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Units of measurement for mass and volume

Janice Davies

Pharmacist Co-Course Leader – Non Medical Prescribing, University of Central Lancashire
jadavies5@uclan.ac.uk

It is important when prescribing medicines to have an understanding of how different units of measurement relate to each other. Tables 1 and 2 describe the Standard International (SI) units that measure mass or volume that we are familiar in the context of prescribing:

- Mass – the SI unit used to measure mass is the 'gram'
- Volume – the SI unit used to measure volume is the 'litre'.

Table 1. Prefixes

Size	Prefix	Symbol
One hundredth	Centi	C
One thousandth	Milli	M
One millionth	Micro	Micro, μ

Table 2. SI units with prefix

Kilogram (kg)	Gram (g)	Milligram (mg)	Microgram (mcg)
Kilolitre	Litre (l)	Millilitre (ml)	Microlitre (mcl)

Units of weight and volume

- 1 kilogram = 1000 grams
- 1 gram = 1000 milligrams
- 1 milligram = 1000 micrograms
- 1 litre = 1000 millilitres

The units of kilolitre and microlitre are rarely used in medicine. To convert from larger to smaller units we multiply by 1000 for each step. To convert from smaller to larger we divide by 1000.

Questions

Now try these exercises. Convert:

- 250 micrograms to mg
- 250 mg to g
- 250 g to kg
- 300 ml to litres
- 30 ml to litres
- 0.8 litres to ml
- 0.08 litres to ml
- 4 kg to mg
- 4 mg to micrograms. JPrP