

units / conversions

$$BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2}$$

$$IBW = h + 2.3 \times 1.65$$

$$\text{Body Surface Area (cm}^2\text{)} = \sqrt{\frac{\text{weight (cm)} \times \text{wt (kg)}}{3,600}}$$

ex. how many mole of Aspirin in 300mg
Aspirin 300mg tab

$$n = \frac{m}{M} = \frac{300 \times 10^{-3} \text{g}}{180.2} = 1.665 \times 10^{-3} \text{mol}$$

Temperature

$$2 \text{ degree Fahrenheit (}^\circ\text{F)} = 5 / 9 \text{ degree Kelvin (}^\circ\text{K)}$$

Amount of NaCl to make isotonic
cald to 100ml - adjust if down

$$NaCl = 0.9 - (\text{SCE} \times \text{amount of substance (g)})$$

$$n = \frac{m}{M}$$

n = No. of moles

m = mass (g)

M = Molecular weight (MW)

$$c = \frac{n}{v}$$

c = concentration (g per L or g per dm³)

n = number of mole

v = volume (L or dm³)

$$m = c \times v$$

m = mass

c = concentration (mol per L or mol per dm³)

v = volume (L or dm³)

$$C_1 V_1 = C_2 V_2$$

Example of $n = \frac{m}{M}$: ~~valve volume of chlorhexidine gluconate solution B-1~~
~~protol to 2ml of a solution in that first corner of chlorhexidine~~
~~1600 0.22% chlorhexidine~~
37. Ferrous sulphate. If a patient is required to take 10 ml TDS,
how much elemental iron are they ingesting on a daily basis?
Fe = 55.8 g/mol FeSO₄ · 7H₂O - MW = 278

$$\begin{aligned} \text{mixt} &= 37 \text{ Ferrous sulphate} = 3 \text{g} / 100 \text{ ml} = 0.03 \text{g in 10 ml} \\ &= 0.9 \text{g daily} \\ n &= \frac{m}{M} = \frac{55.8}{278} = 0.20072 \times 0.9 = 0.18064 \text{g} \\ &= 180 \text{g} \end{aligned}$$

Example CIVI - what volume of Acetic acid B.p (33% w/w, w/ml = 1.04) is required for the preparation of 2 L of a solution containing acetic acid at a concn of 10% w/v? MW acetic acid = 60

acetic acid concn: 33g in 100g

$$C_1 V_1 = C_2 V_2$$

$$34.353 \times V_1 = 10 \times 2000 \text{ ml}$$

$$V_1 = \frac{10 \times 2000}{34.35} = 582 \text{ ml}$$

$$\begin{aligned} &= 0.33 \times 1.041 \text{g per ml} \\ &= 0.34353 \text{g per ml} \times 100 \\ &= 34.3537 \text{ w/v} \end{aligned}$$

Drug common doses:

prednisolone: Croup - 1mg/kg, asthma - 1-2mg/kg - max 60mg → same immune
112-24hrs (once daily for 3-5 days) or inflammatory disease

Ibuprofen: 5-10mg/kg - max 400mg 3-4 x a day

Paracetamol: 15mg/kg - every 4-6 hrs.

Normal Lab values

Na⁺ - 136-146 mmol/L

chloride - 96-106 mmol/L

K⁺ - 3.5-4.5 mmol/L

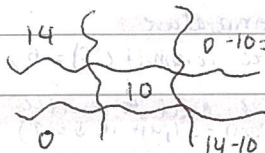
urea creat kft
Ls H pylori

Alligation question

- used when mixing two products w/ different % strengths of the same active ingredient
- strength of final product will fall between the strengths of each original product

Examples

- Dilute ointment - 14% sulfur w/ petrolatum 0% to make 60g ointment containing 10% sulfur. How many g of 14% sulfur & petrolatum 0% will be necessary to make the dilution?



$14 - 10 = 10$ = 10 parts of 14% sulfur
 $14 - 10 = 4$ = 4 parts of petrolatum

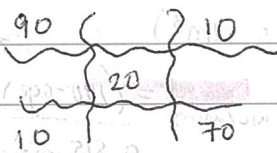
→ 14% sulfur :

$$10/14 \times 60g = 42.9g \text{ of } 14\% \text{ sulfur}$$

→ Petrolatum 0% :

$$4/14 \times 60g = 17.1g \text{ of petrolatum}$$

- Prepare 1L of 20% alcohol solution using 90% alcohol & 10% alcohol



$90 - 20 = 10$ = 10 parts of 90% alcohol
 $90 - 20 = 70$ = 70 parts of 10% alcohol

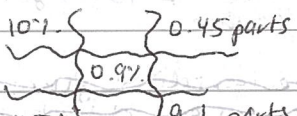
→ 90% alcohol :

$$10/80 \times 1L = 0.125L \text{ of } 90\% \text{ alcohol}$$

→ 10% alcohol :

$$70/80 \times 1L = 0.875L \text{ of } 10\% \text{ alcohol}$$

- How much NaCl 10% stock solution should add to 100ml of NaCl 0.45% solution to make normal saline - 0.9%?



$10 - 0.45 = 9.55$ = 9.55 parts of 10% NaCl
 $10 - 0.9 = 9.1$ = 9.1 parts of 0.45% NaCl

$$\frac{9.1}{9.55} \times 100 = 95.3 \text{ ml}$$

$$+ \text{ (total volume) } = \frac{100}{9.55} = 104.95 \text{ mL final volume}$$

$$\text{NaCl } 10\% \text{ required: } \frac{0.45}{9.55} \times 104.95 = 4.95 \text{ mL of NaCl } 10\% \text{ stock solution to add to } 100 \text{ mL of NaCl } 0.45\% \text{ solution to make saline } 0.9\% \text{ NaCl}$$

Isotonic questions

- How much NaCl should be added in the preparation of 25 mL of pilocarpine HCl 2% eyedrops to render them isotonic

$$\text{NaCl} = 0.9 - (\text{SCE} \times \text{amount of substance})$$

$$= 0.9 - (0.24 \times 2) = 0.42 \text{ g for } 100 \text{ mL solution}$$

$$= 0.105 \text{ g in } 25 \text{ mL solution}$$

$$= 105 \text{ mg}$$

- Isotonic eye drops using : - phenylephrine HCl 1% w/v SCE - phenyl HCl = 0.32
 - chlorobutanol 0.5% w/v SCE - chlorobutanol = 0.21
 - NaCl to make isotonic → how many grams?

	% w/v	wt in 25 mL	E	NaCl
phenylephrine	1	0.25g	0.32	0.08g
chlorobutanol	0.5	0.125g	0.24	0.03g
Sodium chloride	-	xg	1	xg
				0.11 + xg

An isotonic solution of NaCl 0.9% w/v

$$0.9 \text{ g of NaCl in } 100 \text{ mL}$$

$$= 0.225 \text{ g of NaCl in } 25 \text{ mL}$$

$$\rightarrow 0.225 = 0.11 + x$$

$x = 0.115 \text{ g of NaCl to add to solution to make isotonic}$

Dilution

- Dilute 10g 1% of Lipocream to concn - 0.0025% hydrocortisone butyrate (how many grams of lipobase to dilute)
 You have unopened 30g tube of 1% of Lipocream - hydrocortisone butyrate - 0.1%
 dilution factor = $\frac{0.1\%}{0.0025\%}$ (initial concn) = 40
 ∴ original diluted 0.0025% (final concn)
 ∴ quantity of lipobase = $39 \times 10g = 390g$ of lipobase to make 0.0025% 1% of Lipocream from 10g dilute

↳ more dilution questions attached