Calculation guidelines for preparing IV standard concentrations

Continuous Infusions

Step 1: Determine **total** volume of standard concentration to be prepared (i.e. infusion rate mL/hr x 24 hr)

NOTE: if total volume is 50 mL or less, use a syringe to prepare medication for administration **OR**
if total volume is greater than 50 mL, use a bag to prepare medication for administration

Step 2: Determine the amount of medication needed:

- **a)** Total volume (mL) to be prepared (**step 1**) **multiplied** by standard concentration (mg/mL) = amount of medication required (mg)
- **b)** Amount of medication required (mg) **divided** by supplied strength of medication (mg/mL) = volume of medication required (mL)

Step 3: Determine the volume of compatible IV solution needed:
Total volume of standard concentration (**step 1**) **minus** the volume of medication (**step 2b**) = volume of compatible IV solution

Step 4:
Syringe:
Fill appropriate size syringe with volume of compatible IV solution (**step 3**) required. Slowly add required volume of medication (**step 2b**) into the syringe containing compatible IV solution. Gently mix the contents of the syringe and then remove any excess air and administer.

Using a prefilled bag:
Determine the appropriate sized bag (i.e. 25 mL, 50 mL, 100 mL or other) required for administering medication and determine volume of solution to be removed from bag :

Volume of bag required **minus** volume of compatible IV solution required (**step 3**) = volume of compatible IV solution to be removed

Remove volume of compatible IV solution from bag as calculated above, then add the volume of medication (**step 2b**) into the bag containing compatible IV solution. Gently mix the contents of the bag and administer.

Using empty ExactaMix* bag:
Fill appropriate sized empty ExactaMix* bag with volume of compatible IV solution (**step 3**) required. Slowly add required volume of medication (**step 2b**) into the bag containing compatible IV solution. Gently mix the contents of the bag and administer.

EXAMPLE Calculation guidelines for preparing IV standard concentrations
Continuous Infusions

To prepare Levocarnitine Pediatric Standard Concentration 8 mg/mL

Step 1: Determine **total** volume of standard concentration to be prepared (i.e. **infusion rate mL/hr x 24 hr**)

NOTE:
For rates 2 mL/hour and less, prepare 50 mL volume in a syringe. See **Calculation Set #1**

For rates greater than 2 mL/hour, prepare - 250 mL bag. See **Calculation Set #2**

Calculation Set #1 – SYRINGE

Step 2: Determine the amount of medication needed:

a) Total volume (**mL**) to be prepared (**step 1**) **multiplied** by standard concentration (**mg/mL**) = amount of medication required (**mg**)
If volume to prepare is **50 mL** then: **50 mL** multiplied by **8 mg/mL** = X **mg** of levocarnitine
X = **400 mg** levocarnitine needed

b) Amount of medication required (**mg**) **divided** by supplied strength of medication (**mg/mL**) = volume of medication required (**mL**)
If **400 mg** of levocarnitine needed and levocarnitine is supplied as **200 mg/mL** then:
400 mg divided by **200 mg/mL** = X **mL**
X = **2 mL** volume of levocarnitine needed

Step 3: Determine the volume of compatible IV solution needed:
Total volume of standard concentration (**step 1**) **minus** the volume of medication (**step 2b**) = volume of compatible IV solution **50 mL** (**step 1**) minus **2 mL** (**step 2b**) = **48 mL** compatible IV solution

Step 4: Syringe:
Fill appropriate sized syringe with volume of compatible IV solution (**48 mL** from **step 3**) required. Slowly add required volume of medication (**2 mL** from **step 2b**) into the syringe containing compatible IV solution. Gently mix the contents of the syringe and then remove any excess air and administer.

Final concentration is **8 mg/mL**

EXAMPLE Calculation guidelines for preparing IV standard concentrations
Continuous Infusions

Calculation Set #2 – BAG

Step 2: Determine the amount of medication needed:

a) Total volume (mL) to be prepared (**step 1**) **multiplied** by standard concentration (**mg/mL**) = amount of medication required (**mg**)
If volume to prepare is **250 mL** then: **250 mL** multiplied by **8 mg/mL** = X **mg** of levocarnitine
X = **2000 mg** levocarnitine needed

b) Amount of medication required (**mg**) **divided** by supplied strength of medication (**mg/mL**) = volume of medication required (**mL**)
If **2000 mg** of levocarnitine needed and levocarnitine is supplied as **200 mg/mL** then:
2000 mg divided by **200 mg/mL** = X **mL**
X = **10 mL** volume of levocarnitine needed

Step 3: Determine the volume of compatible IV solution needed:
Total volume of standard concentration (**step 1**) **minus** the volume of medication (**step 2b**) = volume of compatible IV solution **250 mL** (**step 1**) minus **10 mL** (**step 2b**) = **240 mL** compatible IV solution

Step 4: choose one of the following

Using a prefilled bag:
Determine the appropriate sized bag (i.e. **250 mL**) required for administering medication and determine volume of solution to be removed from bag :

250 mL (prefilled bag) **minus** **240 mL** (**step 3**) = **10 mL** to be removed from bag (discard)

Remove and discard volume of compatible IV solution from bag as calculated above, then add the volume of medication (**10 mL** from **step 2b**) into the bag containing compatible IV solution. Gently mix the contents of the bag and administer.

OR

Using empty ExactaMix* bag:
Fill appropriate sized empty ExactaMix* bag with volume of compatible IV solution (**240 mL** from **step 3**) required. Slowly add required volume of medication (**10 mL** from **step 2b**) into the bag containing compatible IV solution. Gently mix the contents of the bag and administer.

Final concentration is **8 mg/mL**