

ADVERSE REACTIONS AND EMERGENCIES

Section: Nursing

Compliance: ACHC Infusion Pharmacy

ACHC Standards: DRX4-6A, DRX5-5A, DRX5-5B, DRX7-4A, HIT2-6A

URAC Standards: N/A

TJC Standards: MM.03.01.03, RI.01.02.01 EP 20

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I. POLICY

Patient Emergencies and Adverse Events are defined as an unintended or unwanted event occurring to a patient receiving medical treatment. An adverse event becomes a patient emergency when the outcome is death, disability, life threatening, or requires medical intervention to prevent permanent harm. The event may be a result of a medication, product, equipment and/or procedure.

All events are documented and reported according to **Operations Policy: Incident Reporting Process**. Infusion patient emergencies and adverse events include close calls associated with infusion therapy and vascular access device (VAD) which may result from human errors and system failures.

A life-threatening allergic reaction called anaphylaxis can occur resulting in sudden blood pressure and breathing changes. Epinephrine is the drug of choice for treatment of anaphylaxis. Epinephrine is a sympathomimetic agent with multiple actions to increase vasoconstriction, increase peripheral vascular resistance, decrease mucosal edema, bronchodilation and decrease mediator release from mast cells and basophils. Epinephrine has no absolute contraindications in the setting of anaphylaxis, but transient side effects include tremor, dizziness, palpitations, anxiety, restlessness and headache.

II. NURSING OVERVIEW

Patient and caregivers are to be educated on signs and symptoms of complications, reactions, and any unwanted side effects that are considered an adverse event, and how to contact the appropriate medical provider (which may include summoning emergency medical services (EMS) by dialing 9-1-1).

Patients and caregivers are to be educated on when and how to administer epinephrine when the provider has ordered epinephrine. Refer to **Operations Policy: Patient Caregiver Education** for more information.

A. Patient/Caregiver training will include:

1. Written instructions, video instructions (manufacturer or CarepathRx video)

<https://youtu.be/rkdbzJQ-S9s>), and hand on training with syringe with needle and vial supplies or autoinjector trainer. NOTE: Autoinjectors must be held in place for up to 10 seconds to permit medication delivery.

2. Anaphylaxis is highly unpredictable, and epinephrine is the most effective treatment and should be administered without delay. Epinephrine should be used immediately for:
 - a. Trouble breathing
 - b. Throat tightness
 - c. Feeling lightheaded or like they may pass out
 - d. Pediatric patients:
 - i. Altered consciousness during reaction
 - ii. Coughing repeatedly during reaction (bronchospasm)
 - iii. Widespread hives
 3. Symptom management (i.e., antihistamines, steroids, inhaled bronchodilators) are not sufficient to treat anaphylaxis, as they are too slow-acting and cannot reverse laryngeal edema or hypotension.
 4. Activating EMS as soon as possible as symptoms may worsen as anaphylaxis is unpredictable.
 5. More than 1 dose may be needed, and should be administered as ordered, or 5-15 minutes apart in the absence of specific provider frequency order.
 6. Epinephrine should be replaced prior to expiration, but out of date epinephrine may be administered IM during an anaphylactic reaction if no in date epinephrine is available (will deliver a smaller than prescribed dose).
 7. Pediatric Education:
 - a. Children 9 to 11 years should be taught the signs of anaphylaxis and when epinephrine is to be administered.
 - b. Pediatric patients should be taught self-administration of epinephrine by 12 years of age.
- B. Adverse Events and Patient Emergencies are to be documented in the patient's electronic medical record (EMR) and the organization's incident report system.
- C. When the risk of an allergic or anaphylactic reaction exists for a patient, the pharmacist and nurse will discuss a mutually agreed upon plan of action with the physician prior to dispensing and/or administering a drug or therapy.
- D. Additionally, prior to dispensing a drug which may result in an allergic or anaphylactic reaction, as noted by a review of the patient's medical, drug, and allergy history (including the potential for cross-sensitivity to related drugs), the pharmacist and/or nurse will:
1. Document the findings in the medical record
 2. Discuss an appropriate action plan with the prescriber
 3. Inform the patient or surrogate decision maker about the possibility of an anaphylactic event and proper procedure to follow.
 4. Obtain prescriptions and orders to administer any emergency medications from the prescriber.

- a. The prescriber may elect to utilize the pharmacy's Standard Anaphylaxis Protocol in Appendix A or Epinephrine Protocol in Appendix B.
 - b. The prescriber may elect to order an autoinjector to be dispensed by the patient's retail pharmacy.
 - c. Patient-specific orders are required for pediatric patients.
 - d. Epinephrine is typically prescribed and dispensed for intramuscular (IM) administration in alternate care settings, such as in the home and ambulatory infusion suites. Epinephrine is recommended to be given in the mid-outer thigh (quadriceps).
- E. All clinician personnel providing hands on patient care must be Cardiopulmonary Resuscitation (CPR) certified through an in-person course requiring demonstration of hands-on skills.
- 1. Resuscitative measures may be performed only by personnel who have successfully completed the appropriate training, such as CPR.
 - 2. First aid or other emergency measures may be provided only by those trained to do so and, when necessary, according to applicable laws and/or regulations, and under the direction of physician's orders.
- F. The patient's wishes and advanced directive are to be honored.
- 1. The patient has the right to refuse emergency care and decline activation of emergency 911 services, regardless of having an advanced directive.
 - 2. Refer to **Operations Policy: Advance Directives and Refusal of Medical Treatment by Patient** for more information.
- G. When emergency medications or supplies are used or expired, the pharmacy will replace them as soon as possible to ensure the patient has drug on hand for subsequent infusions.
NOTE: Administration of out-of-date IM epinephrine is preferable to not administering epinephrine at all.²
- H. Medical emergencies in a patient's home may include:
- 1. Allergic/anaphylactic reactions
 - 2. Animal bites
 - 3. Burns and scalds
 - 4. Cardiac Arrest
 - 5. Childbirth
 - 6. Convulsions
 - 7. Cuts and abrasions
 - 8. Fainting
 - 9. Fractures
 - 10. Hemorrhage
 - 11. Obstructed airways
 - 12. Respiratory Arrest
 - 13. Shock
 - 14. Poisoning
 - 15. Hypoglycemic reactions

I. Symptoms of infusion-related reactions include sudden or gradual onset of:

1. **Mild Reaction** includes one or more of the following symptoms:
 - a. Flushing
 - b. Dizziness
 - c. Headache
 - d. Diaphoresis
 - e. Nausea
 - f. Palpitations
2. **Moderate Reaction** included one or more of the following symptoms:
 - a. Chest discomfort
 - b. Dyspnea
 - c. Hives
 - d. Hypotension or hypertension
 - e. Erythema
 - f. Fever
 - g. Other pronounced symptoms
3. **Severe Reaction** includes one or more of the following symptoms:
 - a. Bronchospasm
 - b. Severe hypotension or hypertension
 - c. Fever with rigors
 - d. Angioedema
 - e. Other potentially life-threatening symptoms

III. PROCEDURES

- A. If an allergic or anaphylactic reaction occurs, follow provider orders. See standard protocol for step-by-step instructions and protocol components in:
 - APPENDIX A: ANAPHYLAXIS PROTOCOL
 - APPENDIX B: Epinephrine Protocol
1. For **mild reactions** the infusion should be slowed or stopped.
2. For **moderate and severe reactions**, the infusion should be stopped.
3. Once symptoms have been treated and resolved in mild and moderate reactions, the infusion may be restarted and titrated up to tolerance.
4. Intravenous (IV) access is to be maintained to ensure the ability to administer emergency medications if indicated.
5. If the patient does not have IV access and the IV access supplies have been provided, a peripheral IV should be initiated.
6. Manage **moderate to severe reactions** with ordered emergency medications. If not already given, administer:
 - a. Diphenhydramine 25-50 mg IV push
 - b. Methylprednisolone 125 mg IV push
 - c. Administer 0.9% Sodium Chloride IV bolus via gravity up to 500mL/hr
 - d. Administer IM epinephrine for:
 - Bronchospasm and/or trouble breathing

- Angioedema and/or throat tightness
 - Severe hypotension
 - Fever with rigors
 - Other potentially life-threatening symptoms
 - Pediatric patients:
 - Altered consciousness during reaction
 - Coughing repeatedly during reaction (bronchospasm)
 - Widespread hives
7. Establish and/or maintain airway, if compromised
 8. Place the patient in a supine position with elevated legs
 9. Initiate CPR if needed
 10. Notify the provider and the pharmacy of the event, treatments, and outcomes as soon as possible.
Refer to **Nursing Policy: Algorithm for Notification of Pharmacist and Provider.**
- B. In the event of any medical emergency, EMS should be summoned by dialing 911 immediately and the patient's physician should be contacted as soon as possible.
- C. The nurse will stay with the patient and monitor vital signs every 15- 30 minute until the patient receives medical care/is transported to a hospital.
- D. Documentation should include:
1. Date/time of events
 2. Specific signs and symptoms experienced by the patient
 3. Communication with physician
 4. Interventions taken and outcomes
 5. Patient's condition and response to intervention
 6. Notification of supervisor of event
 7. Transfer of care to EMS or other
- E. An Incident Report must be completed.
- F. Non-clinical personal in the patient's home or patient care area are to support the clinician and/or caregiver and activate emergency 911 services
1. Attempt to assess the severity of the emergency and, if appropriately trained in first aid and emergency procedures, provide immediate aid if the patient is experiencing a life-threatening situation.
 - a. If in doubt as to the nature or severity of the situation, or if no formal training has been received in first aid or emergency procedures, immediately access the emergency medical services system (911).
 - b. All first aid and emergency care provided is to be in accordance with recognized standards (i.e. American Heart Association, American Red Cross, etc.)
 2. Remain with the patient until emergency medical services personnel arrive and transport the patient to an acute care facility.
 3. Notify the clinical pharmacist as soon as possible of the nature of the emergency, what actions were taken, and the current disposition of the patient. The clinical pharmacist will notify the provider of the event.

NOTE: During this conversation, it will be determined if the clinical pharmacist or the personnel in the home will submit the incident report.

IV. TRAINING

This policy will be posted on the Company shared drive.

V. REFERENCES

Infusion Nurses Society, Inc. (2021). *Policies and Procedures for Infusion Therapy: Home Infusion* 3rd edition.

UpToDate. (2022). Prescribing Epinephrine for Anaphylaxis Self-treatment.

APPENDIX A: ANAPHYLAXIS PROTOCOL

Epinephrine is the drug of choice for anaphylaxis because it can reverse associated hypotension and bronchospasm. There are no absolute contraindications to epinephrine administration in the setting of anaphylaxis.

Indications: Epinephrine should be administered to patients who meet the diagnostic criteria for anaphylaxis.

Population: Anaphylaxis kits will be dispensed to adult patients (body weight ≥ 35 kg) per pharmacy protocol and whenever specifically ordered by a prescriber.

<p>How supplied:</p> <ul style="list-style-type: none"> (2) Acetaminophen 325mg tablets (2) Diphenhydramine 25mg capsules (1) Diphenhydramine 50mg/1mL vial (3) Epinephrine 1mg/mL ampules (1) Methylprednisolone 125mg/2mL vial (1) 0.9% Sodium Chloride (NSS) 500mL bag (3) 1mL TB syringes (3) Filter needles (5 micron) 19 G x 1.5inch (3) Monoject Safety Needles 22 G x 1 inch (2) Syringes, 3 cc, 20G x 1" (1) Gravity tubing (10) Alcohol swabs 	<p>Epinephrine administration:</p> <ol style="list-style-type: none"> 1. Attach filter needle to the 1mL syringe 2. Carefully open ampule of epinephrine 3. Withdraw dose of epinephrine 4. Remove filter needle from syringe and attach 22 G x 1 inch needle 5. Purge any air remaining in syringe 6. Administer dose intramuscularly into the anterior to lateral thigh
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FOLLOW CHARTWELL PROTOCOL FOR MANAGEMENT OF ADULT INFUSION REACTIONS

*****FOR SEVERE REACTIONS, DO NOT DELAY ADMINISTRATION OF EPINEPHRINE*****

MILD	MODERATE	SEVERE
<p><i>For flushing, dizziness, headache, diaphoresis, nausea, or palpitations:</i></p> <p style="text-align: center;">Slow drug administration</p> <p style="text-align: center;">Assess vital signs including Airway, Breathing, Circulation</p> <p style="text-align: center;"><u>Administer</u> Diphenhydramine 25-50mg PO AND/OR Acetaminophen 650mg PO</p> <p style="text-align: center;">IF NO RELIEF Infuse NSS at 500-1000mL/hr</p> <p>If symptoms resolve, may resume infusion at slowed rate and titrate as tolerated</p>	<p><i>For chest discomfort, dyspnea, hives, hypotension/hypertension, erythema, fever, or other pronounced symptoms:</i></p> <p style="text-align: center;">STOP drug administration</p> <p style="text-align: center;">Assess vital signs including Airway, Breathing, Circulation</p> <p style="text-align: center;"><u>Administer</u> Diphenhydramine 25-50mg IV push Acetaminophen 650mg PO</p> <p style="text-align: center;">IF NO RELIEF Methylprednisolone 125mg IV push Infuse NSS at 500-1000mL/hr</p> <p style="text-align: center;">Monitor vital signs until WNL</p> <p>If symptoms resolve, may resume infusion at slowed rate and titrate as tolerated</p>	<p><i>For bronchospasm, severe hypotension/hypertension, fever with rigors, angioedema, or other potentially life-threatening symptoms:</i></p> <p style="text-align: center;">STOP drug administration</p> <p style="text-align: center;">CALL 911</p> <p style="text-align: center;">Place in supine position and elevate legs</p> <p style="text-align: center;">Give epinephrine 0.5mg IM injection (May repeat every 5 minutes x 3 doses if needed)</p> <p style="text-align: center;">NSS IV bolus up to 500mL/hr</p>

Emergency Medication After Your Infusion

Please call your pharmacy if you have any questions or concerns. In the event of an emergency, always call 911.

Your nurse will tell you when you need to use Emergency Medications.

The epinephrine dose will be noted on the Anaphylaxis Protocol included with your kit.

Start with a clean work surface and clean hands.

Open the supply bag labeled Anaphylaxis Kit Contents.

You will need:

1. Bag containing Pills (2 Acetaminophen and 2 Diphenhydramine)
2. Bag containing Alcohol Prep Pads
3. Bag labeled IM Epinephrine

All other contents will not be needed.

Open the IM Epinephrine Bag

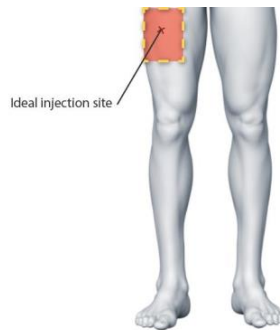
1. Remove 1 of each item
 - a. 1 -syringe
 - b. 1 – brown labeled filter needle (BD Filter Needle)- **for ampule use only**
 - c. 1 – black labeled safety needle (Magellan Hypodermic Safety Needle 22G x 1”)
 - d. 1 ampule of epinephrine

Prepare IM (intramuscular) injection of Epinephrine:

1. Attach the brown filtered needle to syringe
 - a. Be careful to not touch the tip of the syringe or the needle.
2. Using an alcohol swab, wipe the neck of the epinephrine ampule.
3. Holding the ampule upright, swirl and flick the ampule until all fluid flows to the bottom chamber (the top chamber should be empty).
4. Using a new alcohol wipe, grasp the neck of the ampule and with your other hand grasp the bottom chamber of the ampule. Quickly snap the top of the ampule off, directing the snap way from you.

5. **Place the tip of the brown filter needle inside the ampule.** Tilting the ampule, **withdraw dose of medication into the syringe** by gently pulling back on the plunger. Be careful to not pull the plunger out of the syringe.
6. Remove the needle from the ampule and **hold the syringe upright** with the needle pointing upward. **Gently tap the side of the syringe to bring any air to the top of the syringe.**
7. **Push the air out of the syringe by gently pushing on the plunger.**
8. Replace the cap on the brown filter needle. Discard remainder in ampule.
9. **Remove the brown filter needle and place the black safety needle onto the syringe.**

Give your IM Epinephrine injection



1. **Grasp your leg muscle at the outer mid-thigh** and **cleans the area** with a new alcohol wipe.
2. **Push the needle into your leg muscle straight** in at a 90-degree angle.
3. **Inject the medication** by depressing the plunger in a slow and steady motion.
4. **Remove the needle** and wipe the site with the alcohol wipe.
5. May repeat dose every 5 minutes (**maximum 3 doses**) if ordered per protocol.

Take the pills by mouth.

- a. 2 – Acetaminophen
- b. 2 – Diphenhydramine

Place all trash in the bag the pills came in and take with you when you seek medical care. **Give the bag to the nurse or EMT**, so your doctor will know what medication you already took. They will properly dispose of the syringe and needles.

Call 911 or have someone drive you to the emergency department.

APPENDIX B: Epinephrine Protocol

Epinephrine is the drug of choice for anaphylaxis because it can reverse associated hypotension and bronchospasm.

There are no absolute contraindications to epinephrine administration in the setting of anaphylaxis.

Indications: Epinephrine should be given to patients presenting with bronchospasm, significant gastrointestinal symptoms, laryngeal edema (hoarse voice, difficulty swallowing, stridor), hypotension (lightheadedness, collapse), or any rapidly progressing reaction.

Population: Epinephrine will be dispensed per contracted home health protocol or to patients where the benefit outweighs the risk

How Supplied:

- (1) Epinephrine 1mg/ml (1ml) Ampule
- (1) Filter needle (5micron) 19 G x 1.5 inches - *for ampule use only*
- (1) 1ml TB Syringe
- (1) Monoject Safety needle 22 G x 1 inch

Administration:

1. Attach filter needle to the syringe.
2. Carefully open ampule of Epinephrine.
3. Withdraw dose of Epinephrine.
4. Remove filter needle from the syringe and attach a 22 G x 1 inch.
5. Purge any remaining air in the syringe and administer the dose.
6. Administer intramuscularly into the anterior to lateral thigh.

Dosage: (check one)

- ADULT:** 0.3mg (0.3ml) - for adults or patients with a body weight greater than or equal to 30 kg
- Pediatric:** 0.15mg (0.15ml) less than 30kg - A dosage of 0.01 mg/kg will be administered to a patient less than 10kg

Once epinephrine administration is completed - immediate transportation to the local hospital emergency room will be arranged

** All specific physician orders will supersede standing orders.*

APPENDIX B: EPINEPRINE KIT INSTRUCTIONS FOR IM INJECTION

Emergency Medication After Your Infusion

Please call 1-800-755-4704 if you have any questions or concerns. We are available 24 hours a day, 7 days a week. In the event of an emergency, always call 911.

Your nurse will tell you when you need to use Emergency Medications.

Start with a clean work surface and clean hands.

Open the supply bag labeled Epinephrine Kit Contents.

1. Remove 1 of each item

- e. 1 -syringe
- f. 1 – brown labeled filter needle (BD Filter Needle)
- g. 1 – black labeled safety needle (Magellan Hypodermic Safety Needle 22G x 1’')
- h. 1 ampule of epinephrine

Prepare IM (intramuscular) injection of Epinephrine:

2. Attach the brown filtered needle to syringe

a. Be careful to not touch the tip of the syringe or the needle.

3. Using an alcohol swab, wipe the neck of the epinephrine ampule

4. Holding the ampule upright, swirl and flick the ampule until all fluid flows to the bottom chamber (the top chamber should be empty).

5. Using a new alcohol wipe, grasp the neck of the ampule and with your other hand grasp the bottom chamber of the ampule. Quickly snap the top of the ampule off, directing the snap way from you.

6. Place the tip of the brown filter needle inside the ampule. Tilting the ampule, **withdrawal all the medication into the syringe** by gently pulling back on the plunger. Be careful to not pull the plunger out of the syringe.

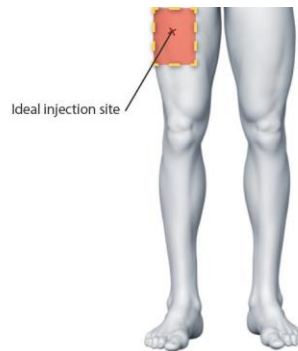
7. Remove the needle from the ampule and hold the syringe upright with the needle pointing upward. **Gently tap the side of the syringe to bring any air to the top of the syringe.**

8. Push the air out of the syringe by gently pushing on the plunger.

9. Replace the cap on the brown filter needle.

10. Remove the brown filter needle and place the black safety needle onto the syringe.

Give your IM Epinephrine injection



2. Grasp your leg muscle at the outer mid-thigh and cleanse the area with a new alcohol wipe.

3. Push the needle into your leg muscle straight in at a 90-degree angle.

4. Inject the medication by depressing the plunger in a slow and steady motion.

5. Remove the needle and wipe the site with the alcohol wipe.

Place all trash in the bag and take with you when you seek medical care. **Give the bag to the nurse or EMT**, so your doctor will know what medication you already took. They will properly dispose of the syringe and needles.

Call 911 or have someone drive you to the emergency department.