has been recently related to a diffuse brain injury pattern. This study aims to analyse the relationship of total and regional CC volumes with intelligence and motor impairment severity in dyskinetic CP.

Methods 15 subjects (age range, 12–34) with dyskinetic CP and signs of perinatal asphyxia underwent a MRI. CC total, anterior, central and posterior volumes were calculated (Figure 1). The intelligence and motor scales most commonly used in CP were administered.

Results The CC total volume and most of its parts were related to intelligence and motor measures (Table 1).

Abstract O-073 Table 1 Partial correlation controlling for age

	Intelligence		Motor		
	Verbal ¹	Non-verbal ²	GMFCS	BFMF	MACS
TOTAL CC	0.773***	0.775***	0.641**	0.542*	0.634**
ANTERIOR	0.612**	0.681**	no significant		
CENTRAL	0.659**	0.637**	0.619**	0.587*	0.641**
POSTERIOR	0.812***	0.779***	0.684**	0.517*	0.656**

* <.05; ** <.01; *** <.001; GMFCS: Gross Motor Function Classification System; BFMF: Bimanual Fine Motor Function; MACS: Manual Ability Classification System; ¹Peabody Picture Vocabulary Test-3rd; ²Raven's Progressive Matrices.

Conclusions Total CC volume may be indicative of intelligence and motor status in dyskinetic CP. Regionally, the posterior part is the most related to intelligence, in agreement with recent theories of intelligence. The anterior part of the CC is not found to be related to motor function. This result agrees with the fact that premotor and sensorimotor fibres are located more posteriorly than previously thought.

New Concepts In Neonatal Sepsis

O-074

THE RELATIONSHIP BETWEEN MULTISITE NIRS-MEASUREMENTS AND ROUTINE HAEMODYNAMIC MEASUREMENTS IN PRETERM INFANTS WITH CLINICAL SEPSIS

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Background Multisite Near-infrared spectroscopy (NIRS) monitoring may help to detect circulatory failure in preterm infants. The aim of this study was to assess the correlation between multisite NIRS-measurements and routine haemodynamic measurements in preterm infants with clinical sepsis.

Methods Prospective exploratory cohort study in which preterm infants (GA²Leiden University Medical Centre, Leiden University, Leiden, Netherlands).

Background Heating and humidification of inspired gas is routine during neonatal non-invasive respiratory support, but little is known about the effects of different techniques on temperature and humidity in the upper airway.

Method Eight non-invasive respiratory support modes were applied to a neonatal manikin, in an incubator set to 34°C with relative humidity (RH) 60% (approximate normal upper airway

conditions). Continuous positive airway pressure (CPAP), high-flow nasal cannulae (HFNC), and low-flow nasal cannulae (LFNC) devices were tested. Except for unhumidified LFNC, set humidifier temperature was 37°C. Typically used pressures and gas flows were assessed. Temperature and RH in the manikin's oropharynx were measured every 5 min for 30 min, using a thermohygrometer. Each variation was repeated 3 times.

Results Steady state was reached by 10 min. Median values from 10–30 min are shown below.

Abstract O-074 Table 1

Device	Prongs/cannulae	Oropharyngeal			
		Set pressure (cm H ₂ O)	Set flow (L/min)	temperature (°C)	Oropharyngeal RH (%)
Hudson		8	8	38.3	82.5
Bubble CPAP	Midline	8	8	36.9	96.7
Babylog	Hudson	8	8	36.5	94.3
8000 CPAP	Midline	8	8	36.8	97.2
SiPAP	Infant Flow	-	8	35.1	88.0
Optiflow Jr.	Optiflow Jr.	-	8	36.3	88.8
Vapotherm	Vapotherm	-	8	34.3	81.2
LFNC	Salter	-	8	33.5	0.8

Conclusions Achieved oropharyngeal temperature and RH varied between devices. RH of 0.8% occurred during LFNC using unconditioned 'dry' gas. Most devices achieved temperatures >34°C and >80% RH. Bubble CPAP delivered by Hudson prongs resulted in an oropharyngeal temperature above body temperature, which could result in water condensation as gas cools in the airway.

Non-Invasive Ventilation – What is the Evidence?

O-077

MEASUREMENT OF RESPIRATORY MECHANICS AND THORACOABDOMINAL ASYNCHRONY INDICES IN NEONATES BY RESPIRATORY INDUCTANCE PLETHYSMOGRAPHY DURING NON-INVASIVE VENTILATION

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Background Measurement of respiratory mechanics during non-invasive ventilation (NIV) precludes use of the traditional airway flow sensor. Increasing use of NIV in premature infants necessitated novel instrumentation for measuring airflow without interfering with the nasal/oral interface. Respiratory inductance plethysmography (RIP), in addition to providing chest wall motion analysis, may be used for volume and airflow measurements when properly calibrated.

Objective To develop an efficient RIP calibration technique to allow bedside measurement of respiratory mechanics and to validate its accuracy against traditional pneumotachometer (PNT) measurements while simultaneously computing thoracoabdominal asynchrony indices in premature infants.

Design/methods RIP ribcage and abdominal signals were recorded simultaneously with facemask PNT signals. RIP was calibrated by qualitative diagnostic calibration and multiple