PURPOSE:

I. Patients transported by MedEvac will have at least one functioning IV unless specified otherwise by medical control. IV attempts may be delayed until during transport, especially for time critical problems.
   a. Trauma patients – Should have at least (2) large bore IV's (18g or larger), unless not indicated. Consider using blood tubing if trauma patient may need blood or blood products at receiving facility. If trauma is below the level of the diaphragm, need at least one IV above the diaphragm. Trauma/surgical patient transport should not be delayed for IV access.
   b. Burn Patients – Establish (2) or more, large bore IVs and anticipate large fluid resuscitation needs. See Burn Protocol
   c. Other patients – Patient should have at least one IV, however, anticipate the need for additional lines as appropriate.

II. Sites of peripheral access in order of preference are: upper extremities, lower extremities, Intraosseous, and external jugular. It is recognized that in critical patients that IV access should be initiated in the best available site and the most appropriate method, with the highest anticipation of success.

III. Avoid access of a fractured extremity.

IV. It is generally recognized that each practitioner should attempt IV access no more than twice. If still no success after (2) attempts, then another practitioner should be allowed to attempt. If IV is critical and (2) attempts have been made, then proceed to more advanced insertion technique such as external jugular or IO.

SCOPE:

MedEvac

Advanced EMT / PARAMEDIC / CRITICAL CARE PARAMEDIC / RN

PERIPHERAL IV

1. Prepare IV bag and tubing utilizing medically clean technique.
2. Apply tourniquet proximally to insertion site for IV.
3. Prep insertion site with alcohol, chloroprep, or betadine as appropriate.
4. Perform venipuncture with appropriate size angiocath. If unsuccessful in (2) attempts and patient is in critical need of IV, proceed to IO [AEMT] or EJ insertion [PARA] .
   - Medication administration – 22-20g or age appropriate size for pediatric patients
   - Trauma – Adult:18g or larger, Pediatric: largest age appropriate; consider (2) or more lines.
     i. Consider infusing through blood tubing
5. Observe for blood return, then advance catheter and remove needle.
6. Attach end of pre-filled extension set to hub of angiocath.
7. Open flow regulator and observe for infiltration.
8. Tape securely and apply sterile dressing.
9. Adjust flow rate:
   - Bolus rate: 999mL/hr, may repeat as needed to achieve systolic pressures >90 mmHg.
   - TKO is 30mL/hr

- Wide Open – For rapid boluses of ideally 250 – 500mL.

10. Monitor frequently for flow rate and signs of infiltration.

INTROSSEOUS INSERTION [AEMT]

1. Rule out contraindications of IO insertion
    - Fracture in selected limb
    - Infection of superficial tissues over insertion site.
    - Significant orthopedic procedures (knee replacements may totally occlude the IO space in the proximal tibia.)
    - Osteogenesis Imperfecta
    - Profound osteoporosis or osteopetrosis.
2. Locate and cleanse appropriate insertion site
    - Proximal Tibial Plateau
    - Distal Tibia
    - Proximal Humerus: most direct access to central circualation
    - Distal Femur
3. Prepare IO driver with appropriate needle set
    - Red Hub -- "Pediatric", 15mm needle, FDA cleared Weight Range: 3-39kg
    - Blue Hub – "Adult", 25mm needle, FDA cleared for greater than 3 kg
    - Yellow Hub –"Bariatric" 45mm needle, FDA cleared for greater than 40 kg and/or excessive tissue depth
4. Stabilize site and insert needle through skin prior to activating the driver.
5. Once needle is through the skin, the double black lines should be visible. If they are not, remove the needle and select the larger size, if available.
6. If double lines are seen, activate the driver and apply gentle downward pressure until a "pop" is felt.
7. Remove EZ-IO driver from needle set while stabilizing hub.
8. Remove trocar/stylet from hub and dispose of in approved sharps container.
9. Connect primed extension tubing and flush with 5-10 ml of normal saline to ensure patency of IO.
    - If site will not flush, site will not flow, abandon the IO and attempt either external jugular IV, or an IO in the unused limb.
10. If patient is conscious consider **2% Lidocaine [PARA]** SLOW IVP for pain control at insertion site, allow to dwell for 60 seconds then flush.
    - Adults 20-40mg
    - Pediatric 0.5mg/kg, maximum 40mg
    - May repeat once: Adults 20mg, Pediatrics: 0.25mg/kg (half initial dose)
11. Attach primed IV tubing to extension tubing and infuse fluids with assistance of infusion pump or pressure bag infuser. Monitor for infiltration or displacement.
12. Secure and Stabilize IO with tape and bulky dressings.
13. Place IO wristband on patient

External Jugular Vein Access [PARA]

1. Assemble equipment.
2. Position patient in Trendelenburg with head turned away from vessel to be cannulated.
3. Prep insertion site with alcohol, chloroprep or betadine.
4. Align angiocath (14-16g) in direction of the vein ***toward the body and away from the head.***
5. Place one finger over external jugular vein just above clavicle and press down lightly until vein is distended.
6. Perform venipuncture midway between the angle of the mandible and the clavicle.i
7. Observe for blood return then advance catheter and withdraw needle. Alternatively a 10 cc syringe may be attached to angiocath needle and aspiration is used to assist with successful venipuncture. Keep catheter hub occluded to prevent air embolism.
8. Confirm placement: Initiate IV fluids and observe site for signs of infiltration or drop IV bag

below level of angiocath to check for blood return.

9. Tape securely and apply sterile occlusive dressing.
10. Flow is facilitated by maintaining patient's head turned away from IV site.
11. Check site frequently for signs of infiltration or developing hematoma.

Note: Only one attempt can be made at EJ venous access due to the risk of hematoma and subsequent airway compromise. If first attempt fails, abandon further EJ attempts and consider I/O or central line.