**Intravenous Therapy Policy and Procedure and Standard Operating Procedures**

1. **New or Established IV patients**

1. Have patients check in with Front Office Staff.

1. New Patients: Front Office Staff will collect New Patient Intake, Consent and IV Consent Form.
2. If a patient has an out of clinic referral form, please give it to IV supervising doctor.
3. Minimum labs required are needed within 4-6 weeks of IV, and future monitoring labs are needed every 4-6 weeks for safety.

CBC, CMP and a G6PD Quant if over (10 grams Vitamin C, Ozone, H202)

1. Upon first visit with patient, review intake paperwork and perform brief

intake with emphasis on questioning for any known heart, liver or kidney

disease.

1. Established Patients: Front office staff will escort patient to IV chair and notify

doctor of patient’s presence.

2. Perform pertinent physical exam:

a. Blood pressure

b. Pulse

c. Temperature

d. Respirations and Pulse Ox if lung or heart issues.

e. (optional) check for pitting edema

3. Aid patient in deciding on what benefits they are looking for and advise them on

the IV that most closely fits those parameters.

4. Discuss what to expect during IV and when to notify staff of concerns.

5. Make sure the patient is nourished and well hydrated before and during the infusion.

5. Prepare IV per sterile procedures outlined in “IV Solution Mixing

Procedure”.

1. **Starting a peripheral IV**
   1. Intravenous therapy is ordered by the licensed provider
      1. This order includes
         1. Base solution with volume
         2. Additives with volume
         3. Flow rate
         4. Frequency
   2. Identify patient and patients order
      1. Label infusions with patient identifying information such as name/initials and solution name. DO NOT write on the bag with a marker. Please write on tape that is stuck to the bag.
   3. Vitals must be taken before and after each infusion by a nurse, physician or medical assistant.
      1. Report the alarm finding to the physician and infusing physician or nurse as soon as possible.
   4. IV will be started by a physician or nurse.
   5. A physician must be in the office during infusions.
   6. Restrictions on site of insertion
      1. Do not attempt feet or legs without a physician's order.
      2. Do not attempt a limb in which the axillary lymph nodes have been removed.
      3. Do not attempt on an extremity with a known blood clot.
      4. If possible, veins in the antecubital fossa are reserved for drawing blood samples.
   7. Attempting IV insertion:
      1. No more than two unsuccessful attempts may be performed without doctor’s authorization.
      2. If unable to accomplish insertion, notify the doctor if available as soon as possible.
   8. Documentation must be complete including but not limited to pre, post vitals, site, gauge, number of attempts, adverse SE, drip rate, start and stop time.
   9. Site will be cleaned with approved aseptic technique using chlorhexidine/IPA scrub x 1 minute until the site is clear. If contraindicated or patient under 2 years of age use 70% alcohol followed by 1-2% iodine. In extremely rare situations of allergies to both then 10% H202 and/or silver may be used.
   10. If needed a local anesthetic agent may be used. This includes sodium chloride, dextrose 5% in water, 1% lidocaine, 1% procaine without epinephrine.
   11. Apply tourniquet proximal to the selected puncture site on top of a thin layer such as gown sleeve. Do not apply too tightly and remove immediately after use.
   12. Make sure the patient is hydrated and nourished before starting IV. Continue to hydrate during IV.
   13. Check on patient status before each IV.
   14. Extension sets may be placed on the angiocath.
   15. Peripheral IV sites must be changed every 72 hours or prn.
   16. Only an RN or physician can only access and d/c central lines and PICC lines.
       1. Sterile technique must be used
       2. Proper flushing technique must be used
          1. Initial blood return
          2. 10 ml saline flush
          3. Additive
          4. 20 ml Saline Flush
          5. Prefilled Heparin for flushing only.
2. **IV Therapy Complications (See details in below)**
3. Infiltration
4. Phlebitis
5. Speed shock
6. Vasovagal
7. Anaphylaxis
8. Cytokine storm
9. Infiltration
10. Flushing: Due to magnesium: Slow infusion
11. Lightheadedness: Several factors from hydration, nourished, IV too fast
12. Odd taste/smell: B-vitamins or DMSO in the bag. This is normal.
13. Soreness at the IV: Infiltration or adjustments are needed in pH/osmolarity of the bag.
14. **Supplies**
15. Tubing
    * 1. Admin sets must have a minimum of 15-micron filter along with y-port access.
16. Catheters must be OSHA safety needles
17. Tegaderm
18. Anchoring tape
19. Appropriate sharps, gauze.
20. **Compounding**
21. Any time more than 3 additives (2 in a bag) are added to a bag or syringe **ISO 5 must be used.**
22. Check dates for expiration
23. Check for correct dosage and correct medication/additive
24. General Mixing order
    * 1. Use single access devices when possible
      2. Utilize gloves, gown and mask or shield when possible
      3. Should occur within 1 hour of patient arrival and no later.
      4. Minerals should be added first and vitamins/amino acids last.
         1. Zinc and MTE always first and agitate bag
         2. Vitamins and amino acids next
            1. Methyl-B12 should always be added last and only right before IV insertion.
            2. DMSO should always be added only right before IV insertion

Complications

IVNTP

**Ecchymosis and Hematoma: Localized mass of blood outside the vessel wall**

**Causes:**

•1. Nicking vein during venipuncture

•2. Discontinuing IV cannula/needle without pressure over site and without adequate amount of time –at least 30 seconds

•3. Applying a tourniquet too tightly, over previously attempted venipuncture site

•4.POOR VESSEL INTEGRITY

**Signs and Symptoms:**

•1. Discoloration at site

•2. Site swelling and discomfort

**Prevention:**

•1. Use indirect method for starting IV

•2. Apply tourniquet just before venipuncture

**Treatment:**

•1. Apply pressure after catheter/needle removed

•2. Elevate extremity above the patient’s head to maximize venous return

•3. REASSURING PATIENT ECCHYMOSIS IS SHORT TERM

**Infiltration**Infiltration of IV fluid or medication into the surrounding tissue outside the vein wall

**Causes:**

•1. Puncture of vein upon insertion of needle

•2. Dislodgement of cannula

•3. Phlebitis

**Signs and Symptoms:**

•1. Coolness of the skin around the site

•2. Taut skin

•3. Edema

•4. Pain

•5. Backflow absent

•6. Infusion rate slowing, but continues to infuse

**Prevention:**

•1. Make sure catheter or needle is in vein before infusing IV

•2. Stabilize IV well with tape

•3. Check IV frequently

**Intervention:**

•1. Stop IV immediately and remove catheter or needle, dress puncture site/APPLY PRESSURE TO SITE FOR 1 MINUTE

•2. Apply ice if infiltration was detected within 30 min., otherwise apply warm compress

•3. Elevate site above heart level

**Extravasation**Infiltration of a medication into the surrounding tissue outside the vein

**Signs and Symptoms:**

•1. Edema

•2. Formation of blisters and subsequent sloughing of tissue leading to necrosis

•3. Pain or burning at site

•4. Infusion stopped or slowing

•5. Skin blanching or coolness

**Prevention:**

•1. Choose best site for IV i.e., avoid antecubital space for long-term therapy

•2. Secure the cannula or needle well

•3. Avoid too rapid infusion

•4. Dilute medications correctly

•5. Check IV site frequently

•6. Make sure you are in the vein before infusing

•a. When using a syringe draw back on needle to check for blood return

•b. Lower bag and check for backflow of blood into tubing

**Thrombosis:**Trauma to the endothelial cells of the venous wall causes platelets to adhere to the vein wall leading to a formation of a clot.

**Causes:**

•1. Blood backing up into the IV system

•2. Low IV flow rate limiting fluid movement

•3. Location of IV

•4. Obstruction of flow rate

•5. Attempt at restarting fluid flow rate, after IV tubing dry for extended period of time

•6. Trauma to wall of vein

•**Signs and Symptoms:**

•1. Pain at the site

•2. Site warm to touch

•3. Sluggish or no infusion rate

•**Prevention:**

•1. Manage flow rate

•2. Check IV often

•3. Choose micro drip tubing of 60 gtts/ml if a low flow rate is desired

•4. Avoid joint flexion areas for IV placement

•5. Use filters

•6. Avoid cannulation of lower extremities

•**Treatment:**

•1. Discontinue IV and restart in an alternate location (different arm is preferable)

•2. Apply cold compress

•3. Refer for medications such as urokinase.

**Phlebitis**Inflammation of the intima of a vein due to mechanical, chemical injury or bacterial infection

**Causes:**

•1. Trauma to the vein with cannula or needle

•2. Irritation due to type of fluid infused

•3. Introduction of pathogens related to contaminated needle or site prior to insertion

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**Signs and Symptoms:**

•1. Redness at the site

•2. Local swelling

•3. Palpable cord along vein

•4. Site warm to touch

•5. Sluggish infusion rate

•6. Increased temperature

**Prevention:**

•1. Don’t use a larger catheter or needle than necessary

•2. Stabilize IV well

•3. Dilute IV solution appropriately

•4. Do not infuse IV too rapidly

•5. Use filters such as 0.22 micron

•6. Use appropriate pH for IV solutions

•7. Use aseptic/sterile technique and hand washing

•8. Rotate IV site every 72 hours

**Treatment:**

•1. Stop IV

•2. Apply hot/cold compress

•3. Give oral anti-inflammatory treatment

**Allergic Reaction** Hypersensitivity to IV solution or materials used for infusing the solutions

•**Causes:**

•1. Materials used in IV tubing and bag

•2. Materials used in gloves

•3. Reactions to solutions and additives to solutions such as preservatives

•**Signs and Symptoms:**

•1. Itching

•2. Rash

•3. Tachypnea, SOB

•4. Tachycardia

•**Prevention:**

•1. Test dose before actual IV given via intradermal injection

•2. Use glass vs. plastic containers

•3. Have compounding pharmacist mix IV nutrients

•4. Use preservative free compounds

•**Treatment:**

•1. Stop IV immediately

•2. Use appropriate medications to treat allergic reactions.

**Infection at Insertion Site**

**Causes:**

•1. Site not cleaned well enough

•2. Needle or cannula contaminated

**Signs and Symptoms:**

•1. Pain and tenderness at site

•2. Redness at site

•3 Swelling at site

**Prevention:**

•1. Aseptic technique

•2. Use of antimicrobial ointment at site

**Treatment:**

•1. Discontinue IV

•2. Culture needle, catheter

•3. Clean site and apply antimicrobial ointment

**Venous Spasm** Vein spasm during insertion of IV and during or after infusion of fluid

**Causes:**

•1. Patient mental anxiety

•2. Difficulty inserting cannula or needle

•3. Irritation of fluid infused

**Signs and Symptoms:**

•1. Difficulty locating vein after insertion of cannula or needle

•2. Pain at site

**Prevention/Treatment**

•Warm IV site prior to starting IV

•Release and reapply tourniquet

•Dilute any medication used

•Slow IV rate

•Use warm pack during treatment

**Circulatory Overload** Infusion of excessive amounts of sodium solution

**Causes:**

•1. Too rapid infusion of sodium solution

•2. Too rapid infusion into a patient with cardiac or renal disease.

**Signs and Symptoms:**

•1. Tachypnea,SOB

•2. Edema

•3. Puffy eyelids

•4. HTN

•5. Weight gain

•6. Wide variance of intake and output of fluid

•7. Distended neck veins

•8. Rise in venous pressure (hospital test)

**Prevention:**

•1. Monitor infusion rate

•2. Do not catch IV up if it is behind

•3. Monitor fluid volume in and out

•4. Know patient’s health history

**Treatment:**

•1. Decrease IV flow rate

•2. Monitor vital signs

•3. Give O2

•4. Raise head of chair or bed

•5. Administer diuretic if necessary

•6. Keep patient warm to promote peripheral circulation

**Septicemia** General systemic infection

**Causes:**

•1. Poor technique

•2. Pathogens entering at IV site

•3. Contaminated IV solutions or medications

**Signs and Symptoms:**

•1. Chills followed by abrupt increase in patient temperature

•2. Nausea, vomiting, diarrhea

•3. General malaise

•4. Abnormal pains

•5. Tachycardia

**Prevention:**

•aseptic technique

•Check dating on all solutions

•Check all solutions and equipment for contamination

**Treatment:**

•1. Restart IV at alternate site

•2. Obtain cultures of administration set, IV container, catheter tip, site and blood

•3. Initiate antimicrobial treatment

•4. Monitor patient closely

**Shock** Occurs when a foreign substance, usually medication, is rapidly introduced into the circulation

**Causes:**

•1. To rapid IV push or drip

•2. Medication not diluted properly

**Signs and Symptoms:**

•1. Dizziness

•2. Headache

•3. Tightness in chest

•4. Hypotension

•5. Irregular pulse

•6. Progression of shock

**Prevention:**

•1. Reduce the size of drops of medications by using a micro drip set

•2. Monitor piggyback solutions closely

•3. Know the appropriate dose/administration of medications

•4. Know well what you are administering

**Treatment:**

•1. Give antidote or resuscitation medications as needed

•2. Have emergency equipment available

•3. Call 911

1. **Allergic and Anaphylactic Reactions:**

**\*note that this is only a guide and should not substitute clinical judgment for**

**individual situations\***

1. Initiate this procedure if any patient begins to have itching, swelling in tongue,

throat or skin, wheals, persistent sneezing etc.

2. Immediately close roller clamp but DO NOT discontinue IV.

3. If patient is experiencing itching, swelling in tongue, throat or skin, wheals,

persistent sneezing, oral 25-50mg of diphenhydramine may be used to suppress

allergic reaction every 2-4 hrs as needed. Max 300mg orally/day and 400mg

IV/IM (see below for procedures).

4. If patient is experiencing significant shortness of breath and is in distress,

administer Epinephrine as directed below and follow up with IM, IV or oral

diphenhydramine.

5. If anaphylaxis is present and epinephrine is needed, **Call 9-1-1.**

**IM administration of Diphenhydramine**

1. Put on gloves of appropriate size.

2. draw 0.5 – 1.0ml diphenhydramine into 1ml syringe.

3. Change needle to 25g needle.

4. Clean area of skin with two IPA pads in a circular motion moving outwards.

5. Insert needle at a right angle to the skin, to a depth of one inch (depending on

depth to reach muscle).

6. Depress syringe until contents have been completely infused into muscle.

7. Remove the needle and apply pressure with gauze.

**IV administration of Diphenhydramine**

1. Put on gloves of appropriate size.

2. draw 0.5 – 1.0ml diphenhydramine into a 10ml syringe.

3. Draw up 0.9% to fill a 10cc syringe.

4. Clean Y-site of IV line with IPA pad.

5. Insert needle into Y-site.

6. Depress the syringe until contents have been completely infused.

7. Remove the needle and reassess the patient every 15 minutes.

**Epinephrine Administration:**

**Epipen**

1. To use an EpiPen auto-injector:

2. Form a fist around the auto-injector with the black tip pointing down. Pull off the

safety cap.

3. Place the black tip against the fleshy portion of your outer thigh.

4. With a quick motion, push the auto-injector firmly against your thigh.

5. Remove the auto-injector from your thigh.

**Epinephrine Administration Procedure:**

1. Draw up 1:1000 Epinephrine 1cc syringe insert a 18g 1” needle on tip of syringe.

Do not administer this dose on a child less than 100lbs.

2. With a 25g needle placed on the syringe, insert the needle at a 45 degree angle to

administer the dose subcutaneously (use area easily accessible). Alternately,

administer the dose intramuscularly in the deltoid muscle.

3. Administer 0.2-0.5ml and remove the syringe.

4. Draw up 1 vial of 50mg/ml Diphenhydramine and inject using sterile technique

into the deltoid muscle.

5. If symptoms of anaphylaxis return, administer another 0.2-0.5 of the syringe.

6. Doses of Epinephrine should be 5-15 minutes apart (if continuing to experience

symptoms).

7. Check the patient’s vitals every 10-15 minutes and record them.

8. Record dose and time of epinephrine and Diphenhydramine administered

9. Have a copy of these available to EMT upon arrival.

10. Fill out incident report including dose and times of any emergency medications

given and frequency of vitals recording.

1. **Needle Stick Procedure**

At \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Clinic, we maintain safe needle techniques to help prevent needle stick injuries. In the event that a needlestick occurs please use the following procedure:

1.Within 15 minutes of the needle stick**:**

a. Phone:

**b.** Payment:

**c.** Locations:

2. Contact Medical Director

3. Obtain the following information from the patient that the needle came from:

a. Vaccination status including tetanus and Hepatitis B

b. History of possible exposure to blood borne pathogens

i. IV Drug Use

ii. Unprotected sexual activity

iii. Body piercing or tattoos

iv. Receipt of blood and/or blood products

v. History of dialysis

vi. Travel outside of the United States in the last year

vii. Other

4. Complete Incident Report

5. Patient Testing

a. The patient will be tested for HIV 1 and 2 antibodies and Hepatitis C

b. The testing will be completed at **Labcorp (USA) or \_\_\_\_\_\_\_\_\_\_\_\_.**

c. If on site testing is available then an on site test will be performed.

d.\_\_\_\_\_\_\_\_\_\_\_\_\_will pay for this testing