

Medication Concentrations in Critical Care Areas

The Intensive Care Society supports the adoption of standard concentrations and endorses the recommendations of a multi-professional group who have published a list of concentrations with wide acceptance by critical care for this purpose^{1,2}.

Standardising to these concentrations represents a significant step towards improving both patient safety and efficient use of resources within critical care. It also facilitates the production of a national injectables guide to provide the end user with the information necessary to safely administer such medications.

A list of medications, typical infusion composition and standard concentrations follows

Medication	Infusion Composition	Concentration
Morphine	50mg in 50ml	1mg/ml
	100mg in 50ml	2mg/ml
Fentanyl	2.5mg in 50ml	50micrograms/ml
Alfentanil	25mg in 50ml	500micrograms/ml
Midazolam	50mg in 50ml	1mg/ml
	100mg in 50ml	2mg/ml
Clonidine	750micrograms in 50ml	15micrograms/ml
Noradrenaline	4mg in 50ml	80micrograms/ml
	8mg in 50ml	160micrograms/ml
	16mg in 50ml	320micrograms/ml
	8mg in 100ml	80micrograms/ml
	16mg in 100ml	160micrograms/ml
	32mg in 100ml	320micrograms/ml
Dobutamine	250mg in 50ml	5mg/ml
	500mg in 100ml	5mg/ml
Dopamine	200mg in 50ml	4mg/ml
	400mg in 50ml	8mg/ml
Arginine Vasopressin	20units in 50ml	0.4units/ml
Amiodarone (Load)	300mg in 50ml	6mg/ml
	300mg in 100ml	3mg/ml
Amiodarone (continuation...)	300mg in 50ml	6mg/ml
	600mg in 50ml	12mg/ml
	900mg in 50ml	18mg/ml
	300mg in 500ml	0.6mg/ml
	600mg in 500ml	1.2mg/ml
	900mg in 500ml	1.8mg/ml
Vecuronium	50mg in 50ml	1mg/ml
	100mg in 50ml	2mg/ml
Heparin	20000units in 20ml	1000units/ml
	25000units in 25ml	1000units/ml
Epoprostenol	100000nanograms in 50ml	2000nanog/ml
Magnesium Sulphate	20mmol in 50ml	0.4mmol/ml
	20mmol in 100ml	0.2mmol/ml
Insulin	50units in 50ml	1unit/ml

The adoption of these is recommended, not mandated. It is anticipated that pharmaceutical manufacturers will begin to prepare ready to use and ready to administer products based on this list.

1. M Borthwick, J Woods, S Keeling, P Keeling, C Waldmann A survey to inform standardisation of intravenous medication concentrations in critical care, The Journal of the Intensive Care Society. 2007; 8: 92-96 ([Link](#))
2. M Borthwick, S Keeling, P Keeling, K Scales, C Waldmann Towards standardisation of drug infusion concentrations in UK critical care units, The Journal of the Intensive Care Society, 2009; 10: 197-200 ([Link](#))