PROSTAGLANDIN INFUSION

INDICATIONS

To achieve and or to maintain patency of ductus arteriosus and optimise systemic perfusion

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 according to formulary - Increase by 5 nanogram/kg/ minute to maximum of 100 nanogram/kg/minute under direction from specialist cardiac centre

Desired response

- Suspected left-sided obstruction:
  - aim for palpable pulses, normal pH and lactate <2 mmol/L
- Suspected right-sided obstruction:
  - aim for SpO_2 75–85% and lactate <2 mmol/L
- Suspected or known transposition of the great arteries (TGA):
  - aim for SpO_2 >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_2) 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 10%, or sodium chloride 0.45% or 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 or peripherally
  - extravasation can cause necrosis – use central access if available
  - umbilical venous line can be used, but only if all other points of access have been exhausted [cardiac unit may need umbilical venous catheterisation (UVC)]
- **Flush:**
  - sodium chloride 0.9% at same rate as infusion

*If dinoprostone IV not available, use alprostadil (prostaglandin E_1) IV as alternative (see **Neonatal Formulary**)

Oral dinoprostone (see *Neonatal Formulary*)
- Used temporarily on very rare occasions when IV access is extremely difficult
- Discuss with cardiac centre before using
- 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 apnoeas, 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
- Gastric hyperplasia (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 ≤10 nanogram/kg/min, risk of apnoea is low