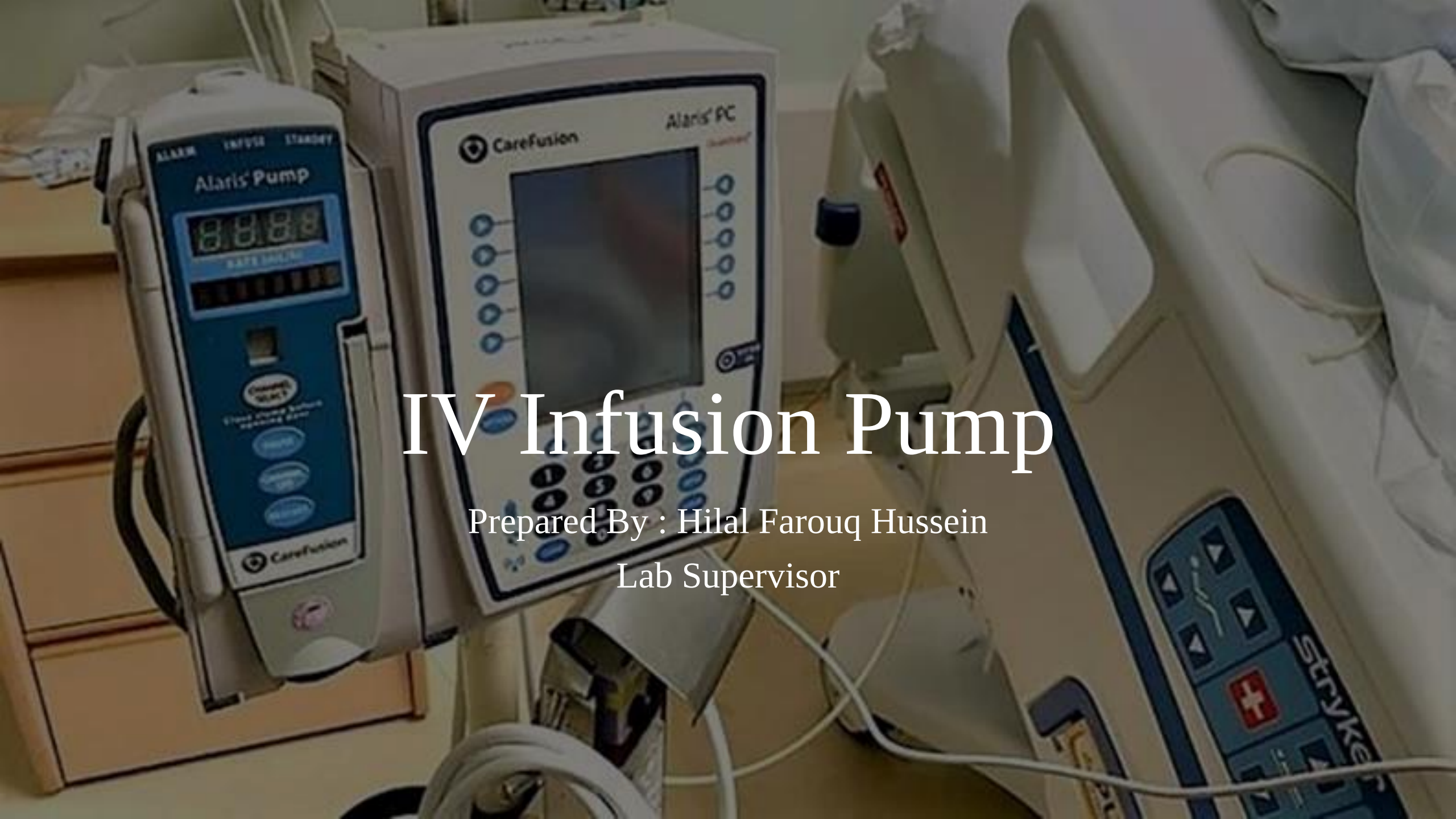

IV Infusion Pump

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Lab Supervisor

Introduction

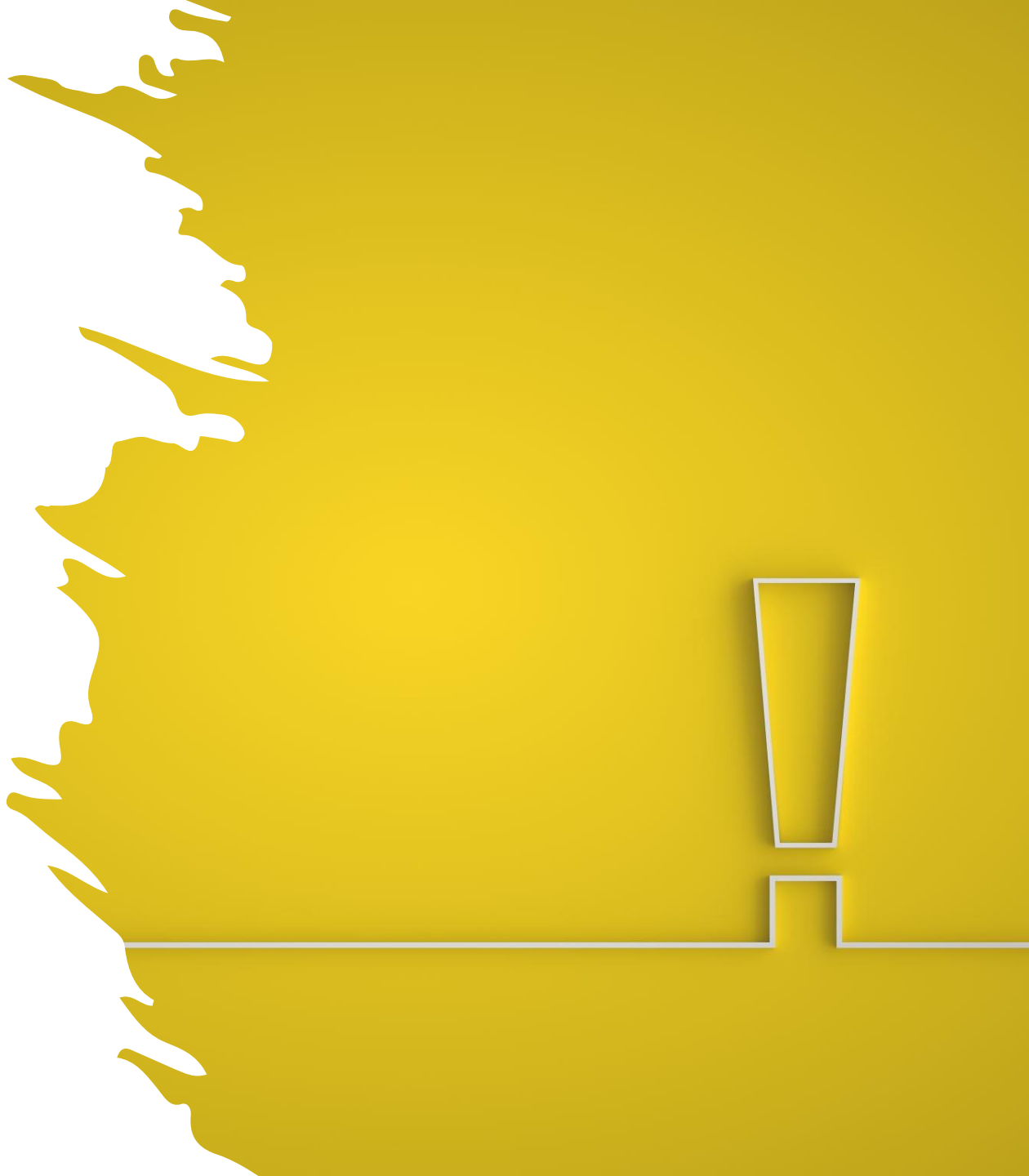
- Intravenous (IV) infusion pumps are the second method used to administer intravenous medications and fluids. Infusion pumps provide an additional safeguard by using a pump to provide an exact amount of fluid per hour to prevent medications from being inadvertently administered too slowly or too quickly.

INDICATIONS

- Administration of intravenous fluids
- Administration of intravenous medications
- Administration of parenteral nutrition
- Administration of blood and blood products

WHAT DO I NEED TO DOCUMENT?

- Location of access site
- Condition of access site
- NOTE: an access site assessed is clean, dry,
- visible, with no inflammation, the tissue proximal to the line
- is warm and soft on palpation
- Route of administration (e.g. central, peripheral, etc.)
- Number of lumens



Count….

- Which lumen is being used for the infusion
- Any additives to solution (e.g. medication)
- Which line (primary vs secondary)
- Status of infusion
- Method of infusion (e.g. gravity, pump, etc.)
- Rate in mL/hr
- Amount infused

Practice Problem: Infusion by Pump (Example 1)

- Let’s use the same information from the problem for the patient named Amber Gomez in the “IV Infusion by Gravity” subsection, but instead we will calculate the rate of infusion using an IV infusion pump.
- Name: Amber Gomez, DOB: 08/26/19xx, Age 26, Allergies: NKDA, Weight: 50 kg
- Prescription: Lactated Ringers 200 mL IV bolus over 2 hours

- 1. Start by identifying the goal units for which you are solving, which is mL per hour:

$$\frac{mL}{hour}$$

- 2. Set up the first fraction by matching mL in the numerator. Look at the known information in the problem related to mL. The prescription is to administer 200 mL IV bolus over 2 hours, so put 200 mL in the numerator and 2 hours in the denominator:

$$\frac{mL}{hour} = \frac{200\ mL}{2\ hours}$$

- 3. Because the units match the goal unit of mL/hour, divide the numerato by the denominator for the final answer:

$$\frac{mL}{hour} = \frac{200\ mL}{2\ hours} = 100\ mL/hr$$

Practice Problem: Infusion by Pump (Example 2)

Let’s practice another problem calculating flow rate via IV infusion pump, but this time the prescription states the rate in minutes instead of hours.

Patient Information:

Name: Ashley Hanson, DOB: 09/29/19xx, Age 21, Allergies: NKDA

Diagnosis: Dehydration

Prescription: Lactated Ringers 100 mL IV bolus over 30 minutes

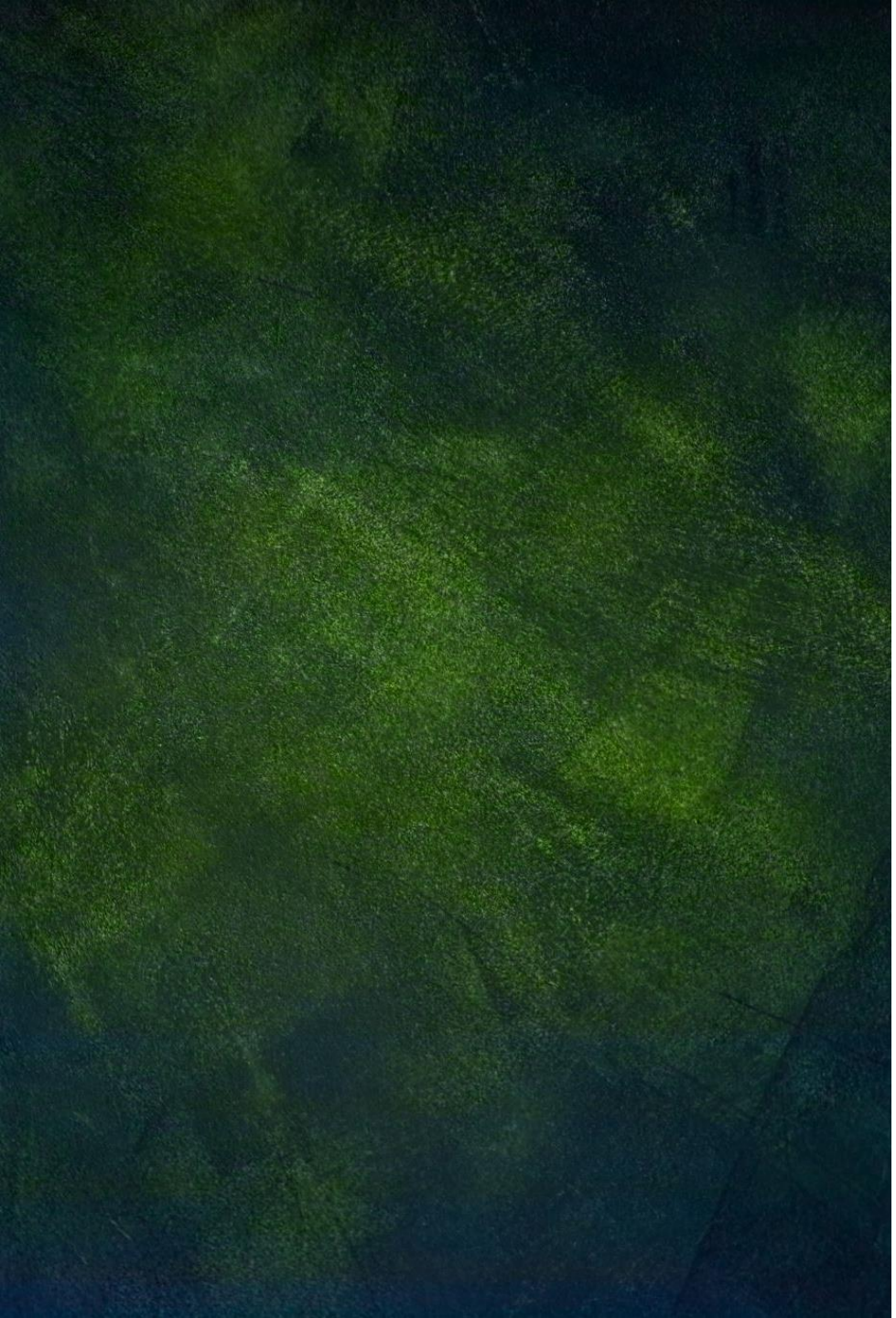
$$\frac{mL}{Hr} = \frac{100\ mL}{30\ minutes}$$

$$\frac{mL}{Hr} = \frac{100\ mL}{30\ \cancel{minutes}} = \frac{60\ \cancel{minutes}}{1\ hour} = \frac{100\ mL\ x\ 60}{30\ x\ 1\ hour} = \frac{6000\ mL}{30\ hour} = 200\,mL/hr$$

NURSING RESPONSIBILITIES

- Observe site for tenderness, discoloration, inflammation or infiltration.

- Document upon changing the rate, solution and when pump is cleared Pump should be cleared at the end of each shift



Continue

Clamp	Clamp tubing on extension set when not in use
Assess	Continuously assess appropriateness of therapy and ongoing need for intravenous access
Change	Change tubing unless otherwise identified by specific guidelines (e.g. TPN tubing changed 24h, blood tubing 4h or after 2 units)
Be	Be aware of therapy specific guidelines for tubing changes in your area

Continue

Label	• Label tubing and site with expiry/replacement date
Ensure	• Ensure all infusions administered through a central venous access device are done so with an infusion pump
Ensure	• Ensure continuous infusions of medications (e.g. heparin) are run on the primary line

- **Client with an infusion pump has an order for 3,000 mL D5W over 24 hours**

  1) Think: pump is regulated in mL/hr
  2) Set up in formula using Formula Method
- 3,000 mL/24 hr

  x= 125 mL/hr

- **A client on an infusion pump is to receive an antibiotic in 50 mL of 0.9% NS over 30 minutes**

  1) Think: The pump infuses in mL/hr. Use dimensional analysis to determine mL/hr
  2) Set up porblem
- 50 mL/30 min

  x= 1.667

  = 1.667*60 min

  x= 100 min

- **Calculate Flow Rate**

  2,000 mL in D5W in 24 hours by infusion pump
- 2,000/24

  x= 83.3 mL/hr

- **Calculate Flow Rate**

  100 mL 0.45% NS in 45 min by infusuin

  Remember: mL/time * 60
- 100mL/45 min * 60 min

  100 mL/45

  x= 2.222

  x= 2.222/60
- x= 133 mL/hr

- **Calculate Flow Rate**

  30 mL of antibiotic in 0.9% NS in 20 min by infusion pump

  Remember: mL/time * 60
- 30 mL/20 min * 60

  30 mL/20 min

  x= 1.5 * 60

  x= 90 min


Thank you
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