POLICY & PROCEDURE NUMBER: 2.6
DEPARTMENT: *Infection Control*
SUBJECT: *Management of Fainting and Anaphylaxis Related to Vaccine Administration*

APPROVAL DATE: April 2004
REVIEW DATE: March 2017
REVISION DATE: October 2015
REVIEW DATE: November 2018

PURPOSE:

All vaccines have the potential to cause adverse reactions. In order to minimize adverse reactions, clients should be carefully screened for contraindications to a vaccine before it is administered. Even with careful screening, reactions may occur. These reactions can vary from trivial and inconvenient (i.e. soreness, itching) to severe and life threatening (i.e. **anaphylaxis**). If reactions occur, staff must be prepared to manage them until the client recovers or care is transferred to another health care provider (i.e. Emergency Medical Services or EMS).

The procedure below outlines the steps to follow in the event of an adverse reaction to a vaccination.

POLICY:

The key categories to consider when providing a safe environment in the management of fainting and anaphylaxis are:
• effective screening tools and procedures to proactively identify persons with potential vaccine reactions;
• staff training re: how to identify client reactions in a timely fashion;
• emergency response procedures in case of anaphylaxis

All recipients (residents and staff) of immunizations who experience fainting or anaphylaxis will be managed according to the procedure outlined below.

For the purposes of this document, **fainting or syncope** will be defined as a "temporary loss of consciousness due to insufficient oxygen to the brain". Symptoms include dizziness, temporary loss of vision (blacking out), temporary loss of hearing, weakness, sweating, a feeling of heat, palpitations (pounding heart), and nausea. Signs include pale skin and rapid, shallow breathing. Loss of consciousness may happen in seconds and can be accompanied by brief clonic seizure activity (rhythmic jerking of the limbs).
Syncope is very common, occurring for the most part in two age ranges: the teenage years and older age. There are three broad categories of syncope: cardiogenic, reflex (i.e. neurally mediated) and orthostatic hypotension; the latter is most common.

Swelling and urticarial rash (hives) at the injection site can occur but are not always caused by an allergic reaction.

Anaphylaxis is defined as a "serious potentially life-threatening allergic reaction to foreign antigens; it has been proven to be associated with vaccines." Anaphylaxis is rare with an estimated occurrence rate of 1 – 10 episodes per million doses of administered vaccine.

Symptoms are usually evident within 15 to 30 minutes of injection. A shorter onset means a more severe reaction. Signs and symptoms develop over several minutes and by definition involve at least two body systems (i.e. the skin, respiratory, gastrointestinal or circulatory systems). The cardinal features include:

- Itchy hives (in over 90% of cases);
- Progressive, painless swelling of the face and mouth, which may be preceded by itchiness, tearing, nasal congestion or facial flushing;
- Respiratory symptoms (in 70% of cases) including sneezing, coughing, wheezing, laboured breathing and upper airway swelling (indicated by hoarseness and/or difficulty swallowing) possibly causing airway obstruction;
- Gastrointestinal symptoms (in 45% of cases) including crampy abdominal pain and vomiting;
- Sudden reduced blood pressure or symptoms of end-organ dysfunction (i.e. hypotonia and incontinence). Hypotension can progress to shock and collapse. Unconsciousness is rarely the sole manifestation of anaphylaxis; rather it is a late event in severe cases.

Other features of anaphylaxis include cardiovascular symptoms (in 45% of cases) such as chest pain, palpitations or tachycardia and central nervous system symptoms (in 15% of cases) of uneasiness, altered mental status, dizziness or confusion.

PROCEDURE:

FAINTING, SEIZURES, VOMITING, LOSS OF CONSCIOUSNESS, INJURY

Prevention:

- Introduce measures to reduce stress in those awaiting immunization such as short waiting times, comfortable room temperature, preparation of vaccines out of view of recipients when possible, and privacy during the procedure;
- Immunize clients while seated;
- Immunize clients with a history of anxiety and fainting while they are lying down;
- Watch for clients who appear particularly anxious, pale, sweating and/or trembling or have cool clammy skin prior to or after vaccination. Watch for clients who complain of dizziness, numbness, or tingling in their extremities prior to or after vaccination;
- If noted prior to vaccination, bring client to recovery area to be vaccinated lying down;
- If noted after vaccination, physically support client to a mat in the recovery area. Ask for assistance if you cannot support them adequately on your own;
- Sometimes counter-pressure manoeuvres that involve crossing the legs or squeezing the thighs together can be used to ward off a fainting spell;
- Clients who are hyperventilating should be offered a paper bag for rebreathing.

Management of All Reactions

- Offer reassurance;
- Check vital signs as appropriate before the client leaves the clinic area (i.e. if client loses consciousness for > 2 minutes);
- Offer the client juice, if available and client is able to swallow safely;
- When the client begins to feel better, s/he should be advised to get up slowly;

Management of Fainting:

- Lay client down and elevate feet;
- Keep the client in the clinic area until s/he feels well enough to leave (minor faint only). Counsel clients to avoid unsafe activities such as stair climbing or driving immediately after vaccination.

Management of Seizure Activity

- If seizure activity is noted, ensure that the client cannot injure him/herself by keeping away from hard objects, cushioning head (if not on mat);
- For staff member, advise staff member to follow-up with their physician ASAP. For residents, registered staff to notify resident's physician.

Management of Vomiting

- If the client vomits or appears likely to vomit, place him/her on his/her side in the recovery position. Be careful to avoid bending the neck if a spinal injury is suspected as a result of a fall;
- Keep the client in the clinic area until s/he feels well enough to leave. Counsel clients to avoid unsafe activities such as stair climbing or driving immediately after vaccination.

Management of Loss of Consciousness

- Keep the client in the clinic area until s/he feels well enough to leave (loss of consciousness < 2 minutes). Counsel clients to avoid unsafe activities such as stair climbing or driving immediately after vaccination.
- If loss of consciousness persists for more than two minutes, ask someone to call 911, continue to assess client's airway, breathing, and circulation and monitor for signs of an anaphylactic reaction until care is transferred to EMS.

Management of Injury

- If the client hits his/her head, advise re need to follow-up with physician ASAP. For residents, follow home's policy and procedures.
- If the client sustains a serious injury, call 911 and transfer care to Emergency Medical Services.

Discharging client

- Arrange for staff member to leave clinic area attended by another adult. S/he should be driven home by someone else and observed by an adult for several hours following the episode. Residents will be monitored by registered staff unless transferred to hospital.
- Document non-minor reactions like seizures, unconsciousness lasting longer than two minutes, or injuries in Point Click Care (PCC) for residents; or, on an "Accident Incident Report" for staff and notify the Resident Physician and Manager of Resident Care;
- Follow-up on the condition of the client later in the day if an injury, seizure, or faint greater than two minutes occurred.

SWELLING AND HIVES AT THE INJECTION SITE

Management of swelling and hives:

- Swelling and urticarial rash i.e. hives can occur at the injection site but are not always caused by an allergic reaction. The swelling or hives should be observed for at least 30 minutes in order to ensure that the reaction remains localized, and if so, the vaccine recipient may leave after this observation period.
- If the hives or swelling disappears and there is no evidence of any progression to other parts of the body and there are no other symptoms within the 30 minute observation period, the vaccine recipient can leave.
- However, **if any other symptoms arise, even if considered mild (e.g. sneezing, nasal congestion, tearing, coughing, facial flushing), or if there is evidence of any progression of the hives or swelling to other parts of the body during the observation period, epinephrine should be given.**

ANAPHYLAXIS

Prevention:

- Screen clients for increased risk of anaphylaxis including known allergies to vaccines and vaccine components
- Screen clients for risk factors of increased severity of anaphylaxis including very old age; pregnancy; asthma; allergic rhinitis and eczema; thyroid disease; cardiovascular disease including hypertension; exercise; acute infection; menses; emotional stress; and concurrent use of certain medications (i.e. angiotensin-converting enzyme [ACE] inhibitors, angiotensin receptor blockers [ARB] or beta-blockers. If multiple risk factors, refer to health care provider for vaccination;
- Keep vaccine recipients under observation for at least 15 minutes after immunization; 30 minutes is a safer interval when there is a specific concern about possible vaccine allergy. In low risk situations, observation can include having vaccine recipient remain within a short distance of the vaccinator and return immediately if feeling unwell.
- Be prepared by having anaphylaxis management kits readily available wherever vaccines are administered.

List of recommended items in an **anaphylaxis management kit**

1. Clear concise summary of anaphylaxis emergency protocol
2. Laminated table of dosage recommendations for epinephrine and diphenhydramine hydrochloride by weight and age

3. Two vials of aqueous epinephrine 1:1000
4. One vial of injectable diphenhydramine hydrochloride
5. Two – 1 cc syringes with attached needles (1 – 25 gauge, 1" needle; 1 – 25 gauge, 5/8 " needle)
6. One extra 25 gauge, 5/8" needle
7. Two 25 gauge, 1" and 1.5 inch needles (extra for larger adults)
8. Scissors
9. Alcohol swabs
10. Pocket mask
11. Equipment for taking blood pressure
12. Tongue depressors
13. Flashlight

Emergency Management of Anaphylaxis:
IMMEDIATELY

- Assess circulation, airway, breathing, mental status, skin, and body weight.
- Direct someone to call **911** or emergency medical services;
- Position the client on his/her back or semi-recumbent if client is pregnant and/or experiencing respiratory distress. Elevate the lower extremities. Place the client on their side if vomiting or unconscious;
- **Inject epinephrine subcutaneously as below**. Scissors may be needed to cut away clothing:
- Use a different injection site from vaccination injection site and epinephrine injection site.
- There should always be **two nurses** in attendance when a client is experiencing anaphylaxis. One nurse should draw up/administer epinephrine and the other nurse should manage the client/check that the dosage is correct

Dose of epinephrine (1:1000, 1mg/ml solution) 0.3 mg SC every 5 minutes to a maximum of 3 doses.

Epinephrine can cause mild and transient effects such as pallor, tremor, anxiety, palpitations, headache and dizziness which occur within minutes after injection of the recommended dose. These effects confirm that a therapeutic dose has been given.

Ensure the client lies down. Fatality can occur within seconds if s/he stands or sits suddenly after receiving epinephrine.

IF CLIENT'S BREATHING IS MORE LABORED OR LEVEL OF CONSCIOUSNESS DECREASES

- Repeat epinephrine every 5 minutes as needed for a maximum of 3 doses;
- Alternate right and left thigh for repeat doses of epinephrine;
- Elevate head and chest slightly;
- Use head tilt, chin lift or jaw thrust if airway is blocked;

ADJUNCTIVE TREATMENT

- **One dose** of diphenhydramine hydrochloride may be given when symptoms are not well controlled by epinephrine or if it takes a longer time for an ambulance to arrive;
- Diphenhydramine hydrochloride should be given IM. IM is preferably given at a different site to that in which epinephrine was given. If necessary, use same thigh as the one in which epinephrine was given. Can also be given into same muscle mass as vaccine was given. Should be given deep IM because it is painful;
- Can give at any time interval, either after the initial or repeat doses of epinephrine if indicated;
- Client should be observed closely after diphenhydramine hydrochloride is given to ensure there is no progression of reaction.

Dose of diphenhydramine hydrochloride (Benadryl) 25 mg IM – one dose only

Monitoring during anaphylaxis:

- Reassess airway, breathing and circulation constantly;
- Record blood pressure, pulse, and respirations every five to ten minutes;
- Record all actions on Vaccine Incident Report (found on clipboard in emergency kit);
- Notify the Manager of Resident Care;
- Complete an Adverse Event Following Immunization report;
- Note the incident on the client's vaccination record. Consult the resident's attending physician re: whether vaccine is contraindicated the future; advise staff member with adverse reaction to consult their own physician re: whether the vaccine is contraindicated in the future
- Follow-up on the condition of the client later in the day.

All clients receiving emergency epinephrine must be transported to hospital immediately after evaluation and observation. Since symptoms of an anaphylactic reaction can reoccur after the initial reaction (biphasic anaphylaxis) in up to 23% of adults hospitalization is recommended. A biphasic course is more likely to occur if the administration of epinephrine is delayed.

Key features of anaphylaxis, vasovagal reactions, and anxiety reactions (Gov't of New Brunswick, 2011).

	ANAPHYLAXIS	VASOVAGAL	ANXIETY
DEFINITION	An acute systemic and potentially fatal allergic reaction to a foreign substance. IgE-mediated antibody induces histamine release from tissue mast cells.	A temporary unconsciousness caused by diminished blood supply to the brain due to painful stimuli or emotional reaction.	A protective physiological state recognized as fear, apprehension or worry.
ONSET	Usually slower, most instances begin within 30 minutes of immunization.	Sudden, occurs before, during or shortly after immunization; recovery occurs within one to two minutes.	Sudden, occurs before, during, or shortly after immunization; recovery occurs within one to two minutes.

	ANAPHYLAXIS	VASOVAGAL	ANXIETY
SKIN	Warm, clammy& flushed. Pruritus and urticaria present in > 90% of cases. Progressive painless swelling of face, mouth and tongue.	Pale, excessive perspiration, cold, clammy.	Pale, excessive perspiration, cold, clammy.
BREATHING	Sneezing, coughing, wheezing, laboured breathing; upper airway swelling (hoarseness and/or difficulty swallowing) possibly causing airway obstruction.	Normal or shallow, irregular, laboured.	Rapid and shallow (hyperventilation).
PULSE	Rapid, weak, irregular.	Slow, steady.	Rapid
BLOOD PRESSURE	Hypotension which may progress to shock and collapse.		
SYMPTOMS & BEHAVIOURS	Uneasiness, restlessness, agitation. Not all signs/symptoms will be exhibited in each person. Usually one body system predominates.	Fearfulness, light-headedness, dizziness, numbness, weakness, sometimes accompanied by brief clonic seizure activity.	Fearfulness, light-headedness, dizziness, numbness, weakness, tingling around lips and spasm in hands and feet, hyperventilation.
GASTRO-INTESTINAL	Nausea & vomiting, abdominal pain, diarrhea.	Nausea.	Nausea.
OTHER SYMPTOMS	Loss of consciousness, progression of injection site reaction beyond hives and swelling.	Loss of consciousness is possible; of short duration (one to two minutes).	Loss of consciousness in severe cases; of short duration.

Reference:
Elgin St. Thomas Public Health "Fainting & Anaphylaxis" policy and procedure MD-VPD-4.2 - 05, October 1, 2015.