

Standard Concentrations of Neonatal Drug Infusions

A collaborative effort between the Institute for Safe Medication Practices (ISMP) and Vermont Oxford Network (VON)

The drug concentrations provided below are the result of a national effort to create standard concentrations for typical neonatal drug infusions that could be used across all US hospitals for at least 80% of neonatal infusions. (The other 20% of infusions may require different concentrations based on the unique needs of the neonate.) ISMP and the Vermont Oxford Network (VON), a nonprofit voluntary group of healthcare professionals working to improve newborn care, collaborated with representatives from neonatal intensive care units in the US to identify and promote the standard concentrations of typical neonatal drug infusions listed in the table that follows. Some drugs include two standard concentrations to accommodate various weights of neonates, including low-birth-weight infants.

The safety benefits of all hospitals using the same standard concentrations whenever possible for neonates are vast and include the following:

- Reduce medication error risk when critically-ill neonates are transferred from one facility to another
- Stimulate development of standardized infusion device drug libraries
- Provide the demand necessary for manufacturers to offer commercially prepared standard solutions (if not already available), thereby reducing the risk of extemporaneous compounding errors within hospitals.

We urge all hospitals where neonates are treated to join our national effort to reduce the risk of harmful errors when caring for our tiniest patients!

Standard Concentrations of Neonatal Drug Infusions

Drug	Type(s) of Infusions	Recommended Concentrations*
acyclovir	intermittent infusion**	7 mg/mL
alprostadil	continuous infusion	10 mcg/mL
amphotericin B	intermittent infusion**	0.1 mg/mL
amphotericin B liposomal	intermittent infusion**	1 mg/mL
ceFAZolin	intermittent infusion**	100 mg/mL
cefotaxime	intermittent infusion**	100 mg/mL
clindamycin	intermittent infusion**	6 mg/mL
digoxin	intermittent infusion**	20 mcg/mL
		100 mcg/mL
DOBUtamine	continuous infusion	2,000 mcg/mL
DOPamine	continuous infusion	1,600 mcg/mL
EPINEPHrine	continuous infusion	10 mcg/mL
fentaNYL	continuous or intermittent infusion**	10 mcg/mL
fluconazole	intermittent infusion**	2 mg/mL
furosemide	continuous or intermittent infusion**	2 mg/mL
		10 mg/mL
gentamicin	intermittent infusion**	2 mg/mL
		10 mg/mL
heparin (in 0.45% NaCl)	continuous infusion for line patency	0.5 unit/mL
insulin (regular)	continuous infusion	0.1 unit/mL
		0.5 unit/mL
metroNIDAZOLE	intermittent infusion**	5 mg/mL
midazolam	continuous and intermittent infusion**	0.5 mg/mL (continuous infusion)
		1 mg/mL (intermittent infusion** preservative free)
morphine	continuous and intermittent infusion**	0.1 mg/mL (continuous or intermittent infusion**)
		0.5 mg/mL (intermittent infusion**)
norepinephrine	continuous infusion	16 mcg/mL
PHENobarbital	intermittent infusion**	10 mg/mL
		65 mg/mL
vancomycin	intermittent infusion**	5 mg/mL

*Blue **bolded** concentration is commercially available

**Intermittent infusions are typically administered over 15-30 minutes