

High Flow Nasal Cannula Vs NCPAP in Premature Infants

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Introduction: Traditionally, nCPAP has been the method to deliver non-invasive PEEP blended oxygen to premature infants. However, common problems occur with the sizing the prongs, comfort to the patient, and skin breakdown. Formerly, our extubation were followed by administration of nCPAP or low flow nasal cannula. For the preceding year, our NICU has been using the Vapotherm TM 2000i to deliver respiratory assistance without the complication of nCPAP. We compared extubation outcomes with nCPAP / Vapotherm verses vapotherm alone.

Methods: following mechanical ventilation eleven patients were entered into two groups. Group 1 was extubated, placed in nCPAP at 5-6 cm H₂O and progressed to Vapotherm at 3-6 L/min. Group 2 was extubated directly to Vapotherm at 3-6 L/min. Arterial blood gases was collected for patients. **Results:** In both groups ABG and CXR remain closely correlated or were improved. Two patients in Group 2 were reintubated due to hypercapnia. All patients in Group 1 and 2 seemed more comfortable on Vapotherm and had fewer traumas to the nose when compared to nCPAP.

Group 1:

Extubation to nCPAP followed by Vapotherm

Gest age	Wt (kg)	nCPAP	Vapotherm	ABG
27 week	0.57 kg	6 at 21-30%	4 L/min	Improved
26 week	0.80 kg	5 at 29-40%	4 L/min	Improved
25 week	0.71 kg	5 at 21-30%	3 L/min	Same
26 week	0.73 kg	5 at 35-50%	4 L/min	Same
28 week	0.90 kg	5/6 at 30%	4-6 L/min	Improved

Group 2: Extubated Directly to Vapotherm

Gest age	Wt (kg)	Vapotherm	ABG	Weaned to NC
25 week	0.76	4 L/min at 32%	Same	Yes
28 week	1.25	4 L/min at 24%	Improved	Yes
26 week	1.02	4 L/min at 40%	Not Improved	No
25 week	0.58	6 L/min at 28%	Same	Yes
26 week	0.71	4 L/min at 30%	Improved	Yes
24 week	0.52	3 L/min at 35%	Same	No

Discussion: Vapotherm utilizes an open flow system (NC does not seal the nares) to provide respiratory assistance compared to closed system of nCPAP (prongs seal nares). Although, Vapotherm does not set a pressure adequate oxygenation is achieved at flow rated 3-6 L/min in this study. The Vapotherm nasal cannula is applied in similar fashion to standard NC and seems to create less stress to the premature infant. Conclusion: The high flow nasal cannula is as effective for oxygenation purposes as nCPAP. Moreover, patients seem more comfortable and there are fewer traumas than nCPAP.

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