Fluid Maintenance Requirement Questions

Given the weight of a child or infant, calculate the necessary amount of fluid per day. Different hospitals may have different policies, but for learning how to perform these pediatric dosage calculations, the following commonly used table of fluid requirements may be used.

Weight Range	Required Daily Fluid
0-10 kg	**100 mL per kg**
10-20 kg	**1,000 mL + 50 mL per each kg above 10 kg**
20-70 kg	**1,500 mL + 20 mL per each kg above 20 kg**
Over 70 kg	**2,500 mL (adult requirement)**

Example: An infant weighs 4 kg. What is the required amount of fluid per day in mL?

0-10 kg	100 mL per kg

- 4 kg x 100 mL/kg = **400 mL**

Example: An infant weighs 30.8 lb. What is the required IV flow rate in mL/hr to maintain proper fluid levels?

Convert 30.8 lb to kg.

- lb → kg (÷ by 2.2)
- 30.8 lb ÷ 2.2 = 14 kg

10-20 kg	1,000 mL + 50 mL per each kg above 10kg

- 14 kg - 10 kg = 4 kg (There are 4 kg over 10 kg).
- 1,000 mL + (50 mL/kg x 4 kg) = 1,200 mL/day
- This is now an ordinary IV Flow Rate - mL Rate Question. The required volume is 1,200 mL and the time is one day.

$$\frac{\text{Volume (mL)}}{\text{Time (hr)}} = \text{Y (Flow Rate in mL/hr)}$$

There are 24 hours in one day.

- 1 day x 24 = 24 hr

$$\frac{1{,}200 \text{ mL}}{24 \text{ hr}} = \mathbf{50 \text{ mL/hr}}$$

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IV Fluids Calculations

Administering fluids/medications via an infusion pump

- How do I use the pump to deliver the right dose?
  - Each brand of infusion pump has specific tubing, filling volumes, filters, and other accessories.

A problem indicates that a medication or fluid is to be given via an infusion pump. Even though the problem may state the tubing that is specific to the pump has a "drip factor of 15 gtts/ml or 20 gtts/ml", it will still be delivered the equivalent to 60 gtts/ml if it is placed on the pump. Remember when the physician orders *x* ml/hr or you calculate *x* ml *per hour*, that is essentially what you dial into the IV pump.

1. Question:

The doctor writes an order for D_5 NS to run at 90 cc/hr. The packaging for the IV tubing indicates that the drip factor of the tubing is 15 gtt/cc. Hospital policy states that all fluids are placed on a pump. How will the nurse set the infusion pump?

Critical information:

- Doctor's order of 90 ml/hr
- Use of an infusion pump.

Extraneous information for calculation:

- Drip factor of the tubing.

Answer: _____ml/hr

2. Question:

Order: Run current IV fluids at 175 ml/hr for 2 hours. How much total volume to give?

Critical information: Use the space below to show your solution/s.

- Volume = 175 ml

Answer: _____ml

3. Calculating Hours Manually:

Determining IV infusion rates when pumps are not available.

The DRIP FACTOR is **15 gtt/ml**.

Calculate the DRIP RATE manually in the following examples:

Use the space below to show your solution/s.

_____**gtt/min** 1. Administer 500cc for 4 hours.

_____**gtt/min** 2. Administer 700 cc for 3 hours.

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_____**gtt/min** 3. Administer 100 cc for 1 hour.

_____**gtt/min** 4. Administer 250 cc for 2 hours.

_____**gtt/min** 5. Administer 600 cc for 7 hours.

Formula = $\frac{\text{Volume x Drip Factor}}{\text{Time}}$

Important Reminder: Don't forget to convert hours to minutes.

Use the space below to show your solution/s.

4. Calculating Hours via Infusion Pump:

The nurse makes rounds and notes that the current IV bag contains approximately 450 ml. The IV flow rate is 150 ml/hr. How long will it be before the nurse must hang a new bag?

Critical information:

- Volume = 450 ml
- Flow rate = 150 ml/hr

$\frac{\text{450 ml}}{\text{150 ml/hr}}$	=	.
450 / 150	=	3 hr

Use this space to show your solution/s. >>>

_____**hr(s)** 1. IV flow rate is 200/ml. For how long will it infuse if IV bag contains 1000 ml?

_____**hr(s)** 2. IV flow rate is 150/ml. For how long will it infuse if IV bag contains 1000 ml?

_____**hr(s)** 3. IV flow rate is 300/ml. For how long will it infuse if IV bag contains 1500 ml?

_____**hr(s)** 4. IV flow rate is 100/ml. For how long will it infuse if IV bag contains 450 ml?

_____**hr(s)** 5. IV flow rate is 50/ml. For how long will it infuse if IV bag contains 300 ml?

_____**hr(s)** 6. IV flow rate is 75/ml. For how long will it infuse if IV bag contains 1000 ml?

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_____**hr(s)** 7. IV flow rate is 90/ml. For how long will it infuse if IV bag contains 800 ml?

_____**hr(s)** 8. IV flow rate is 45/ml. For how long will it infuse if IV bag contains 500 ml?

_____**hr(s)** 9. IV flow rate is 10/ml. For how long will it infuse if IV bag contains 230 ml?

_____**hr(s)** 10. IV flow rate is 30/ml. For how long will it infuse if IV bag contains 1000 ml?

_____**hr(s)** 11. IV flow rate is 85/ml. For how long will it infuse if IV bag contains 600 ml?

5. Fluid Maintenance Requirements:

REFER TO THE HANDOUT

Use this space to show your solution/s. >>>

_____**ml** 1. An infant weighs 5 kg. What is the required amount of Fluid per day?

_____**ml** 2. An adult weighs 70 kg. What is the required amount of Fluid per day?

_____**ml** 3. A teenager weighs 45 kg. What is the required amount of Fluid per day?

_____**ml** 4. An infant weighs 6 kg. What is the required amount of Fluid per day?

_____**ml** 5. A female weighs 50 kg. What is the required amount of Fluid per day?

_____**ml** 6. An infant weighs 3 kg. What is the required amount of Fluid per day?

_____**ml** 7. A toddler weighs 7 kg. What is the required amount of Fluid per day?

_____**ml** 8. An adult weighs 95 kg. What is the required amount of Fluid per day?

_____**ml** 9. An adult weighs 105 kg. What is the required amount of Fluid per day?

_____**ml** 10. A male adult weighs 115 kg. What is the required amount of Fluid per day?

_____**ml** 11. An infant weighs 2 kg. What is the required amount of Fluid per day?

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_____**ml** 12. An elderly weighs 65 kg. What is the required amount of Fluid per day?

_____**ml** 13. An elderly weighs 35 kg. What is the required amount of Fluid per day?

_____**ml** 14. An infant weighs 2.5 kg. What is the required amount of Fluid per day?

_____**ml** 15. An adult female weighs 85 kg. What is the required amount of Fluid per day?