

Caring for Children with Anaphylaxis in Community Program Settings

**Unified Referral and Intake System (URIS)
3rd edition
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Anaphylaxis

This manual was developed in consultation with health care professionals in the areas of anaphylaxis and community health. The Unified Referral and Intake System (URIS) wishes to acknowledge the contribution of the following individuals.

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INTRODUCTION

Unified Referral and Intake System

The Unified Referral and Intake System (URIS) is a joint collaboration among various government departments, health service organizations, school divisions and child caring organizations. URIS supports community programs in the care of children with specific health care needs. Community programs that are eligible for URIS support include schools, licensed child care facilities and respite service.

URIS provides a standard means of classifying the complexity of health care needs and establishes the level of qualification required by personnel to support children with these health care needs. Health care needs that are classified as 'Group B' can be delegated to non-health care personnel who receive training and monitoring by a registered nurse. For children with 'Group B' health needs (e.g. anaphylaxis), the nurse provides the following support:

- develops and maintains a written health care plan;
- provides training to community program personnel that are responsible for the child; and
- monitors community program personnel that receive training.

URIS 'Group B' support for children at increased risk for anaphylaxis

A child at increased risk for anaphylaxis is eligible for URIS 'Group B' support if he/she is prescribed an epinephrine auto-injector by a physician.

This document provides standard clinical information that is relevant to the care of children at increased risk for anaphylaxis in community program settings. Supplemental documents are also provided to assist the nurse in the development of the health care plan and training and monitoring of community program personnel.

CLINICAL INFORMATION

The following information is considered 'best practice' in community program settings and is the basis for all anaphylaxis information contained in this document and its supplements.

Allergies

An allergy is the immune system's excessive reaction to a normally harmless substance, called an allergen. In individuals susceptible to an IgE-mediated allergy, exposure to an allergen results in the body creating IgE antibodies specific to that allergen. When the body is exposed to the allergen again, the IgE antibodies cause chemicals (e.g. histamine) to be released from mast cells, which are found in many areas of the body including the airway, mouth, nose, eyes and stomach. When mast cells release these chemicals, signs such as hives, itching and swelling are seen.

Allergic reactions can vary from mild to life-threatening.

Anaphylaxis

Anaphylaxis is a severe allergic reaction that is typically rapid in onset and can result in death due to airway obstruction or a severe drop in blood pressure. It is an extreme total body reaction.

A person with a life-threatening allergy is at increased risk for anaphylaxis. (Fischer 2018) Children at risk for anaphylaxis must be diagnosed and prescribed an epinephrine auto-injector by a physician. It is recommended that an allergist assess the child to confirm the diagnosis. Education for the child and parent/guardian in managing their allergy is essential.

A life-threatening allergy may be unpredictable and rapid in onset. Anaphylaxis can occur even when a person has previously experienced only minor allergic reactions. A person may experience an anaphylactic reaction without any previous signs of an allergy. Anaphylactic reactions can be triggered by minute amounts of an allergen measured in micrograms.

Studies have estimated that 2% of Canadians are at increased risk for anaphylaxis. Foods and insect stings are common causes of anaphylaxis in children. (Sampson 2003, Kim 2011, Golden 2017) More recent studies suggest that 6-8% of the population is at increased risk for food allergies alone. Fatalities from anaphylaxis more often occur away from home and are associated with either not using or a delay in the use of epinephrine. In one study, four out of six deaths from food allergies occurred in school and none of these children had epinephrine available at the time of their reaction. Children are at higher risk for severe allergic reactions if they also have asthma, especially if it is not well controlled. (Bock 2007)

Allergens

Foods

A person can be allergic to any food. Foods that commonly cause anaphylaxis include peanuts, tree nuts, cow's milk, eggs, fish, shellfish, wheat, sesame, mustard and soy. (Waserman 2018)

Peanut and tree nuts

Peanut allergies are one of the most common food allergies. It is estimated that 20% of children may outgrow their peanut allergy.

Peanuts are legumes that grow underground and are not botanically related to tree nuts. Tree nuts include almonds, Brazil nuts, cashews, hazelnuts, macadamia nuts, pecans, pistachios, walnuts, chestnuts, hickory nuts and pine nuts. Pine nuts are a seed but are labeled as a tree nut under the Government of Canada's Priority Allergen for Tree Nuts. Individuals who are allergic to peanuts may not be allergic to tree nuts and vice versa. However it is possible to be allergic to both. Those who are allergic to peanut or tree nuts are generally advised to avoid both due to possible cross-contamination of peanuts and tree nuts during processing and the risk of confusion between different nuts.

Peanut and tree nut residue is oily in nature and persists on surfaces, putting the child with a life threatening allergy at increased risk. Very minute quantities of peanut can result in a life-threatening reaction when ingested.

Allergic reactions to foods such as peanuts are triggered by specific food proteins. Food odor is caused by non-protein chemicals. Smelling peanut butter odor is different from inhaling airborne peanut particles (proteins) which might occur from the mass shelling of peanuts in a poorly ventilated area. Peanut-allergic people may feel unwell if they smell peanut butter, but this is likely due to a strong psychological aversion.

Milk and egg

Anaphylactic reactions to milk and egg can occur when relatively small quantities are ingested. Most children outgrow their allergy to milk or egg by the time they reach school age. Children who remain allergic to milk and egg may still have severe anaphylaxis.

Fish and shellfish

The term "fish" refers to all edible finned or boney fish, including fresh and salt water species. Shellfish are also referred to as crustaceans (e.g. shrimp, crab, lobster) and molluscs (e.g. scallops, clams). Individuals with a specific allergy to any of these species are advised to consult with their allergist about possible sensitivity to other species.

When cooking fish or shellfish, the vapor or steam has been shown to contain protein allergens that can cause anaphylaxis. However, it is rare for inhalation to cause anaphylaxis. Factors to consider are proximity to the food and type of cooking (i.e. frying

food poses a higher risk than microwaving food). Microwaving food is unlikely to cause anaphylaxis.

Insect stings

Bees, wasps, hornets and yellow jackets can cause anaphylaxis from their stings. (Golden 2017)

Medications

Medications such as antibiotics, muscle relaxants and anti-convulsants can cause anaphylaxis.

Latex

Latex may be an allergen for children who have had multiple surgeries with exposure to latex. An increase in latex use has occurred since the mid 80's and may be a contributing factor to the rise in latex allergies. This may be declining as more non latex products are being used.

Other allergens and physical triggers

Cold-induced urticaria causes hives with exposure to cold air or water. Unlike anaphylaxis triggered by foods or insect stings, cold-induced urticaria may be prevented by antihistamines. Taking a daily 24-hour/non-sedating antihistamine is often recommended during certain times of year or before situations that trigger hives for an individual child. The highest risk for anaphylaxis is in situations where the child is fully and suddenly immersed (e.g. jumping into a cold lake).

Although rare, vigorous exercise and a cold, wet environment can cause anaphylaxis. Anaphylaxis may occur with vigorous exercise alone or with vigorous exercise that occurs after eating certain foods. It may not occur every time the child exercises.

A person can also be diagnosed with idiopathic anaphylaxis, which means the cause is unknown or has not yet been identified.

Risk Reduction

Avoidance of allergens is the only way to prevent an anaphylactic reaction. Although it can be difficult to achieve complete avoidance of an allergen, reducing the child's exposure to the allergen is possible. Ingestion is the most common cause of anaphylaxis and should be the focus when developing risk reduction strategies. Ingestion also causes the most serious reactions. Risk reduction strategies should be flexible enough to address the safety of children with anaphylaxis as well as the organizational and physical environment of the community program. (Young 2009) Many factors need to be considered when implementing risk reduction strategies such as the age of children, location of eating areas, level of supervision and size of facility. The most successful strategies enlist the support of the entire community including parents, children and community program personnel. A culture of mutual respect among children, parents/guardians and the community program is critical for the safety of children with and without an increased risk of anaphylaxis.

Risk reduction strategies for younger children

Young children are at great risk of accidental exposure. The greatest risk of exposure to food allergens occurs in new situations or when normal routines are interrupted such as field trips, birthday parties and other special events. Precautions should be taken when changes in routines occur.

In general, the following strategies are recommended for food allergens.

- Have an adult supervise young children while eating.
- Do not trade or share food, utensils, straws or water bottles.
- Wash hands before and after eating. Liquid or bar soap and antibacterial wipes can effectively remove peanut butter residue from hands. However, anti-bacterial hand sanitizers and water alone are not as effective. (Perry 2004)
- Clean surfaces with soap and water or a grease-cutting solution where food has been eaten. Care should be taken to clean all surfaces that the children might touch such as tabletops and under-hangs of tables and chairs. Common cleaning products are effective in removing residual peanut allergen from surfaces.
- Do not allow eating on buses.
- Avoid craft supplies that contain allergens. Look for allergens hidden in items such as play dough, pet food or stuffed animals.

Other risk reduction strategies for younger children

- Establish an allergen-aware environment (see below for more information).
- Designate safe eating areas. If food containing an allergen is brought to the community program, it should be eaten in a designated area where the child with the allergy is not likely to be exposed. Alternately, children with food allergies may eat in a designated “allergen aware” location.
- At minimum, a young child with a food allergy should be well out of arm’s reach of their food allergen at all times.
- Do not offer food to children with an allergy without prior approval from their parent/guardian.
- Children with food allergies should not eat food that has been brought to the community program by someone other than their parent/guardian.
- Use of placemats or napkins on tables while eating may expedite cleaning of tables but is not a substitute for cleaning potentially-contaminated areas.

Establishing an allergen aware environment

If a community program requests that products containing an allergen are not brought to the community program, it is recommended to use terminology such as “allergen-aware” as opposed to “allergen-free” or “allergen-safe” as it is not possible to guarantee that the allergen will not be present in the facility. The *Allergen Aware Sample Letter* is included as a supplement to this document and may be used by the community program when requesting parents to NOT send products containing allergens to the community program.

An important component in establishing an allergen-aware policy is reading ingredient labels on foods and other products.

- Ingredient labels should be read each time a product is purchased because ingredients may change. Some community programs compile a list of “safe foods” for all families to help them comply with “allergen aware” requests. While this is well-intended, such lists should be used only as a guideline because the lists may become inaccurate or outdated. The preferred practice is to read food ingredient labels.
- Children with allergies should only eat food that is approved by the parent/guardian because it is unrealistic to expect others who are not affected by food allergies to understand the details required to properly read a food label. Some popular brands that are widely recognized as being safe for allergic consumers may be used in other products that may contain allergens (e.g. peanut-free chocolate in ice cream which has a “may contain peanut” warning).
- It should never be assumed that all forms of an allergen-free product are safe. An allergen-free claim on certain products may be specific to only one size or format of the brand, not to all products using the same brand name. For example, a regular size candy bar may be considered to be free of an allergen. However, the snack size version could have a “may contain” warning.
- The Canadian Food Inspection Agency requires “priority food allergens” to be identified on prepackaged food products using plain language. In Canada these priority allergens are peanuts, tree nuts (i.e. almonds, Brazil nuts, cashews, pistachios, hazelnuts, pecans, walnuts, macadamia nuts, pine nuts), sesame, wheat, egg, cow’s milk, fish (e.g. salmon, tuna), shellfish, crustaceans (e.g. shrimp, lobster, crab), molluscs (e.g. scallops, clams), soy and mustard. (Government of Canada, 2018)
- Food labeling standards in other countries may not be the same as in Canada.
- Precautionary warnings such as “may contain” are used by food manufacturers at their own discretion. If there is a warning, it is possible that the food contains traces of the allergen. Food-allergic people should not eat products with a “may contain” warning for their allergen(s) unless instructed by their allergist. Foods with a precautionary warning should not be an issue if they are consumed by non-allergic children in the presence of older children with food allergies.

Risk reduction strategies for teenagers

Teenagers are thought to be at higher risk for a severe allergic reaction because of their increased independence, peer pressure and a reluctance to carry an epinephrine auto-injector. The management of allergens in secondary schools is a balancing act between safety and the gradually-increasing need for learning self-management of allergies while leading a normal social life. Risk reduction strategies are more difficult to implement in secondary schools because supervision is limited and students often leave campus.

Teenagers with anaphylaxis must take on the primary responsibility for allergen avoidance at school and in other environments. High school students are expected to read food labels carefully and take special precautions such as asking foodservice staff about the preparation and handling of food if they purchase their lunch at school.

Students with food allergy should eat with a friend and advise others quickly if they feel they are having an allergic reaction.

Some possible strategies that may reduce the risk of accidental exposure without imposing unenforceable or unrealistic rules include:

- reducing common allergens in vending machines;
- placing vending machines in a central area; and
- encouraging eating in the cafeteria instead of in halls and classrooms.

Children and teenagers with food allergies should not eat if they do not have their epinephrine auto-injector with them. However, allergic reactions to some allergens are possible without eating and the safest practice is for the epinephrine auto-injector to be available at all times.

Risk reduction strategies for specific allergens

Peanuts and tree nuts

Very minute quantities of peanut can result in a life-threatening reaction when ingested. Peanut and tree nut residue is oily in nature and persists on surfaces, putting the child with a life-threatening allergy at risk. For this reason, establishing a nut-aware environment (i.e. requesting that products containing peanuts or tree nuts are not brought to the community program) may be warranted.

Milk

- Some schools request that milk products NOT be brought into classrooms where there are milk-allergic children.
- Exempt classrooms with milk-allergic children from milk programs.
- Some community programs allow milk products in their facility and reduce the risk of exposure by implementing some of the following strategies.
 - Give children straws to put in bevel-topped milk containers and teaching them to close the top once the straw is inserted.
 - Ask children to bring milk from home in a plastic bottle with a straw.
 - Have children with milk allergy sit at a table where milk products more likely to spill (e.g. milk, yogurt) are not being consumed.
 - On pizza days, allow parents of milk-allergic children to take their children home for lunch or send homemade milk-free pizza/ alternative meal to school.
 - After a pizza lunch, take special care to ensure that children properly wash their hands/mouth and that surfaces are properly cleaned.

Egg

- Have separate tables far apart for children with egg allergies and children who bring eggs (e.g. hard boiled eggs, egg salad sandwiches) or whose food contains egg products (e.g. mayonnaise).
- Avoid egg in cooking classes, including egg whites and yolks, either cooked or raw.

- Use plastic or wooden eggs for crafts instead of real eggs (e.g. Easter egg hunts).

Stinging insects

- Avoid areas where insects congregate.
- Keep outdoor garbage covered and away from play areas. Yellow jackets tend to congregate around garbage and food.
- Avoid eating outdoors, especially meat or fish and sweet products such as pop drinks and juice. Insects often fly into pop cans and sting the person when they drink from the can.
- Use straws for drinks whenever possible.
- Wear shoes instead of sandals. Do not go barefoot.
- Remove nests or hives from play areas.
- Only the honeybee leaves a stinger. When removing the stinger, scrape your nail over the skin. Grabbing the stinger between your fingers will compress the sac of venom and inject more venom into the body.

Latex

- Provide non-latex gloves for use by staff and children (e.g. science class, first aid kits).
- Inflate and deflate balls outdoors and away from children. Balls that contain latex will send latex particles into the air when inflated or deflated.
- Do not use latex-containing balloons in the community program if a child has a life-threatening allergy to latex. When balloons break, the latex particles become aerosolized.
- Avoid any items that contain latex such as soft rubber balls and stretchy rubber items, such as pink erasers and rubber bands.

Signs of anaphylaxis

After exposure to the allergen, any combination of the signs listed on the next page may occur to signal the onset of anaphylaxis. Signs do not always occur in the same sequence, even in the same individual.

An anaphylactic reaction most commonly begins within seconds or minutes of exposure to the allergen, with the majority of reactions occurring within thirty minutes. The time from the first signs of anaphylaxis to death can be as little as a few minutes, if the reaction is not treated. It is possible, but rare, for signs of anaphylaxis to occur up to 2-4 hours after exposure to the allergen. Even when signs have subsided after initial treatment, they can return as long as eight hours after exposure. This second (biphasic) reaction may occur in up to 20% of cases. (Järvinen 2008)

When remembering the signs of anaphylaxis, use Food Allergy Canada's acronym Think F.A.S.T. (face, airway, stomach, total body). Watch for signs that occur suddenly and are obvious changes in appearance or behavior. *If ANY combination of signs is present and there is reason to suspect anaphylaxis, give epinephrine immediately and activate 911/EMS.* There is clear evidence that a delay in injecting epinephrine

increases the odds of the person dying from anaphylaxis. Prompt treatment of anaphylaxis with an epinephrine auto-injector decreases the likelihood of needing repeated doses because of prolonged or recurrent symptoms. (Sicherer 2017, Hochstadter 2016, Fleming 2015, Bock 2007)

Face

- Red watering eyes
- Runny nose
- Redness and/or swelling of face, lips and tongue
- Hives (red, raised & itchy rash) – itchy
 - If a person has eaten a food that contains the allergen, hives often appear around the mouth.

Airway

- A sensation of throat tightness
- Hoarseness or other change of voice
- Difficulty swallowing
- Difficulty breathing
- Coughing
- Wheezing
- Drooling

Stomach

- Severe vomiting
- Severe diarrhea
- Severe cramps

Total body

- Hives (red, raised & itchy rash) - itchy
- Feeling a “sense of doom”
- Change in behavior – The child may say he doesn’t feel right, become unusually quiet or withdrawn, become suddenly tired, scream, appear very agitated or stop eating in the midst of eating well.
- Pale or bluish skin
- Dizziness and fainting are signs that blood pressure is dropping
- Loss of consciousness

Children have a unique ways of describing their experiences and perception. Some children, especially very young ones, put their hands in their mouths or pull or scratch at their tongues in response to an allergic reaction. Children’s voices may change (e.g. become hoarse or squeaky) and they may slur their words.

The following are examples of the words a child might use to describe an allergic reaction.

- “This food is too spicy.”
- “My tongue is hot (or burning).”
- “It feels like something is poking my tongue.”
- “My tongue (or mouth) is tingling (or burning).”
- “My tongue (or mouth) itches.”
- “My tongue feels like there is hair on it.”
- “My mouth feels funny.”
- “There’s a frog in my throat.”
- “There’s something stuck in my throat.”
- “My tongue feels full (or heavy).”
- “My lips feel tight.”
- “It feels like there are bugs in there.” (to describe itchy ears)
- “My throat feels thick.”
- “It feels like a bump is on the back of my tongue.”

Treatment of anaphylaxis

Epinephrine is the first-line medicine used to treat anaphylaxis. (Sicherer 2007, NAIAD 2010, Simons 2014, Sicherer 2017) It is a chemical that the body naturally produces (adrenaline=epinephrine) and is responsible for the “adrenaline rush” under stress. Epinephrine is effective in treating anaphylaxis by reversing the dangerous symptoms involved in anaphylaxis and by turning off the allergic response in the body. It helps by constricting muscles around blood vessels, which raises the blood pressure, relaxing airway muscles, reducing swelling, reducing the release of chemicals that cause anaphylaxis and stimulating the heart. (Simons 2004)

There is no significant cause for concern if epinephrine is given to a child for whom it is prescribed and an anaphylactic reaction is not actually taking place. As described below, epinephrine will also help asthma episodes in children with both anaphylaxis and asthma and should be used first if it is difficult to tell whether the child is experiencing an asthma episode or anaphylaxis. The lifesaving benefit of epinephrine in cases of suspected anaphylaxis outweighs any small risk of side effects. In healthy individuals, epinephrine will not cause harm if given unnecessarily.

Side effects from epinephrine are generally mild and subside within a few minutes. Possible side effects are listed below.

- Rapid heart rate
- Paleness
- Dizziness
- Weakness
- Tremors
- Headache

Antihistamines are not recommended as first-line treatment of anaphylaxis. The main benefit of antihistamines is in treating hives or skin symptoms. Antihistamines will not increase blood pressure or open the airway. Older generation antihistamines may also cause drowsiness and mask the signs of progressing anaphylaxis.

Clinical experts recommend that a child with a life-threatening allergy wear medical alert identification (e.g. MedicAlert® bracelet). The Canadian MedicAlert® Foundation offers free MedicAlert® identification to children from age 4-14 in schools that are registered in the program. Parents may contact their child's school or visit the website at www.nochildwithout.ca for more information.

Asthma & anaphylaxis

For children who are diagnosed with both anaphylaxis and asthma, epinephrine should always be used first if there is uncertainty about whether they are having an anaphylactic reaction or an asthma episode. Epinephrine can be used to treat life-threatening asthma episodes as well as anaphylactic reactions. Children with anaphylaxis and asthma should carry their epinephrine auto-injector and asthma reliever medication with them.

Epinephrine auto-injectors

Epinephrine auto-injectors (e.g. EpiPen®, Allerject®) should be used to administer epinephrine and are the devices of choice because they are simple to use. They contain a spring-loaded, self-injectable syringe with a concealed needle. They should always be administered in the outer middle thigh. Epinephrine auto-injectors are available in two doses in Canada. In general, the 0.3-mg dosage is prescribed for adults and children weighing 25-30 kg or more and the 0.15-mg dosage is prescribed for children weighing less than 25-30 kg. (Sicherer 2017, Lieberman 2015, Simons 2014) Although the appropriate dose should be used, accidental administration of a larger dose of epinephrine to a school-age child is unlikely to cause harm. Epinephrine auto-injectors should be stored in their protective tubing or case and kept at stable room temperature (15-30 °C). They should not be refrigerated or left in extreme temperatures (e.g. in the car) for long periods of time. If the epinephrine freezes, the auto-injector should be replaced.

Epinephrine auto-injectors are stamped with an expiry date and should be replaced when expired. If an epinephrine auto-injector is expired, it is still safe to use it as long as the epinephrine is clear and colorless. (Simons 2000) The benefit of using an expired medication is greater than no medication. However, epinephrine may remain clear for a long time after it has expired and its effectiveness continues to decrease over time. (Simons 2000) Epinephrine should not be used if it is brown. Manufacturers of most epinephrine auto-injectors offer online programs to assist people with keeping track of the expiration date of their epinephrine auto-injector. See the manufacturers' website for additional information.

The child should carry the epinephrine auto-injector at all times. Most children are able to carry their own auto-injector by age six or seven years. If the child is not developmentally able to carry the epinephrine auto-injector, it should be worn by the

adult responsible or kept in an unlocked, safe and accessible location. Children with stinging insect allergy usually carry their epinephrine auto-injector only during insect season (i.e. warmer months). It is the responsibility of community program personnel to be aware of the location of the epinephrine auto-injector(s) for children in their care.

Older children and teens should be encouraged to take as much responsibility as possible for preventing and managing anaphylaxis. However, some signs of anaphylaxis, such as a drop in blood pressure and feeling faint, may impair the ability to recognize anaphylaxis. It can never be assumed that a person of any age will have the ability to judge when epinephrine is required and to self-inject in an emergency situation.

An epinephrine auto-injector that is prescribed to a child cannot be administered to another child. If a back-up epinephrine auto-injector purchased by the community program is being used, it is the responsibility of the community program personnel to ensure its dosage is equivalent to the dosage prescribed to the child.

If a child is exhibiting signs of anaphylaxis but is *not* prescribed an epinephrine auto-injector, the community program's standard emergency procedure (i.e. call 911/EMS) should be implemented and the instructions provided by EMS followed.

EpiPen®

When removing the blue safety cap from the EpiPen®, pull the cap straight off. It should not be pulled sideways, bent or twisted off as this may cause the auto-injector to spontaneously activate or not work correctly. After the EpiPen® is administered, an orange cover automatically extends and locks into place to ensure the needle is not exposed.

Allerject®

The Allerject® contains an electronic voice instruction system that guides the user through the steps in administering the injection. The voice recording will begin when the device is removed from the outer sleeve. If the voice instruction does not work for any reason, the Allerject® may still be used. When the red safety cap is removed, the Allerject® is primed and must be used or discarded. After the Allerject® has been administered, the black base locks into place to ensure the needle is not exposed.

Administering an epinephrine auto-injector

1. Secure the child's leg. The child should be sitting or lying down in a position of comfort.
 - If the child is feeling lightheaded or dizzy, they should lie down on their back with the legs raised above heart level. However, if the child is having difficulty breathing, keep them in an upright position. If the child is vomiting, they should be placed on their side. The child should not sit or stand immediately following a reaction as this could result in a life-threatening drop in blood pressure.
 - It may be necessary to hold or straddle the child. Infants and toddlers can be held in an adult's lap.

2. Identify the injection area on the outer middle thigh.
 - The epinephrine auto-injector will penetrate one layer of regular clothes but snowsuits or other bulky clothing should be removed.
 - The middle of the thigh can be found by dividing the leg between the knee and hip into three sections and choosing the middle section. The outer portion of the thigh is found between the outer seam and center crease of a pant leg. Feel the spot with your hand to avoid seams or items in a pocket.
3. Hold the epinephrine auto-injector correctly.
 - For the EpiPen[®], hold it in a tight fist without putting your thumb over either end. Avoid injection into the hands or feet because this may result in loss of blood flow to the affected area. If there is an accidental injection into these areas, 911/EMS should be initiated.
4. Remove the safety cap by pulling it straight off. Do not bend or twist it off.
5. Administer the epinephrine auto-injector by pressing the tip into the thigh at a 90° angle until you hear or feel a click. Hold the epinephrine auto-injector in place to ensure all the medication is injected.
 - Hold the EpiPen[®] in place for a slow count of 5.
 - Hold the Allerject[®] in place for a slow count of 2.
6. Discard the used epinephrine auto-injector following the community program's policy for disposal of sharps or give to EMS personnel.
 - The EpiPen[®] has a plastic cover that will extend and lock into place to ensure the needle is not exposed. If this did not occur, check to see if the safety cap was removed and inject again, pressing more firmly.

After the epinephrine auto-injector is injected, the child may appear pale and complain of headache, dizziness, pounding heart, nausea or shakiness. The child may become very quiet. These effects are from the epinephrine and will pass quickly. Improvements in the signs of anaphylaxis will occur within minutes.

Responding to an anaphylactic reaction

1. Inject the epinephrine auto-injector in the outer middle thigh.
 - It is essential that the epinephrine auto-injector is given as soon as possible. Giving the first dose in a timely manner decreases the likelihood of needing additional doses of epinephrine.
2. Activate 911/EMS.
 - It is essential that a person having an anaphylactic reaction be seen by a physician, even if the epinephrine auto-injector has been given and the signs of anaphylaxis disappear.
 - Activating 911/EMS should be done simultaneously with injecting the epinephrine auto-injector by delegating the task to a responsible person. NEVER leave the child who is experiencing an anaphylactic reaction alone.
3. Notify the child's parent/guardian.
4. A second dose of epinephrine may be administered within 5-15 minutes after the first dose is given IF symptoms have not improved.
 - Signs that anaphylaxis is worsening include the child's breathing becoming more difficult or a decreasing level of consciousness.

- It is important to note the time of administration of the first epinephrine auto-injector.
 - The administration of more than two doses of the epinephrine auto-injector should be decided in consultation with an EMS provider (in person or by phone).
 - Whenever possible, parents/guardians should provide a back-up epinephrine auto-injector for use at the community program in the event that a second dose of epinephrine is required.
5. Stay with the child until the EMS personnel arrive.
- Prevent the child from sitting up or standing quickly as this may cause a dangerous drop in blood pressure.
 - Information that should be provided to EMS personnel includes the signs of anaphylaxis observed, the timing of anaphylaxis signs and treatment, where the epinephrine auto-injector was given (right or left thigh) and the effect of epinephrine on the child.

HEALTH CARE PLAN

When a community program receives URIS 'Group B' support for children with URIS 'Group B' health care needs, a written health care plan is developed and maintained by a registered nurse on at least an annual basis. The development and implementation of the health care plan should reflect the principles of inclusion, normalization and independence.

- A child with anaphylaxis is foremost a child within a family, child-care facility, classroom or other community program.
- The environment should be changed to support the child, not the child changed to suit the environment.
- Interventions should be as non-intrusive as possible and be delivered in a manner that respects the child's dignity and privacy as well as the normal routines and patterns of the community program.
- The parent/guardian and child have rights and obligations and should be encouraged to actively participate in decisions affecting themselves and their children.

A standard health care plan may be used as the response to an anaphylactic reaction in community program settings is the same for every child. Standardized health care plans may be completed by the parent/guardian and reviewed by the nurse.

The health care plan should be kept in a location that is secure and accessible at the community program. All community program personnel that may be responsible for a child with anaphylaxis should be aware of the location of the health care plan. It should also accompany the child on excursions outside the facility.

If the child is prescribed an epinephrine auto-injector but does not bring it to the community program, completion of the anaphylaxis health care plan is not required. In such situations, the response to an anaphylactic reaction is to call 911/EMS.

Content

The following information is included in the anaphylaxis health care plan. The *Anaphylaxis Health Care Plan* contains this information and is included as a supplement to this document.

Demographic information

- Child name
- Birth date
- Community program name
- Parent(s)/guardian name and phone number(s)
- Alternate emergency contact name and phone number(s)
- Physician information
 - Allergist name and phone number

- Family physician/pediatrician name and phone number

Allergy information

- Life-threatening allergen(s)
- Non life-threatening allergen(s)
- Availability of medical alert identification (e.g. Medic-Alert® bracelet)

Epinephrine auto-injector information

- Name and dosage of epinephrine auto-injector (e.g. EpiPen®, Allerject®)
- Location of epinephrine auto-injector during attendance at the community program
- Availability of back-up epinephrine auto-injector at the community program and its location

Responding to an anaphylactic reaction

- Signs of anaphylaxis
- Steps in administering epinephrine auto-injector
- Steps in responding to anaphylactic reaction

Documentation

- Template for recording interventions and actions performed by nurse and/or community program personnel (e.g. communication, actions taken)
- Signatures & dates
 - Nurse signature & date
 - Parent/guardian signature & date

Administration of anti-histamines

Anti-histamines are not recommended for the treatment of anaphylaxis and should not be included in the anaphylaxis health care plan. If the parent/guardian requests the administration of an antihistamine for non-life-threatening allergic reactions, this should be addressed as outlined in the community program's policy for administration of medication.

Risk reduction strategies

Schools and licensed child care facilities in Manitoba are required to develop and implement policy that addresses anaphylaxis in their facility including strategies for reducing risk of exposure to allergens. In October 2008, the *Public Schools Amendment Act – Anaphylaxis Policies* was passed to formalize a school board's obligation to develop an anaphylaxis policy. The Bill also gives the Minister of Education the discretionary authority to make regulations in this area. The amendment was proclaimed effective November 1, 2009. For more information about *The Public Schools Amendment Act*, go to <http://web2.gov.mb.ca/bills/39-2/b232e.php>.

In 2008, Manitoba passed the *Child Care Safety Charter*, the first legislation of its kind in Canada, which mandates safety plans and codes of conduct in child care facilities. This legislation requires them to develop comprehensive and coordinated policies and procedures to meet the needs of children with anaphylaxis. The Charter was proclaimed on May 1, 2010. For more information about the Child Care Safety Charter, go to <http://web2.gov.mb.ca/laws/statutes/2008/c01808e.php>

If a community program has not established risk reduction strategies, the nurse should assist them in doing so. Many factors should be considered when establishing risk reduction strategies such as the age of children, location of eating areas, level of supervision and size of facility. The most successful strategies enlist the support of the entire community including parents/guardians, children and community program personnel. The *Risk Reduction Strategies Template* may be used for this purpose and is included as a supplement to this document. The *Allergen Aware Sample Letter* is also included as a supplement to this document and may be used by the community program when establishing an allergen-safe environment (i.e. requesting that products containing allergens are not brought to the community program). Other resources that may be useful in the development of risk reduction strategies include *Anaphylaxis in Schools and Other Settings 3rd Edition*.

TRAINING

When a community program receives URIS 'Group B' support, training is provided to community program personnel by a registered nurse. Training is provided on at least an annual basis. The training of community program personnel should reflect the principles of adult learning.

- Identify and integrate the learning needs of participants into the training session.
- Information should be applicable to the participants' responsibilities and focus on what is most useful to them.
- Adults have accumulated a foundation of life experiences and knowledge and need to connect learning to this knowledge/experience base.
- An organized training session with clearly-defined elements assists participants in identifying and attaining learning goals.

It is recommended that all community program personnel that may be responsible for a child with anaphylaxis attend the training session. As an example, community program personnel that may be responsible for a child with anaphylaxis may include:

- in schools - teachers, teaching assistants, school administrators, office staff, substitute teachers, bus drivers, lunch room supervisors;
- in licensed child care facilities - child care providers, child care directors; and
- in recreational programs – staff members, administrators, volunteers.

The community program is responsible to ensure relevant personnel attend the training session. It is recommended to keep a written record that indicates community program personnel in attendance and date that training occurred.

Adequate time should be scheduled for training to ensure community program personnel obtain the knowledge and skill necessary to safely respond to the needs of children with anaphylaxis in their facility. The amount of time required to train community program personnel will vary depending on several factors such as the existing knowledge of community program personnel, number of personnel attending the session and format of training resources used (e.g. PowerPoint, Worksheet).

Whenever possible, training should be scheduled when all community program personnel can attend to ensure service is provided in an efficient manner. If the training session is poorly attended (i.e. there is not an adequate number of community program personnel to safely address the child's needs), additional training should be scheduled. If subsequent training sessions are also poorly attended, alternate strategies should be discussed with the community program to ensure training is provided in an efficient manner.

When the community program has not received training in the past, a child with anaphylaxis may still attend the community program prior to the training session. In such situations, the community program's standard policy for emergency situations (e.g. call 911/EMS) is implemented, if required.

Content

The following clinical information and child-specific information is included in the training session. A demonstration and return demonstration of administering an epinephrine auto-injector is also performed at the training session.

Clinical information

- Definition of allergies and anaphylaxis
- Common allergens
- Risk reduction
- Signs of anaphylaxis
- Treatment of anaphylaxis
 - Epinephrine
 - Asthma and anaphylaxis
 - Epinephrine auto-injectors
 - Administration of epinephrine auto-injector – including demonstration and return demonstration (see below for more details)
 - Responding to an anaphylactic reaction

Child-specific information

- Life threatening allergen(s)
- Name and location of epinephrine auto-injector

Demonstration and return demonstration

The nurse demonstrates the administration of the epinephrine auto-injector(s) prescribed for children in the community program and observes community program personnel performing a return demonstration.

Training devices are required for demonstration purposes and can be purchased through the manufacturer's websites.

- www.epipen.ca

Training Resources

The following resources are included as supplements to this document. If alternate resources are used, it is the responsibility of the nurse to ensure its content is consistent with the clinical information included in this document.

- *Anaphylaxis Handout*
- *Anaphylaxis PowerPoint*
- *Anaphylaxis DVD*
- *Anaphylaxis Worksheet* (Word and PowerPoint version) is recommended for community program personnel that have previously attended an anaphylaxis

training session. The Microsoft Word version may be better suited for individuals or small groups. The Microsoft PowerPoint version may be more suitable for large groups.

- *Child Specific Information for Anaphylaxis Training Session* may be used to review child specific information at the training session.

On-site training by a registered nurse is required to delegate knowledge and skill to community program personnel in the management of anaphylaxis. Other teaching strategies may be used as supplements to on-site training at the discretion of the nurse. The following on-line resources may be useful for training purposes.

- Online Anaphylaxis Training
<http://www.eworkshop.on.ca/edu/anaphylaxis/sc00.cfm?L=1>
- Food Allergy Canada - Online allergy aware course for educators and child care workers - www.allergyaware.ca/courses/
- Food Allergies in Schools: What School Staff Need to Know - www.allergyhome.org
- EpiPen® video - www.epipen.ca

MONITORING

Monitoring of trained community program personnel by a nurse is required to ensure that the knowledge and skill necessary to safely care for children with anaphylaxis has been acquired and/or retained. Monitoring is required on at least an annual basis.

The frequency and timing of monitoring is based on the professional judgment of the nurse as well as the complexity of information taught, maturational issues and the skill demonstrated by community program personnel. The following strategies may be used for monitoring purposes.

- Completion of an evaluation form by community program personnel that attend the training session. The *Anaphylaxis Training Session Evaluation Form* is included as a supplement to this document and may be used for this purpose.
- Observation of community program personnel performing a return demonstration (i.e. administration of epinephrine auto-injector training device) at the training session.
- Asking community program personnel questions during the training session. The *Anaphylaxis Worksheet* is included as a supplement to this document and may be used for this purpose.

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RESOURCES

The following list includes resources that may be relevant to community programs in the care of children with anaphylaxis. The purpose of these agencies/organizations may not be consistent with the purpose and content of this document.

Children’s Allergy and Asthma Education (CAAEC) at Health Sciences Centre in Winnipeg

YouTube channel “Allergy and Asthma Education”

- The CAAEC offers free asthma and food allergy education programs for parents, school age children and teens.
- www.caaec.ca or 204-787-2551 Toll free number 1-888-554-1141

Alberta Education - Allergy and Anaphylaxis Informational Response (AAIR)

www.education.alberta.ca/admin/healthandsafety/aaair.aspx

Allergy Home – educational website

<http://www.allergyhome.org/>

- Online and written resources for schools and other community programs

Allergy Safe Communities

www.allergysafecommunities.ca

- Based on *Canadian Society of Allergy and Clinical Immunology Anaphylaxis in Schools and Other Settings, 2011*
- Resources for community programs

Food Allergy Canada

www.foodallergycanada.ca

- Resources for community programs and families
- Items to purchase (e.g. books, posters)
- Online anaphylaxis training e-learning module - www.eworkshop.on.ca/allergies
- Online allergy aware course for educators and child care workers - www.allergyaware.ca/courses/
- Website for teens – www.whyriskit.ca
- Website for children – www.safe4kids.ca

Allergy Asthma Information Association

www.aaia.ca

- Resources for community programs and families

Association québécoise des allergies alimentaires

www.aqaa.qc.ca

- Resources for community programs and families (French)

Allergic Living Magazine

www.allergicliving.com

- Resources for community programs and families

British Columbia School Trustees Association - Anaphylaxis Resource
<http://dsweb.bcsta.org/docushare/dsweb/View/Collection-7655>

Canadian Food Inspection Agency
www.inspection.gc.ca

- [Food Allergy Labeling Information and Fact Sheets -](http://www.inspection.gc.ca/food/information-for-consumers/fact-sheets-and-infographics/food-allergies/eng/1332442914456/1332442980290)
<http://www.inspection.gc.ca/food/information-for-consumers/fact-sheets-and-infographics/food-allergies/eng/1332442914456/1332442980290>
- Food Recalls/Allergy Alerts -
www.inspection.gc.ca/english/corpafr/recarapp/recaltoce.shtml

Canadian Medic Alert – No Child Without
www.nochildwithout.ca

- FREE medic alert bracelet for children ages 4-14 that attend a school participating in the program.

Canadian School Boards Association (CSBA)
www.cdnsba.org

- Anaphylaxis: A Handbook for School Boards

EpiPen® Canada
www.epipen.ca

- How to use EpiPen® – Online video
- Expiration Reminder service

F.A.R.E. Food Allergy Research and Education (U.S.)
www.foodallergy.org

- Website for Teens - www.faanteen.org & www.foodallergy.org/resources/teens

Health Canada
www.healthcanada.gc.ca/foodallergies

- Advisories, Warnings and Recalls
www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/index_e.html
- Food Labeling
www.hc-sc.gc.ca/fn-an/label-etiquet/index_e.html

Kids with Food Allergies Foundation
www.kidswithfoodallergies.org

Manitoba Department of Education
www.edu.gov.mb.ca

- Unified Referral and Intake System - www.edu.gov.mb.ca/k12/specedu/plan_part.html
- Legislation and Policies - www.edu.gov.mb.ca/k12/specedu/plan_part.html

National Education Association (NEA) Health Information Network

www.neahin.org

- Resources for community programs

The Food Allergy & Anaphylaxis Alliance

www.foodallergyalliance.org