

## GUIDELINE FOR DOSING, PREPARATION AND ADMINISTRATION OF DINOPROSTONE INFUSION FOR NEONATES

### 1 Introduction

Dinoprostone is a vasodilator that can maintain patency of the arterial duct. Thus in infants with congenital cardio-pulmonary defects that restrict pulmonary or systemic blood flow, the drug may sustain pulmonary and systemic perfusion until corrective or palliative surgery can be performed.

**Note: The decision to commence Dinoprostone infusion in a newly presenting cardiac patient should be taken after consultation with a Consultant Paediatric Cardiologist or Paediatric Intensivist.**

### 2 Dosing of Dinoprostone Infusion

A dose of 5-10 nanogram/kg/min (0.005-0.01 microgram/kg/min) is usually sufficient. At a consultant paediatric cardiologist's discretion, a higher dose may be used.

### 3 Preparation of Dinoprostone Infusion 50 microgram/ 50mL (using Prostin® E2 1mg/mL ampoule)

- Dinoprostone is prepared as a standard concentration infusion of **50microgram/50mL**
- A fresh solution must be prepared every 24 hours
- Ensure dose and dilution on the prescription are correct

#### Method of Preparation:

1. Each 500mL bag of glucose 5%w/v contains an overage of 30mL\*, therefore the total bag volume is 530mL. Withdraw 30mL from the 500mL bag of glucose 5%w/v and discard.
2. Draw up 0.5mL of Prostin® E2 1mg/mL (Dinoprostone) ampoule in a 1mL syringe (0.5mg = 500microgram).
3. Add this solution into the 500mL bag of Glucose 5%w/v (from step 1).
4. **NB** Invert bag at least 10 times to disperse the Dinoprostone solution evenly. If concentrated Dinoprostone solution remains in the neck of the bag, there is a risk of the patient getting an incorrect dose.  
 Note: This bag now contains Dinoprostone 500microgram/500mL = 1microgram/mL = 50microgram/50mL
5. Draw up 50ml of diluted Dinoprostone solution into a 50mL syringe that is compatible with syringe pump.
6. Attach extension set/IV giving set and prime with diluted Dinoprostone solution. NOTE: An anti-siphon valve is NOT required when using a B. Braun Perfusor® Infusion Pump as it has an integrated piston brake.
7. Attach completed label detailing the drug details and patient details as per local policy.

Unit Conversion			
1 nanogram = 0.001microgram	1000nanogram = 1microgram	1 microgram = 0.001mg	1000microgram = 1mg

\* NB: 30mL overage refers to Baxter® Viaflo 500mL IV fluid bag. If an IV fluid bag other than Baxter® Viaflo is in use, please ensure the correct overage (as per manufacturer) is removed before beginning infusion preparation.

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### 4 Administration of Dinoprostone

#### 4.1 In centres **with access** to the National Neonatal and Paediatric Standard Concentration Infusion (SCI) Drug Library:

The prepared Dinoprostone infusion should be programmed and administered via the drug library available on B.Braun Perfusor® Space pumps. Reference to the current SCI table and/or CHI's Paediatric Formulary should be made. Note: At the time of publication, the Neonatal Drug Library Version 1.1 and Paediatric Drug Library Version 5 are in use. Please verify table below against current SCI tables.

Drug Line	Weight Band	Standard Concentration Infusion (SCI)	Default Dose and Rate Calculator <i>All Weights in kg - rounding can occur</i>	
			Default dose on pump	Default rate (mL/hr)
Dinoprostone	All ≤10kg	50microgram/50mL	5 nanogram/kg/min	0.3 x Wt
		in Glucose 5%w/v ONLY		

#### 4.2 In centres **without access** to a Children's Health Ireland Drug Library:

The prepared Dinoprostone infusion should be programmed via a suitable rate-controlled syringe driver with reference to the table below. Most birth weights are accommodated; where an infant's weight falls in between two values on the table, round up to the nearest weight on the table. For infants weighing less than 1.3kg or greater than 4.7kg, please discuss with a cardiologist. **A manual calculation check should also be performed – see example below.**

DOSE	WEIGHT & RATE				
<b>Dose</b>	<b>1.5kg</b>	<b>1.75kg</b>	<b>2kg</b>	<b>2.25kg</b>	<b>2.5kg</b>
5 nanogram/kg/min (0.005 microgram/ kg/min)	450 nanogram/hr (0.45microgram/hr) = <b>0.4 mL/hr</b>	500 nanogram/hr (0.5 microgram/hr) = <b>0.5 mL/hr</b>	600 nanogram/hr (0.6 microgram/hr) = <b>0.6 mL/hr</b>	700 nanogram/hr (0.7 microgram/hr) = <b>0.7 mL/hr</b>	750 nanogram/hr (0.75 microgram/hr) = <b>0.7 mL/hr</b>
10 nanogram/kg/min (0.01 microgram/ kg/min)	900 nanogram/hr (0.9 microgram/hr) = <b>0.9 mL/hr</b>	1000 nanogram/hr (1 microgram/hr) = <b>1 mL/hr</b>	1200 nanogram/hr (1.2 microgram/hr) = <b>1.2 mL/hr</b>	1300 nanogram/hr (1.3 microgram/hr) = <b>1.3 mL/hr</b>	1500 nanogram/hr (1.5 microgram/hr) = <b>1.5 mL/hr</b>
<b>Dose</b>	<b>2.75kg</b>	<b>3kg</b>	<b>3.25kg</b>	<b>3.5kg</b>	<b>3.75kg</b>
5 nanogram/kg/min (0.005 microgram/ kg/min)	800 nanogram/hr (0.8 microgram/hr) = <b>0.8 mL/hr</b>	900 nanogram/hr (0.9 microgram/hr) = <b>0.9 mL/hr</b>	1000 nanogram/hr (1 microgram/hr) = <b>1 mL/hr</b>	1000 nanogram/hr (1 microgram/hr) = <b>1 mL/hr</b>	1000 nanogram/hr (1 microgram/hr) = <b>1 mL/hr</b>
10 nanogram/kg/min (0.01 microgram/ kg/min)	1600 nanogram/hr (1.6 microgram/hr) = <b>1.6 mL/hr</b>	1800 nanogram/hr (1.8 microgram/hr) = <b>1.8 mL/hr</b>	1900 nanogram/hr (1.9 microgram/hr) = <b>1.9 mL/hr</b>	2100 nanogram/hr (2.1 microgram/hr) = <b>2.1 mL/hr</b>	2200 nanogram/hr (2.2 microgram/hr) = <b>2.2 mL/hr</b>
<b>Dose</b>	<b>4kg</b>	<b>4.25kg</b>	<b>4.5kg</b>		
5 nanogram/kg/min (0.005 microgram/ kg/min)	1200 nanogram/hr (1.2 microgram/hr) = <b>1.2 mL/hr</b>	1300 nanogram/hr (1.3 microgram/hr) = <b>1.3 mL/hr</b>	1300 nanogram/hr (1.3 microgram/hr) = <b>1.3 mL/hr</b>		
10 nanogram/kg/min (0.01 microgram/ kg/min)	2400 nanogram/hr (2.4 microgram/hr) = <b>2.4 mL/hr</b>	2500 nanogram/hr (2.5 microgram/hr) = <b>2.5 mL/hr</b>	2700 nanogram/hr (2.7 microgram/hr) = <b>2.7 mL/hr</b>		

#### MANUAL CALCULATION EXAMPLE: 3kg infant requiring Dinoprostone 10nanogram/kg/min

*This should be prescribed as "Dinoprostone 50microgram in 50mL glucose 5%w/v".*

Calculate infusion rate:

10nanogram/kg/min = 10nanogram x 3kg = 30 nanogram per min = (30 x 60) nanogram per hour = **1800 nanogram per hour**

Infusion is 50microgram in 50 mL = 1microgram / 1mL = **1000 nanogram / 1mL**

Dose required 1800nanogram per hour, so rate should be 1800 ÷ 1000 = **1.8mL / hour**

Thus infusion should be prescribed and run at 1.8 mL per hour