

SUBJECT	Identification and Treatment of Adverse Vaccine and Medication Reactions	NUMBER	CA.50.01.400
CATEGORY	Agency – General	EFFECTIVE	April 30, 2021
DIVISION	Community Health	PAGE(S)	1 of 8

POLICY

All staff assigned to work at Wellington-Dufferin-Guelph Public Health (WDGPH) clinics where immunizations or medications are administered must ensure that an individual who experiences adverse reactions(s) post-immunization or medication administration receives immediate and appropriate treatment.

Nursing:

Nurses are responsible for their competency to manage a client who experiences an adverse reaction post immunization or medication. Nurses must be familiar with the medical directive, CA.40.01.104 *Administration of Epinephrine*, the signs and symptoms of an allergic or anaphylactic reaction, the appropriate assessment to make this conclusion and the process for caring for client who may experience this type of reaction.

Non-Nursing:

Non-nursing staff who support WDGPH clinics must be familiar with this policy and procedure and be willing to report to a nurse if a suspected allergic reaction or other adverse reaction is occurring for a client. Non-nursing staff may also be requested to assist and follow directions from a nurse during this type of reaction. For example, call 911, retrieve a cool compress or juice box etc.

The following define possible acute reactions post immunization:

1. **Anaphylactic Reaction:** In anaphylaxis, signs and symptoms onset suddenly and progress rapidly over several minutes and involves two or more body systems. The most frequently involved body systems are skin (80% to 90% of cases), respiratory (up to 70% of cases) and less often cardiovascular and gastrointestinal (each up to 45% of cases). Up to 15% of cases may also manifest central nervous system changes of uneasiness, altered mental status, dizziness or confusion. Features of severe anaphylaxis include obstructive swelling of the upper airway, marked bronchospasm and hypotension. Hypotension can progress to cause shock and collapse.

System	Signs and Symptoms
General CNS	Fussiness, irritability, drowsiness, lethargy, reduced level of consciousness, somnolence
Skin	Urticaria, pruritus, angioedema, flushing
Upper Airway	Stridor, hoarseness, oropharyngeal or laryngeal edema, uvular edema, swollen lips/tongue, sneezing, rhinorrhea, upper airway obstruction
Lower Airway	Coughing, dyspnea, bronchospasm, tachypnea, respiratory arrest
Cardiovascular	Tachycardia, hypotension, dizziness, syncope, arrhythmias, diaphoresis, pallor, cyanosis, cardiac arrest
Gastrointestinal	Nausea, vomiting, diarrhea, abdominal pain

2. **Local Reactions:** Swelling, pain, warmth and/or redness at the injection site (within a few centimeters of where the immunization was given). A mild local reaction resolving by itself within a few minutes is not indicative of an allergic reaction. Swelling and urticarial rash (i.e. hives) at the injection site may be the first indication of an evolving anaphylaxis.
3. **Anxiety-Related Adverse Events**
 1. **Breath-holding:** can occur in some young children when they are upset or crying hard. The child suddenly becomes silent but remains agitated. Facial flushing and perioral cyanosis deepens as breath-holding continues. Some episodes end with resumption of crying, but others end with a brief period of unconsciousness during which breathing resumes. No treatment required beyond reassurance.
 2. **Hyperventilation:** Rapid or deep breathing, usually caused by anxiety or panic. Persons may appear fearful, pale and diaphoretic. They may complain of lightheadedness, dizziness and numbness as well as tingling of the face and extremities. Treatment consists of reassurance and encouraging the individual to breathe slowly and deeply.
 3. **Vasovagal Syncope (Fainting):** loss of consciousness because of a sudden arrest of the blood supply to the brain. Usually occurs during immunization or within minutes. The individual may complain of feeling faint or light-headed then suddenly become pale, lose consciousness and collapse to the ground which may be accompanied by brief clonic seizure activity (i.e. rhythmic jerking of the limbs).
 - Respiratory – rate is normal not labored but may be shallow
 - Cardiovascular – bradycardia, faint peripheral pulses but usually carotid pulse is strong
 - Skin – pale, cool and clammy
 - Gastrointestinal – may be associated nausea and vomiting.

SCOPE

This policy applies to all WDGPH staff including students, volunteers and contractual employees working in clinics that administer immunizations and/or medications within the Agency.

PPE FOR CPR

To safely conduct CPR in an unresponsive client all staff in the immediate area should be wearing N95 mask, isolation gown, gloves and face shield. These items should be readily available in clinical settings and staff should be appropriately fit tested for N95 masks. In the event CPR is required follow the process below to ensure the best outcomes for the client while maintain staff safety:

- The first responder on scene will call for assistance, engage safety fob alarm and request AED.
- First responder will initiate chest compressions while waiting for assistance. Unless already wearing a N95 mask they will not perform artificial respirations.
- A second responder on the scene will don a N95 mask, isolation gown, gloves and face shield and initiate full CPR. The first responder will leave the area and don appropriate PPE.
- A third responder will don N95, gloves, isolation gown and face shield to assist second responder in CPR.
- Space will be contained as much as possible due to the potential spread of aerosols e.g. if in clinic room close the door.

See **Appendix A** for contents of WDGPH emergency kits for anaphylaxis treatment.

PROCEDURE

The purpose of this document is to provide clear guidelines for nurses at WDGPH who may administer vaccines and/or medications in a clinical setting. Nurses should be familiar with identifying immediate-type allergic reactions, including anaphylaxis and be competent in treating these events at the time of vaccine/medication administration. It is important to note that not all reactions are considered allergic. See **Appendix A** for a summary that outlines the difference between anaphylaxis, fainting and anxiety.

Anaphylaxis:

Prompt administration of epinephrine is the priority and should not be delayed. Failure to use epinephrine is more dangerous than using it improperly. There are no contraindications to the use of epinephrine and it is the treatment of choice for management of anaphylaxis.

NOTE: Excessive doses of epinephrine can add to patient's distress by causing pallor, tremor, anxiety, palpitations, headache and dizziness. Although unpleasant, such side effects pose little danger and are evidence that a therapeutic dose has been administered.

1. Direct someone to call 911.
2. If onsite, have Medical Officer of Health (MOH)/Associate Medical Officer of Health (AMOH) paged to assist.
3. Assess airway, breathing, circulation, mental status, skin, and body weight (mass). When assessing airway, look specifically at the lips, tongue and throat for signs of swelling; if appropriate, ask individual to say his/her name to assess glottic/peri-glottic swelling.
4. Place client on his/her back (supine) and elevate lower extremities. The client should remain in this position. Fatality can occur within seconds if the client stands or sits suddenly, due to empty vena cava/empty ventricle syndrome. Exceptions to the supine position:
 - If in respiratory distress, place in a position of comfort (elevate head and chest);
 - If vomiting or unconscious, place lying on his/her side; or
 - If pregnant, place lying on their left side.
5. Inject epinephrine IM in the mid-anterolateral aspect of the thigh, following medical directive CA.40.01.104 *Administration of Epinephrine*.
 - The recommended route is ALWAYS intramuscular (IM) because the rate of absorption is far quicker than when the drug is given subcutaneously. Deltoid is not recommended as absorption is slower and area is less vascular.
 - If the client has already received immunizations in both legs, give epinephrine IM at least 2.5cm (1 inch) from the original immunization injection site.
6. Stabilize the client; perform cardiopulmonary resuscitation (CPR) if necessary.
 - If available give supplemental oxygen (6 to 8 L/minute) by face mask to people with cyanosis, dyspnea or any other severe reaction requiring repeat doses of epinephrine.
7. Monitor the client's blood pressure, cardiac rate and function, and respiratory status every 5 minutes at minimum.

8. Transfer to hospital for observation.
 - All clients receiving emergency epinephrine must be transported to hospital immediately by EMS for evaluation and observation. Since the symptoms of anaphylactic reaction can occur after the initial reaction, hospitalization is recommended for monitoring.
9. Notify the manager or manager on-call as soon as possible following management of the incident. The manager will then report the incident to the director, who will notify the MOH.
10. Document actions on HPDCD(F)321 *Incident Treatment Record* and complete the *PHO Report of Adverse Events Following Immunization* (AEFI) and *PHO enhanced reporting form for events managed as anaphylaxis following immunization*. Forward to AEFI to the iPHIS data entry clerk if related to vaccine administration.

Injection Site Reactions:

A mild local reaction (swelling, pain, warmth, and/or redness) resolving by itself within a few minutes is not indicative of an allergic reaction and does not require special observation or specialized assessment prior to subsequent vaccination. Swelling and urticarial rash (i.e. hives) at the injection site can occur and may be the first indication of an evolving anaphylaxis.

1. Swelling or hives should be observed for at least 30 minutes in order to ensure that the reaction remains localized, and if so, the client may leave after this observation period. After 30 minutes, no further observation is required if:
 - Hives or swelling have disappeared;
 - There has been no progression to other parts of the body; or
 - No other symptoms appear.
2. Ice or cool compress can be applied to the injection site for comfort.
3. If any other symptoms arise (two or more systems involved), even if considered mild (sneezing, nasal congestion, tearing, coughing, facial flushing) or if there is evidence of any progression of hives or swelling to other parts of the body during the observation period, epinephrine should be given as per procedure for Anaphylaxis.

NOTE: There is little risk to the unnecessary use of epinephrine. Delaying its use when required may result in difficulty treating anaphylaxis.

4. Document all notes pertaining to incident in the client chart.

Feeling Faint/Anxiety Related to Injections:

Clients experiencing feeling faint/anxiety may appear fearful, pale and diaphoretic and complain of light-headedness, dizziness and numbness, as well as tingling of the face and extremities. Hyperventilation is usually evident.

1. Assist the client into a recumbent position or into a position of comfort.
2. Offer a cool compress or ice to be applied to the back of the neck or forehead. If appropriate, it may be helpful for client to rebreathe into a paper bag until symptoms of anxiety subside.
3. Offer the client juice.
4. Place the client on his/her side in recovery position if they vomit or appears likely to vomit.

5. Offer reassurance/support to the client.
6. Document all notes pertaining to incident in the client chart.

NOTE: If the incident progresses to an actual faint, refer to procedure for a Faint.

Faint:

During a faint, the client suddenly becomes pale, loses consciousness and may collapse to the ground if they are not already lying down. Recovery of consciousness occurs within a minute or two, but the person may remain pale, diaphoretic and mildly hypotensive for several minutes. Fainting is sometimes accompanied by brief myoclonic activity (rhythmic jerking of the limbs), but this generally requires no specific treatment or investigation. If unconsciousness persists for more than 2-3 minutes, call 911 and if deemed necessary, proceed to “Anaphylaxis” procedure above.

1. Assist the client to lie down in a recumbent position.
2. Apply a cool compress or ice to the back of the neck or forehead.
3. Place the client on his/her side in recovery position if they vomit or appear likely to vomit.
4. When the client regains consciousness, offer juice.
5. Document the client’s baseline vital signs/colour/responsiveness on the *Incident Treatment Record*. Continue to assess the client’s vital signs as per nursing assessment.
6. Keep client in clinic area for at least 30 minutes following a faint. Recommend to the client (or parent) that they be closely observed by an adult and refrain from driving until fully recovered. If the client refuses, document the refusal on the *Incident Treatment Record*.
7. Discuss with the parent/guardian any incident involving a child.
8. If a client has hit their head during a fainting episode, advise client/parent to contact physician for head injury follow-up. If necessary, call 911 for transfer to a hospital for assessment.
9. Document the client’s vital signs/colour/responsiveness on the *Incident Treatment Record* again before client leaves clinic area.

RESPONSIBILITY

Management will:

- Ensure staff have reviewed this policy and procedure; and
- Assist employees in interpreting and applying this policy and procedure to their practice (i.e. offer training).

Employees will:

- Review this policy and procedure;
- Notify manager of any concerns with the above policy and procedure;
- Consult with manager if clarification or interpretation is required; and
- Ensure emergency kits are always fully stocked and up to date.

DEFINITIONS

	Anaphylaxis	Fainting	Anxiety
Definition	A potentially life-threatening allergic reaction that is rapid in onset and progression of symptoms	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	<ul style="list-style-type: none"> • rapid onset and progression of symptoms • occurs minutes to hours after exposure to trigger • recovery dependent on response to treatment 	<ul style="list-style-type: none"> • sudden onset • occurs before, during or shortly after trigger (e.g. sight of the needle) • recovery occurs within 1-2 minutes 	<ul style="list-style-type: none"> • sudden onset • occurs before, during, or after trigger (e.g. sight of needle) • recovery generally occurs within 1-2 minutes
Skin/Mucosal	<ul style="list-style-type: none"> • flushed, red blotchy areas (not necessarily itchy) • itchy, generalized hive-like rash • tingling sensation often first felt about the face and mouth • progressive, painless swelling about the face, mouth, and tongue 	<ul style="list-style-type: none"> • pale • excessive perspiration • cold, clammy 	<ul style="list-style-type: none"> • pale • excessive perspiration • cold, clammy • tingling around the lips
Respiratory	<ul style="list-style-type: none"> • laboured breathing – hoarse voice, throat tightness, rapid breathing, wheezing, coughing, nasal flaring, nasal and chest congestion • rhinitis (stuffy or runny nose, itchy watery eyes and sneezing) • shortness of breath, stridor, retractions, chest pain and cyanosis 	<ul style="list-style-type: none"> • breathing normal or shallow, irregular, laboured 	<ul style="list-style-type: none"> • breathing rapid and shallow (hyperventilation) • breath-holding in children
Pulse	<ul style="list-style-type: none"> • weak and rapid 	<ul style="list-style-type: none"> • slow, steady 	<ul style="list-style-type: none"> • rapid
Blood Pressure	<ul style="list-style-type: none"> • hypotension alone after an exposure can represent anaphylaxis • hypotension is less common in children • shock 	<ul style="list-style-type: none"> • decreased systolic and diastolic 	<ul style="list-style-type: none"> • normal or elevated systolic
Gastrointestinal	<ul style="list-style-type: none"> • nausea, vomiting, diarrhea • abdominal pain or cramping • dysphagia (difficulty swallowing) • drooling in children 	<ul style="list-style-type: none"> • nausea 	<ul style="list-style-type: none"> • nausea
Symptoms and Behaviours	<ul style="list-style-type: none"> • anxious or feeling of “impending doom” • sudden lack of energy (lethargy) in children • quietness or sleepiness in children • headache, light-headedness or dizziness, decreased level of consciousness • uterine cramps 	<ul style="list-style-type: none"> • fearfulness • light-headedness • dizziness • numbness, weakness • sometimes accompanied by brief clonic seizure activity 	<ul style="list-style-type: none"> • fearfulness • light-headedness • dizziness • numbness, weakness • spasm in the hands and feet associated with hyperventilation

REFERENCES AND RELATED FORMS, POLICIES AND PROCEDURES

- CA.40.01.104 *Administration of Epinephrine*
- CA.40.01.105 *Administration of Vaccines*
- CA.40.01.121 *Administration of Pharmaceutical Products*
- HPDCD(F)321 *Incident Treatment*
- *Report of Adverse Events Following Immunization* (AEFI) Canadian Immunization Guide, Part 2 – Vaccine safety
- British Columbia Centre for Disease Control. British Columbia Centre for Disease Control (2016). Communicable Disease Control Manual, Chapter 2: Immunization http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Epid/CD%20Manual/Chapter%202-%20Imms/Part_3_Anaphylaxis.pdf

CONTACT FOR INQUIRIES – Manager, Vaccine Preventable Diseases

APPROVED BY: Director, Community Health/CNO– *Signed document on file*

REVISION DATES: (CHDP IV 120 – Jan 1996); (CHDP IV 120: Jan 1996, May 2003, Dec 2003, Nov 7, 2005, Sep 22, 2006, Sep 17, 2009), CA.50.01.400 – Mar 28, 2011, Feb 22, 2013, Oct 25, 2018; CA.50.02.400 – Mar 28, 2011, Feb 19, 2013, Oct 25, 2018, Sep 5, 2019, Dec 31, 2020 Combined with CA.50.02.400; Jan 4, 2021; Apr 30, 2021

Appendix A – Contents of Emergency Kit for Anaphylaxis Treatment:

EPINEPHRINE KIT

Syringes and Needles

- Two 1 cc syringes with attached 25 gauge needle (one – 1 inch; one 5/8 inch)
- Three additional 25 gauge needles of each different size: 5/8 inch, 1 or 1.25 inch, 1.5 inch

Blood Pressure Equipment

- BP cuff – child
- BP cuff – adult regular and extra large
- Stethoscope

Medication

- Aqueous epinephrine 1:1000 (3-6 ampules) **OR**
- Two (2) EPINEPHrine autoinjectors - .3 mgs/.3 ml

Miscellaneous inside kit

- Alcohol swabs
- Tongue Depressors
- Flashlight
- Gloves – vinyl
- Scissors
- Pens

Documents (Folded in Epi Kit)

- Medical Directive– Administration of Epinephrine
- Policy CA50.01.400 Identification and Treatment of Adverse Vaccine and Medication Reactions
- Report of Adverse Events Following Immunization forms
- Incident Treatment Record
- Progress Notes
- WDGPH/Agency Contact Numbers

Miscellaneous Items Accompanying Epi Kit

- Bag Valve Mask (e.g. Ambu bag/ Ambu resuscitator)
- Desk clock with second hand and one extra battery
- Three (3) Isolation Gowns