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CAREPATHrx™
Specialty Pharmacy & Infusion Solutions

GUIDELINES FOR OUTPATIENT INTRAVENOUS ALPHA-1 PROTEINASE INHIBITORS

Section: Nursing
Compliance: Infusion Pharmacy
ACHC Standards:
URAC Standards:
TJC Standards:
Policy ID: NUR256
Effective: 1/16/23
Reviewed:
Revised:
Approved by: Kathleen Patrick, President, 1/16/23

I. BACKGROUND

Human alpha-1 proteinase inhibitors (Prolastin-C, Prolastin-C Liquid, Aralast NP, Glassia, and Zemaira) are intravenous agents that augment the deficient alpha 1-antitrypsin, which theoretically is used to correct the imbalance of proteinase inhibitors and the neutrophil elastase in the lungs. Ultimately, it serves to protect the lungs from the damage caused from the deficiency. All drugs in the class share this common purpose and are indicated for people with confirmed alpha-1-antitrypsin deficiency. The following outlines the procedures for servicing patients in need of outpatient human alpha-1 proteinase inhibitor augmentation.

II. PATIENT ACCEPTANCE CRITERIA

A. All candidates for home care service must be evaluated by the clinician(s) and deemed appropriate to receive home care based upon admission criteria.

B. The decision to administer a first dose in the home by a field nurse will be determined on a case-by-case basis and reviewed by nursing and pharmacy management. The following criteria will be evaluated:
   1. Prescriber preference
   2. Allergy profile
   3. IgA deficiency status
   4. Age ≥18 years
   5. Ability to secure nursing for initial infusion
   6. Other relevant social and/or medical history

C. Physician orders for alpha-1 proteinase inhibitors must include:
   1. Patient weight
   2. Drug and dose (weight-based dosage)
   3. Route of administration
   4. Frequency of administration
   5. Emergency medications

6. Orders for pre-medications, if applicable
7. Line care protocol
8. Routine lab monitoring, if applicable

D. Dispensing pharmacy treatment protocol for anaphylaxis will be instituted unless a more comprehensive patient- specific orders are provided by physician. See policy NUR012 (Appendix A).

III. PHARMACOLOGIC OVERVIEW

Refer to manufacturer's full Prescribing Information for most up to date information.

A. Indications and Dosing
   1. Treatment of adult patients with confirmed alpha-1 antitrypsin deficiency
   2. Dose is 60mg/kg IV infused once weekly
   3. Dosing is based off actual body weight. Alpha-1 products have not been studied in extremes of body weights.

B. Contraindications
   1. History of severe systemic reactions or anaphylaxis to alpha-1-proteinase inhibitor products
   2. Immunoglobulin A (IgA) deficient patients with antibodies against IgA

C. Warnings and Precautions
   1. Hypersensitivity reactions
      a. Alpha-1 products may contain trace amounts of IgA. Patients with known antibodies to IgA, which can be present in patients with selective or severe IgA deficiency, have a greater risk of developing severe hypersensitivity and anaphylactic reactions. Monitor vital signs continuously and observe the patient carefully throughout the infusion. Discontinue the infusion if hypersensitivity symptoms occur and administer appropriate emergency treatment. Have epinephrine and other appropriate supportive therapy available for the treatment of any acute anaphylactic or anaphylactoid reaction
      b. Patients with history of severe infusion reactions should only be considered for home infusion after a thorough discussion of safety for the patient and risk vs. benefit with physician. If home infusion continues, a slower infusion rate will be utilized.
   2. Transmission of infectious agents
      a. Because this product is made from human plasma, it may carry a risk of transmitting infectious agents, such as viruses, the variant Creutzfeldt-Jakob disease (vCJD) and theoretically, the Creutzfeld-Jakob disease (CJD) agent. This also applies to unknown or emerging viruses and other pathogens. The risk of transmitting an infectious agent has been minimized by screening plasma donors for prior exposure to certain viruses, by testing for the presence of certain virus infections and by inactivating and removing certain viruses during the manufacturing process.
   3. Pregnancy/ Lactation
      a. There is no data with alpha-1 product use in pregnant women to inform drug-

associated risk. It is not known whether these agents can cause fetal harm when administered to pregnant women or can affect reproductive capacity. Alpha-1 agents should only be given to pregnant patients with a clear need for therapy.

b. There is no information regarding the presence of alpha-1 agents in human milk, the effects of the breastfed infant, or the effects on milk production. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for alpha-1 treatment and any potential effects on the breastfed infant from alpha-1 agents.

D. Pharmacokinetics
   1. Half-life: 4.5-5.9 days
   2. Volume of distribution 3.2-5.6 L

E. Adverse Reactions
   1. Cardiovascular: Chest discomfort (6%)
   2. Gastrointestinal: Nausea
   3. Hepatic: Increased aminotransferase level (11.1%), Increased liver enzymes (6%)
   4. Neurologic: Dizziness (6%), Headache (Up to 20%)
   5. Musculoskeletal: joint pain (16%)
   6. Respiratory: Acute exacerbation of chronic obstructive pulmonary disease (Up to 20%), Bronchitis (7.6%), Cough (Up to 24%), Sinusitis (Up to 15%), URTI (Up to 15%)
   7. Immunologic: Hypersensitivity reaction

F. Drug Interactions
   1. No formal drug interaction studies have been conducted.

IV. ADMINISTRATIVE GUIDELINES

A. Administration: IV infusions should be given immediately after reconstitution and dilution. Use within 1 hour of preparation per current USP Immediate-Use Guidelines.
   1. Aralast NP: A 20-micron filter (supplied) should be used during pooling (in-line filter is not required for administration)
   2. Glassia: Filter the solution through a 5 micron in-line filter (not supplied) during the infusion
   3. Prolastin-C: Filter the solution through a 5-15 micron in-line filter (not supplied) during the infusion
   4. Zemaira: Filter the solution through a 5 micron in-line filter (not supplied) during the infusion

B. Duration: Indefinitely

C. Dose adjustment: No dosage adjustment is recommended for renal or hepatic impairment.

D. Do not co-administer other medicinal products in the same infusion line.

V. NURSING PROCEDURE

A. Recommended supplies and procedure below apply to nurse-administered infusions. Patients may be candidates for self-infusion if deemed appropriate by their provider. Nursing supplies may include but are not limited to:

1. Alcohol Swabs
2. Gloves
3. Vials of human alpha-1 proteinase inhibitor
4. Empty, sterile intravenous solution container/bag for pooling
5. Vented spike (for Glassia, and Prolastin)
6. Dressing change kit
7. IV Pole
8. IV pole clamp (if utilizing infusion pump)
9. IV Start Kit
10. Peripheral IV catheter (22-gauge x1" and 24-gauge x ¾")
11. Port access needle (22 Gauge x ¾ to 1" safe step)
12. Tape
13. Extension set 8"
14. IV injection cap
15. IV administration set with corresponding filter, if applicable (ex: gravity or dial-a-flow tubing)
    a. 5-micron filter for Glassia and Zemaira
    b. 5-15-micron filter for Prolastin-C
16. Syringes (various sizes depending on product and preparation instructions)
17. Needles (ex: 20Gx1")
18. Normal Saline (0.9%) flushes
19. Sharp container

B. How supplied

1. Aralast NP: 0.5- or 1-gram vials of drug, and 25mL or 50mL of Sterile Water for Injection diluent respectively, one sterile double-ended transfer needle, and one sterile 20-micron filter needle
2. Glassia: vial of 1gram/50mL solution
3. Prolastin-C Liquid: vial of 0.5g/10mL, 1g/20mL or 4g/80mL solution
4. Zemaira: 1, 4, or 5-gram vials of drug, and 20mL, 76mL, or 95 mL of Sterile Water for Injection diluent respectively, and one vented transfer device

C. Storage and handling

1. Aralast NP: Store in the original container at temperature below 25C (77F). Do not freeze. Protect from light.
2. Glassia: Store in the original container in the refrigerator at 2C to 8C (36F to 46F); Product may be stored at a temperature up to 25C (77F) for up to 1 month (do not refrigerate once brought to room temperature). Do not freeze.
3. Prolastin-C Liquid: Store in the original contained at in the refrigerator at 2C to 8C (36F to 46F); Product may be stored at a temperature up to 25C (77F) for up to 1 month (do not refrigerate once brought to room temperature). Do not freeze.
4. Zemaira: Store in the original container at temperature below 25C (77F). Do not freeze. Protect from light.
5. All products: Discard unused medication in vials
6. Refer to specific product packing and prescribing information for storage, stability,

and excursion information

D. Compatibility: Alpha 1 proteinase inhibitors have not been studied in other solutions. Aralast NP and Zemaira powders are reconstituted with sterile water for injection.

E. Preparation
    1. Explain the reasoning for visit and use of the human alpha-1 proteinase inhibitor product
    2. Don gloves
    3. Establish venous access prior to preparation of drug
    4. Counsel patient on warnings, precautions, and potential side effects including but not limited to: hypersensitivity reactions, chest discomfort, yellow of the skin or eyes, dizziness and headache, and respiratory symptoms.
    5. Prepare product:
        a. Aralast NP
            i. Allow product and diluent to come to room temperature.
            ii. Using aseptic technique and a double ended transfer needle provided, reconstitute the drug with the provided diluent; Let the vial stand till most of the contents are in solution, then gently swirl the product. **Do not shake or invert.**
            iii. The solution should be colorless to slightly yellow/green. Inspect the vial for particles, but they will ultimately be filtered through the provided 20-micron filter.
            iv. Pool the vial(s) into an empty, sterile solution container using the 20-micron filter provided.
            v. Administer reconstituted product within 1 hour of reconstitution. Discard any product that is unused.
        b. Glassia
            i. Allow the product to come to room temperature before administration.
            ii. Inspect the solution for colorless to slightly yellow/green appearance, and particulate matter. Particles will be filtered. Do not use if solution is cloudy.
            iii. Using aseptic technique, vial(s) pool vial into an empty, sterile container to be infused. Use a vented spike (not supplied) to withdraw the solution from the vial and then use the supplied 5-micron needle to transfer the solution into the IV infusion container.
            iv. Use the product within 1 hour of entering the vials. Discard any unused product.
        c. Prolastin-C Liquid
            i. Allow the product to come to room temperature before administration.
            ii. Inspect the solution for colorless to slightly yellow/green appearance, and particulate matter. Particles will be filtered. Do not use if solution is cloudy.
            iii. Vial(s) should be pooled into an empty, sterile container to be infused using aseptic technique.
            iv. Use the pooled solution within 1 hour of transferring the product. Discard any unused product
        d. Zemaira
            i. Allow the product to come to room temperature before administration.
            ii. Using aseptic technique and the provided Mix2Vial filter set provided to reconstitute the drug with the provided diluent. The 1g vial will take ~5 minutes to reconstitute, and the 4 and 5g vial will take ~10 minutes. See package insert for specific Mix2Vial instructions.

iii. Inspect the solution for colorless to slightly yellow appearance, and free from visible particles.
iv. Vial(s) should be pooled into an empty, sterile container to be infused.
v. Administer reconstituted product within 1 hour of reconstitution. Discard any product that is unused.

F. Infusion rates according to product:
1. Aralast and Glassia infusion rate not to exceed 0.2mL/kg/min, as determined by the response and comfort of the patient
2. Prolastin-C and Zemaira infusion rate is recommended to be 0.08mL/kg/min, but is determined by the response and comfort of the patient
3. If a minor reaction is observed, the infusion may be slowed or temporarily interrupted. Follow dispensing pharmacy's treatment protocol for anaphylaxis and management of adult infusion reactions. See policy NUR012 (Appendix A).

G. For nurse-administered infusions, monitor patients and vital signs during the infusion and 30 minutes after the infusion has completed.

VI. CLINICAL MONITORING

A. Prior to staring therapy
1. Lab work including immunoglobulin panel for IgA deficiency
2. Baseline CMP and CBC

B. Monitor disease severity including:
1. Progression of COPD or emphysema using pulmonary function tests including but not limited to spirometry
2. Progression of liver disease using hepatic enzyme panels, CT scans or ultrasonography of the liver and abdomen, and objectively measuring jaundice

C. Monitor for signs and symptoms of infection

D. Monitor for signs and symptoms of hypersensitivity reactions

Refer to manufacturer's full Prescribing Information for most up to date information

REFERENCES

Aralast NP [package insert]. Lexington, MA: Baxalta U.S. Inc.; June 2017.

Glassia [package insert]. Lexington, MA: Baxalta U.S. Inc.; June 2017.

Prolastin-C Liquid [package insert]. Triangle Park, NC: Grifols Therapeutics LLC; 2019.

Zemaira [package insert]. Kankakee, IL: CSL Behring LLC; 2021.

Alpha-1-antitrypsin deficiency. IBM Micromedex Solutions. Truven Health Analytics, Inc. Ann Arbor, MI. Accessed July 7, 2022. http://www.micromedexsolutions.com.

APPENDIX A: ANAPHYLAXIS KIT INTRUCTIONS

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

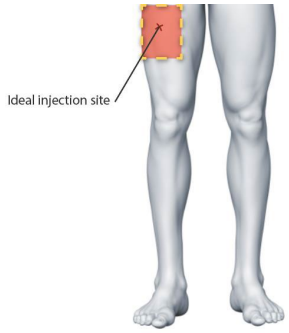
1. **Remove 1 of each item**
    a. 1 -syringe
    b. 1 – brown labeled filter needle (BD Filter Needle)- **for ampule use only**
    c. 1 – black labeled safety needle (Magellan Hypodermic Safety Needle 22G x 1")
    d. 1 ampule of epinephrine

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 h**old 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 **cleanse 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.