Learning Objectives

- State the importance of taking body substance isolation precautions when starting an IV.
- State the importance of cleansing the intended site of puncture with alcohol or betadine preparations.
- Describe the appropriate technique for establishing a peripheral IV.
- Define flow rate and describe a wide open and TKO/KVO rate.

Establishing an IV

- Performing proper techniques in a specific order allows for
  - Proficient skills
  - Successful IV placement
  - Decreased IV complication

INFECTION CONTROL

- IV therapy is invasive and breaks the protective barrier of the skin
- Pathogens on the skin must be removed with an alcohol and/or betadine wipe
- Start at the intended puncture site and wipe in a circular motion outward
- Always take appropriate BSI precautions prior to initiating skill

PERIPHERAL ACCESS

- Determine indication for IV therapy
  - Select appropriate

materials

- Gather supplies
  - IV fluid
  - IV administration set
  - IV catheter
  - Antiseptic preparation (alcohol/betadine)
  - Venous constricting band
  - Tape or commercial securing device
- Take BSI precautions
  - Gloves required, goggles recommended
- Prepare IV bag and administration tubing
  - Examine chosen IV bag for leaks, clarity, and expiration date after removing outer packaging
  - Slide the flow control valve on the tubing to 1-3” away from the drip chamber, and then close it off completely
  - Remove sheath from spike and insert it into IV bag
  - Squeeze drip chamber until chamber is 1/3 full (to line)
  - Open the flow control valve to allow the fluid to fill the tubing and expel all air from the line
  - Allow the fluid to flow through the administration set until all air and trapped bubbles are eliminated
  - Close the flow regulator

- Select puncture site
    - Free of bruising and scarring, proper vein size
- Place the venous constricting band
    - 2” above puncture site, but not on a joint
    - Do not impede arterial flow (check distal pulse after application)
    - Do not leave in place for more than 2 minutes
- Clean the puncture site
    - Use alcohol or betadine, starting at puncture site, wiping outwards in a circular motion
    - Do not touch or palpate after cleaned
    - Do not re-use alcohol pad to clean again
- Insert the IV catheter into the vein
    - Pull skin taunt with non-dominant hand
    - Place the bevel of the metal stylet up
    - Insert at a 10°-30° angle
    - Continue until a “pop” is felt or flashback is seen
    - Carefully advance catheter another 0.5 cm
- Slide the catheter into the vein
    - Hold the IV needle stationary and slide the catheter off the stylet into the vein

- Once inserted, tamponade (occlude) the distal end of the catheter and remove the needle
- Dispose of the needle in a sharps container
- Remove the constricting band

- Obtain blood samples as needed

- Attach the IV tubing to the IV catheter
  - Remove the protective cap and attach securely to the hub of the IV catheter
  - Open the flow regulator and allow a free flow of fluid for a few seconds
  - Set the desired flow rate

- Secure the IV catheter and tubing
  - Never let go until secured!!
  - Use tape and a sterile covering over site
  - Place a loop in the tubing and secure

- Label the IV bag (if required)
  - Date and time initiated
  - Provider who established IV

- Monitor the IV flow rate

FLOW RATES

- Rate that IV fluid is administered to the patient
- Wide Open (WO)

- Fluid flows freely to the patient
- Roller clamp is open completely

- To Keep Open (TKO)
  - Also known as "keep vein open" (KVO)
  - Minimum amount of flow to prevent clots at catheter tip
  - 1 drop of fluid every 3-5 seconds

EXTERNAL JUGULAR

- Use is dependent upon local protocols
- The external jugular (EJ) veins are large blood vessels located on either side of the neck
- Painful to access, many potential complications
- Used for unconscious patients, or when no other veins for access are available
- Requires same equipment as in peripheral IV access, without a constricting band, plus a 10 ml syringe

- Determine indication for IV therapy
  - Select appropriate materials

- Gather supplies
  - IV Fluid
  - IV administration set (macrodip)
  - IV catheter (14g-16g)
  - 10 ml syringe
  - Antiseptic preparation

(betadine/alcohol) ▪ Tape or commercial securing device • Attach 10 ml syringe to flashback chamber of IV catheter • Take BSI precautions ▪ Gloves required, goggles recommended • Place the patient supine or in the Trendelenberg position ▪ Position increases blood in EJ vein, enlarging vein • Turn the patient's head to the side opposite of access ▪ Easier to see and access EJ ▪ Do not perform on suspected c-spine injuries • Cleanse the puncture site • Occlude by placing a finger on the external jugular vein just above the clavicle ▪ Do not use a constricting band!! • Insert the IV catheter ▪ Bevel up, 10°-30° angle • Withdraw on the syringe as IV catheter "pops" into vein ▪ Once the lumen of the blood vessel is entered, blood will start accumulation ▪ After pop, advance another 0.5 cm	_

- Slide catheter into vein
- Obtain blood samples as needed
- Attach IV tubing to IV catheter
- Secure the IV catheter and tubing
    - Never let go until secured
    - Use tape and a sterile covering over site
    - Place a loop in the tubing and secure
- Label the IV bag (if required)
    - Date and time initiated
    - Provider who established IV
- Monitor flow rate

IV ACCESS

USING A MEASURED VOLUME SET

- Close all clamps on the tubing and insert the spike into the IV bag
- Open the airway handle and the flow control valve between the IV bag and the burette chamber. Fill the burette with approximately 20 ml of fluid
- Squeeze the drip chamber beneath the burette chamber until the fluid reaches the fill line
- Open the bottom flow regulator to purge air from the tubing. When all air is purged, close the

bottom flow regulator

- Continue to fill the burette chamber with the desired amount of solution

- Close the uppermost clamp and open the flow regulator until you reach the desired drip rate. Leave the airway handle open, so that air replaces the displaced fluid

USING BLOOD TUBING

- Close all clamps on the tubing and insert the spike into the IV bag
    - Squeeze the drip chamber until it is 1/3 full
    - Purge the tubing of any air
    - Attach blood tubing to the intravenous catheter (or into the medication administration port of a previously established IV line)
    - Ensure patency by infusing a small amount of normal saline and adjust to the desired flow rate once patency is confirmed

Summary

- The EMT must follow the proper steps in the proper order when establishing an IV
- BSI and proper infection control are key to long-term success of IV therapy
- Proper disposal of sharps prevents healthcare injuries