Hypoxic Respiratory Failure in the Newborn: The Role of Inhaled Nitric Oxide

A free CE-accredited lecture for physicians and nurses

Upon completion of this free CE webinar, participants should be able to:

- Define hypoxic respiratory failure (HRF) and describe the risk factors, clinical signs, common comorbidities, and differential diagnoses associated with HRF in neonates.
- Understand the cardiopulmonary pathophysiology underlying the development of neonatal HRF, in particular the interactions between lung disease, cardiac dysfunction, and pulmonary hypertension.
- Appreciate the rationale for treatment approaches that selectively dilate pulmonary vessels.
- Understand the clinical trial data that support the use of inhaled nitric oxide (iNO) in neonates with HRF.
- Describe the important safety precautions that need to be taken with the use of iNO, including the rationale for avoiding abrupt discontinuation, monitoring of PaO_2, methemoglobin, and inspired NO_2 during therapy, and recognition that use in patients with preexisting left ventricular dysfunction may experience serious side effects.
- Establish appropriate treatment protocols for the management of neonatal HRF within their own clinical environments.

Free Live 45-minute CE Webinar February 26th
Includes a 15-minute Q&A with faculty speaker Donald M. Null, M.D.
2 session options: Noon EST or Noon PST

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Why this lecture is important:

Given how common HRF is in the neonatal period, it is important for healthcare professionals to be able to rapidly and accurately identify the early signs of respiratory distress and to initiate appropriate treatment. Treatment will include interventions to optimize lung volumes, reduce pulmonary vascular resistance, and improve cardiac function, and may include the use of mechanical ventilation, oxygen, drug therapy, and inhaled nitric oxide, which is approved for the use of term or near-term neonates with HRF and evidence of pulmonary hypertension.[1]

iNO is an important regulatory molecule in the neonatal lung, and iNO is a potent pulmonary-selective vasodilator.[2] This is an important attribute because intravenous vasodilators cause systemic vasodilation, and enhance blood flow to perfused but not ventilated lung regions, which can worsen left-to-right shunting and further impair oxygen saturation.[3] In contrast, iNO rapidly relaxes pulmonary vessels and reduces pulmonary vascular resistance, which can reverse the ventilation-perfusion mismatch seen in HRF, and reduce right-to-left shunting through the patent foramen ovale and ductus arteriosus.[4]

While there are clear benefits for the use of iNO for selected infants with HRF, this treatment is not without risk, in particular the development of methemoglobinemia.[4] Therefore, it is important that clinicians managing infants with HRF know how to use this treatment effectively, and according to current recommendations.

Faculty Speaker:

Donald M. Null, M.D.
Neonatologist, Newborn Intensive Care Unit
Primary Children's Medical Center
University of Utah Medical Center
and Intermountain Medical Center
Salt Lake City, UT

Donald M. Null, MD has served as a consultant for Drager and has received honoraria from Ikaria.

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Nurses:

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References: 1. INOmax (nitric oxide) [Prescribing information]. Hampton, NJ: INO Therapeutics. 2011.
2. Myers TR. Therapeutic gases for neonatal and pediatric respiratory care. *Resp Care* 2003;48:399–422.
3. Bloch KD, Ichinose F, Roberts Jr JD, Zapol WM. Inhaled NO as a therapeutic agent. *Cardiovasc Res* 2007;75:339–348.
4. DiBlasi RM, Myers TR, Hess DR. Evidence-based clinical practice guideline: inhaled nitric oxide for neonates with acute hypoxic respiratory failure. *Respir Care* 2010;55:1717–45.

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