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Changes in the use of humidified high flow nasal cannula oxygen

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HHFNC has gained popularity in neonatal care. A systematic review [1] of the results of nine trials which included a total of 1,112 infants, however, demonstrated that HHFNC was not superior to other modes of non-invasive ventilation in infants of greater than twenty eight weeks gestational age. We, therefore, sought to determine whether clinical practice regarding HHFNC had changed since 2012 when all UK units were surveyed [2] and also to identify why practitioners preferred HHFNC or CPAP.

In 2015, lead clinicians of all 194 UK neonatal units were identified from the National Neonatal Audit Programme, BAPM directory and a departmental database from previous audits. In 2012, practitioners from the then 203 UK neonatal units had been contacted.[2] Both surveys included questions on the level of neonatal care, the indications for use of HHFNC and the flow rates used. The 2015 survey also contained questions regarding nasal prong size, weaning policies and HHFNC or CPAP preference (practitioners were given a list of possible reasons to choose from).

There was a 100% percent response rate to both surveys. Use of HHFNC was significantly increased in 2015 compared to 2012 ($p < 0.001$) (Table 1). Almost all local neonatal and neonatal intensive care units were using HHFNC in 2015. Fewer units were using HHFNC as an alternative to CPAP or weaning from CPAP ($p = 0.001$), but a greater proportion were using it as the primary support mode post extubation ($p = 0.001$). The 2015 survey highlighted that in 25% of units prong size was chosen to fit snugly and occlude the nostril, whereas it is recommended that the fit should be less than 50% of the nares.[3] Thirty-six percent of units were using HHFNC without guidelines. The highest and lowest flow rates used varied in both surveys, but the magnitude of change of flow when weaning from HHFNC did not differ significantly in the two surveys. In the 2015 survey, weaning the flow in increments of between 0.5-1 L/min and 24 hourly was most popular, but there was no consensus.

This likely reflects that there is currently no evidence to determine the best weaning strategy from HHFNC.[4]

The majority of practitioners preferred HHFNC (Table 2). In particular, almost all thought babies achieved full oral feeds by breast or bottle quicker on HHFNC and that it was more comfortable for the baby than CPAP.

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Table1: HHFNC practice in 2012 and 2015

Data are displayed as the n (%)

	2012	2015	P value
HHFNC			
Total number of units	203	194	
Using HHFNC	113 (56%)	169 (87%)	<0.001
Unit Level			
Special Care Unit	12/53 (23%)	22/42 (52%)	0.003
Local Neonatal Unit	60/92 (64%)	84/88 (95%)	<0.001
Neonatal Intensive Care Unit	41/58 (70%)	63/64 (98%)	<0.001
Data are subsequently displayed only for units using HHFNC			
Indication of Use			
Alternative to CPAP/ Weaning from CPAP	66 (58%)	65 (38%)	0.001
Primary mode of respiratory support post extubation	47 (42%)	104 (62%)	0.001
Highest Flow Rate			
8	36 (32%)	78 (46%)	0.011
7	12 (11%)	6 (4%)	0.017
6	38 (34%)	77 (46%)	0.030
5	27 (23%)	8 (4%)	<0.001
Lowest Flow Rate			
4	11 (10%)	18 (11%)	0.485
3	40 (35%)	40 (24%)	0.023
2	45 (40%)	97 (57%)	0.003
1	17 (15%)	14 (8%)	0.058
Size of change in flow when weaning			
0.5 L/min	30 (27%)	51 (30%)	0.301
1 L/min	38 (34%)	58 (35%)	0.504
0.5 - 1 L/min	45 (40%)	60 (36%)	0.271
Time between changes in flow rates			
24 hourly		79 (47%)	
24-48 hourly		21 (12%)	
48 hourly		17 (10%)	
Depends on the infant's condition		52 (31%)	
Prong size			
Snug fit to occlude the nostril		42 (25%)	
Prong size selected to allow air leak		127 (75%)	
Guideline/Policy			
Yes		108 (64%)	

Table 2: Preference for CPAP or HHFNC

Data are displayed as n (%)*

	CPAP	HHFNC	P value
Which is better	18 (11%)	109 (64%)	<0.001
Better access to the infant	1 (1%)	145 (86%)	<0.001
Easier to set up	13 (8%)	138 (82%)	<0.001
Better access for skin to skin care	0 (0%)	162 (96%)	<0.001
Quicker to achieve full bottle feeding	0 (0%)	166 (98%)	<0.001
Quicker to achieve full breast feeding	0 (0%)	168 (99%)	<0.001
Less nasal trauma	0 (0%)	162 (96%)	<0.001
More comfortable for the infant	1 (1%)	165 (98%)	<0.001
Parental preference	0 (0%)	162 (96%)	<0.001

*Not all practitioners responded to every question