Intravenous Access

Press "Enter" or the "down" arrow to proceed
Power point presentation covering the very basic foundation for Proper techniques in intravascular access & medical asepsis

Practice & Return demonstrations for venipuncture and lab specimen collection at astec

Practice the national standard skills performance criteria for pre-hospital emergency providers

Enjoy!!!

John Jarred, Instructional Specialist ASTEC
Goals

• With the Intention to Do No Harm
• With Personal Safety and Medical Asepsis as Imperatives
• Safe and Successful Vascular Access
• To Reduce Patient Pain & Discomfort

Perform
• The 2 main purposes for vascular access

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Discuss

The functional and anatomical differences between central lines & peripheral lines

Anatomically, central lines are inserted in the larger vessels lacking valves between the catheter and the heart.

What are the common central access points?

- Internal Jugular
- Subclavian
- Femoral

What are the common peripheral access points?

- Dorsum of the Hand
- Antecubital
- Forearm
- External Jugular
Discuss

•The functional and anatomical differences between central lines & peripheral lines

Functionally, central lines allow for large fluid boluses under pressure and rapid absorption and distribution of IV medications

Colloids, vasopressors, and antibiotics should be delivered via central access or a large peripheral vessel

Central lines can accommodate multiple IV lines and medications

Peripheral lines can be cautionary, temporary, and pose fewer complications during placement and removal
• The Special Considerations for IV Placement

IV access for OR patients should not compromise sterile fields during surgical procedures while allowing for ease of access.

For patients requiring contrasted studies, IV’s should be large bore, placed in the forearm or antecubital.

IV’s must be placed proximally for certain medication administrations: Adenosine for ex.

Optimal patient therapy and recovery should caution placement in or around joints or in locations that might inhibit patient mobility.
Evaluate

• The Special Considerations for IV Placement

Attempts should be limited to 2 tries for all patients.

For critical patients, all attempts should be limited to 90 seconds then place an intra-osseous or central line.

For pediatric and combative patients, there should be more than one assistant.

For infants, the optimal placement is the dorsum of the foot or in a scalp vein: less likely to be pulled out by the patient.
• The Special Considerations for IV Placement

Avoid placement in patients who have had a *mastectomy* within the last 2 years: higher risk of interstitial edema & infection.

Avoid placement below or in *fistulas* (see second illustration).

Avoid placement below or within burned tissues: *interstitial edema will evolve and can compartmentalize the extremity*.
Objective #4

Understand

• The risks and/or complications associated with IV misplacement

Localized Infiltration
Compartmentalization from infiltration & poor monitoring
Tissue Necrosis from infiltration and/or administering medications via a compromised line

What medications?

Dextrose    Sodium Bicarbonate    Hypertonic Saline
Mannitol

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Understand

• Risks/complications associated with IV Access

An unprotected injection port for catheters in the larger vessels could result in air aspiration based on venous return.

Occlude with your gloved hand (must be sterile) until an adaptor is applied.

If the patient becomes symptomatic of a pulmonary embolism, place the patient into left lateral recumbent to reduce further circulation.

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Understand

**OBJECTIVE #4**

• Risks/complications associated with IV Access

“**Fishing**” is poor practice; a process by which vessels becomes perforated or torn during several blind attempts to gain access.

Palpate for the suitable vein and redirect **once**, then abandon the attempt.

If the catheter should become detached from the stylet, you must reconnect before redirection: **reconnection should be smooth, meeting NO resistance**

If the patient becomes symptomatic of a **catheter sheer embolism**, place the patient into left lateral recumbent to reduce further circulation.
Discuss

**OBJECTIVE #5**

• The Steps You Should Take Preparing for Venipuncture

Introduce yourself, your level of care, and confirm that the patient label on the order matches the patient’s identification bracelet: *name, date of birth, & patient’s identification number*

Verify the order

*Request permission to perform the procedure*

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Discuss

**Gather Supplies: Choose the Right Sized Glove**

Gloves that are **too small** lose their integrity quickly and as you place them on, they hamper your senses & circulation as well

Furthermore, they risk **contaminating points of medical asepsis**

Gloves that are **too large** inhibit motor capabilities and risk contaminating points of medical asepsis

**Proper sized gloves** slide on without difficulty and fit to the form of your hand comfortably while allowing for uninhibited motor skills, optimizing medical asepsis.

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**Objective #5**

- The Steps You Should Take Preparing for Venipuncture

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Discuss

**OBJECTIVE #5**

• The Steps You Should Take Preparing for Venipuncture & Important Concepts

**Gather Supplies: Lab Tote (Tourniquet & Cleaning Agents)**

- Venus tourniquet (TK)
  - Non-latex only

- Alcohol Preps
  - Only useful for general skin surface cleaning

- ChloraPreps
  - Should be used for all patients needing blood cultures

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Discuss

**OBJECTIVE #5**

- The Steps You Should Take Preparing for Venipuncture & Important Concepts

**Gather Supplies: Lab Tote (Securing Supplies, Dressings, & Bandages)**

- **Plastic Tape**: Most commonly used to secure the IV and IV tubing to the patient’s extremity.
- **Tegaderm Film**: For patients with allergies to the plastic/adhesives of the tape; paper tape is best for prednisone skin (tears easily).

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Discuss

OBJECTIVE #5

• The Steps You Should Take Preparing for Venipuncture & Important Concepts

Gather Supplies: Lab Tote (Securing Supplies, Dressings, & Bandages)

2”x2” Gauze
Dressings

Koban

Used to catch blood while applying proximal occlusion (see slide) and to dress wounds

Commonly used to secure IV tubing or as a bandage, but should be avoided; becomes a TK over time; should be removed in 10 min. when used as a bandage
Discuss

**OBJECTIVE #5**

- The Steps You Should Take Preparing for Venipuncture & Important Concepts

**Gather Supplies: Lab Tote (IV Catheters)**

- The smaller the number, the larger the gauge (g)
- Use shorter lengths for fluid resuscitation and rapid boluses for medication administration
- 24g  Infants
- 22g  Small Children
- 20g  School Age Children & Small Adults
- 18g  For Average Adults
- 16g & 14g for Fluid Resuscitation and Rapid Boluses for Medication Administration, Antibiotics, & Vasopressors

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Discuss

**OBJECTIVE #5**

- The Steps You Should Take Preparing for Venipuncture & Important Concepts

**Gather Supplies:** Lab Tote (Needles, Syringes, & Extensions)

- Blunt fill needles
- Assorted Syringes
  - 1 mL
  - 3 mL
  - 5 mL
  - 10 mL
- Avoid Non-blunted Needles: they increase the risk of accidental exposures
- 2, 10 mL syringes are required for most adult labs

**Do not use syringes > 10 mL:** they tend to hemolyze the specimen yielding false readings

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Discuss

- The Steps You Should Take Preparing for Venipuncture & Important Concepts

Gather Supplies: Lab Tote (Blood Specimen Containers)

The proper order of specimen container filling

- Cultures 1st prn: 10 mL per container
- Blues before anything else, except if a venous blood gas (VBG) is ordered
  - Reds, Yellows & Greens in the middle: order doesn’t matter
- Lavenders Last: except for those sensitive studies such as ammonia on ice (gray tube)
Objective #5

Discuss

- The Steps You Should Take Preparing for Venipuncture & Important Concepts

Gather Supplies: Lab Tote (Blood Specimen Containers)

- **Light Blues** for **pt/pttt’s**: must fill exactly to the indicator marking or false outcomes result

- **Reds /Yellows**: hormone tests (LFT’s or hCg’s) or blood viral assessment (HIV/HBV)

- **Greens**: complete metabolic panel; a 2nd tube is required if troponins are indicated (chest pain) or ordered

- **Lavenders**: Complete Blood Count (CBC) + Differential White Cell Counts; a 2nd tube is required for BNP’s

- **Dark Purple**: Blood Type Cross/Match or Maternal Rh Status

- **Dark Green /Dark Blue**: blood alcohol levels

- **Dark Blue**: drugs of abuse

All blood containers must be filled to at least 1/3 of the container size
OBJECTIVE #5

Discuss

The Steps You Should Take Preparing for Venipuncture & Important Concepts

Gather Supplies: Lab Tote (Extensions & Adaptors)

IV Catheter Extension & Needless Microclave

Permits ease of IV tubing attachment or readjusting lines while maintaining asepsis

Maintains IV patency when fluid resuscitation has been accomplished while ongoing medication administration remains necessary
Discuss

**Objective #5**

- The Steps You Should Take Preparing for Venipuncture

**Gather Supplies: IV Solutions**

- **0.9% Normal Saline (NS)**
  - Hyponatremia
  - Trauma
  - Standard for Most IV Boluses
  - Electrolytes within Normal Values

- **0.45% NS**
  - Pediatrics

- **Ringer’s Lactate (LR)**
  - Electrolyte Depleted & Hypovolemic
Discuss

• The Steps You Should Take Preparing for Venipuncture

Gather Supplies: IV Tubing

Micro-drip Containers (a)
- Metal Rod in Drip Chamber
- Pediatrics
- IV Medication Piggy-Back
- It Takes 60 drops (gtts) = 1 mL

Macro-drip Containers (c)
- Larger Boluses in Quicker Time
- 10 gtt/15 gtt/20 gtt = 1 mL
Discuss

• The Steps You Should Take Preparing for Venipuncture

Gather Supplies: IV Tubing

Medication Administration Set
- Limited Drug Administration Ports

Pump Tubing (Alaris @ UAHN)
- Usually 20 gtts = 1 mL when not on a pump

Blood Tubing
- Simultaneous Colloid and Crystalloid Fluid Boluses

Extension Sets with Multiple Administration Ports
- Allows for Multiple Fluids & Infusions
- Should be Applied to ALL IV’s Regardless
Discuss

- The Steps You Should Take Preparing for Venipuncture

**Gather Supplies: IV Tubing**

**Check Solution**
- Type
- Expiration Date
- Clarity
- Repeat after Removing from Shipping Container

**Aseptically, Connect IV Tubing to IV Extension**
- Simultaneous Colloid and Crystalloid Fluid Boluses

**Aseptically, Spike the Solution to the IV Tubing Drip Chamber**
- Leave All Caps ON
- The Line Must be Cleared of ALL AIR
- Close One of the Locks
OBJECTIVE #6

• The Appropriate Steps for Successful IV Access
Discuss

• The Steps You Should Take Preparing for Venipuncture

Prepare 2 Strips of Tape, Connect the IV Extension to the Microclave & Attach a 10 mL Syringe to the Needleless Adaptor, Aseptically
OBJECTIVE #6

• Safe and Successful IV Access
OBJECTIVE #6

- Safe and Successful IV Access
OBJECTIVE #6

- Safe and Successful IV Access
OBJECTIVE #6

Perform

- Safe and Successful IV Access

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OBJECTIVE #6

- Safe and Successful IV Access
**OBJECTIVE #6**

- Safe and Successful IV Access

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OBJECTIVE #6

- Safe and Successful IV Access

Perform
OBJECTIVE #6

Perform

• Safe and Successful IV Access
OBJECTIVE #6

- Safe and Successful IV Access
OBJECTIVE #6

• Safe and Successful IV Access

Perform

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OBJECTIVE #6

- Safe and Successful IV Access
OBJECTIVE #6

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OBJECTIVE #6

- Safe and Successful IV Access
OBJECTIVE #6

Perform

• Safe and Successful IV Access
**OBJECTIVE #6**

- Safe and Successful IV Access

\[
\text{Amount to Infuse} \times \text{Solution Set (gtt/mL)} = \text{gtts/min} \\
\text{Time (minutes)}
\]

200 mL x **Micro-drip Set**

60 minutes

Count the # of gtts for 6 Seconds & x 10

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Perform

• Safe and Successful IV Access

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OBJECTIVE #7

Perform

• Safe Removal of an IV
OBJECTIVE #7

• Safe Removal of an IV
CAUTION!

This is an instructional course in IV Access and not a certification course.