

A Multi-Centre Service Evaluation into the use of High Flow Nasal Cannula Oxygen Therapy in the Management of Infants with Bronchiolitis, a PRAM Project

Aims

Highflow nasal cannula oxygen (HFNCO) therapy is increasingly used in the management of infants with bronchiolitis. Our aim was to document the current practice across the West Midlands in the use of HFNCO therapy in this patient cohort.

Methods

A multi-centre, retrospective service evaluation of HFNCO use in infants <12 months with a primary diagnosis of bronchiolitis. Data collection was over a 4 week period between 1st November 2017 and 31st January 2018 and included co-morbidities, physiological parameters prior to commencing HFNCO, respiratory support before and after, flow rates, patient outcomes and feeding practices.

Results

Data was obtained for 78 patients from seven hospitals. Median age was 9.3 weeks (range 1.7-50.5), median weight was 4.9kg (range 2.5-10.88) and 17/84 (20%) had co-morbidities. There was a statistically significant improvement in HR and RR one hour post commencing HFNCO therapy ($p=0.033$ and 0.003 respectively). Median starting flow rate was 1.99L/kg (range 1.12-3.84) with flow rates, on average (median), increased to a maximum of 2.15L/kg (range 1.12-4.80).

36 patients (50%) recovered with HFNCO therapy, subsequently stepping down to low flow oxygen therapy or self-ventilating in air. Equally, 36 patients (50%) required escalation of care to at least CPAP with one patient requiring intubation and ventilation. The clinical area HFNCO was delivered included 47 patients on a paediatric ward (60.3%) and 31 in a HDU bedspace (39.7%). The number of patients requiring escalation of care were comparable whether cared for in a paediatric ward (46.8%) or a HDU bedspace (45.1%). 11 patients (14.5%) required admission to PICU.

Feeding practices whilst on HFNCO therapy were reviewed. 19 patients (24.3%) remained on nasogastric(NG) feeding only, 17 patients (21.8%) received NG feed initially and were then escalated to intravenous (IV) fluid therapy and 41 patients (52.6%) received only IV fluids. Of those being NG fed, 38.9% were bolus fed, 55.5% had a continuous NG feed and 5.5% had both bolus and continuous. Of those that were treated with IV fluid therapy, median percentage of maintenance fluids was 99% (range 63-149). Of those that were fluid restricted, the percentages of maintenance fluids being delivered were as follows; 6 patients (10.5%) <70%, 2 (3.5%) 70-79%, 10 (17.5%) 80-89%, 14 (24.6%) 90-99%.

Conclusions

Our data demonstrates variability in the use of HFNCO for the management of infants with bronchiolitis with wide ranges of flow rates and almost half of patients requiring escalation to CPAP and/or ventilation. There is also variability in enteral feeding practices and volume of IV fluids being delivered. This data lends towards the need for more research to determine the most beneficial patient cohort from HFNCO, which can then be implemented into national guidance.