

## Medication Concentrations in Adult Critical Care Areas

The Intensive Care Society and Faculty of Intensive Care Medicine support the adoption of standard concentrations and endorse the recommendations of a multi-professional group who have published a list of concentrations with wide acceptance by critical care for this purpose<sup>1,2,3</sup>.

Standardising 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<sup>4</sup>.

Medication	Example Infusion Composition	Concentration	Central or Peripheral
<b>Morphine</b>	50mg in 50mL	1mg/mL	C / P
	100mg in 50mL	2mg/mL	C / P
<b>Fentanyl</b>	2.5mg in 50mL	50micrograms/mL	C / P
<b>Alfentanil</b>	25mg in 50mL	500micrograms/mL	C / P
<b>Remifentanyl</b>	2mg in 40mL	50micrograms/mL	C / P
	5mg in 50mL	100micrograms/mL	C / P
<b>Midazolam</b>	50mg in 50mL	1mg/mL	C / P
	100mg in 50mL	2mg/mL	C / P
<b>Clonidine</b>	750micrograms in 50mL	15micrograms/mL	C / P
<b>Dexmedetomidine</b>	200micrograms in 50mL	4micrograms/mL	C / P
	400micrograms in 50mL	8micrograms/mL	C / P
<b>Adrenaline</b>	4mg in 50mL	80micrograms/mL	C
	8mg in 50mL	160micrograms/mL	C
	16mg in 50mL	320micrograms/mL	C
	8mg in 100mL	80micrograms/mL	C
	16mg in 100mL	160micrograms/mL	C
	32mg in 100mL	320micrograms/mL	C
<b>Noradrenaline</b>	4mg in 50mL	80micrograms/mL	C
	8mg in 50mL	160micrograms/mL	C
	16mg in 50mL	320micrograms/mL	C
	8mg in 100mL	80micrograms/mL	C
	16mg in 100mL	160micrograms/mL	C
	32mg in 100mL	320micrograms/mL	C
<b>Dobutamine</b>	250mg in 50mL	5mg/mL	C
	500mg in 100mL	5mg/mL	C
<b>Dopamine</b>	200mg in 50mL	4mg/mL	C
	400mg in 50mL	8mg/mL	C
<b>Vasopressin (Argipressin)</b>	20units in 50mL	0.4units/mL	C / P
<b>Amiodarone (Load)</b>	300mg in 50mL	6mg/mL	C
	300mg in 100mL	3mg/mL	C
<b>Amiodarone (continuation...)</b>	300mg in 50mL	6mg/mL	C
	600mg in 50mL	12mg/mL	C
	900mg in 50mL	18mg/mL	C
	300mg in 500mL	0.6mg/mL	C / (P)*
	600mg in 500mL	1.2mg/mL	C / (P)*
	900mg in 500mL	1.8mg/mL	C / (P)*
<b>Heparin<sup>5</sup></b>	20000units in 20mL	1000units/mL	C / P
	25000units in 25mL	1000units/mL	C / P
<b>Magnesium Sulphate</b>	20mmol in 50mL	0.4mmol/mL	C
	20mmol in 100mL	0.2mmol/mL	C / P
	20mmol in 250ml	0.08mmol/mL	C / P
<b>Phosphate</b>	20mmol in 50mL	0.4mmol/mL	C
	40mmol in 100mL	0.4mmol/mL	C
	50mmol in 500mL	0.1mmol/mL	C / P
<b>Insulin<sup>6</sup></b>	50units in 50mL	1unit/mL	C / P
<b>Epoprostenol</b>	The formulation of Flolan™ has <i>changed</i> . Different formulations in circulation. Consult package insert.		

\*(P) – Short term use only, high risk of phlebitis

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.

## References

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](#))
3. YD Titiesari, G Barton, M Borthwick, S Keeling, P Keeling Infusion medication concentrations in UK's critical care areas: Are the Intensive Care Society's recommendations being used?, The Journal of the Intensive Care Society, 2017 ([Link](#))
4. Medusa Injectables Guide ([Link](#))
5. NPSA Patient Safety Alert (18): Actions that can make anticoagulation therapy safer, 2007 ([Link](#))
6. NPSA Rapid Response Alert (013): Safer administration of insulin, 2010 ([Link](#))