1. Purpose and scope

To facilitate the safe and effective use of dobutamine in the Neonatal Intensive Care Unit (NICU).

2. Drug

Drug	**Dobutamine**
Drug action	Dobutamine is a synthetic catecholamine with primarily β_1 adrenergic activity. It is an inotropic vasopressor. It increases myocardial contractility, cardiac index, oxygen delivery and oxygen consumption.[1] Dobutamine must be administered by continuous infusion due to rapid hepatic metabolism of the drug to an inactive compound. The onset of action is 1-2 minutes after IV administration with the peak effect occurring in 10 minutes. The half-life of its drug effect is 2 minutes.[2]
Indications	To improve cardiac output by providing blood pressure support in infants with shock and hypotension[2]
Description	Dobutamine hydrochloride; clear colourless solution containing dobutamine 250mg/20mL (12.5mg/ml) pH of undiluted dobutamine solution is 2.5-5.5.[3]
Route	Continuous IV infusion via central line. Use cannula in large vein if no central access available[1,4]
Dose	2-20mcg/kg/min by continuous IV infusion. [1,2,4]
Contraindications	• Hypersensitivity to sympathomimetic amines and sodium metabisulfite[2]
Precautions	• Hypovolaemia should be corrected prior to commencing drug[2] • Uncorrected tachyarrhythmia[2] • Caution in infants with hypertension, LV outflow tract obstruction[2] • Dobutamine injection contains sodium bisulfite which may cause allergic reaction[3]
Compatibilities & Incompatibilities	• Compatible with sodium chloride 0.9%, glucose 5% or glucose 10% [1,6] • Compatible at Y injection site with dopamine, morphine, insulin and TPN[2] • Incompatible with sodium bicarbonate and any strongly alkaline solution[3],[5] • Do NOT mix with any other drug, blood or blood products[2]
Adverse effects	• Venous irritation, soft tissue injury at site of IV infusion[1] • May cause hypotension if patient is hypovolaemic[2] • Tachycardia at high dosage[1] • Arrhythmias, hypertension especially systolic pressure and cutaneous vasodilatation[1]

3. Administration

Competency for administration	This procedure is carried out by, or under, the direct supervision of a registered nurse/ registered midwife who holds generic IV certification **and** Neonatal specific certifications NCV/NAC and NIC2.

Preparation & Administration	**Dilution**: dilute as per 'NICU Drugs' computer software available on all desktops in the NICU. If this resource unavailable, dilute as per the default dilution below: Dilute 30mg/kg (2.4mL/kg) dobutamine up to **20mL** with compatible fluid and mix well. **Infusion rate:** 0.1mL/hr = 2.5micrograms/kg/min **Concentration:** Solution strength should not routinely exceed 5mg/mL[6], however stronger solutions have been used if fluid restricted **NOTE**: Filter through a PALL (0.2 micron) filter prior to administration Solution can discolour (pink) but may still be used[6]
Observations and management	• Continuous blood pressure and cardiorespiratory monitoring • Document vital signs hourly and as required • Monitor for adverse effects and/or possible allergic reaction • Observe IV site for signs of extravasation • Monitor urine output • Do NOT flush line
Special considerations	• Volume loading is recommended before commencing dobutamine infusion[2] • Renal dysfunction – no dosage adjustment necessary[4]
Storage	• Store at room temperature <25°C.[3] • Protect from light[3] • After dilution in compatible IV fluid, solution should be discarded if not used within 24 hours.[6] • Solution can be kept in the original vial in the fridge for up to 24 hours once first accessed

4. Guardrails Information[8]

Guardrails Drug Name Dobutamine
Pump CC

	0.4-1kg	1-2kg	2-3kg	3-5kg
Concentration (mg/mL)				
Minimum	0.6	1	2	3
Maximum	3	6	9	15
Administration Rate (mcg/kg/min)				
Soft minimum	2	2	2	2
Default	5	5	5	5
Soft maximum	20	20	20	20
Hard maximum	30	30	30	30

5. References

1 Micromedex® 1.0 (Healthcare Series), (electronic version). Paediatrics and Neofax - Dobutamine. Truven Health Analytics, Greenwood Village, Colorado, USA. Last accessed 03 March 2015. Available from : http://www.micromedexsolutions.com/

2 Auckland NICU Drug Protocols – Dobutamine, November 2011. Available from: http://www.adhb.govt.nz/newborn/DrugProtocols/Default.htm Last accessed 8 April 2015.

3 The New Zealand Medicines and Medical Devices Safety Authority (Medsafe): Dobutamine Hydrochloride Injection, Data sheet -New Zealand. Last accessed 8 April 2015. Available from http://www.medsafe.govt.nz/profs/datasheet/d/Dobutaminehydrochlorideinj.pdf

4 Phelps SJ, Hak EB, Crill CM, editors. Teddy Bear Book: Pediatric Injectable Drugs. 9th Edition. Dobutamine. Bethesda, MD: American Society of Health-System Pharmacists; 2010.

5 The New Zealand Formulary Editorial Team. New Zealand Formulary for Children (electronic version – v33 – 01 March 2015). Dobutamine. New Zealand Formulary, NZ. Last accessed 08 April 2015. Available from http://nzfchildren.org.nz/nzf_3436

6 New Zealand Hospital Pharmacists Association: Notes on Injectable Drugs, 6th Edition, Dobutamine. Published 2010, Wellington NZ.

7 The Royal Children's Hospital Melbourne: Paediatric Injectable Guidelines 4th Edition, Dobutamine. Published July 2011, Melbourne Australia.

8 Guardrails Data Sheets, Waikato Hospital, Hamilton, NZ April 2015.