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**EFFECT OF TIDAL VOLUME INFORMATION AND TARGETED VENTILATOR TRAINING ON THE INCIDENCE OF HYPOCARBIA IN THE EARLY NEONATAL PERIOD**

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**Background:** Hypocarbica is associated with adverse neurodevelopmental outcome in ventilated preterm infants. Most neonatal blood gas (BG) sampling is performed by pediatric trainees. We have previously shown that the monthly incidence of hypocarbica is affected by trainee experience.

**Aims:** To compare the incidence of significant hypocarbica in infants < 1500g, or < 32 weeks gestation, and < 8 days old before (Audit 1, 2004-6) and after (Audit 2, 2008-9) equipment and training changes.

**Method:** BG results were retrieved from the electronic patient data management system for all eligible patients. Audit 1 was performed with ventilators (SLE 2000) without tidal volume information. In January 2008, new ventilators (Engstrom Carestation) providing continuous tidal volume information were introduced supported by a regular targeted ventilation training package. The percentage of BG with hypocarbica (< 4kPa) was calculated. Monthly percentages were calculated for new trainees (months 1-2) and the rest of the training period (months 3-6).

**Results:**

	Number of infants	Total BG	% hypocarbica (all months)	% hypocarbica (months 1-2)	% hypocarbica (months 3-6)
Audit 1	401	8323	5.4 (1.7-12.4)	5.9 (3.5-12.4)	4.3 (1.7-9.7)
Audit 2	358	9628	3.1 (1.0-6.5)**	3.9 (2.7-6.5)*	2.5 (1.0-3.4)**

[Table 1: Hypocarbica rates (%) median (range)] Table 1 shows that the monthly incidence of hypocarbica (%) has been reduced (\*p< 0.01; \*\*p< 0.001) following the intervention. There is still a higher incidence of hypocarbica when new trainees start (P< 0.001).

**Conclusion:** Tidal volume information and targeted neonatal ventilation training is associated with a

reduction in the incidence of hypocarbica suggesting this risk factor for adverse outcome is amenable to intervention

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**TIMING OF SURFACTANT TREATMENT IN EXTREMELY PREMATURE INFANTS - EFFECTS ON MORTALITY AND DEVELOPMENT OF BRONCHOPULMONARY DYSPLASIA (BPD)**

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**Background and aims:** The effect of early surfactant treatment is uncertain. The aim of this study was to evaluate mortality and moderate/severe BPD in relation to timing of surfactant treatment.

**Methods:** All 452 admitted infants with gestational age (GA) ≤ 30 weeks from a national cohort of infants with GA 22<sup>0</sup>-27<sup>6</sup> weeks and/or birth weight (BW) 500-999 g were studied.

**Results.** Only minor differences in mortality or BPD was found between infants given surfactant in delivery room (S-DR) only, NICU (S-NICU) only or both in DR and in NICU (S-DR/NICU) (Table 1).

		S-DR	S-NICU	S-DR/NICU
Entire cohort	n=452	n=91	n=132	n=145
GA (wks)	26.2±1.7	26.0±1.6	26.1±1.6	25.6±1.5§
BW (g)	832±180	801±190	852±172	799±181§
Died	83 (18.4%)	13 (14.3%)	27 (20.5%)	36 (24.8%)#
BPD cohort	n=376	n=78	n=110	n=109
GA (wks)	26.4±1.6	26.2±1.6	26.5±1.5	25.7±1.4*
BW (g)	853±176	813±190§	875±163	822±180§
BPD	170 (45.2%)	37 (47.4%)	52 (47.2%)	63 (57.8%)#

[Table 1]