

ventilation was standardized using a ventilation rate of 60/min, a PIP of 16 mbar, a PEEP of 3.5 mbar and a flow of 10 l/min. A capnograph in the expiration-part of the ventilation tube measured CO<sub>2</sub> concentrations. The test series were repeated 10 times and the mean (± SD) was used for statistical analysis.

**Results** CO<sub>2</sub> elimination time was: in A, 47.7 (± 0.82) s with enclosed suctioning device, without 45.5 (± 1.18) s; in B, 42.5 (± 1.27) and 41.1 (± 0.99) s; in C, 37.5 (± 1.18) and 37.4

(± 0.97) s; and in D, 38.3 (± 1.16) s and 36.8 (± 0.79) s, respectively.

**Conclusion** The use of the Y-piece with the patented dead space free flow sensor shows the same CO<sub>2</sub> elimination time as the Y-piece without flow sensor. This reduced the ventilation effort by 20% compared with the Y-pieces with integrated flow sensor and by 10% with the flow sensor with small dead space. This might also reduce the incidence of bronchopulmonary dysplasia.

**P14 Elimination of ventilator dead space in premature infants by flow partition: a new method**

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*Critical Care 2004, 8(Suppl 1):P14 (DOI 10.1186/cc2481)*

Chronic pulmonary damage, induced by mechanical ventilation, represents a major morbidity risk for low birth weight infants. Lung overexpansion by high tidal volumes has been recognized as a contributory factor. In currently used ventilation modes, the inbuilt flow sensor and the gadget for closed endotracheal suction increase the dead space significantly. This apparatusive dead space is commonly combated by high tidal volumes. A recently inaugurated alternative consists in flushing the anatomical dead space with fresh gas – which is split off the regular ventilation circuit – bypassing the apparatusive dead space. Such a flow

partition system was compared with conventional ventilation in 17 preterm infants weighing <2000 g. Ventilation requirements were significantly lowered in all patients. Mean minute volumes could be reduced by 40.6% (*P* < 0.001), while mean arterial partial pressures of carbon dioxide fell from 54.3 (± 10.74) mmHg to 47.4 (± 3.80) mmHg (*P* = 0.009) on average. We conclude that the dead space decrease by split flow signs responsible for the reduced ventilation requirements, and would expect correspondingly less pulmonary injury. Specialized flow sensor calibration will be required for routine usage.

**P15 Prospective randomised controlled study of use of intrapulmonary percussive ventilation with chest physiotherapy after cardiac surgery**

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*Critical Care 2004, 8(Suppl 1):P15 (DOI 10.1186/cc2482)*

**Introduction** Intrapulmonary Percussive Ventilation® (IPV) is a complementary chest physiotherapy technique for restrictive and obstructive disease treatment. We tested its tolerance and efficacy after cardiac surgery in a prospective randomised controlled study.

**Patients and methods** Forty patients receiving chest physiotherapy during their first 3 days after cardiac surgery were randomised in two groups: the control group benefited from one conventional chest physiotherapy per day, and the IPV group received same treatment alternated with IPV1® application each day. Treatment duration was the same. Blood gas, flow-volume curve, subjective sensation of dyspnoea (using visual scale), thorax radiograph, postoperative complications and hospital length of stay were analysed.

**Results** (Table 1) Both groups were comparable regardless of type of intervention, comorbidities and demography. Blood gas analysis (days 1 and 3) and frequency of postoperative clinical complications were not statistically different. However, fewer

**Table 1**

	IPV group (n = 20)	Control group (n = 20)	P value
Atelectasis	0	5	0.048
ICU LOS (days)	3.5 ± 0.82	4.6 ± 4.28	0.98
Hospital LOS (days)	10.4 ± 0.99	13 ± 4.93	0.009

atelectasis were seen in the IPV group on thorax radiograph. Subjective dyspnoea sensation is less in the patients of the IPV group. Hospital length of stay (LOS) was longer in the control group. No IPV treatment was stopped for intolerance.

**Conclusion** Tolerance to IPV treatment was good early after cardiac surgery. In this study, use of IPV during the first three postoperative days reduces hospital LOS after cardiac surgery. However, a larger study is necessary to confirm these results.

**P16 Isoflurane anesthesia for status asthmaticus: 10 years' experience**

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*Critical Care 2004, 8(Suppl 1):P16 (DOI 10.1186/cc2483)*

Mechanical ventilation (MV) for status asthmaticus (SA) is associated with high mortality [1]. Prolonged isoflurane (ISO) administration has been shown to be a safe and well-tolerated

therapy in ICU patients and is a predictedable bronchodilator [2,3]. We report our 10 years' experience with MV and use of isoflurane (ISO) as a therapy for refractory SA.