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 kilograms at birth, and usually appears during the first hour of drug administration. 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 to prevent intubation in patients with CHD who experience apnea associated with alprostadil whenever possible.

INDICATIONS TO START ALPROSTADIL

1. Any infant born with a known or suspected ductal dependent congenital cardiac lesion

DRUG INFORMATION

- Concentration 10 mcg/mL infusion dispensed from pharmacy
    - Emergent preparation (50 mL syringe) add 1 mL (500mcg) alprostadil (pyxis) to 49 mL of compatible solution (D5W, D10W, NS), concentration = 10mcg/mL
- Start continuous IV infusion at 0.025 mcg/kg/min continuous IV and wean as tolerated. (Dose may be as low as 0.01 mcg/kg/min.) If desired saturation goals are not met on the starting dose of alprostadil increase to 0.05 mcg/kg/min.
- A compatible carrier fluid MAY be needed depending on infusion rate and line access. (Drug and solution compatibilities are searchable via LexiComp. Nurses also have access to this resource via the MAR in Epic.)
- Ensure reliable IV access due to the short duration of action. Alprostadil infusion requires dedicated IV access, therefore a secondary saline locked PIV should be established.
- If apnea occurs, consider LFNC @ 0.2 LPM or HFNC @ 2 LPM, FiO2 0.21.
- Closely monitor respiratory and cardiovascular status. Assess for achievement of desired saturation goals and adequate PaO2.

ADVERSE EFFECTS

- **Common (6% to 15%): *Apnea***, hypotension, ***fever***, leukocytosis, ***cutaneous flushing***, and bradycardia. Hypokalemia (with treatment > 20 days). 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.

Revised January 2025 – Brown, A. / DeLoache, K. / Deprenger, A. / Hoffman, T. / Laughon, M.