

Editorial on Advances in Neonatology

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EDITORIAL

It is with pleasure I prefer to introduce the readers of this journal to the forthcoming series of articles under the title of "Advance in Neonatology". The mission of this journal always has been to stay the readers au courant scientific advances and translation of medical research in pediatrics into practice guidelines. The specialty of Neonatology may be a fast advancing specialty. In trying to stay up with advances we always seek papers from experts within the field from round the globe.

Neonatal medicine continues to form rapid progress. Babies born at 26 weeks of gestation now have a far better than evens chance of survival, an interesting improvement compared to even a decade ago. The mixture of antenatal steroids and postnatal surfactant has significantly reduced mortality and therefore the risk of intracranial haemorrhage. Artificial ventilators became more and more sophisticated and therefore the role of high frequency oscillation (HFOV) as rescue treatment is now established. Infections still contribute to several premature labours, and although the results of the ORACLE trial are still awaited, intrapartum antibiotic prophylaxis against neonatal B streptococcal infection is gaining widespread acceptance. For term infants with persistent pulmonary hypertension (PPHN), gas (NO) has made a rapid leap from the laboratory to the cotside and has already proved to be evocative treatment. This review aims to supply a quick update of the foremost important recent changes in neonatal medicine [1].

Neonatal resuscitation

Neonatal resuscitation is defined as the set of interventions at the time of birth to support the establishment of breathing and circulation of 136 million births annually, an estimated 10 million will require some level of intervention [2]. Some non-breathing babies with primary apnea will respond to simple stimulation alone. Basic resuscitation with a bag-and-mask is required for an estimated 6 million of these babies each year and is sufficient to resuscitate most neonates with secondary apnea, as their bradycardia primarily results from hypoxemia and respiratory failure. More advanced measures endotracheal intubation, chest compressions and medications are required in <1% of births [3], and most of these babies require ongoing intensive care which is not available in most low-income country settings. Supplemental oxygen is not

associated with survival benefit in term infants, although the effect may differ in very preterm infants.

Hyperoxia-induced lung injury

Preterm neonates with underdeveloped lungs often require oxygen after birth. While its lifesaving, high levels of oxygen even have negative effects on the lungs. Researchers in our division are investigating the mechanisms by which hyperoxia causes lung injury also as agents that would mitigate this injury.

E-Cigarettes and their effect on the fetus

There is little or no known about the consequences of e-cigarettes on the fetus and neonate, yet more and younger adults are using this product. In unique studies currently being conducted by divisional faculty, the role of e-cigarettes (both nicotine and additives) on lung development is being evaluated.

Clinical trials to enhance patient outcomes

We are a participating center within the Neonatal Research Network (NRN), established by the Eunice Kennedy Shriver National Institute of kid Health and Human Development (NICHD). With the support of a fanatical team of clinical research coordinators, multiple trials are currently active that aim to enhance look after newborns.

Some of these trials include

- Evaluating the role of Darbepoietin in future neurodevelopment in preterm infants
- Determining the simplest management of Patent blood vessel
- Exploring the role of therapeutic hypothermia in preterm infants with hypoxic ischemic encephalopathy (HIE)

Additional National Institute of Health (NIH) studies

We are also participating within the Developmental Impact of Neonatal Exposures (DINE) multicenter study which is a component of the Environmental Influences on Child Health Outcomes (ECHO) program at the NIH. Our Division was

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previously the recipient of a PROP (Prematurity and Respiratory Outcomes Program) grant and a TOLSURF (Trial lately SURFactant) grant aimed toward the prevention and understanding of bronchopulmonary dysplasia (BPD). Participation in this clinical test ensures that the newest therapies and monitoring techniques are available to our patient population.

Quality improvement projects for patient safety

Participation in state-wide and locally initiated quality improvement programs ensure optimal care to our neonates. Led by divisional faculty, several successful initiatives have occurred within the last 5 years and include:

- A significant reduction in CLABSI (central line associated bloodstream infections).
- Optimizing nutrition and growth for infants born before 32 weeks of gestation.

- Reducing the utilization of antibiotics within the NICU.
- Projects designed to successfully improve teamwork among the various providers and ancillary services within the NICU.

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