ALPROSTADIL (prostaglandin E₁)

**Indication**
- Temporarily maintain patency of ductus arteriosus¹
- Use with ductal dependent congenital heart defects¹
- Can be considered for reducing right ventricular afterload in persistent pulmonary hypertension²,³

**Presentation**
- Ampoule: 500 microgram in 1 mL (500,000 nanogram in 1 mL)

**Dosage (initial)**
- 0.01–0.02 microgram/kg/minute (10–20 nanogram/kg/minute)
  - Titrate according to response in consultation with paediatric cardiologist

**Dosage (maintenance)**
- Usual range 0.01–0.02 microgram/kg/minute (10–20 nanogram/kg/minute)
  - Can be given at range of 0.005–0.1 microgram/kg/minute (5–100 nanogram/kg/minute)⁴

**Special considerations**
- For dosages greater than 0.02 microgram/kg/minute (20 nanograms/kg/minute)
  - Consult with paediatric cardiologist first
  - Apnoea is common and intubation may be required
- Caution
  - If bleeding disorders¹
  - If respiratory distress syndrome¹
  - Preferentially, continuous infusion via large vein¹ and dedicated IV line

**Monitoring**
- Continuous cardio-respiratory monitoring (apnoea frequent side-effect)¹
- BP¹, temperature, pulse oximetry
- Improvement in blood oxygenation, systemic BP and blood pH demonstrates efficacy¹
- Extravasation risk: can cause tissue sloughing and necrosis⁵

**Compatibility**
- Fluids
  - 5% glucose⁵, 0.9% sodium chloride⁵
- Y-site
  - Do not give other drugs via same line

**Incompatibility**
- No information⁵

**Interactions**
- Concurrent use with heparin may result in increased risk of bleeding⁶

**Stability**
- Undiluted solution
  - Store in refrigerator at 2–8 °C¹
  - If undiluted alprostadil comes into contact with plastic, the solution may turn hazy and must then be discarded⁴
- Diluted solution
  - Stable for 24 hours at 25 °C, then discard¹
Side effects

- Blood pathology: disseminated intravascular coagulation (DIC)\(^1\)
- Circulatory: hypotension\(^1\), bradycardia\(^1\), tachycardia\(^1\), cardiac arrest\(^1\), oedema\(^1\)
- Digestive: diarrhoea\(^1\), gastric outlet obstruction secondary to antral hyperplasia\(^1\) (prolonged treatment)
- Musculo-skeletal: widened fontanels, pretibial and soft tissue swelling (associated with prolonged duration)\(^1\)
- Nervous: cutaneous flushing (related to infusion rate)\(^1\), fever\(^1\), urticaria\(^2\), seizures\(^7\)
- Respiratory: apnoea appearing during first hour of infusion (more common in babies weighing less than 2 kg)\(^1\)

Actions

- Causes vasodilation of all arterioles (i.e. ductus arteriosus as well as ductal tissue surrounding the duct)\(^7\)
- Inhibits platelet aggregation\(^7\)
- Short half-life of 5–10 minutes necessitates infusion rather than bolus administration\(^1\)
- Maximum effect observed within 96 hours after birth\(^1\)

Abbreviations

BP: blood pressure, DIC: disseminated intravascular coagulation

Keywords

Prostaglandin E1, Prostin VR, alprostadil, PDA, patent ductus arteriosus, duct dependent congenital heart defect, PGE1

The Queensland Clinical Guideline Neonatal Medicines is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

References


Document history

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