Pharmaceutical Calculations Made Easy

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Simplifying How To Calculate a Medication Volume from a Concentration

- Rather than trying to do the math based on the concentration of the drug i.e. mg/ml or mcg/ml
- Think in terms of a factor of what multiplier times the concentration will equal a factor of 1 or a multiple thereof i.e. 10, 100 etc.
- This manner will quickly allow you to either calculate a dose or double check your math
- Let's have some examples of how this works

Fentanyl 50mcg/ml

Fentanyl

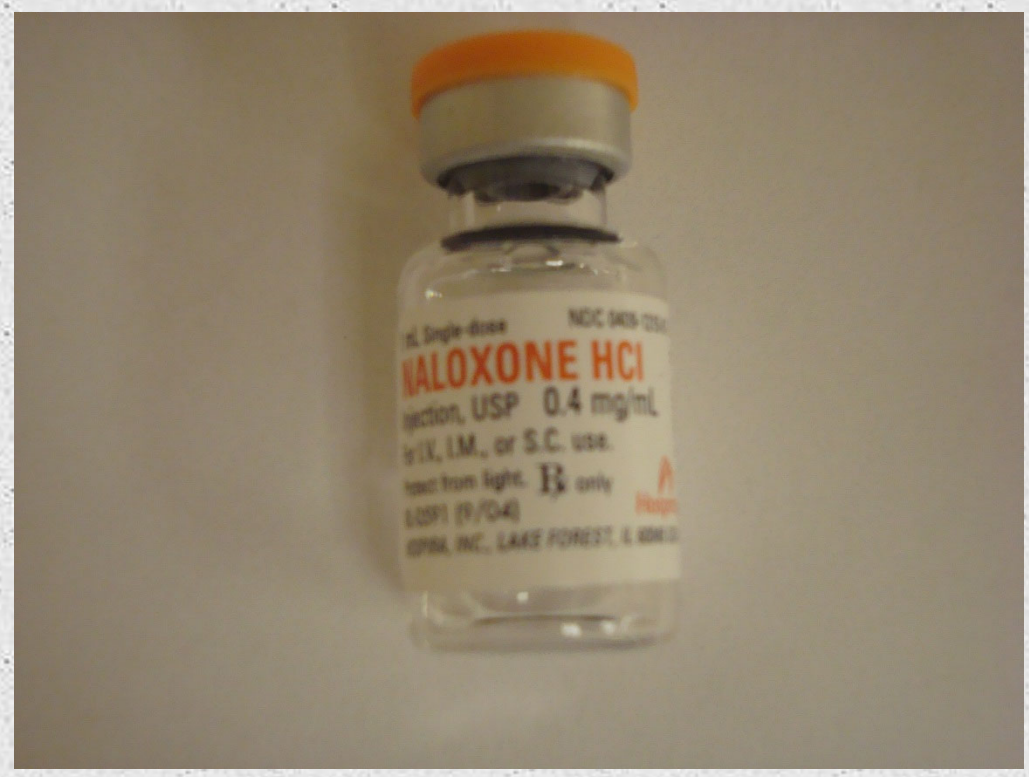
- Traditional math
  - Dose is 2mcg/kg for 80kg patient =160mcg
  - Then you would divide the dose (160mcg) by the concentration 50mcg/ml to get the volume to administer = 3.2ml
- Debbie's math
  - Dose is 2mcg/kg for 80kg patient =160mcg
  - Take the 50mcg/ml concentration and multiply by 2 to get a factor of 100
  - Multiply the dose 160mcg x 2 =320mcg
  - Adjust the decimal point accordingly or divide by 100 and you 3.2, the number of ml's

Ondansetron 2mg/ml

Ondansetron

- Traditional math
  - Dose is 0.1mg/kg for a 27kg patient = 2.7mg
  - Then you would divide the dose 2.7mg by the concentration 2mg/ml for a volume =1.35ml
- Debbie's math
  - Dose is 0.1mg/kg for a 27kg patient =2.7mg
  - Concentration is 2mg/ml so to get a factor of 10 you multiply by 5
  - Take the dose 2.7mg x 5 = 13.5ml and adjust the decimal place accordingly or divide by a factor of 10 to get the volume 1.35ml

Naloxone 0.4mg/ml



Naloxone

- Traditional math
  - Dose is 0.1mg/kg for 17kg patient = 1.7mg
  - Concentration is 0.4mg/ml so you would divide 1.7 by 0.4 = 4.25ml
- Debbie's math
  - Dose is 0.1mg/kg for 17kg patient =1.7ml
  - Concentration is 0.4mg/ml so 2.5 times 0.4 = 1
  - Take the dose 1.7 x 2.5 = 4.25 (volume is correct as the ratio used was one)

Why This Works Every Time

- Simply put it's sometimes easier to multiply than divide numbers in your head
- It's easy to visualize 1, 10, or 100
- It's quick
- Key is to always work with a concentration of (x) number of mcg's or mg's per 1ml
- Once you have that it's easy
- Now try it yourself