

## IV / VASCULAR ACCESS

### ADVANCED EMT

1. Vascular access should be obtained when the Advanced EMT or Paramedic feel it is necessary either for the immediate or potential future need of medications or fluid administration.
2. Saline lock is the preferred IV access unless fluid administration is anticipated.
3. **Establishing IV access should never delay transport in the critically ill patient and should be obtained on the scene only if immediately necessary.**
4. Each Advanced EMT/Paramedic should generally be limited to two IV attempts
  - unless the clinical situation warrants further repeated attempts.

### INTRAOSSEROUS / IO ACCESS

1. In critical patients who are in immediate need of vascular access peripheral IV attempts should be limited to two or less before attempting IO access.

### PARAMEDIC

#### INTRAOSSEROUS / IO ACCESS

6. Adults: **Lidocaine** 20 – 40 mg IO slowly as needed for pain prior to bolus  
Pediatrics: **Lidocaine** 0.5 mg/kg IO slowly as needed for pain prior to bolus

#### EXTERNAL JUGULAR

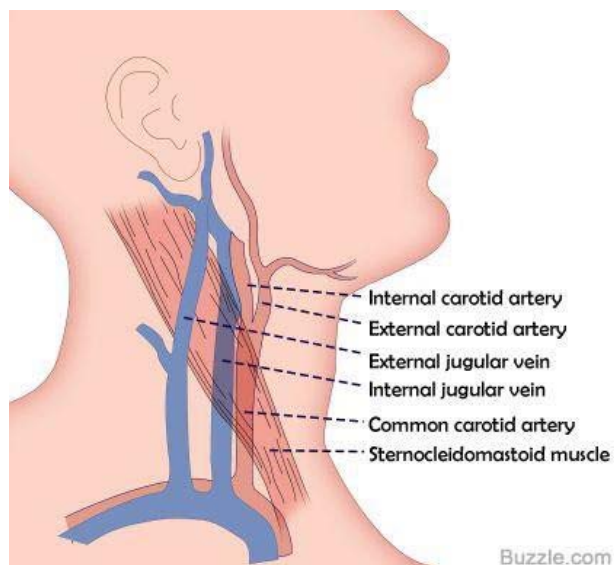
1. The External Jugular site may be used in critical patients with poor extremity venous access.

***Some systems may routinely find benefit in obtaining blood samples for use by the receiving hospital. Please follow local protocol.***

### IV ACCESS, EXTERNAL JUGULAR

#### CLINICAL STATEMENT:

To provide intravascular access in medical and trauma situations where no other peripheral site is available. The external jugular vein runs downward and obliquely backward behind the angle of the jaw until it pierces the deep fascia of the neck just above the middle of the clavicle; the external jugular vein ends in the subclavian vein, where valves retard backflow of blood.



## IV / VASCULAR ACCESS cont.

### Equipment Needed for EJ access:

- Gloves
- Alcohol or Betadine wipes
- Angiocath
- IV set, drip set, NS
- Tegaderm and tape
- 10 cc syringe of NS

### COMPLICATIONS:

- Air embolism
- Gross hematoma
- Arterial puncture
- Infection
- Vital structure damage
- Pneumo/hemothorax

### PROCEDURE:

1. Position patient supine/trendelenburg if possible.
2. Turn head to opposite side of intended venipuncture site if no evidence or index of suspicion of C-spine injury.
3. Cleanse skin.
4. Align the catheter down in the direction of the vein, with the catheter point aimed toward the shoulder on the side of the venipuncture.
5. Make the puncture midway between the angle of the jaw and the midclavicular line; stabilize the vein by placing a finger lightly on top of it just above the clavicle.
6. Watch for flash. If no flash and in vein, remove the stylette and aspirate using a syringe.
7. Prevent air embolism; do not allow air to enter the catheter or tubing prior to connection.  
***Trendelenburg positioning helps to reduce the risk of air emboli as does using a gloved finger to tamponade the vein.***
8. Secure the IV. Do not restrict by applying dressing too tightly.

## EZ I/O (ADULT AND PEDIATRIC)

### INDICATIONS:

- Altered LOC
- Respiratory Compromise
- Hemodynamic Instability
- Any patient that requires immediate vascular access for life-saving medications or fluids
- Adult patients weighing 40.0 kg or more
- Pediatric patients weighing 3.0-39.0 kg

### CONTRAINDICATIONS:

- Fracture at the site (Tibia or Humerus)

## IV / VASCULAR ACCESS cont.

- Previous orthopedic procedures near insertion site
- Infection at the insertion site
- Inability to locate landmarks or excessive tissue noted

### Equipment Needed:

- EZ-IO Driver
- Tape or IO Tegaderm
- 10cc syringe
- IV set, drip set, NS
- EZ-IO needle (Adult or Pediatric)
- Alcohol or Betadine wipes
- 2% Lidocaine

### Procedure for I/O Placement

- Select the insertion site
  - **Adult proximal tibia**
    - One fingerbreadth medial to the tibial tuberosity, on flat aspect
  - **Pediatric proximal tibia**
    - One finger width distal to tibial tuberosity or two finger widths below the patella
  - **Adult distal tibia**
    - Two finger widths proximal to the medial malleolus and midline on the medial shaft
  - **Pediatric distal tibia**
    - One finger width proximal to the medial malleolus along the flat aspect of the medial distal tibia
  - **Adult proximal humerus or greater tubercle** - *Bariatric needle should be utilized*
    - Palpate and identify the midshaft humerus and continue palpating toward the proximal aspect of the humeral head. You should feel the greater tubercle (protrusion near the shoulder).
  - **Pediatric proximal humerus** – *Bariatric needle should be utilized*
    - Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm above the surgical neck is the insertion site.

*\*If the patient “fits” on the Broselow tape, THINK PINK and use EZ IO PD*

*\*\*For humeral site make sure patient’s hand is resting on the abdomen and elbow is adducted and positioned at the spine.*

### Procedure after site is selected:

- Prepare the site with alcohol and/or betadine

## IV / VASCULAR ACCESS cont.

- Prepare IO driver and needle set and load needle onto the driver
- Hold the IO driver in one hand and stabilize the site
- Position the driver at the insertion site with the needle at a 90 degree angle to the surface of the bone
- Insert the needle through the skin. When the needle hits resistance from the bone, make sure the 5 mm black line is still visible above the skin.
- Power the driver on while applying minimal pressure.
- Insert the needle until a change in resistance is noted. Remove the driver from the needle set and the stylet from the catheter.
- Attach the connection tubing.
- **For conscious patients, slowly administer 20-40 mg (adults) or 0.5 mg/kg (pediatrics) of 2% Lidocaine into IO port BEFORE the 10 ml syringe flush. “Flush to flow” Without the lidocaine the conscious patient will experience pain!**
- Use a syringe to rapidly infuse 10 ml of normal saline – if no infiltration is seen, attach the IV line and infuse fluids and/or medications as usual.
- For adults the IV bag may need to be under pressure.
- Secure the needle and tubing.
- Monitor the EZ-IO site and patient condition.

### Proximal Humerus Insertion Site Identification

