

# PROSTAGLANDIN INFUSION

## INDICATIONS

To achieve and/or to maintain patency of ductus arteriosus in critical congenital heart defects with duct dependent systemic or pulmonary circulations

## DOSAGE

- Ranges from 5–50 nanogram/kg/min (higher doses may be used on recommendation of a tertiary specialist)
- Starting dose depends upon time of diagnosis and condition of baby:
  - antenatal diagnosis of duct dependent lesion – start at 5 nanogram/kg/min
  - well but cyanosed baby with normal pH – start at 5–10 nanogram/kg/min
  - well baby with poorly palpable pulses but normal pH – start at 10–15 nanogram/kg/min
  - acidotic or unwell baby with suspected duct dependent lesion – start at 50 nanogram/kg/min
- If not achieving desired response at the lower dose – increase dose rapidly

### Desired response

- Suspected left-sided obstruction:
  - aim for palpable pulses, normal pH and lactate <2 mmol/L
- Suspected right-sided obstruction:
  - aim for SpO<sub>2</sub> 75–85% and lactate <2 mmol/L
- Suspected or known transposition of the great arteries (TGA):
  - aim for SpO<sub>2</sub> >75% and lactate <2 mmol/L
  - urgently liaise with neonatal consultant, cardiologist and KIDS NTS team
  - monitor for side effects

## PREPARATIONS

### Dinoprostone infusion

- **Dinoprostone (prostaglandin E<sub>2</sub>) is the recommended prostaglandin\***
- make a solution of 500 microgram in 500 mL by adding 0.5 mL of dinoprostone 1 mg in 1 mL to a 500 mL bag of suitable diluent (glucose 5% , or sodium chloride 0.9%)
- transfer 50 mL of this solution into a 50 mL Luer lock syringe and label
- discard the 500 mL bag immediately into clinical waste – single patient and single dose use only
- infusion rate: 0.3 mL/kg/hr = 5 nanogram/kg/min delivered continuously (short half-life)
- **Stability:**
  - syringe stable for 24 hr, after which fresh solution must be made
- **Administration:**
  - infuse dinoprostone via separate line
  - ensure 2 working points of IV access at all times
  - infusions can be given via long line, umbilical venous catheter or peripheral venous cannula
  - extravasation can cause necrosis – use central access if available
- **Flush:**
  - sodium chloride 0.9% at same rate as infusion

\*If dinoprostone IV not available, use alprostadil (prostaglandin E<sub>1</sub>) IV as alternative (see **Neonatal Formulary**)

### Oral dinoprostone (see *Neonatal Formulary*)

- Used temporarily on very rare occasions when unable to get intravenous access despite appropriate escalation
- Discuss with cardiac centre
- Use dinoprostone injection orally
- May not be as effective as prostaglandin IV

## **SIDE EFFECTS**

### **Common**

- Apnoea – tends to occur in first hour after starting prostaglandin or when dose increased. Consider intubation and ventilation if unwell or has recurrent episodes of apnoea, but do not reduce infusion dose (see **Intubation** guideline)
- Hypotension – due to systemic vasodilatation. Consider sodium chloride 0.9% 10 mL/kg bolus
- Fever
- Tachycardia
- Hypoglycaemia

### **Uncommon**

- Hypothermia
- Bradycardia
- Convulsions
- Cardiac arrest
- Diarrhoea
- Disseminated intravascular coagulation (DIC)
- Gastric outlet obstruction
- Cortical hyperostosis and gastric hyperplasia (on prolonged use)

## **MONITOR**

- Heart rate
- Blood pressure
- Respiratory rate
- Temperature
- Oxygen saturations
- Blood gases
- Blood glucose and lactate

## **TRANSFER OF BABY RECEIVING PROSTAGLANDIN INFUSION**

- Contact local retrieval team for transport of baby to cardiac centre (e.g. for Birmingham Children's Hospital – contact KIDS NTS team on 0300 200 1100)
- Keep baby nil-by-mouth for transfer
- In a well baby on prostaglandin  $\leq 10$  nanogram/kg/min, risk of apnoea is low