and 0.3mg epinephrine should be available via auto-injector (or vial) in each school (i.e., total of four doses of epinephrine per school unless the principal documents that 100 percent of students in the school are over 66lbs in which case two doses of the 0.3mg epinephrine will suffice).

### Training Considerations

Each school division shall adopt and implement a policy for the possession and administration of epinephrine in every school. Considerations include:

* Routine training of all school employees in the recognition of and response to anaphylaxis, including summoning of appropriate emergency care.
* Annual training of designated employees of the school in the use of auto-injectable epinephrine. This training epinephrine should be conducted by a registered professional nurse and utilize the guidelines found in the most current edition of the Virginia Department of Education’s ***Medication Administration, School Nurses Guide: A Training Manual for Unlicensed Public School Employees****,*available on the [School Health Guidance & Resources](https://www.doe.virginia.gov/programs-services/student-services/specialized-student-support-services/school-health-services/school-health-guidance-resources) webpage.
* Annual practice drills to equip school personnel in providing a prompt and efficient response to an anaphylactic emergency.

### Procedural Considerations for Responding to Anaphylaxis

Anaphylaxis is the most dangerous type of allergic reaction. Anaphylaxis is a life-threatening event, where the blood pressure drops, respiratory distress occurs (i.e., shortness of breath), and the student may become unresponsive. School division emergency procedures should be implemented if anaphylaxis is suspected. Epinephrine auto-injectors deliver medication intramuscularly and are used for life-threatening anaphylaxis following exposure to an allergen.

* For a student with a **known allergy** and prescribed epinephrine, the school registered nurse (RN) will train the Unlicensed Assistive Personnel (UAP) to use **the student’s medicine according to the EAP**.
* For a student experiencing a **first time reaction** the RN will train UAP to use **stock epinephrine per school division policies and/or protocols**.

## Administration Procedures

### EpiPen® and EpiPen Jr®

Instructions for use of the EpiPen® and EpiPen Jr® are found at [How to use EpiPen](https://www.epipen.com/en/about-epipen-and-generic/how-to-use-epipen). Instructions for use of generic or Teva® epinephrine auto-injector are available at [Teva Epinephrine Auto Injector](https://www.tevaepinephrine.com/howtouse):

1. Remain calm and reassure the student. Have the student seated or reclining. Ensure that either the student has prescribed auto-injector **or** the correct dosage of stock epinephrine is available for administration. Pull the safety cap off the auto-injector, being careful to not stick yourself or drop the auto-injector. There may not be enough time to wash hands before intervention.
2. Swing and firmly push the orange tip against the middle of the outer thigh. Medicine may be injected through clothing. Avoid the seam of heavy denim.
3. Firmly press the auto-injector against the student's thigh until the mechanism activates and hold in place for at least three seconds, counting 1-1000, 2-1000, and 3-1000. Note: Other generic epinephrine auto-injectors require a count of ten to ensure complete delivery of the medication. Always check the manufacturer’s instructions.
4. Remove the auto-injector, place in a protective container **without replacing the safety cap** and massage-injected area for at least ten seconds.
5. Continue to observe the student closely for signs and symptoms of recovery or worsening condition.
6. Ensure that emergency responders have been called.
7. Note the time you gave the medication and report this to emergency responders.
8. Remain with the student to keep him/her calm and still until emergency responders arrive. Follow established emergency response procedures.
9. Dispose of auto-injector in the non-penetrable (sharps) container or send the used auto-injector in the protective case with Emergency Medical Services (EMS) to the emergency room.
10. If a student's symptoms continue and EMS is not on the scene, administer a second dose of epinephrine via auto-injector 5-15 minutes after the initial injection, according to the student's EAP or the school division policy and protocols for use of stock epinephrine.
11. Notify school administrator, school nurse, and student’s parent/legal guardian of medication administration.
12. Discard gloves and wash hands.
13. Document medication administration.
14. Follow up with the student's parent/legal guardian to have prescribed epinephrine auto-injector replaced when the student returns to school. Follow school division protocols to obtain replacement for any stock epinephrine used.

### Auvi-Q®

[Auvi-Q](https://www.auvi-q.com/about-auvi-q)® auto injector is pocket-sized device that can be used to self-administer epinephrine in response to symptoms of anaphylaxis. It has a voice prompt that gives step-by-step instructions on the administration of the medication:

1. Remain calm and reassure the student. Have the student seated or reclining. Activate the device by removing the outer covering. There may not be enough time to wash hands before intervention.
2. Place the end of the device on the student's thigh. Medicine may be injected through clothing but avoid seam of heavy denim.
3. To trigger the injection, firmly press the auto-injector against the student's thigh until the device instructs you to remove it.
4. Continue to observe the student closely for signs and symptoms of recovery or worsening condition.
5. Ensure that emergency responders have been called.
6. Note the time you gave the medication and report this to emergency responders.
7. Remain with the student to keep him/her calm and still until emergency responders arrive. Follow established emergency response procedures.
8. Dispose of auto-injector in the biohazards sharps container or send the used auto-injector in the protective case with EMS to the Emergency Room.
9. If a student's symptoms continue and EMS is not on the scene, administer a second dose of epinephrine via auto-injector 5-15 minutes after the initial injection, according to the student's EAP or the school division policy and protocols for use of stock epinephrine.
10. Notify school nurse, school administrator, and student’s parent or guardian of medication administration.
11. Discard gloves and wash hands.
12. Document medication administration.
13. Follow up with the student's parent or guardian to have prescribed epinephrine auto-injector replaced when the student returns to school. Follow school division protocols to obtain replacement for any stock epinephrine used.

### Symjepi® (prefilled epinephrine syringe)

[Symjepi](https://www.symjepi.com/)® is a syringe with the correct dose of epinephrine already loaded. The needle must be inserted, and the plunger depressed to deliver the medication. It is also available in both 0.15 mg dose for children 33-65 lbs. and 0.3 mg for people over 66 lbs.:

1. When ready to use Symjepi, pull the cap off to expose the needle.
2. To ensure no accidental epinephrine leakage, do not touch the plunger until the needle is fully inserted.
3. Holding by the finger grips, slowly insert the needle into the thigh. Symjepi can be injected through clothing if necessary.
4. After the needle is in the thigh, push the plunger all the way down until it clicks.
5. Hold for **two** seconds.
6. Remove the needle and massage the area for ten seconds.
7. The correct dose has been injected if the plunger has been pushed all the way down and the solution window is at least partially blocked.
8. Once the injection has been administered, using one hand with your fingers behind the needle, slide the safety guard up until it clicks to cover the needle.
9. The Symjepi injector features a safety guard to keep you protected. **Remember to slide cover up to cover the needle before putting the used Symjepi device back in its case**.

### Post Anaphylaxis Follow-Up

1. Ensure the parents/guardians of the affected student have been notified and advised to promptly let the student’s primary care physician know about the episode of suspected anaphylaxis.
2. Refer the student to their health care provider or emergency room.
3. The school nurse will complete the required documentation of the incident using the Sample Report of Anaphylactic Reaction at following link: [VDH-Guidelines-for-Healthcare-Procedures-in-Schools](https://www.vdh.virginia.gov/content/uploads/sites/58/2016/12/VDH-Guidelines-for-Healthcare-Procedures-in-Schools_2017.pdf) (page 454).
4. Order replacement epinephrine auto injector(s). Examples of epinephrine auto-injectors include:
* [Adrenaclick](http://adrenaclick.com/)
* [Auvi-Q](http://www.auvi-q.com/)
* [Epipen](http://www.epipen.com/)

### Storage of Medication and Supplies

Epinephrine auto-injectors should be stored in a safe, unlocked, and accessible location, in a dark place at room temperature (between 59-86 degrees F). It should be protected from exposure to heat, cold, or freezing temperatures. Exposure to sunlight will hasten deterioration of epinephrine more rapidly than exposure to room temperatures. The expiration date of epinephrine solutions should be periodically checked; the drug should be discarded and replaced if it is past the prescription expiration date. The contents should periodically be inspected through the clear window of the auto-injector. The solution should be clear; if it is discolored or contains solid particles, replace the unit. Supplies associated with responding to suspected anaphylaxis should be stored along with the epinephrine (e.g., Incident Report, copy of Anaphylaxis guidelines). The epinephrine should be readily available to multiple school personnel, easily accessible to them, and should not be locked up. It should not be accessible to children. For additional information on anaphylaxis or epinephrine review information in the Virginia Department of Health, [Guidelines for Healthcare Procedures in Schools](https://www.vdh.virginia.gov/content/uploads/sites/58/2016/12/VDH-Guidelines-for-Healthcare-Procedures-in-Schools_2017.pdf).

## References

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Virginia Department of Health (2018). [*First Aid Flip Chart for School Emergencies*](https://www.vdh.virginia.gov/school-age-health-and-forms/school-health-guidelines-and-resources/#firstaid).

Virginia Department of Health (2017). [*Guidelines for Healthcare Procedures in Schools*](https://www.vdh.virginia.gov/school-age-health-and-forms/school-health-guidelines-and-resources/#healthcare)*.*

## Appendix A: Virginia School Health Guidelines for Anaphylaxis

*Virginia Department of Health, Revision, 09/2020 (J. Pitts, T. White)*

### Auto-Injector Epinephrine Use

In the event of an anaphylactic reaction in an individual in the school setting, epinephrine will be administered by the school nurse or trained unlicensed school personnel. This Standing Order is for the use of auto-injector epinephrine in such situations.

In the case of students with a history of anaphylaxis or other severe allergic reactions, epinephrine should be administered according to specific individualized prescriptive orders documented in their individualized health care plans. If no such orders exist or are not readily available, the Standing Orders given in this document should be used.

### Anaphylaxis definition

Anaphylaxis is a severe allergic reaction which can be life threatening and occur within minutes after a triggering event or up to hours later.

**Causes of Anaphylaxis:**

Extreme sensitivity to one or more of the following:

* Medication;
* Foods;
* Latex;
* Idiopathic (unknown);
* Insect stings/venom;
* Asthma triggers; and
* Other.

**Symptoms Associated with Anaphylaxis:**

Common symptoms associated with anaphylaxis may include:

* difficulty breathing, wheezing; hives, generalized flushing, itching, or redness of the skin;
* swelling of the throat, lips, tongue, throat; tightness/change of voice; difficulty swallowing;
* tingling sensation, itching, or metallic taste in mouth; and
* feeling of apprehension, agitation.

## Appendix B: Virginia Department of Health, Standing Order Form

Based on symptoms, determine that an anaphylactic reaction appears to be occurring. Act quickly as it is safer to give epinephrine than to delay treatment. Anaphylaxis is a life-threatening reaction. **If you are alone and can provide epinephrine:**

* Call or yell for help; **get epinephrine.**
* Do not take extra time seeking others until you have provided the epinephrine; and
* Follow procedure (below) for administering epinephrine.

**If you are alone and do not know how to provide epinephrine:**

* Call out or yell for help.
* If someone is available to help you, have them get the personnel trained to provide epinephrine.
* Dial 911 and follow the dispatcher’s instructions.
* Explain to the 911 operator that anaphylaxis is suspected, and epinephrine is available:
* Your goal is to get someone (EMS or trained personnel) to provide epinephrine and care as soon as possible.

**Administer epinephrine auto-injector based on weight using following dosage:**

* 0.15 mg Epinephrine auto-injector IM, if less than 66 pounds.
* 0.30 mg Epinephrine auto-injector IM, if 66 pounds or greater.

**Frequency**: If symptoms continue, a second dose should be administered 5 to 15 minutes after the first dose.

**Procedure**:

* Inject epinephrine via auto-injector: Pull off safety release cap. Swing and jab firmly into the upper, outer thigh, (through clothing if necessary). **Hold in place for \*5 or 10 seconds to deliver medication and then remove. *\*Note: Check manufacturer instructions for time of delivery of medication.*** Massage the area for ten more seconds. Note the time.
* Call or have a bystander call 911 immediately or activate the Emergency Medical System (EMS). Explain to the 911 operator that anaphylaxis is suspected, and epinephrine has been given.
* Keep the individual either lying down or seated. If they lose consciousness, check if they are breathing and have a pulse. If not, begin CPR (cardiopulmonary resuscitation), call out for help, and continue CPR until the individual regains a pulse and is breathing or until EMS arrives and takes over.
* Call School Nurse/Front Office school personnel and advise of the situation.
* Repeat the dose after 5 to 15 minutes if symptoms persist or return.
* Stay with the individual until EMS arrives.
* Provide EMS with Epinephrine auto injector labeled with name, date, and time administered to transport to the ER with the student.
* Assure parents/guardians have been notified.
* Complete required documentation of incident.
* Order replacement epinephrine auto injector(s).

**Physician/Licensed Prescriber Signature:** Click or tap here to enter text.

**Print Name:** Click or tap here to enter text. **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\*Effective for School Year:** Click or tap here to enter text. **Must be renewed annually and with any change in prescriber.**