

MATHS FOR NURSES

Calculating Dosages – Cheat Sheet

Working Out a Basic Dose

When a drug is dissolved in a solution, you can work out the total volume of the solution that you need to give to a patient if you have the following information.

- The prescribed dose (the total amount of the drug that the patient needs).
- The stock dose (the amount of the solution in a particular volume of fluid)

To work out the basic dose, your calculation is:

$$\text{Volume Required} = \text{Prescribed Dose} \div \text{Stock Dose} \times \text{Volume Stock Dose Is In}$$

Doses with Unit Conversions

If your prescribed dose and stock dose are in different units, you will need to convert one of them.

It is usually easiest to convert them into the smaller unit, and you can do this by multiplying by the scale factor (for these calculations, this will be 1000).

- To convert grams to milligrams, multiply by 1000.
- To convert milligrams to micrograms, multiply by 1000.
- To convert micrograms to nanograms, multiply by 1000.

If you do need to convert from the smaller unit to the larger one, then you can divide by 1000 instead of multiplying.

When your prescribed dose and stock dose are in the same units, you can carry out the calculation as above.

Drug Concentration

Sometimes a drug is given as a percentage concentration. This tells you how many grams are in 100ml of the fluid (so 5% concentration means there are 5g in 100ml).

You can use this like a stock dose and carry out the calculation as above.

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Drug Strength as a Ratio

Where a drug strength is given as a ratio, it tells you how many grams of the drug are in how many millilitres of the solution (for example a 1 in 1000 solution means there is 1g of the drug in 1000ml of the solution).

Again, you can use this like a stock dose and carry out the calculation as above.

Checking Your Answer

It is essential that your drug calculations are accurate.

- First, make sure that any dose you are giving seems reasonable – if something doesn't look right, it probably isn't.
- Carry out the calculation without using a calculator.
- Then carry out the calculation with a calculator – and make sure your answers match. If not, check again until you can see where you have gone wrong and are sure of the answer.
- Check the BNF or BNF for Children to see what an appropriate dose should be.

If any of these checks gives you reason to doubt your answer, then check your work with a colleague, with a pharmacist or with the person who made the prescription before you administer the drug.