ANATOMY OF IV BAG AND SOLUTION SET
CONTAINERS

- Containers can be glass or plastic
- Always squeeze the bag or check the glass bottle for small punctures or cracks.
- **DO NOT** write with pen on the plastic bag it may be absorbed into the fluid.
- Use a label and a ballpoint pen for marking the bag, placing the label onto the bag.
- Hang the bag about 36 inches above the venipuncture site
**DRIP CHAMBERS**

- **Microdrip chamber**
  * delivers 60 gtts per millimeter

- **Macrodrip chamber**
  * drop factor varies from 8 to 20 gtts per millimeter
TUBING

- Contains a spike end for the bag or bottle, a drop chamber, a roller clamp, a Y-site, and an adapter end for attachment to the needle.
- Some tubing contains a vent that allows air to enter the IV container as the fluid leaves.
- Vented tubing is used for glass or rigid plastic containers to allow air to enter and displace the fluid as it leaves; fluid will not allow from a rigid IV container unless it is vented.
- Nonvented tubing may be used for flexible plastic containers.
- Extension tubing may be attached to the IV tubing for children, clients who are restless, or clients who have special mobility needs.
CLAMPS

- Helps to control the rate of flow regulation.
- With these clamps, a wheel or screw increases or decreases the flow rate through the administration site.
ADAPTERS / INJECTION SITES

- Scrub / wipe hub tip every time with alcohol EVERYTIME you gain access
  - For 15 seconds
  - Firm rotating movement
  - Allow to dry
Y- PORT

- Device that provides an access route for two IV fluids to infuse at the same time
- The “arms” of the Y connect to the fluids, while the “leg” of Y attaches to the cannula hub
LOCKING CANNULA

- Cannulas used to secure IV catheter connections
PIGGYBACK

- Used primarily for secondary medication administration
  - Common to administer concurrent with primary infusion
    - Placement
    - PB completed
BLOOD TUBING
BLOOD TRANSFUSION

A. Types of Blood Components
   1. Red blood cells (RBCs)
   2. Whole Blood
   3. Platelets
   4. Fresh-frozen plasma

B. Compatibility

C. Implementation

1. Immediate transfusion reaction
   a. Chills and diaphoresis
   b. Rapid, thready pulse
   c. Pallor and cyanosis
   d. Muscle aches, back pain, or chest pain
   e. Headache
   f. Apprehension
   g. Tingling and numbness
   h. Dyspnea, cough, or wheezing
   i. Nausea, vomiting, abdominal cramping, & diarrhea
   j. Rashes, hives, itching, and swelling
PATIENT CONTROLLED ANALGESIA

- Drug administration system that enables the patient to self-administer and regulate the delivery of medication for pain control on an as needed basis
  - Benefits
  - Effectiveness
  - Monitoring
  - Pt effectiveness
  - Pt Education
  - Terminology:
    - Loading dose
    - Bolus
    - Lockout
    - Continuous
TITRATION

- Orders to give meds based upon parameters set forth by doctor or protocol of the institution
  - Orders will define dose range and parameters
  - Frequency of adjustments depends upon pt response to meds

- Always start at lowest dose (unless otherwise specified)
- Always increase/decrease one interval (unless otherwise specified)
EXAMPLE:

Orders for Buffy to be placed on a dopamine drip to maintain her blood pressure.

The order reads: Dopamine drip at 1-3 mcg/min to maintain systolic BP above 100 mm Hg.

What rate would you start at?

Systolic blood pressure is 88 mm Hg, currently at 1 mcg/min, what would you do?

Systolic blood pressure is at 102 mm Hg, what would you do?

Systolic blood pressure is at 95 mcg/min, currently at 3 mcg/min, what would you do?
**IV TERMS**

- **Continuous Infusion:**
  - Fluids given continuously to maintain a constant therapeutic drug level or to provide IV fluid therapy

- **Intermittent Infusion**:
  - Fluids given at prescribed times and does not require additional fluids

- **IV Push**:
  - A syringe is connected to the IV access device and medication is injected directly

- **KVO**:
  - Keep Vein Open
DOCUMENTATION OF START OF VENIPUNCTURE

- Date and time of venipuncture
- Type and gauge of needle and catheter
- The location of insertion site-use anatomical name
- Reason why site was changed or initiated
- Number of attempts at venipuncture
- The type and flow rate of the iv solution (if any)
- The name and amount of medication in the solution (if any)
- Any adverse reactions and actions taken to correct them
- Patient teaching and evidence of patient understanding
- Your name or initials
- How the patient tolerated the procedure
OBSERVING & DOCUMENTING WHILE PT ON IV THERAPY

- **INSPECTING EQUIPMENT:**
  - The catheter itself for migration
  - All connections are secure
  - Fluids being infused
  - Pump function and flow rate

- **INSPECTING THE SITE:**
  - Insertion site
  - Patient’s report of pain or discomfort at site
  - IV-related infections or complications
  - Date of insertion
DOCUMENTATION OF REMOVAL

- Date and time and reason of removal
- Size, type and condition of catheter upon removal
- Location and condition of the site
- Type of dressing applied
- How the patient tolerated the procedure
- Any actions taken for infiltration, phlebitis, or extravasation
CALCULATING IV FLOW RATE
CALCULATING FLOW RATE

FORMULA FOR CALCULATING DRIP RATES FOR IV:

\[
\frac{\text{VOLUME OF INFUSION (IN ML)}}{\text{RATE}} \times \frac{\text{DROP FACTOR (IN DROPS PER ML)}}{\text{TIME OF INFUSION (IN MINUTES)}} = \frac{\text{FLOW (IN DROPS PER MIN)}}{\text{GTT/MIN}}
\]
Let’s Practice

**Order**
- Infuse 1000cc LR over 8 hours.
- How many cc’s will be infused per hour.

**Answer**
- Divide volume (1000cc) by # of hours or minutes.
- \( 1000 \div 8 = 125 \text{ cc/hr} \)
Let’s Practice again.....

<table>
<thead>
<tr>
<th>Order</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infuse 500cc NSS over 2 hours.</td>
<td>Divide volume (500cc) by # of hours.</td>
</tr>
<tr>
<td>How many cc’s will be infused per hour.</td>
<td>500 ÷ 2 = 250 cc/hr</td>
</tr>
</tbody>
</table>
VOLUME OF INFUSION

The amount to be infused:
- Infuse 1000cc Normal Saline over 5 hours
- Infuse 500cc D5LR now

Remember cc = ml
TIME OF INFUSION

- The amount of time over which the fluid is to be infused
  - May need to convert to minutes

  Infuse 500cc D5LR over 2 hours

  Infuse 1000cc Normal Saline over 5 hours
DROP FACTOR

- How many drops (gtts) equal one ml in the tubing being used
- Tubing drop factor found on the tubing bag
  - Microdrip vs. Macrodrip tubing
  - Will be in gtt/ml
    - ie: tubing delivers 10 gtt/ml
DROP FACTOR

**Macro**
- Macrodrip is used for most IV tubing.
- Drip factor (gtt) is usually 10, 12, or 15/minute
- Drip factor will be marked on tubing package

**Micro**
- Microdrip is used for children
- Drip factor is 60 gtt/minute
- Drip factor will be marked on tubing package
FLOW RATE

- Answer will be in gtt/min if solving for gravity drip or cc/hr if solving for iv pump rate.
- If solving for flow rate by gravity, the answer will be the number of drops in drip chamber per minute.
ELECTRONIC INFUSION CONTROL DEVICES

- Regulating mechanisms that are powered by electricity, battery packs or both
- Capable of delivering fluids/medications accurately
  - Several meds can be given at one time