Newborn Critical Care Center (NCCC) Clinical Guidelines

Alprostadil (Prostin) administration for Congenital Heart Disease (CHD)

INTRODUCTION

Alprostadil is used to promote dilation of the ductus arteriosus (PDA) in infants with congenital heart disease dependent on ductal shunting for oxygenation/perfusion. Apnea has been reported in 10 to 12% of neonates with congenital heart defects treated with Alprostadil and is dose dependent. The majority of pre-operative mechanical ventilation for CHD patients is associated with apnea from Alprostadil administration. Apnea is seen most often in neonates weighing less than 2 Kg at birth, and usually appears during the first hour of drug infusion. Infants receiving Alprostadil may respond to low flow or high flow nasal cannula as a stimulant if apnea associated with Alprostadil administration is present. It is optimal in patients with CHD to prevent intubation for apnea associated with Alprostadil whenever possible.

DRUG INFORMATION

- Start infusion at 0.025mcg/kg/min continuous IV infusion and wean as tolerated, may be as low as 0.01 mcg/kg/min continuous IV infusion. If desired saturation goals are not met on the starting dose of Alprostadil increase to 0.05mcg/kg/min.
- A compatible carrier fluid (D5W or Normal Saline) will need to be ordered to infuse with the medication. Mix one Ampule (500 mcg) in 49ml of compatible solution, yielding a concentration of 10mcg/ml. Ensure reliable IV access: duration of effect is short. Because an Alprostadil drip requires its own access line, a secondary saline locked PIV site should be established.
- If apnea is noted consider ordering LFNC @ 0.2LPM or HFNC @ 1 LPM, 0.21 FiO2 for stimulation.
- Closely monitor respiratory and cardiovascular status. Assess for achievement of desired saturation goals and adequate PaO2.

INDICATIONS TO START ALPROSTADIL

1. Any Infant born with a known or suspected ductal dependent congenital cardiac defect.
2. PPHN infants, early in their disease process, with inadequate blood pressure to assist right heart function.

ADVERSE EFFECTS

- **Common (6% to 15%)**: Apnea, hypotension, fever, leukocytosis, cutaneous flushing, and bradycardia. Hypokalemia (with treatment >20days). Gastric outlet obstruction and reversible cortical proliferation of the long bones after prolonged treatment (>5 days).
- **Uncommon (1% to 5%)**: Seizures, hypoventilation, tachycardia, cardiac arrest, edema, sepsis, diarrhea, and disseminated intravascular coagulation.
- **Rare (less than 1%)**: Urticaria, bronchospasm, hemorrhage, hypoglycemia, and hypocalcemia.

References: