ALPROSTADIL (Prostaglandin E1)

Read in conjunction with Disclaimer

HIGH RISK Medication

Alert 1 microgram = 1000 nanograms

Formulary: Highly Restricted Requires Neonatologist approval before commencing	
Presentation	**Ampoule:** 500 microgram/mL
Classification	Prostaglandin
Indication	To maintain patency of ductus arteriosus in neonates with congenital heart defects dependent on ductal shunting for oxygenation and perfusion until surgery can be performed
Contraindications	• Hypersensitivity to alprostadil or any component of the formulation. • Persistent foetal circulation or anomalous pulmonary venous return below the diaphragm • Respiratory distress syndrome / hyaline membrane disease • Neonates with polysplenia or asplenia in whom pulmonary atresia is combined with anomalous pulmonary venous return which may be obstructed. Alprostadil may precipitate pulmonary oedema because of increased pulmonary blood flow in these patients
Monitoring	Blood pressure, respiratory rate, heart rate, temperature, pO_2, ECG, urine output and peripheral perfusion. For high doses of therapy with greater than 120 hours of treatment there is an increased risk of antral hyperplasia, gastric outlet obstruction or cortical hyperostosis (e.g. widening fontanelles)
Compatibility	**Fluids:** Sodium Chloride 0.9%, Glucose 5%, Glucose 10% Refer to KEMH Neonatal Medication Guideline: Y-Site IV Compatibility in Neonates
Incompatibility	There is no available information for stability of combining alprostadil with diluents that contain heparin in a syringe. However, alprostadil is stable with heparin through a Y-site.
Interactions	Concomitant administration with heparin may result in an increased risk of bleeding

Side Effects	**Common:** flushing, apnoea, fever
	Infrequent: back pain, bradycardia, cardiac arrest, cough, diarrhoea, dizziness, flu-like symptoms, hypertension, hypokalaemia, hypotension, headache, disseminated intravascular coagulation, local pain (in structures other than the injection site), oedema, nasal congestion, sinusitis, seizures, tachycardia, upper respiratory tract infection
	Rare: Anaemia, anuria, bradypnoea, cardiac failure, cerebral haemorrhage, gastroesophageal reflux disease, haematuria, haemorrhage, hyperbilirubinemia, hyperaemia, hyperirritability, hyperkalaemia, hypoglycaemia, hypothermia, jitteriness, lethargy, neck hyperextension, peritonitis, second degree atrioventricular block, shock, stiffness, supraventricular tachycardia, thrombocytopenia, ventricular fibrillation, wheezing (bronchial)
Storage & Stability	**Ampoule:** Store at 2 to 8°. Do not freeze. **Infusion solution:** Stable for 24 hours at 25°C.
Comments	If undiluted alprostadil comes into direct contact with plastic, the solution may turn hazy and must be discarded if this occurs.

INTRAVENOUS INFUSION

Presentation	**Ampoule:** 500 microgram/mL ***Infusion available from CIVAS (KEMH and PCH)***

Dosage	**Doses are expressed in nanograms.**
	1 microgram = 1000 nanograms.
	Starting Dose:
	10 to 50 nanograms/kg/minute
	• Adjust in increments of 5 nanograms/kg/minute according to response.
	• If effective within 30 minutes, contact cardiologist for review of dose
	  • Renal impairment: nil dosage adjustment
	  • Hepatic impairment: nil dosage adjustment

	Maintenance Dose: 2.5 to 10 nanograms/kg/minute • Aim for the lowest dose that maintains ductal patency
Preparation	**LOW CONCENTRATION: 10 nanograms/kg/minute** ***Note:*** *when undiluted alprostadil comes into direct contact with plastic, the solution may turn hazy and must be discarded if this occurs.* **First Dilution:** • Draw up 1 mL (500 microg) of alprostadil and make up to 10 mL with compatible fluid. Concentration equals 50 microg/mL. **Second Dilution:** • From the first dilution, withdraw 0.6 mL/kg body weight (30 microg/kg) and dilute to 50 mL with compatible fluid. *This will give the following infusion rate:* **1 mL/hour = 10 nanograms/kg/minute**
	HIGH CONCENTRATION: 50 nanograms/kg/minute ***Note:*** *when undiluted alprostadil comes into direct contact with plastic, the solution may turn hazy and must be discarded if this occurs.* **First Dilution:** • Draw up 1 mL (500 microg) of alprostadil and make up to 10 mL with compatible fluid. Concentration equals 50 microg/mL. **Second Dilution:** • From the first dilution, withdraw 3 mL/kg body weight (150 microg/kg) and dilute to 50 mL with compatible fluid. *This will give the following infusion rate:* **1 mL/hour = 50 nanograms/kg/minute**
Administration	**Continuous IV infusion:** • If volume infused is less than 0.5 mL/hr, then it must be run in conjunction with glucose 5% or sodium chloride 0.9% infusion.

Related Policies, Procedures, and Guidelines

Clinical Practice Guidelines:

Neonatology: Patent Ductus Arteriosus

Neonatology: Congenital Diaphragmatic Hernia (CDH)

Neonatology: Transposition of the Great Arteries (TGA)

Neonatology: Coarctation of the Aorta (CoA) and Interrupted Aortic Arch (IAA)- Pre-operative Management

Pharmaceutical and Medicines Management Guidelines:

CAHS Medication Refrigerators and Freezers

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NSQHS Standards Applicable:	☒ Std 1: Clinical Governance		☒ Std 4: Medication Safety		
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