Drug Dose Calculations

• Finding the ordered dose-The KEY to Calculations! What are you looking for?

  1. The desired dose
  2. Concentration
  3. Volume on hand
  4. Lbs. to kg
  5. Units to administer (What are you looking for?)

Calculate This!

• Doctor orders 2.5 mg of morphine to be administered IV to a patient with substernal chest pain. You have 1 ml vial that contains 10 mg of morphine (10 mg/ml). How many milliliters are you going to have to draw up into a syringe and push IV into your patient’s IV line port?

Organize-

• Finding the ordered dose-The KEY to Calculations!

  1. D Dose: 2.5 mg of Morphine IV
  2. Concentration: 10 mg
  3. Volume on hand: 1 ml
  4. Lbs. to kg: Do not need it
  5. Looking for: ml to be given
Which Formula?

- Ordered Dose Formula

\[ \text{Ordered dose} = \text{Volume on hand} \times \frac{\text{Ordered Dose}}{\text{Concentration}} \]

Should look like this!

<table>
<thead>
<tr>
<th>Dose</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 mg</td>
<td>1 ml</td>
</tr>
<tr>
<td>10 mg/ml</td>
<td></td>
</tr>
</tbody>
</table>

= 0.25 ml to be given

Calculate This!

- A 154 lb. male patient needs Lasix. The ED physician orders 40 mg via IV push. Lasix is supplied as 100mg/10ml. How many ml will you give to deliver the ordered dose?
Organize-

• Finding the ordered dose - The KEY to Calculations!

1. Dose: 40 mg Lasix
2. Concentration: 100 mg
3. Volume on hand: 10 ml
4. Lbs. to kg: Do not need it
5. Looking for: ml to be given

Which Formula?

• Ordered Dose Formula

Ordered dose = \(\frac{\text{Ordered Dose}}{\text{Volume on hand}}\) \times \frac{\text{Concentration}}{}

Should look like this!

Dose \ \\
\text{Volume} \ \\
\ \ \\
\text{40 mg x 10 ml} = 4 ml \ \\
100 mg \ \\
\text{Concentration}
Calculate this!

You are ordered to start an IV of Normal Saline with a 10 gtt/ml administration set and infuse 300 ml over 2 hours. At how many gtt/min will you set your IV?

Organize!

• Finding the ordered dose-The KEY to Calculations!

1. D Dose: 300 ml
2. Concentration: not needed
3. Volume on hand: 500 or 1000
4. Lbs. to kg: Do not need it
5. Looking for: ml to be given/minute

Which Formula?

• Drip Rate Formula-

Amount to be infused x Drip set =
Time in minutes
Should look like this!

ATBI Drip Set
300 ml x 10 = 25 gtts/min
120
Time in Minutes

Calculate this!

After your radio report of a 220 lb. male patient involved in a MVA has been given, the physician orders an infusion of Lactated Ringers to be given a rate of 500 per hour. You have a 20 gtts drip set. What rate does your IV need to be running at?

Organize-

• Finding the ordered dose-The KEY to Calculations!
  1. D Dose: 500 ml
  2. Concentration: not needed
  3. Volume on hand: 500 or 1000 unlimited!
  4. Lbs. to kg: Do not need it
  5. Looking for: ml to be given/minute
Which Formula?

• Drip Rate Formula:

\[
\text{Amount to be infused} \times \text{Drip set} = \frac{\text{Time in minutes}}{} 
\]

Should look like this

\[
\frac{500 \times 20}{60} = 167\text{gtts/minute} 
\]

Calculate this!

Post cardiac arrest “Save” you are ordered to prepare and hang a Lidocaine drip at 2 mg/min. Your Lidocaine is prepackaged at 1g/250 ml. You will be using a 60gtt administration set. At how many drops will you be running your IV?
Organize

• Finding the ordered dose - The KEY to Calculations!

1. Dose: 2mg/min
2. Concentration: 1g or 1000 mg or 4mg/ml
3. Volume on hand: 250
4. Lbs. to kg: Do not need it
5. Looking for: ml to be given/minute

Which Formula?

Medication per Minute Dosing -

Med per minute ordered x Drip Set = Concentration of the Drug

Should look like this

Med/min (dose)  Drip Set
2mg  x  60 = 30 gtts
4 mg/ml
Concentration
Calculate this!

After your radio report, the physician orders an Epinephrine drip at a rate of 0.25 mg/min. Your Epinephrine comes pre-packaged in 10mg/250ml. You are using a 60gtts administration set. What rate will your IV need to be infusing at?

Organize-

- Finding the ordered dose - The KEY to Calculations!
  1. D Dose: 0.25mg/min
  2. Concentration: 10mg or 0.04mg/ml
  3. Volume on hand: 250ml
  4. Lbs. to kg: Do not need it
  5. Looking for: ml to be given/minute

Which Formula?

Medication per Minute Dosing-

Med per minute ordered $\times$ Drip Set = Concentration of the Drug
Should look like this

Med/min (dose)  Drip Set
0.25mg/min  x  60 = 375 gtt/min
0.04 mg /ml
Concentration

Calculate this?

- Atropine is ordered for symptomatic bradycardia. The desired dose is 0.5mg. Atropine comes as 1mg/10ml. How many ml will you need to administer to deliver the desired dose of 0.5mg

Organize-

- Finding the ordered dose-The KEY to Calculations!
  1. D Dose: 0.5 mg
  2. Concentration: 1mg or 0.1mg/ml
  3. Volume on hand: 10ml
  4. Lbs. to kg: Do not need it
  5. Looking for: ml to be given
Which Formula?

• Ordered Dose Formula

\[
\text{Ordered dose} = \frac{\text{Volume on hand} \times \text{Ordered Dose}}{\text{Concentration}}
\]

Should look like this

<table>
<thead>
<tr>
<th>Dose</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mg x 10m</td>
<td>5 ml</td>
</tr>
<tr>
<td>1 ml</td>
<td></td>
</tr>
</tbody>
</table>

Calculate this!

The physician orders 5mg/kg Bretylium IV to be administered to your patient. You have premixed syringes with 500mg/10ml. Your patient weighs 170lbs. How many mls will you need to administer?
Organize-

• Finding the ordered dose-The KEY to Calculations!

1. D Dose: 5mg x 77 kg=385mg
2. Concentration: 500mg=50mg/ml
3. Volume on hand: 10ml
4. Lbs. to kg: Yes-170/2.2=77kg
5. Looking for: ml to given

Which Formula?

• Ordered Dose Formula

\[
\text{Ordered dose} = \frac{\text{Volume on hand} \times \text{Ordered Dose}}{\text{Concentration}}
\]

Should look like this

<table>
<thead>
<tr>
<th>Dose</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>385 mg</td>
<td>10 ml</td>
</tr>
<tr>
<td>50 mg/ml</td>
<td></td>
</tr>
</tbody>
</table>
Calculate this

A dopamine drip is ordered at 5mcg/kg/min. Your dopamine comes pre-packaged 400mg/500ml. You are using a microdrip drop set (60 gtts). The patient weighs 163lbs. At how many drops per minute will you run your IV?

Organize-

- Finding the ordered dose-The KEY to Calculations!

1. D Dose: 5mcg x 74 kg = 370mcg
2. Concentration: 400mg is 0.8 mg
3. Volume on hand: 500ml
4. Lbs. to kg: Yes-163lbs./2.2=74kg
5. Looking for: ml to given per minute

Which Formula?

Medication per Weight Dosing

\[
\text{Drip Rate} = \text{amt. per minute (dose)} \times \text{weight in kg} \times \text{Drip Set Concentration}
\]
Medication per Weight Dosing

amt. per minute (dose) x weight in kg x Drip Set

5 mcg x 74 kg x 60 gtt. = 28 gtt/min

0.8 mg/ml or 800 mcg

Concentration