

Nationwide Survey on High-Flow Nasal Cannula Use in Neonatal Units

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Dear Sir,

High flow nasal cannula (HFNC) is a form of non-invasive respiratory support delivering heated humidified blended air and oxygen through loose-fitting nasal prongs at a flow rate greater than 2L/min. HFNC was developed as an alternative mode of non-invasive respiratory support for neonates and it is becoming increasingly popular in neonatal units due to the ease of use, reduced nasal trauma and low cost compared to continuous positive airway pressure (CPAP). Primary non-invasive respiratory support for respiratory distress syndrome, as a 'step-down' therapy from CPAP and post-extubation respiratory support are the main indications for HFNC treatment in newborn infants.¹ The mechanism of gas exchange with HFNC is attributed to CO₂ 'washout' of nasopharyngeal anatomical dead space and a 'CPAP' effect.² In order for infants to benefit from this therapy, it is vital that physicians prescribing HFNC support understand the general principles regarding the indications for use, flow rates and weaning strategies, and how to correctly fit the nasal interface.

In June 2021, we carried out a survey, via telephone interviews with senior neonatal staff, to determine the current practices regarding the use of HFNC among the 19 neonatal units in the ROI. Ninety-five percent of units (18/19) reported HFNC use. Eight units (44%) reported frequent use, six units (33%) occasionally use and four units (23%) used HFNC rarely. HFNC was mostly used in Level two and three units. The majority of units used HFNC as a 'step down' therapy from CPAP (73%), while some units used it frequently (6%) or occasionally (44%) as a primary mode of respiratory support. Although most units had a clinical guideline for the use of HFNC, wide variations existed in primary indications for treatment, starting flow rates (1-8L/min), weaning flow rates (0.5-2L/min), weaning protocols, and minimum and maximum flow rates. Four units were fitting the nasal interface incorrectly.

The results of this survey demonstrate that HFNC is frequently used in neonatal units in the ROI, and that wide variations exist in most aspects of providing this common non-invasive respiratory support. Studies from UK and New Zealand have reported similar variations in the use of neonatal HFNC.^{3 4} While many of the practice variations observed in our survey were probably the result of a general lack of universal guidelines on HFNC therapy, some of the differences observed were concerning, and possibly related to a lack of understanding of the mechanism of gas exchange with HFNC therapy. The low starting flow rates (< 2L/min) reported in some units were probably insufficient to exceed the infant's spontaneous inspiratory flow rates (2L/min) and therefore unlikely to enhance gas exchange, and units that incorrectly applied the nasal interface risked exposing the infants to unpredictable, and potentially damaging high PEEP pressures. A national guideline could standardise the approach to HFNC therapy in our neonatal units, and educate staff on the most effective way to provide this popular and important non-invasive respiratory support.

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