Dosage Calculations II

Study Development Worksheet

Questions

1. How many tablets should be given to a patient if half a tablet contains 250mg of a drug and the patient has been prescribed 1000mg?

2. The concentration of a liquid drug is 1.5mg/ml, and the patient requires 121mg. How many ml should the patient take?

3. A patient is prescribed 4000μg daily of a drug that comes in 1mg tablets. How many tablets should the patient take in a single dose if they have to take two doses a day?

4. A painkiller comes in tablets containing 200mg of the drug. A patient weighs 100kg and has been prescribed 360mg of the painkiller daily. If the patient must take 2 doses across the day, how many pills should they take in a single dose, to the nearest quarter tablet?

5. If a patient needs to take 30,000μg of a painkiller in a day that comes in a concentration of 1mg/2ml, how many ml of the painkiller do they need to have administered in a day? If the patient needs to take the 30,000μg across 4 doses in a day, how many ml of the painkiller will be in a single dose?

6. A male patient, aged 45, comes in to be treated. They weigh 125kg, and are 185cm tall. If they are prescribed a drug that has 200mg in a single dose, and they take 4 doses per day, how many mg of the drug will they take in a full day?

7. A patient needs to take a single dose of 10mg of a drug twice a day, every day, for 1 week, and the drug has a concentration of 2mg/ml. The drug is not commonly prescribed, so there is only 55ml available. Should more of the drug be ordered? If so, how much more is needed for the patient?

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1. If there is 250mg in half a tablet, then we calculate $\frac{250\text{mg}}{\left(\frac{1}{2}\text{ tablet}\right)}$ = 500mg per tablet. We now calculate the tablet dose:

   Tablet dose (tablets) = $\frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg/tablet)}} = \frac{1000\text{mg}}{500\text{mg/tablet}}$ = 2 tablets.

2. Liquid dose (ml) = $\frac{\text{dose prescribed (mg)}}{\text{dose in stock (mg)}}$ x stock volume (ml) = $\frac{121\text{mg}}{1.5\text{mg}} \times 1\text{ml}$ = 80.7ml.

3. 1000μg = 1mg, therefore, 4000μg = 4mg.

   Tablet dose (tablets/day) = $\frac{\text{dose prescribed (mg/day)}}{\text{dose in stock (mg/tablet)}} = \frac{4\text{mg/day}}{1\text{mg/tablet}}$ = 4 tablets/day.

   Single dose (tablets/dose) = $\frac{\text{daily dosage (tablets/day)}}{\text{number of doses per day (doses/day)}} = \frac{4\text{ tablets/day}}{2\text{ doses/day}}$ = 2 tablets/dose.

4. Here, the weight is extra information that we don't need, as the drug has been prescribed without any reference to the patient weight.

   We calculate the tablet dose:

   Tablet dose (tablets/day) = $\frac{\text{dose prescribed (mg/day)}}{\text{dose in stock (mg/tablet)}} = \frac{360\text{ mg/day}}{200\text{ mg/tablet}}$ = 1.8 tablets/day.

   Single dose (tablets/dose) = $\frac{1.8\text{ tablets/day}}{2\text{ doses/day}}$ = 0.9 tablets/dose.

   We then have to round this dose to the nearest quarter tablet. If you do not know how to round, that's fine as it's a second-year skill on the Nursing course, but if you do, this is the answer:

We need to know which quarter tablet amount is closest to the dose, so we find out how far away the dose is from 0.75 tablets, and 1 tablet.

0.9 – 0.75 = 0.15

1 – 0.9 = 0.1

Therefore, we can see that 0.9 tablets to the nearest quarter tablet is 1 tablet.

5. 1000μg = 1mg, so 30,000μg = 30mg. The liquid dose is calculated as:

Liquid dose (ml/day) = $\frac{\text{dose prescribed (mg/day)}}{\text{dose in stock (mg)}}$ x stock volume (ml) = $\frac{30 \text{ mg/day}}{1 \text{ mg}} \times$ 2ml = 60ml/day.

Single dose (ml/dose) = $\frac{\text{daily dose (ml/day)}}{\text{number of doses per day (doses/day)}} = \frac{60 \text{ ml/day}}{4 \text{ doses/day}}$ = 15ml/dose.

6. The age, weight, height, and sex of the patient are irrelevant to this calculation.

Daily dose (mg/day) = single dose (mg/dose) × number of daily doses (doses/day)

= 200 mg/dose × 4 doses/day = 800 mg/day.

7. Daily dose (mg/day) = single dose (mg/dose) × number of daily doses (doses/day)

= 10 mg/dose × 2 (doses/day) = 20 mg/day.

Weekly dose (mg/week) = daily dose (mg/day) × 7 (days/week)

= 20 mg/day × 7 days/week = 140 mg/week.

Liquid weekly dose (ml/week) = $\frac{\text{weekly dose (mg/week)}}{\text{dose in stock (mg)}}$ × stock volume (ml) = $\frac{140 \text{ mg/week}}{2 \text{ mg}} \times$ 1 ml = 70 ml/week.

Since 70 ml is more than 55 ml, more of the drug will need to be ordered. To find out how much more we need for the patient, we calculate 70 ml – 55 ml = 15 ml.

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