

## PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN (PPHN) Supporting information

This guideline has been prepared with reference to the following:

Hansmann G, Koestenberger M, Alastalo TP et al. 2019 updated consensus statement on the diagnosis and treatment of pediatric pulmonary hypertension: The European Pediatric Pulmonary Vascular Disease Network (EPPVDN), endorsed by AEPC, ESPR and ISHLT. *J Heart Lung Transplant.* 2019;38:879-901

[https://www.jhltonline.org/article/S1053-2498\(19\)31564-5/fulltext](https://www.jhltonline.org/article/S1053-2498(19)31564-5/fulltext)

Children's Acute Transport Service (CATS). CATS clinical guideline: persistent pulmonary hypertension (PPHN). 2016

### **Inhaled nitric oxide decreases the risk from PPH?**

An historical cohort study compared 16 infants who received inhaled nitric oxide with 15 who were given 100% oxygen (Tanaka, 2007). The incidence of cerebral palsy was 12.5% in the nitric oxide group, vs 46.7% in the oxygen group.

A 2019 systematic review of RCTs found that inhaled nitric oxide was associated with a significant reduction in the use of ECMO before hospital discharge was found, indicating that the number needed to treat with iNO for an additional beneficial outcome to prevent 1 neonate from requiring extra corporeal membrane oxygenation was 5 (Barrington, 2017). Oxygenation was significantly improved in infants treated with inhaled nitric oxide, and the oxygenation index 30–60 min. after the start of treatment was significantly lower in the inhaled nitric oxide group. PaO<sub>2</sub> 30–60 min. after treatment was significantly higher when treated with inhaled nitric oxide. Furthermore, neonates who received iNO were not at increased risk of neurodevelopmental sequelae and did not experience increased post-discharge pulmonary complications.

Barrington KJ, Finer N, Pennaforte T et al. Nitric oxide for respiratory failure in infants born at or near term. *Cochrane Database Syst Rev* 2017;1:CD000399.

<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000399.pub3/full>

Tanaka Y, Hayashi T, Kitajima H, et al. Inhaled nitric oxide therapy decreases the risk of cerebral palsy in preterm infants with persistent pulmonary hypertension of the newborn. *Pediatrics* 2007;119:1159-64

**Evidence Level: I**

### **Magnesium sulphate is a suitable alternative for pulmonary vasodilation if nitric oxide is unavailable?**

Approximately 30% of patients fail to respond to inhaled nitric oxide therapy (Shah, 2011). Although magnesium sulphate is a potent vasodilator, a Cochrane Systematic Review (Ho, 2007) found no relevant randomised or quasi-randomised trials looking at this question, and consequently declined to recommend the use of magnesium sulphate on the grounds of lack of evidence.

Ho JJ, Rasa G. Magnesium sulfate for persistent pulmonary hypertension of the newborn. *Cochrane Database of Systematic Reviews* 2007, Issue 3. Art. No.: CD005588

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005588.pub2/full>

Shah PS, Ohlsson A. Sildenafil for pulmonary hypertension in neonates. *Cochrane Database of Systematic Reviews* 2011, Art. No.: CD005494

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005494.pub3/full>

**Evidence Level: V**

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