The Infusion Pump

Dear Editor,

The infusion pump is a useful device now available in most service hospitals, however it is largely underutilised probably due to complex calculations involved. A ready reckoner in tabular form as shown below should be of help in the intensive care units and acute wards. The table lists most common emergency drugs and has been calculated for a 60 kg patient. While the infusion is

in progress the infusion rate of most drugs will have to be titrated against the patient response. I would welcome comments from intensivists and others on applicability of such a table.

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Infusion pump protocol for common emergency drugs

Drug	Diluent	Available strength	Loading dose (IV)	Standard infusion dose (for 60kg)	Amount for 50 ml syringe	Infusion rate to be entered	Indications
Amiodarone	NS/D5W	50 mg/ml, 3ml amp	300 mg rapid in 20-30ml diluent	1 mg/min x 6hrs, then 0.5 mg/min to max dose 2gm	150 mg (3 ml)	20 ml/hr, then 10ml/hr	VT, SVT
Atropine	NS/D5W	1 ml amp, 0.6 mg/amp	Nil	8 mg/hr	8 mg (13-14 amp)	50ml/hr	OP poisoning
Diazepam	NS/D5W	2ml amp, 5 mg/ml	0.2 mg/kg at 5 mg/min	0.12 mg/min	10 mg (2ml)	40 ml/hr	Status epilepticus
Diltiazem	NS/D5W	5 mg/ml, 5ml amp	0.25 mg/kg, rpt 0.35 mg/kg	5-15 mg/hr	25 mg (5ml)	10-30 ml/hr	AF, Af, MAT, SVT
Dobutamine	NS/D5W	5ml amp, 50mg/ml	Nil	3-20mcg/kg/min	250mg (5ml)	2.16-14.4 ml/hr	Heart failure*
Dopamine	NS/D5W	5ml amp, 40mg/ml	Nil	2-8mcg/kg/min	200mg (5ml)	1.8ml-7.2ml/hr	Heart failure*
Heparin	NS/D5W	25000u/5ml vial	10,000 units	1000 unit/hr	25000 units (5ml)	2ml/hr	PE, AMI, UA
Insulin	NS	40 U/ml vial	10-15 units	6 units/hr	40 units	7.5 ml/hr	DKA*, NKHS*
Lidocaine	NS/D5W	50ml vial, 20 mg/ml	1 mg/min	1-4 mg/min	200 mg, 10 ml	15-60 ml/hr	VT
Midazolam	NS/D5W	1ml amp, 5 mg/ml	0.2 mg/kg at 5mg/min	0.75mcg/kg/min-10 mcg/kg/min	50mg, 10ml	2.7ml-36ml/hr	Status epilepticus
Nitroglycerine	NS/D5W	5ml amp, 5mg/ml	Nil	10mcg/min	10mg (2 ml)	3ml/hr	AMI*, UA*, Severe HTN*
Nitroprusside	D5W only	50mg/ml, 5ml vial	Nil	0.25-10mcg/kg/min	50mg (1ml)	0.9-36ml/hr	Severe HTN*
Propofol	NS/D5W	10ml, 20 mg/ml	1-2mg/kg	2-10 mg/kg/hr	100mg, 5ml	1.2-6ml/hr	Status epilepticus

VT - Ventricular tachycardia, SVT - Supraventricular tachycardia, AF - Atrial fibrillation, A fl - Atrial flutter, OP - Organophosphorous, PE - Pulmonary embolism, UA - Unstable angina, AMI - Acute myocardial infarction, MAT - Multifocal atrial tachycardia, DKA - Diabetic ketoacidosis, NKHS - Nonketotic hyperosmolar syndrome, HTN - Hypertension, NS - Normal saline, D5W - 5% dextrose

For convenience loading and bolus doses may be given separate manually

* Titrate to effect

Answers to MCQs

1 - a	2 - a	3 - d	4 - b	5 - c
6 - b	7 - c	8 - c	9 - d	10 - a
11 - c	12 - c	13 - d	14 - b	15 - a
16 - c	17 - d	18 - b	19 - a	20 - c
21 - d	22 - b	23 - c	24 - b	25 - b