

Essentials of Medication Administration

Dimensional Analysis - ORAL & PARENTERAL CALCULATIONS

STUDENT HELP SHEET

A. **CONVERTING** (See Chapter)

unit X = **Convert to** X **Given**

Example: Convert 38 lb to kg

$$\begin{aligned} 38 \text{ lb} &= \text{ } \text{ kg} \\ \text{kg}(x) &= \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{38 \text{ lb}}{1} \\ x &= 17.3 \text{ kg} \end{aligned}$$

B. **DOSAGE CALCULATIONS** (See Chapter)

1. **No conversion needed:**

unit x = **Available** X **Order**

Example:

Order: Vistaril 15 mg IM q4h

Available: Vistaril 30 mg/2mL

$$\begin{aligned} \text{mL}(x) &= \frac{2 \text{ mL}}{30 \text{ mg}} \times \frac{15 \text{ mg}}{1} \\ x &= 1 \text{ mL} \end{aligned}$$

2. **Conversion needed:**

unit x = **Available** X **Conversion** X **Order**

Example:

Order: Ampicillin 0.5 g IM q6h

Available: Ampicillin 250 mg per mL

$$\begin{aligned} \text{mL}(x) &= \frac{1 \text{ mL}}{250 \text{ mg}} \times \frac{1,000 \text{ mg}}{1 \text{ g}} \times \frac{0.5 \text{ g}}{1} \\ x &= 2 \text{ mL} \end{aligned}$$

C. **CALCULATE SAFE DOSAGES BY WEIGHT**

First – Check - Are the units the same in the Medication ORDER and Medication AVAILABLE?

(If they are the same start at Step #2. – If they are not the same, conversion is needed - start at Step #1)

Step #1: (convert lb to kg) (use format A above & see example)

Step #2: Calculate to see if the ordered dose is safe:

(If the recommend is a range, the calculation below must be performed twice to get the safe range)

Recommend **Weight (in kg)**
mg(x) = X

Example: Order: Vistaril 15 mg IM q4h

Recommend: 0.5 to 1 mg/kg/dose q 4 h

Available: 30 mg/2mL

Weight: ~~38 lb~~ 17.3 kg (see conversion example in format A above)

$$\begin{aligned} \text{mg}(x) &= \frac{0.5 \text{ mg}}{\text{kg/dose}} \times \frac{17.3 \text{ kg}}{1} \\ x &= 8.65 \text{ mg/dose} \end{aligned}$$

$$\begin{aligned} \text{mg}(x) &= \frac{1 \text{ mg}}{\text{kg/dose}} \times \frac{17.3 \text{ kg}}{1} \\ x &= 17.3 \text{ mg/dose} \end{aligned}$$

Safe dose range = 8.65 – 17.3 mg/dose

Step #3: Compare answer in Step #2 to the Order to see if the order is Safe.

If it is not safe – STOP - and call the MD.

Step #4: If it is safe, perform the dosage calculation (use format B above) and administer the medication.

(See dosage calculation in B1 example)