Clinic Reference	
Title:	Manitoba Provincial Anaphylaxis Protocol: Community Health Immunization
Area:	Community Immunization Clinics
Effective Date:	February 24, 2021
Revised Date:	Aug 18, 2021
Approver:	Richard Baydack/Tim Hilderman
Modified from:	Management of Suspected Anaphylaxis by Public Health Nurses in WRHA Population and Public Health, August 2020

Manitoba Provincial Anaphylaxis Protocol: Community Health Immunization

Purpose and Scope

This protocol provides practice guidance for the management of suspected anaphylaxis for community immunization clinics, including Manitoba COVID-19 Immunization Teams.

Background and Definitions

This guidance is based on the Public Health Agency of Canada, *Canadian Immunization Guide,* and other evidence-based sources for the management of suspected anaphylaxis. This protocol supersedes the former 2008 Manitoba Health *Anaphylaxis Management Protocol*, repealed in August 2020.

Epinephrine (also known as adrenaline) is the treatment of choice for management of anaphylaxis in community and health care settings and **administration should not be delayed**. It prevents and relieves upper airway swelling, hypotension and shock, and causes increased heart rate, increased force of cardiac contractions, increased bronchodilation, and decreased release of histamine and other mediators of inflammation. Epinephrine reaches peak plasma and tissue concentrations rapidly.

Diphenhydramine is NOT indicated in anaphylaxis and is no longer included in anaphylaxis management kits. Antihistamines are not indicated as initial first line treatment in the emergency management of anaphylaxis as there is no effect on respiratory or cardiovascular symptoms and they are of little clinical importance in life-threatening anaphylaxis. H1 antihistamines relieve localized and less severe systemic allergic reactions and the only useful clinical effect is the improvement of pruritus (itch) and hives.

Anaphylaxis *is 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 range of occurrence of 1-10 episodes per million doses of vaccine administered. Anaphylaxis is preventable in many cases and treatable in all. It should be anticipated in every vaccine* (PHAC, 2020).

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Procedure

All immunizing practitioners should regularly review this document. This review process may be completed through regional review policies and programs.

1. PREPARATION

Although rare, anaphylaxis should be anticipated in any context that involves administration of a vaccine by any route (or medication or treatment by injection).

Anaphylaxis management kits must available wherever these services are offered.

Pre-vaccination or treatment screening includes screening for a history of anaphylaxis and identification of potential risks. It should include questions about possible allergy to any component of the vaccine(s) or treatments being considered in order to identify if there is a contraindication to administration.

Most instances of anaphylaxis begin within 30 minutes after administration of vaccine or medication by injection. Therefore, clients receiving treatments or medications by injection are encouraged to remain in the service area for 15 minutes post administration; 30 minutes is a safer interval when there is a specific concern about possible allergy.

Anaphylaxis Management Kits:

- Anaphylaxis management kits should be readily available wherever vaccines are administered (by any route), and where treatments or medications are administered by injection.
- It is the responsibility of the immunization lead (e.g. Public health nurse, Clinical Lead) to ensure there is a properly stocked anaphylaxis management kit available when providing these treatments.
- Epinephrine and other emergency supplies should be checked on a regular basis and replaced when supplies have been utilized and/or nearing expiry.
- The kits should be stored at room temperature and securely closed to protect the epinephrine from exposure to light.

Anaphylaxis Kit Required Item List:

- A clear, concise summary of the anaphylaxis emergency management protocol
- Ready access to phone/method to contact emergency services
- Script for use when contacting emergency services, including immunization venue address and emergency numbers.(See template: Appendix B)
- Dosing table with recommendations for epinephrine by age. (See Appendix C)
- Three ampoules of aqueous epinephrine 1 mg/mL packed for protection from light with three - 1 mL syringes with safety engineered needles of various lengths for intramuscular injection, appropriate to the population served (e.g. 25 gauge needles in: 1 inch, 1.5 inch) and extra syringe/needles of all appropriate lengths; or
- Three epinephrine auto-injectors with appropriate dosing for each age group that services are being provided to, packaged and labeled to ensure timely access in an emergency)
- Alcohol swabs
- Pocket mask
- Stethoscope and sphygmomanometer, with cuffs of standard, large and pediatric sizes

Optional Items

- Flashlight (ensure source of light is available)
- Watch with second hand (ensure time piece to take pulse is available)
- Scissors (for removing clothing)
- Tongue depressor (for assessing swelling of tongue and throat)

2. ASSESSMENT

In anaphylaxis, signs and symptoms develop over several minutes and usually involve at least two body systems (e.g. the skin, respiratory, gastrointestinal or circulatory systems). Hypotension, collapse and/or loss of consciousness may be the only sign of anaphylaxis.

The cardinal features of anaphylaxis are:

- Pruritic (itchy) urticarial rash is common but not required to diagnose anaphylaxis

- Progressive, painless swelling (angioedema) about the face and mouth, which may be preceded by pruritus (itchiness), tearing, nasal congestion or facial flushing

- Respiratory symptoms, including sneezing, coughing, wheezing, laboured breathing and upper airway swelling (indicated by hoarseness and/or difficulty swallowing) possibly causing airway obstruction
- Gastrointestinal symptoms, including crampy abdominal pain and vomiting
- Sudden reduced blood pressure, syncope (fainting) or symptoms of end-organ dysfunction (e.g., hypotonia and incontinence)
- Infants may present with irritability, lethargy, drowsiness or appear unwell

Table 1: Frequency of occurrence of signs and symptoms of anaphylaxis (adapted from BCCDC 2019[6])

System	% of Episodes	Signs and Symptoms One or more sign or symptoms may be present
Skin*	Up to 80%	Hives, swelling (face, lips, tongue), angioedema, itching, warmth, redness, drooling in children
Respiratory	Up to 70%	Coughing, wheezing, shortness of breath, chest pain or tightness, throat tightness, hoarse voice, nasal congestion or hay fever-like symptoms (runny, itchy nose and watery eyes, sneezing), trouble swallowing, drooling in children
Cardiovascular	Up to 45%	Weak pulse, dizziness or light headedness, collapse, hypotension**, shock
Gastrointestinal	Up to 45%	Nausea, pain or cramps, vomiting, diarrhea
Other		Anxiety, sense of doom, headache, uterine cramps, metallic taste, suddenly quiet, sleepy or lethargic in children

*Skin signs, such as hives are present in ~80% of cases, but may develop after other symptoms have already occurred. Anaphylaxis may present without hives.**Hypotension may be the only sign of anaphylaxis.

3. INTERVENTION for Anaphylaxis in Community Setting

Rapid intervention is of paramount importance.

Steps a, b, c, d; complete promptly and simultaneously:

a) **Direct someone to call 911 and say that client is experiencing possible anaphylaxis**

b) **Call for help and assess** circulation, airway, breathing, mental status, and skin. Airway: look specifically at lips, tongue and throat for swelling.

c) **Administer epinephrine intramuscularly (IM) in the vastus lateralis (mid-anterolateral aspect of the thigh).**

d) **Administer through clothing if not possible to cut/remove clothes.**

See age based dosing in *Table 1* below.

While weight based epinephrine dosing at 0.01 mg/kg body weight of 1 mg/mL solution is optimal, client weight is unlikely to be available in community settings.

The maximum dose is 0.5 mg per injection.

Record the time of the dose.

e) **Place client on their back with legs elevated as able.**
- If in respiratory distress, place in a position of comfort (elevate head and chest)
- If vomiting or unconscious, place lying on his/her side
- If pregnant, place lying on their left side

f) **Re-assess circulation, airway, breathing every 5 minutes until transfer of care.**

g) **Repeat epinephrine: IM every 5 minutes to a maximum of 3 doses** if symptoms persist (other than residual rash or mild swelling). Alternate legs (IM site) for multiple doses. (most clients improve in 1-2 doses)

h) **Document and provide handover to Paramedics/EMS:** Suspected offending agent/vaccine/drug; time of onset and nature of symptoms; interventions provided including timing and administration of epinephrine; response to treatment.

- Ensure the client's current and future records are clearly marked with a history of a suspected anaphylaxis following the suspected offending agent/vaccine/drug.
- All clients receiving epinephrine must be transported to a hospital for assessment (symptoms can reoccur after the initial reaction in up to 23% of patients.)

Prompt administration of epinephrine is the priority and **should not be delayed**.

Failure to administer epinephrine promptly may result in greater risks to the anaphylactic client than using epinephrine improperly. If uncertain, err on the side of treatment; there are

no contraindications to the use of epinephrine. If time is lost early in the treatment of an acute anaphylactic episode, subsequent management can become more difficult.

Epinephrine should be administered into the mid-anterolateral aspect of the thigh; the deltoid muscle of the arm is not as effective as the thigh in absorbing epinephrine. Scissors may be needed to cut clothing to establish access. If scissors are not readily available, epinephrine may be administered through clothing. Although there is a slightly increased risk of infection, timely administration of epinephrine is the priority. The risk of infection can be addressed once the person has stabilized.

Table 1: Dosing Guidelines for Epinephrine (1 mg/mL solution; Auto-injector), by age.

Age Range	Epinephrine dose (1 mg/mL)	Auto-injector dose
Less than 2 years of age	0.1 mg = 0.1 mL	EpiPen® Jr 0.15 mg Allerject® 0.15 mg
2 years – 7 years	0.15 mg = 0.15 mL	
8 – 12 years	0.3 mg = 0.3 mL	EpiPen® 0.3 mg Allerject® 0.3 mg Emerade® 0.3 mg
13 years and older	0.5 mg = 0.5 mL	Emerade® 0.5 mg or 0.3 mg EpiPen® 0.3 mg Allerject® 0.3 mg
Personal Care Home residents	0.3 mg = 0.3 mL	EpiPen® 0.3 mg Allerject® 0.3 mg Emerade® 0.3 mg

Mild and transient effects such as pallor, tremor, anxiety, palpitations, headache and dizziness may occur within minutes after injection of a recommended dose of epinephrine. These effects may confirm that a therapeutic dose has been given.

Ensure the person lies down. Fatality can occur within seconds if the client stands or sits suddenly after epinephrine. People should remain in a recumbent position with legs elevated following receipt of an epinephrine injection and be monitored closely. People on beta-blockers may be more resistant to epinephrine.

4. POST-EVENT FOLLOW UP

- Offer de-briefing for staff members involved in anaphylaxis management, and consider debriefing or support for family members or others involved in the anaphylaxis event.
- If anaphylaxis occurs in a minor or adult requiring signing authority in a setting with no guardian or legal signing authority present (e.g. immunization clinic), notify the legal guardian/signing authority as soon as possible.
- Report patient safety events such as; occurrences, critical incidents and adverse drug reactions as per regional direction.
- If anaphylaxis occurred following an immunization, complete the Manitoba Adverse Events Following Immunization Form and forward to the respective Communicable Disease Coordinator or as per regional protocol.
- Replenish/replace anaphylaxis kit.

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Appendix A

Table 1: Key distinguishing features of anaphylaxis and vasovagal syncope.		
Clinical features	**Anaphylaxis**	**Vasovagal syncope (fainting)**
Onset from time of immunization	Within minutes up to 4 hours after injection; most within 2 hours	During or within minutes of injection
Skin	Urticaria, angioedema, pruritus, erythema	Generalized pallor, cold clammy skin
Respiratory	Cough, wheeze, stridor, respiratory distress, rhinorrhea, sneezing	Normal respiration – may be shallow but not laboured
Cardiac	Tachycardia	Bradycardia
Neurologic	Sense of severe anxiety and distress; loss of consciousness – no improvement once supine or in head down position	Sense of light-headedness; loss of consciousness – improves once supine or in head down position; may be transient jerking of the limbs and eye-rolling

From: Anaphylaxis and other Acute Reactions following Vaccination: Canadian Immunization Guide: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-2-vaccine-safety/page-4-early-vaccine-reactions-including-anaphylaxis.html#t1

Secondary citation: Adapted with permission from: Immunisation Section, South Australian Department for Health and Wellbeing.

Appendix B

Community/Public Health Immunization Clinics

Telephone Script for Calling 911

1. **Record the relevant information** about the building street address and telephone number in the space provided in script below.
   - Name of Building
   - Street Address of Building
   - Telephone Number at this Phone
2. **Ensure all staff and volunteers are aware of location of telephone** to use in event of emergency.
3. **Ensure all staff and volunteers are aware of procedures** to follow in event that 911 is called.
4. **Post this page with the telephone** to use in event of emergency.

IF DIRECTED TO CALL 911, SAY TO THE OPERATOR:
"I am a/an Clinical lead/Immunizer/Admin/Volunteer at a ______________ *(school, flu, Covid)* immunization clinic and I have been directed to call 911 by the immunizer who is with the patient." "We have a/an ______________ *(e.g. unconscious)*, ________ *(age)*, female/male, with possible anaphylaxis *(or other emergent issue)* at a community immunization clinic at:" *City/Town/Community:* ___________________________________ *Name of Building:* ___________________________________ *Street Address of Building:* ___________________________________ *Telephone Number at this Phone:*_________________________________
• **Complete the call.** • **Return to scene.** • **Respond to further direction from the clinical lead/immunizer unless asked to remain on the line by the 911 operator.**

Appendix C
Assessment Guide and Drug Administration Record for Anaphylaxis Management

Client Name: ____________________________________ Date of Birth: _____________
MFRN or PHIN ________________ Name/Location of Clinic/Service: _________________

Suspected trigger/offending agent: ____
Onset of Signs and Symptoms (*circle pertinent findings*):__________________________
- **Respiratory:** Coughing, wheezing, shortness of breath, chest pain or tightness, throat tightness, hoarse voice, nasal congestion, runny/nose and watery eyes, sneezing, drooling in children
- **Skin:** Hives, swelling (face, lips, tongue), angioedema, itching, warmth, redness, drooling in children
- **Eye/Nasal:** nasal congestion, runny/nose and watery eyes, sneezing, drooling in children, sneezing
- **Cardiovascular:** Hypotension, chest discomfort, weak pulse, dizziness, syncope, headache
- **Other:** Nausea, pain or cramps, vomiting, diarrhea, anxiety, sense of doom, headache, uterine cramps, metallic taste, suddenly quiet, sleepy or lethargic in children

Epinephrine (Adrenalin®) 1 mg/mL or Auto-injector: Administer intramuscularly (IM) as per age based dosing table below. Epinephrine, at the same dose as the initial one, can be **repeated** every 5 min prn to a maximum of 3 doses.

Age Range	Epinephrine dose (1 mg/mL)	Auto-injector dose
Less than 2 years of age	0.1 mg = 0.1 mL	EpiPen Jr® 0.15 mg Allerject® 0.15 mg
2 years – 7 years	0.15 mg = 0.15 mL	
8 – 12 years	0.3 mg = 0.3 mL	EpiPen® 0.3 mg Allerject® 0.3 mg Emerade® 0.3 mg
13 years and older	0.5 mg = 0.5 mL	Emerade® 0.5 mg or 0.3 mg EpiPen® 0.3 mg Allerject® 0.3 mg
Personal Care Home residents	0.3 mg = 0.3 mL	EpiPen® 0.3 mg Allerject® 0.3 mg Emerade® 0.3 mg

	Epinephrine 1mg/ml dose	OR Auto-injector dose	Site and route	Time	Provider signature
Dose 1					
Dose 2					
Dose 3					

Call 911 **Called 911 at:** __________ (time)

Respiration (rate/min.)	Pulse (rate/min.)	Blood Pressure	Time	Comments

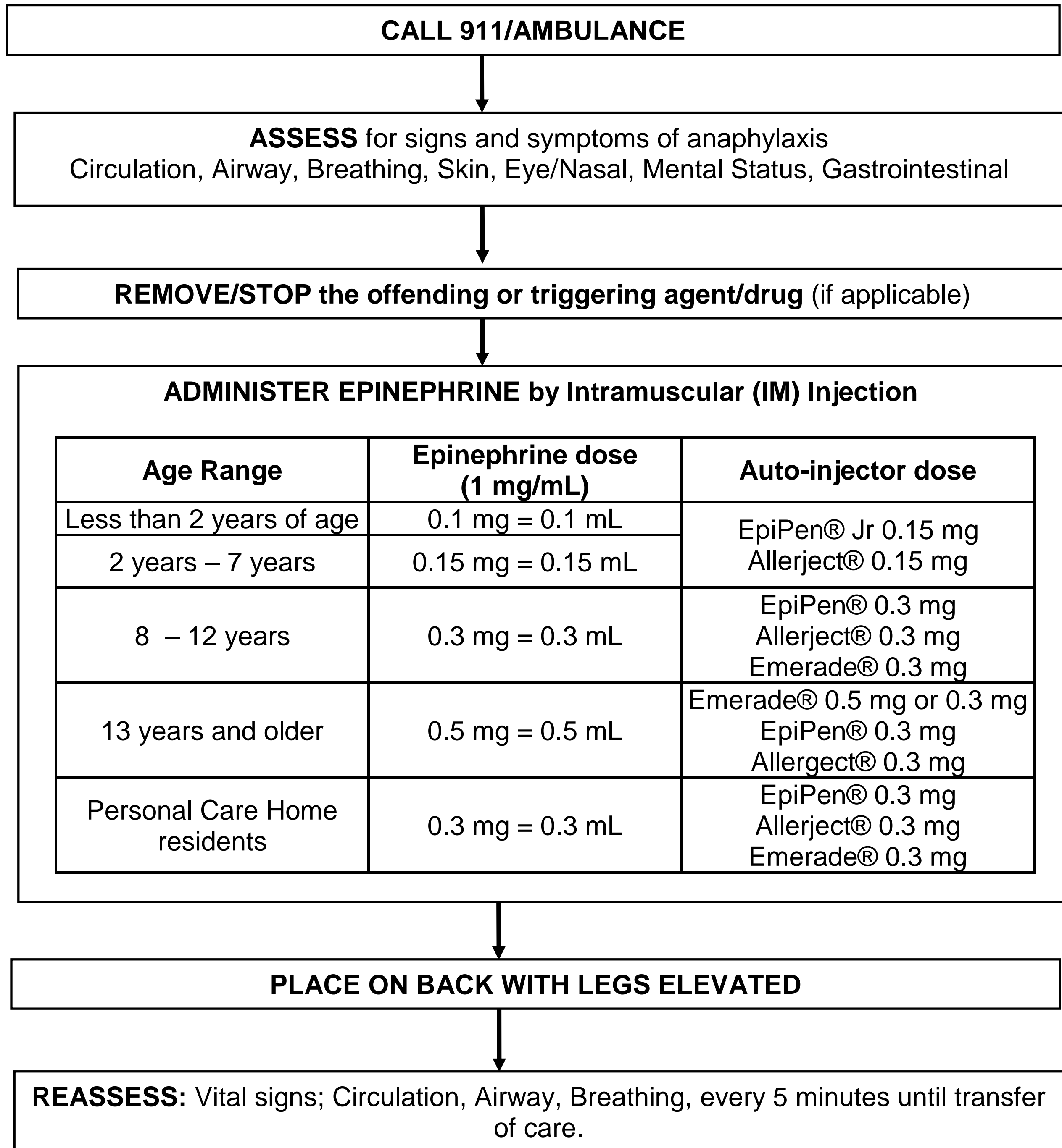
Transfer to Paramedic/EMS at: __________ (time)

Printed name and designation of provider ____________ Signature ____________ DD/MMM/YYYY ____________

Appendix D

Post-event follow up: *Offer debriefing with involved staff or clients*, *ensure completion of Manitoba Adverse Event Following Immunization (AEFI) if related to vaccine and any other regional protocol/documentation, and replenish anaphylaxis management kit.*

EMERGENCY TREATMENT OF ANAPHYLAXIS



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