



TITLE

ANAPHYLAXIS MANAGEMENT: REGISTERED NURSE (RN) PRESCRIBING AND ADMINISTERING INTRAMUSCULAR EPINEPHRINE

SCOPE

Provincial

DOCUMENT #

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NOTE: The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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OBJECTIVES

- To provide guidance and clinical direction for a Registered Nurse (RN) to prescribe, so that the same RN can administer intramuscular (IM) epinephrine from a one (1) milligram per millilitre (mg/mL) concentration ampoule to **patients** experiencing suspected **anaphylaxis**.

PRINCIPLES

Anaphylaxis can be a life-threatening situation, and Alberta Health Services (AHS) supports the practice of an RN to prescribe, so that the same RN can administer epinephrine for suspected anaphylaxis in practice situations where epinephrine is used and accessible, as authorized by the College and Association of Registered Nurses of Alberta (CARNA).

APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

ELEMENTS

1. Points of Emphasis

- 1.1 This **Clinical Support Tool (CST)** Protocol is not intended to provide direction for **health care professionals** who administer epinephrine for suspected anaphylaxis with a patient-specific **order** or when an **authorized prescriber** (e.g., Physician or Nurse Practitioner) is immediately available to provide an

order. Refer to the AHS *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Policy for direction when a health care professional suspects anaphylaxis and these conditions exist.

- 1.2 This CST Protocol only applies to RNs who prescribe and in turn administer epinephrine to treat patients experiencing suspected anaphylaxis in all **Alberta Health Services settings** where epinephrine is available, except when there is:
- an existing patient-specific order for epinephrine; or
 - another authorized prescriber (e.g., a Physician or Nurse Practitioner) is immediately available to provide an order.
- 1.3 As per CARNA, RNs are authorized to prescribe and administer epinephrine for anaphylaxis while using a CST, without applying to CARNA's Registrar to be authorized to prescribe a Schedule 1 drug, the RN shall:
- use critical judgement to decide if epinephrine, as outlined in this CST Protocol, is appropriate for the patient; and
 - obtain the education, knowledge, assessment, and critical judgment skills in practice situations where epinephrine is used.
- 1.4 RNs who prescribe and administer epinephrine for suspected anaphylaxis shall review and comply with the:
- Prescribing Epinephrine for Anaphylaxis – Exception to RN Prescribing Schedule 1 Drugs and Ordering of Diagnostic Tests Requirements* section, as outlined in CARNA's *Registered Nurse Prescribing Schedule 1 Drugs and Ordering Diagnostic Tests: Requirements and Standards*; and
 - AHS *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Policy.
- 1.5 Implementation of this CST Protocol occurs if:
- the RN is competent to successfully perform the activities and skills in this CST Protocol after receiving clinical education, including but not limited to, the initial and annual completion of the AHS *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Learning Module; and
 - the patient meets the inclusion criteria, outlined in Section 2.1 below.
- 1.6 An RN shall not prescribe epinephrine for another health care professional to administer when anaphylaxis is suspected.

- 1.7 AHS does not expect an RN to prescribe and administer epinephrine for the treatment of suspected anaphylaxis in situations not considered part of an RN's day-to-day work responsibilities.
- a) In an **emergency situation**, if an RN suspects a person is experiencing anaphylaxis, AHS supports that RN (if epinephrine is available) to use critical thinking and their clinical judgement to decide if prescribing and administering epinephrine, as outlined in this CST Protocol, is in the best interest of that person.
- 1.8 Administration of IM epinephrine from a one (1) mg/mL concentration ampoule should occur as soon as possible, as it is the first-line treatment for suspected anaphylaxis. Refer to Section 4.2 c) below for epinephrine dosing based on the patient's weight or age, if weight cannot be confirmed.
- 1.9 Epinephrine shall not be given intravenous (IV) as the first-line treatment for anaphylaxis.
- 1.10 Anaphylaxis is characterized by sudden onset and rapid progression of symptoms (refer to Section 2.3 c) below). Severity of the episode is difficult to predict.
- a) Failure to administer epinephrine promptly can be life-threatening – death can occur within minutes. Rapid intervention is required.
- 1.11 There is no absolute contraindication for the use of epinephrine when a patient is experiencing suspected, life-threatening anaphylaxis.
- 1.12 Anaphylaxis kits for administration of epinephrine shall be provided to AHS settings that receive medications through AHS Pharmacy Services.

2. Assessment

- 2.1 Inclusion Criteria
- a) Signs and symptoms of suspected anaphylaxis (refer to Section 2.3 below) and when epinephrine is readily available.
- 2.2 Exclusion Criteria
- a) Signs and symptoms that do not indicate suspected anaphylaxis (refer to Section 2.3 below for signs and symptoms that indicate suspected anaphylaxis).
- 2.3 Signs and Symptoms of Suspected Anaphylaxis
- a) Anaphylaxis usually begins within a few minutes after exposure to the allergen and symptoms are usually evident within 15 minutes.

- b) Anaphylaxis is suspected and should be managed as such when the patient presents with sudden onset and rapid progression of signs and symptoms:
 - (i) without a clear history or an unknown history of allergen exposure;
 - (ii) after exposure to a likely allergen for that patient; or
 - (iii) after exposure to a known allergen for that patient.
- c) Anaphylaxis is suspected when the patient presents with one (1) of the three (3) following criteria, identified in Figure 1 below.

Figure 1 – Criteria for Suspected Anaphylaxis

Suspected Anaphylaxis Criteria	System	Symptoms may include
1. After <u>unknown exposure</u> – presenting with acute onset of illness, with: <ul style="list-style-type: none"> • skin and/or mucosa involvement, plus • at least one (1) symptom from either of the listed respiratory-airway or cardiovascular systems. 	Skin and/or mucosa	Flushed skin, generalized hives, itchiness, swollen face/lips/ tongue and/or uvula.
	Respiratory–airway	Accessory muscle use, cough, decreased air entry, drooling/difficulty swallowing, grunting, hypoxemia, increased respiratory rate, increased work of breathing, nasal flaring, shortness of breath, sneezing, stridor, vocal changes, wheeze.
	Cardiovascular	Cyanosis/pale/grey, dizziness, headache, hypotension, loss of consciousness, poor capillary refill time, restlessness/irritability, sweating, tachycardia, throbbing or ringing ears, weakness.
2. After <u>exposure to a likely or known allergen</u> for that patient, with: <ul style="list-style-type: none"> • at least one (1) symptom from two (2) or more of the listed systems. 	Skin and/or mucosa	Flushed skin, generalized hives, itchiness, swollen face/lips/ tongue and/or uvula.
	Respiratory–airway	Accessory muscle use, cough, decreased air entry, drooling/difficulty swallowing, grunting, hypoxemia, increased respiratory rate, increased work of breathing, nasal flaring, shortness of breath, sneezing, stridor, vocal changes, wheeze.
	Cardiovascular	Cyanosis/pale/grey, dizziness, headache, hypotension, loss of consciousness, poor capillary refill time, restlessness/irritability, sweating, tachycardia, throbbing or ringing ears, weakness.
3. After <u>exposure to a known allergen</u> for that patient, with: <ul style="list-style-type: none"> • only hypotension. • This may occur in rare circumstances. 	Cardiovascular	Hypotension

- 2.4 Anaphylaxis must be distinguished from vasovagal syncope and anxiety, as these are more common and benign reactions. Refer to the AHS *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Learning Module and the AHS *Is it Anaphylaxis, Syncope, or Anxiety?* Infographic.
- 2.5 Rapid Patient Assessment
- a) Identify the signs and symptoms of suspected anaphylaxis (refer to Section 2.3 c) above) by assessing the patient's:
 - (i) airway, breathing, and circulation;
 - (ii) skin and mucosa;
 - (iii) gastrointestinal status; and
 - (iv) mental and neurological status.
 - b) Determine the patient's history of exposure to suspected allergen, if known, and time of exposure.

3. Diagnosis

- 3.1 Nursing Diagnoses for Suspected Anaphylaxis:
- a) Impaired skin integrity related to changes in circulation and histamine response.
 - b) Impaired gas exchange related to ventilation perfusion imbalance.
 - c) Impaired tissue perfusion related to decreased blood flow secondary to vascular disorders due to anaphylactic reaction.
 - d) Ineffective breathing pattern related to swelling of the nasal mucosa wall and upper airway obstruction.
 - e) Acute confusion related to hypoxemia and/or hypotension and/or altered level of consciousness.
 - f) Anxiety related to feelings of discomfort, dread, apprehension, and/or impending doom.
 - g) Acute pain, nausea, and/or diarrhea related to gastric irritation.

4. Interventions

- 4.1 Administration of IM epinephrine, from a one (1) mg/mL concentration ampoule, should occur as soon as possible as it is the first-line treatment for suspected anaphylaxis.

- 4.2 Some of the following interventions may be accomplished concurrently, especially if another **health care provider** is available to assist.
- a) Seek immediate emergency assistance, as per practice setting. In the community, call 911/Emergency Medical Services (EMS).
 - b) Stop the continued exposure to the suspected allergen, if applicable.
 - c) Pharmacological Treatment - dosing, administration (as per the AHS *Medication Administration Policy*), and monitoring:
 - (i) Pediatric patients who weigh less than 30 kilograms (kg) (or if weight cannot be confirmed and the patient is less than eight [8] years old):
 - Promptly administer epinephrine 0.15 mg (0.15 mL) deep intramuscular (IM) to mid-anterior lateral thigh (vastus lateralis muscle).
 - Monitor for continued signs and symptoms of anaphylaxis and repeat epinephrine dose every five (5) minutes using a new anaphylaxis kit, to a maximum of three (3) doses, if the patient's condition does not improve.
 - (ii) Adult and pediatric patients who weigh 30 kg or more (or if weight cannot be confirmed and the patient is eight [8] years and older):
 - Promptly administer epinephrine 0.3 mg (0.3 mL) deep intramuscular (IM) to mid-anterior lateral thigh (vastus lateralis muscle).
 - Monitor for continued signs and symptoms of anaphylaxis and repeat epinephrine dose every five (5) minutes using a new anaphylaxis kit, to a maximum of three (3) doses, if the patient's condition does not improve.
 - (iii) If a second dose of epinephrine is required, use the patient's other thigh (in the vastus lateralis muscle). If a third dose of epinephrine is required, use a different injection site (in the vastus lateralis muscle) on the first thigh used.
 - (iv) If a patient experiences anaphylaxis after administration of IM medications/immunizations and each thigh has been used, administer epinephrine in a different injection site (in the vastus lateralis muscle), on one of the thighs. If more than one (1) dose of epinephrine is required, alternate thighs.

- d) Non-pharmacological Interventions:
- (i) Place the patient in a supine position with lower extremities elevated; if the patient is unable to lie supine with lower extremities elevated (e.g., due to respiratory distress, obesity, pregnancy, or age), place the patient in a position of comfort.
 - Death can occur within seconds, due to circulatory collapse, if the patient suddenly sits, stands, or is placed in an upright position. Keep the patient in a supine position with the lower extremities elevated until their cardiovascular system has been stabilized.
 - (ii) Maintain airway and adequate ventilation.
 - (iii) Monitor oxygen saturation, if equipment available.
 - (iv) Administer oxygen as required and if available.

5. Evaluation

5.1 Post-treatment Monitoring/Assessment, Notification, and Education/Follow-up.

- a) After administration of the epinephrine dose(s), the RN shall:
- (i) continue to monitor/assess the patient (refer to Section 2.4 a) above), including vital signs, at a minimum of every five (5) minutes until the patient is showing no new or continued signs and symptoms of anaphylaxis (refer to Section 2.3 c) above), assistance arrives (e.g., EMS), and/or care is transferred, as per practice setting; and
 - (ii) notify the patient's **most responsible health practitioner (MRHP)**, if not aware, of the anaphylaxis incident, the disposition of the patient, and for further prescribing decisions, if applicable.
- b) Once the patient is showing no new or continued signs and symptoms of anaphylaxis (refer to Section 2.3 c) above), the RN who prescribed and administered the epinephrine, or another health care professional, shall:
- (i) monitor/assess the patient, as per practice setting standards, or as ordered by the MRHP, while observing for the potential of a **biphasic anaphylactic reaction**; and
 - (ii) provide education to the patient and/or **family** on the:
 - importance of observing and assessing for up to 72 hours, due to the potential for a biphasic anaphylactic reaction; and

- steps to take if a biphasic anaphylactic reaction occurs (i.e., immediately call 911).

6. Documentation

- 6.1 The RN shall document all interventions in the patient's **health record**, and/or provide a verbal report to others taking over care (e.g., EMS), and document according to practice setting standards, including but not limited to the following:
- a) facts of the **clinical adverse event** (CAE), if applicable;
 - b) initial assessment, including presenting signs and symptoms;
 - c) nursing diagnosis/diagnoses of suspected anaphylaxis;
 - d) time of notification and arrival of additional assistance as per practice setting;
 - e) epinephrine order, including but not limited to, the dose, concentration, and route, as per the *AHS Medication Orders Policy and Procedure*;
 - f) dose, concentration, route, site, and time of epinephrine dose(s) administered, as per the *AHS Medication Administration Policy*;
 - g) non-pharmacological interventions, as applicable;
 - h) ongoing assessments and patient's response to intervention(s);
 - i) patient's final disposition;
 - j) patient education provided, if applicable; and
 - k) follow-up plan, if known.
- 6.2 Documenting CAEs and **close calls**:
- a) For anaphylaxis and epinephrine CAEs and close calls, the RN may submit a report in the Reporting and Learning System for Patient Safety (RLS), as per the *AHS Patient Safety Policy and Procedures*
 - b) Anaphylaxis after immunization is considered an **adverse event following immunization (AEFI)** and shall be reported as soon as possible to the AEFI provincial team, as per the *Immunization Regulation* under the *Public Health Act* (Alberta).

DEFINITIONS

Adverse event following immunization (AEFI) means an unfavourable health occurrence experience by a patient that:

- Follows immunization;
- Cannot be attributed to a pre-existing condition; and
- Meets one or more of the following as determined by a health practitioner:
 - A life-threatening health occurrence that requires hospitalization or urgent medical attention.
 - The health occurrence is unusual or unexpected that:
 - Has not previously been identified; or
 - Has been previously identified but has increased frequency.
 - The health occurrence cannot be explained by the patient's medical history, recent disease or illness or consumption of medication

Alberta Health Services setting means any environment where treatment/procedures and other health services are delivered by, on behalf of or in conjunction with, Alberta Health Services.

Anaphylaxis means a serious allergic reaction that has a rapid onset and can cause death.

Authorized prescriber means a health care professional who is permitted by federal and provincial legislation, their regulatory college, Alberta Health Services, and practice setting (where applicable) to prescribe medications.

Biphasic anaphylactic reaction means a secondary anaphylactic reaction (i.e., a reoccurrence of anaphylaxis). It usually occurs two (2) to nine (9) hours after, but can be up to 72 hours after, the first anaphylactic reaction, where the patient has received the appropriate initial treatment, becomes asymptomatic, and then becomes symptomatic again, in spite of no further exposure to an allergen.

Clinical adverse event means an event that reasonably could or does result in an unintended injury or complications arising from health care management, with outcomes that may range from (but are not limited to) death or disability to dissatisfaction with health care management, or require a change in patient care.

Clinical Support Tool (CST) means an evidence-informed tool used by the practice setting to guide decisions related to prescribing and ordering of diagnostic tests, and ordering medical radiography. The clinical support tool may be in the form of a protocol, algorithm, or clinical practice guideline (CARNA, 2019).

Close call means an event that has potential for harm and is intercepted or corrected prior to reaching the patient.

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Emergency situation means a circumstance which requires immediate health care that is necessary to preserve life, to prevent serious physical or mental harm, or to alleviate severe pain.

Family means one or more individuals identified by the patient as an important support, and who the patient wishes to be included in any encounters with the health care system, including but not limited to, family members, legal guardians, friends, and informal caregivers.

Health care professional means an individual who is a member of a regulated health discipline, as defined by the *Health Disciplines Act* (Alberta) or the *Health Professions Act* (Alberta), and who practices within scope or role.

Health care provider means any person who provides goods or services to a patient, inclusive of health care professionals, staff, students, volunteers and other persons acting on behalf of or in conjunction with Alberta Health Services.

Health record means the collection of all records documenting individually identifying health information in relation to a single person.

Most responsible health practitioner (MRHP) means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by AHS to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of their practice.

Order means a direction given by a regulated health care professional to carry out specific activity(-ies) as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An order may be written (including handwritten and/or electronic), verbal, by telephone or facsimile.

Patient means an adult or child who receives or has requested health care or services from Alberta Health Services and its health care providers or individuals authorized to act on behalf of Alberta Health Services. This term is inclusive of residents, clients and outpatients.

REFERENCES

- Alberta Health Services Governance Documents:
 - *Anaphylaxis Management: Administration of Intramuscular Epinephrine Policy* (#HCS-223)
 - *Clinical Documentation Directive* (#1173)
 - *Disclosure of Harm Procedure* (#PS-95-01)
 - *Immediate Management of Clinical Adverse Events Procedure* (#PS-95-02)
 - *Medication Administration Policy* (#HCS-244)
 - *Medication Orders Policy* (#PS-93)
 - *Medication Orders Procedure* (#PS-93-01)
 - *Ongoing Management of Clinical Adverse Events Procedure* (#PS-95-03)
 - *Patient Safety Alerts and Safer Practice Notices Procedure* (#PS-95-05)
 - *Patient Safety Learning Summary Procedure* (#PS-95-06)

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- *Recognizing and Responding to Hazards, Close Calls and Clinical Adverse Events Policy (#PS-95)*
- *Reporting of Clinical Adverse Events, Close Calls and Hazards Procedure (#PS-95-04)*
- *Standard for Reporting and Follow-Up of Adverse Events Following Immunization (#11.100)*
- Alberta Health Services Resources:
 - *Anaphylaxis Management: Administration of Intramuscular Epinephrine Learning Module*
 - *Is it Anaphylaxis, Syncope, or Anxiety? Infographic*
 - *Protecting Canadians from Unsafe Drugs & Devices Act (Vanessa's Law)*
 - *Reporting and Learning System for Patient Safety (RLS)*
- Non-Alberta Health Services Documents:
 - *Immunization Regulation (Alberta)*
 - *Protecting Canadians from Unsafe Drugs Act (Vanessa's Law) (Canada)*
 - *Public Health Act (Alberta)*
 - *Registered Nurse Prescribing Schedule 1 Drugs and Ordering Diagnostic Tests: Requirements and Standards (CARNA)*

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