Calculating the half-life of medications

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

Half-life is the time taken for the concentration of drug in the plasma to fall by half. It is important for prescribers to have knowledge of the concept of half-life, in order to understand the relationship between impaired elimination of drugs from the body and the risk of toxicity. If metabolism or excretion are impaired, the half-life of drugs will be prolonged, necessitating either a dose reduction or prolongation of the dose interval. Practise calculating the reduction in plasma concentration for the following drugs.

Table 1. Reduction in plasma concentration

Drug	Plasma concentration (mg/L)	Plasma concentration after ONE half-life (mg/L)	Plasma concentration after TWO half-lives (mg/L)
Digoxin	2.0		
Theophylline	20		
Lithium	1.2		
Salicylate	300		
Flecainide	0.8		

Table 1. Reduction in plasma concentration

Drug	Plasma concentration (mg/L)	Plasma concentration after ONE half-life (mg/L)	Plasma concentration after TWO half-lives (mg/L)
Digoxin	2.0	**1.0**	**0.5**
Theophylline	20	**10**	**5**
Lithium	1.2	**0.6**	**0.3**
Salicylate	300	**150**	**75**
Flecainide	0.8	**0.4**	**0.2**